



Nomination of

Risco Caído
and the **Sacred Mountains**
of **Gran Canaria Cultural Landscape**

for Inscription on the World Heritage List 2018



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February 2018





Foreword

The Cabildo of Gran Canaria (Island Government) manages the important historical heritage that our island conserves and defends the maximum protection of all the listed spaces and items. In the context of the UNESCO World Heritage Convention, in December 2014, this Island Government decided to promote the inscription of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria in the World Heritage List, in collaboration with the Canary Island Government and with the support of the Spanish central government.



The nominated Cultural Landscape covers an extensive mountainous area of the centre of our island, holding unique values within the colossal Caldera de Tejeda, a “petrified storm” as Miguel de Unamuno called it. It is an outstanding example that represents the odyssey of island cultures of the Earth and contains the marks of a unique cultural process that evolved in isolation for over 1500 years from its Amazigh (Berber) roots, in North Africa, and which now aspires to becoming the new paradigm of Mankind's historical and cultural evolution.

We are talking about some of the places where the ancient Canarians managed to create their own vision of the sacred mountains: uniting heaven and earth, integrating the skyscape into their cosmology, as the “almorgarenes” or sanctuaries of Risco Caído and El Bentayga clearly show with their evident astronomical connotations. This is a landscape in which these same settlers engraved their spiritual perception in the rocks and created spectacular, complex troglodyte settlements, clinging to crags and cliffs, creating a tradition that remains alive and which has turned the cave house into a symbol of pride and identity for the inhabitants of this area. Moreover, we have the survival of ancestral traditions and land uses, such as transhumance, growing crops on terraces and water management, making this landscape an open book dealing with intelligent, environmentally-friendly, sustainable uses of the land and of the value that its outstanding natural and cultural heritage now has.

It is a space that allows the alliance forged between the past and the present to consolidate, offering knowledge, science, creativity and economies of quality. A landscape that belongs to everybody, that will continue to be sacred in modern times, as a place for reflecting, a space that tries to act as a model with regard to UNESCO's aspirations in all sustainable development-related aspects.

On an island that has suffered the vicissitudes of the development of intensive mass tourism, it is surprising that this landscape, and the values it possesses, have been so well conserved in convulsive times (a large part of its territory has been declared a Biosphere Reserve). And basically, this is due to its people, who have managed to maintain this heritage over the years, and continue enhancing it. The nomination to inscribe the property in the World Heritage List has really come from their experience and it is driven by their will.

We can say that the nomination of Risco Caído and the Sacred Mountains has the unanimous backing of all political parties and civil society, in a meritorious consensus that, above all, exemplifies the high-mindedness of a society that is capable of giving pride of place to the future and to the generations to come in the actions and decisions that we take today. The 2016 Declaration of the Summits of Tejeda was the expression that consolidates this commit-

ment, and all the local and island institutional representatives, without distinction, have taken ownership of it. This is a commitment that makes it perfectly clear that the nomination to inscribe this property in the World Heritage List is not an end, but basically a tool that will help to maintain and direct the management of this universal legacy for the generations of the present and the future.

World Heritage Sites are undoubtedly places and expressions of outstanding importance for all mankind, places that transcend national borders, time and continents. Against this backdrop, and aware of the responsibility to preserve this legacy, the Cabildo of Gran Canaria, as the competent authority for the cultural and environmental management of the nominated territory, has been making all the financial, administrative, legal and skill-building provisions necessary to guarantee this commitment over time, for many years.

If there is one thing that has shown the growing and exponential support for this initiative, and the social demand to enjoy it, it is the fact that it has found a place in the hearts and souls of our people. It has become a new component of our identity, which not only holds the gaze of the past, but also all the good that we are capable of doing today to make it a reason for satisfaction tomorrow.

I am convinced that our nomination offers elements that will enhance the representativeness and improve the balance of the World Heritage List. It is a nomination that reflects many voices, such as those of the Amazigh world, but especially, the voice of the islands, lands trapped between the sea and the sky.

Antonio Morales Méndez

President of the Cabildo of Gran Canaria

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Executive Summary

State Party

Spain

State, Province or Region

Autonomous Community of the Canary Islands, Gran Canaria island.

Geographical Region: Africa

Biogeographic region: Macaronesia

Name of Property

Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape

Geographical coordinates to the nearest second

Name	Municipality	Coordinates
Geographical center of nominated property	Caldera de Tejeda	27° 59' 7.723" N / 15° 38' 15.168" O
Risco Caído Almogaren	Artenara	28° 2' 37.860" N / 15° 39' 40.572" O
Risco Chapín Sanctuary	Artenara / Tejeda	28° 1' 3.129" N / 15° 38' 2.437" O
Mesa de Acusa	Artenara	0' 35.423" N / 15° 40' 40.935" O
Sierra del Bentayga	Tejeda	27° 59' 7.723" N / 15° 38' 15.168" O

Textual description of the limits of the proposed property

The proposed property is in the mountainous heart of Gran Canaria, encompassing the entire Cuenca de Tejeda, including its escarpments and cliffs, the Tamadaba Highlands and the course and slopes of Barranco Hondo. The entire property proposed and the buffer zone are part of the Caldera de Tejeda, which comprises the scenic and natural boundary of the nominated property, the geographic and symbolic centre of which is Roque Bentayga.

A4 Size Map of the nominated property, showing boundaries and buffer zone

See the next pages for the maps of the scope of the nominated property and buffer zone

Map 1. General

Area of the nominated property and buffer zone, including the names of the most representative attributes and important geographical areas.

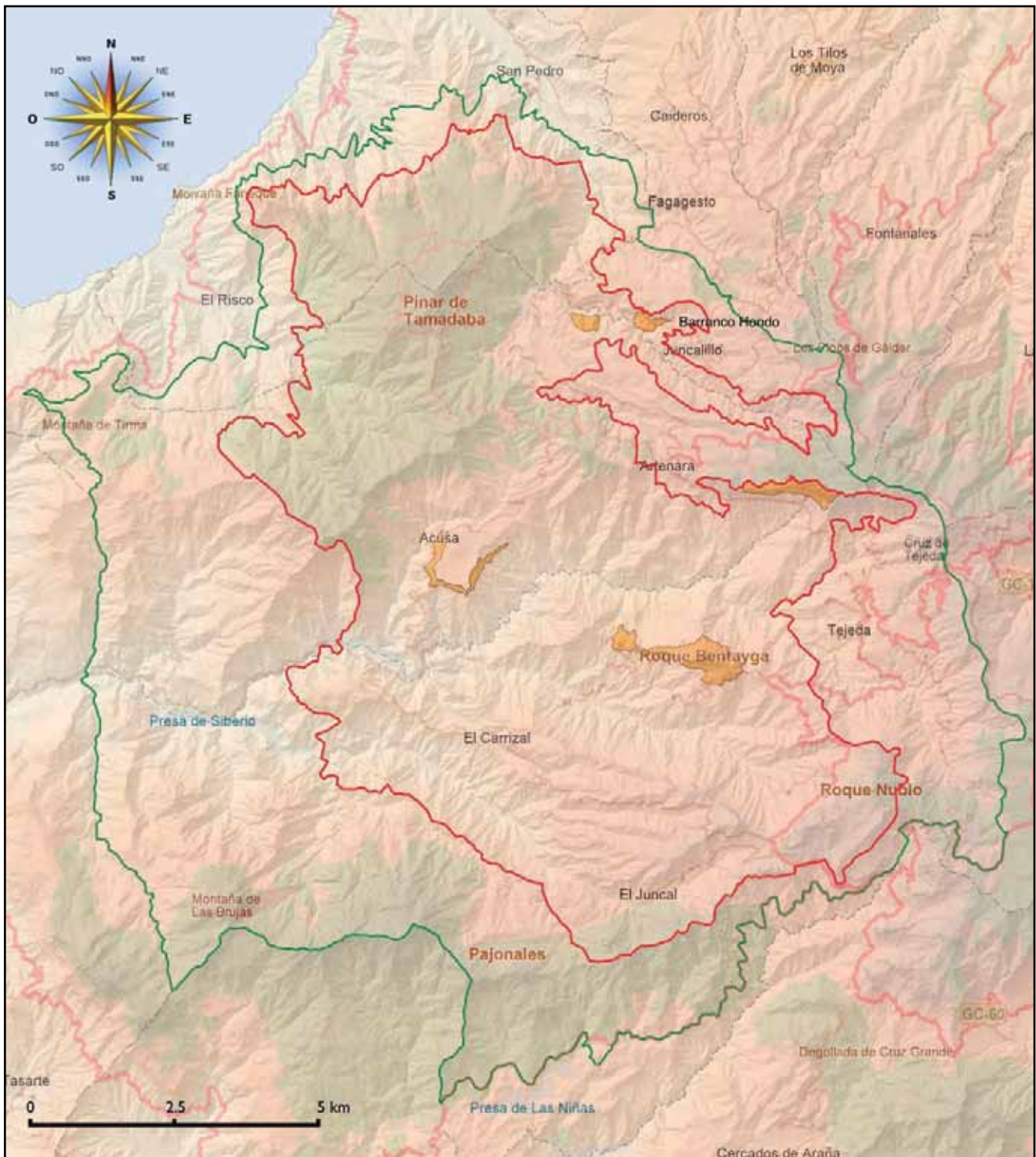
Map 2. Zoning, place names and population centres.

Area of the nominated property and population centres, including the place names of scattered settlements of population.

Criteria under which property is nominated

The Risco Caído and the Sacred Mountains of Gran Canaria meets inscription criteria (iii) and (v)

I. Map of the nominated property, showing boundaries and buffer zone



Description:

Area of the nominated property and the buffer zone. The most interesting troglodyte areas are highlighted.

Base map:

Digital Terrain Model (DTM) over shaded map.
Source: Grafcan. Canary Island Regional Information System.
Canary Island Government.

Legend

- Main troglodyte settlements
- Nominated property boundaries
- Buffer zone boundaries

Spatial reference system:

UTM projection
EPSG:32628 - WGS 84 / UTM zone 28N

2. Map of the nominated property, showing boundaries and buffer zone



Description:

Area of the nominated property and rural settlements.
(D) = scattered

Legend

- Rural settlements
- Nominated property boundaries
- Buffer zone boundaries

Base map:

Digital Terrain Model (DTM) over shaded map.
Source: Grafcan. Canary Island Regional Information System.
Canary Island Government.

Spatial reference system:

UTM projection
EPSG:32628 - WGS 84 / UTM zone 28N

Draft Statement of Outstanding Universal Value

a) Brief synthesis

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria covers an extensive mountainous area of the centre of the island of Gran Canaria, delimited by the spectacular Caldera de Tejeda, encompassing much of the basin, course and slopes of Barranco Hondo and the forested highlands of Tamadaba. The terrain is extremely rugged, with imposing crags, cliffs, deep ravines and monumental volcanic formations, all in an area of extreme biodiversity.

The nominated property harbours a set of well-conserved, mainly archaeological manifestations and works belonging to an extinct island culture that evolved in total isolation from the presence, at least in the year 0 A.D., after the first North African Berbers or Imazighen had reached these shores, until the Spanish conquered the island in the 15th century. Thus, it is an exceptional cultural evolution in an oceanic island space that grew from the background, knowledge and beliefs of the first Berber settlers (Imazighen), finally generating a unique and distinct island culture in this territory.

A cosmological vision encompassing both the skyscape and the landscape provided the means of organising and understanding the space of the sacred mountains of Gran Canaria. Outstanding human troglodyte settlements and rock art sanctuaries are arranged here, along with farming structures surprisingly-well adapted to the unique geology and nature, giving rise to a cultural landscape that still conserves most of its original elements together with the visual relationships between them. The Cultural Landscape offers a clear and outstanding example of how mankind adapts to a complex and difficult natural environment, representing a paradigmatic model in the island context.

Certain material expressions of the indigenous inhabitants of this territory, especially the temples or *almogarenes* with obvious astronomical connections, are surprisingly complex and the outstanding constructive conception is incredible; the more so if we consider that this was a culture that did not even use metal. Another rarity is that the area contains one of the largest concentrations of pubic triangle engravings, an ancestral symbol of fertility, known in the world.

The way the settlements are laid out, the presence of temples and markers with clear astronomical connotations, and certain reference landmarks, along with certain calendrical reference points, reveal a complex landscape inter-

connected with the sky. The evolving cultural landscape of the sacred mountains includes both the earth and the skyscape, inextricably combined.

The aboriginal mark has survived through time and space here, moulding the landscape, maintaining the troglodyte culture throughout the area and conserving ancestral practices such as transhumance, the unique terraced fields for growing crops, and methods of managing water and cave pools. In general terms, this is a heritage whose roots are sunk deep into the original culture, as is evident from the extant Libyco-Berber engravings. It can be considered the westernmost expression of the Amazigh culture, which, for the first time, develops into another, unique island culture.

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria is a genuine laboratory of knowledge that illustrates the adventure of the aboriginal island cultures of the planet, which have evolved over long periods of time without any external influence, giving rise to their own cosmology and a distinctive universe of knowledge and beliefs. Thus, it is an outstanding heritage that expresses a unique and unrepeatable cultural process displayed on a stage that has remained almost unaltered over the centuries.

b) Justification for Criteria

Criterion (iii)

(Bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared)

The set of archaeological sites and rock art manifestations bears unique and exceptional testimony to an extinct island culture that evolved in isolation for over one thousand five hundred years. Archaeological and historical evidence from the nominated property bears witness to the fact that this culture arose from the first settlers that came from the Berber Maghreb, which in of itself makes it exceptional, as it is a unique case of an island culture that can trace its roots back to the pre-Islamic Amazigh world, of which there are very few manifestations. This place also represents the sacred mountains that were the final refuge of the ancient Canarians before the Spanish conquest.

The site expresses a very strong and highly original relationship of human beings with nature (both land and sky). The nominated property provides exceptional testimony of an island culture that includes the skyscape as a fundamental part of the perception of their world, rites and beliefs. They also developed an astronomical culture closely attuned and related to the natural environment and the surrounding landscape. Evidence of this is provided by the

temples with strong astronomical connections, such as the almogaren at Roque Bentayga and the cave at Risco Caído, that represent the pinnacle of the evolution of these manifestations.

This heritage legacy also illustrates the odyssey of the aboriginal island cultures of the planet that have evolved over long periods of time without any external influences, giving rise to their own cosmology and a unique universe of know-how and beliefs.

Criterion (v):

(Be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment, especially when it has become vulnerable under the impact of irreversible change)

The aboriginal troglodyte settlements of the Caldera de Tejeda and the surrounding area are an unrepeatable example of this kind of human habitat in ancient island cultures, illustrating a highly efficient and complex level of organisation of the space and adaptive resource management. The colossal geological stage and the natural landscapes blend in with the cave settlements, sanctuaries, agricultural works and terraces, to develop a genuine cultural landscape that still maintains its main references and its symbolic and cosmological connotations.

The troglodyte habitat has been kept alive as a way of life over time, creating new ways of occupying the space that express the syncretism between the aboriginal culture and the culture introduced after the conquest. There is also the survival of ancestral techniques and land uses, such as transhumance and water management with unique troglodyte traits such as the cave pools.

The orientation and alignment of certain temples and caves also indicates an intimate relationship between settlements of this kind and the skyscape and the main symbolic elements of the landscape.

The spatial distribution of the settlements and the findings from the sites offer a detailed understanding of how the aboriginal communities exploited the territory of the sacred mountains. The current environment contains habitats and species of flora and fauna that also cast light on the lifestyle of the ancient settlers. Our knowledge of the skills and cultural traditions of the aboriginal people, and the survival of many of these skills and traditions, allows us to recognise a territorial culture that was intelligently adapted to a difficult and complex territory and that generates an incomparable cultural landscape.

c) Statement of Integrity

The whole of the designated property does not only include all the necessary components and elements to express the Outstanding Universal Value in terms of a cultural landscape, sacred for the ancestral settlers of the island, it also has the right size and adequate boundaries to fully represent the attributes and processes that transmit the importance of the property.

With respect to the integrity of the composition of the landscape, the area of the nominated property houses the greatest density of troglodyte manifestations on the island of Gran Canaria, exhibiting a unique phenomenon in the islands, with almost one thousand artificial caves of different kinds, from well-conserved, original aboriginal villages, to caves reused in historic times. It also includes an important representation of temples, or almogarenes, of different characteristics, which include sanctuaries both in caves and outdoors.

The Cultural Landscape clearly maintains the integrity of its relations. Delimitation of the space of the property by the Caldera and Tejeda Basin (geological and geographical factors that determine the property) is very visible and coherent. It has a series of visual qualities: spectacular and monumental physical features, sacred forests, human troglodyte settlements on the cliffs and peaks, agricultural settlement by the use of terraces combined with the troglodyte settlements and traces of the paths of the ancient Canarians, among other important manifestations. Relationships between attributes and components of different kinds are highly visible, with many viewing points for visitors. Human use of geographical and astronomical alignments is especially readable in their relationship with the human artefacts

The wholeness of the property and its visual expression made an exceptional, complete and very harmonious cultural landscape, showing the last mountain refuge of the Canarian Imazighen. This landscape offers an exceptional combination of aesthetic features arising from geology, geography, biodiversity and human physical settlement. It also bears witness to scientific and symbolic practices concerning the sky in relation to human beings and understanding nature.

d) Statement of authenticity

The authenticity of the nominated property's attributes can be seen particularly in the almogarenes or sanctuaries, the common granaries and the multiple manifestations of original troglodyte habitat that conserve their original forms and content almost unchanged, particularly the ones

with rock art (engravings, paintings, Libyco-Berber alphabetic inscriptions), which include the extraordinary collection of pubic triangles. The relationship between these manifestations and the Amazigh culture is confirmed by archaeological and ethnographic evidence. The authenticity of the ceremonial or ritual use of the sanctuaries has also been confirmed by the results of the archaeological research, the excavations and the rock art studies, along with the clear references provided by the chronicles of the Spanish conquest of the island.

Archaeoastronomical research has provided sufficient evidence about the sanctuaries with astronomical connections to enable us to deduce that they were used as equinox and solstice markers.

The location and setting of the main troglodyte sites and the manifestations of rock art have remained without any significant change for over 500 years after the conquest, maintaining their original structure and location. Even the layout of the herding trails for nomadic grazing and the old access tracks to the temples, the continued survival of cave tanks/ponds and the siting of the old refuges have all been maintained through time and space.

In terms of intangible heritage, the relationship with the sky follows the same patterns as it did with the ancients, as the ethnographic studies reveal. Even certain festive traditions have maintained much of the essence of the original ones, even taking into consideration the processes of assimilation of the new culture and the passing of the years.

In these conditions, the main scenic elements of the cultural landscape and the skyscape, including the night sky, remain practically unaltered since the Spanish conquest in the 15th century, maintaining the essence of the landscape and the skyscape perceived by the ancient Canarians.

e) Requirements for protection and management

The necessary protection requirements for safeguarding the nominated property are guaranteed in the long term by virtue of the legal and planning provisions that affect both the area and its attributes. A raft of natural and cultural protection provisions converges on the nominated property to guarantee the integral protection of the landscape and the set of cultural attributes it contains, in the short and medium term.

Most of the area delimited for the nominated property and its buffer zone is covered by some of the protection provisions of the Canary Island Network of Protected Natural Areas, which clearly arbitrate the management criteria for the space with regard to uses, criteria and conservation, and they identify the natural, scenic and cultural proper-

ties that are protected. Moreover, the entire protection zone has been listed as a SPA (Special Protection Area) by virtue of the EU Habitats Directive and Birds Directive, by including them in the Natura 2000 Network, which is an extremely important guarantee of protection.

With regard to the cultural heritage, the main attributes of the nominated property have been listed as BICs (Properties of Cultural Interest), giving them maximum protection status in both national legislation and in Canary Island regional legislation. Furthermore, all the rock art manifestations have been automatically listed as BICs, since the Spanish Historical Heritage Act and the corresponding Regional Canary Island Historical Heritage Act have come onto the statute books.

The Cabildo of Gran Canaria is directly responsible for and is the competent authority for managing the main attributes and components of the cultural landscape by virtue of the devolved powers it holds, especially for cultural heritage, the environment and regional planning. It has the means and the human and financial resources to address this task. Nevertheless, bearing in mind the new challenges and objectives entailed in the nomination, such as enhancing grass-roots participation in the management process or the need to provide an holistic vision of managing the property that includes all the entities and departments concerned, the "Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape Steering Committee" was set up at the end of 2015 as the body to provide permanent co-ordination of the management and the intervention/action strategy of the nominated property.

One of the Steering Committee's leading contributions has been to draw up the "Integrated Management Plan for the Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape", which provides the management guidelines for the nominated property, which are revised periodically. The management and governance organisational chart of the nominated property is completed with the "Risco Caído and the sacred mountains of Gran Canaria Foundation", which is currently in the process of being set up.

Name and contact information of official local institution/agency

Organization:

CABILDO INSULAR DE GRAN CANARIA

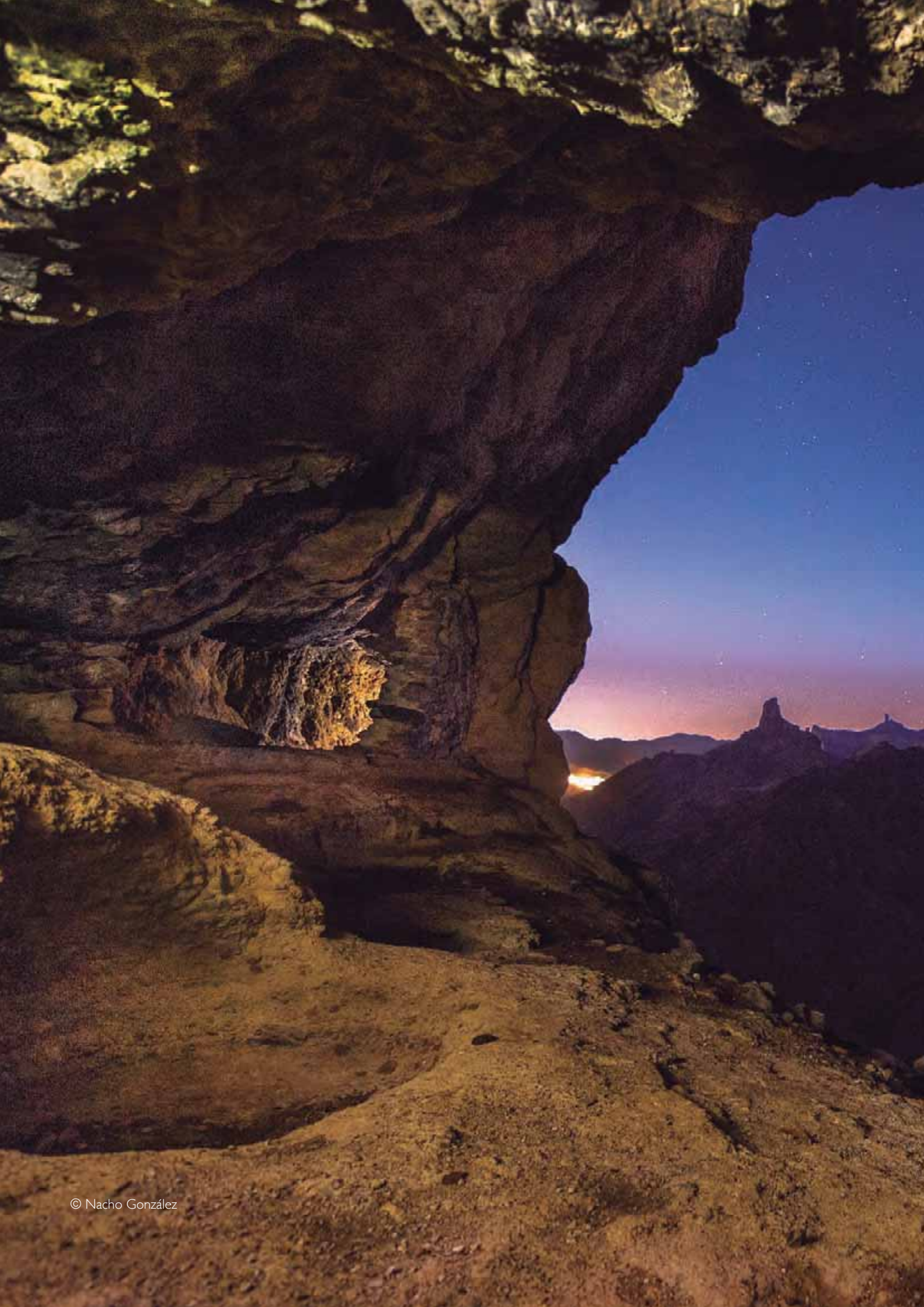
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Fax.: +34 928 219 666

E-mail: presidencia@grancanaria.com

Web address: <http://cabildo.grancanaria.com/>



A night view from a cave looking out over a starry sky and a dark valley. The cave's rocky ceiling is visible at the top, and the foreground shows a rocky ledge. The sky is dark blue with many stars, and the valley below is dark with some distant lights.

1

Identification of the Property



Figure 1.1. © Nacho González

1. Identification of the Property

I.a Country

Spain

I.b State, Province or Region

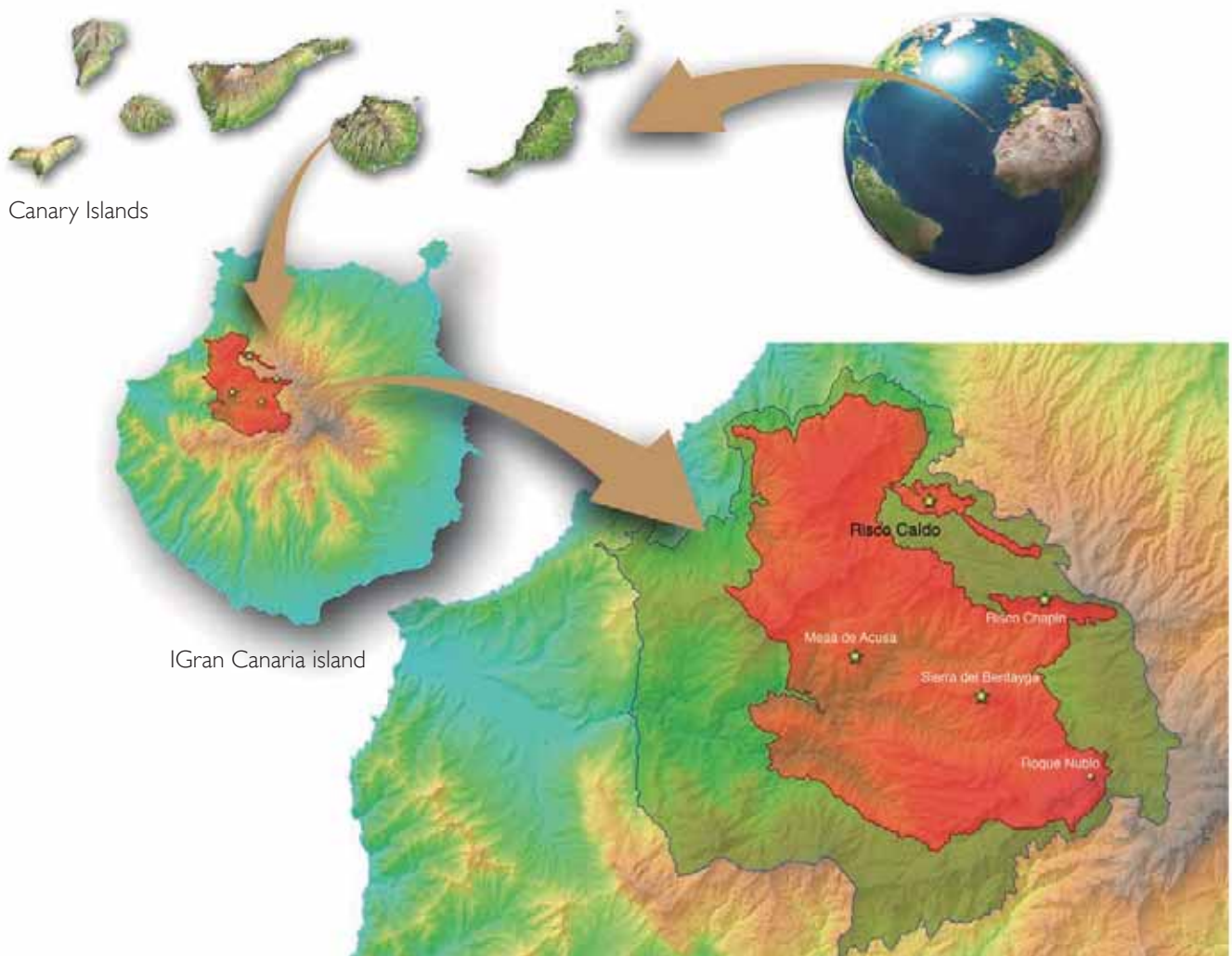
Autonomous Community of the Canary Islands, Gran Canaria island.

Geographical Region: Africa

Biogeographic region: Macaronesia

I.c Name of Property

Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape



I.d Geographical coordinates to the nearest second

The attached table shows the geographical coordinates of the area in relation to the leading attributes and components, considering Roque Bentayga as the geographical centre of the Cultural Landscape.

Name	Municipality	Coordinates
Geographical center of nominated property	Caldera de Tejeda	27° 59' 7.723" N / 15° 38' 15.168" O
Risco Caído Almogaren	Artenara	28° 2' 37.860" N / 15° 39' 40.572" O
Risco Chapín Sanctuary	Artenara / Tejeda	28° 1' 3.129" N / 15° 38' 2.437" O
Mesa de Acusa	Artenara	0' 35.423" N / 15° 40' 40.935" O
Sierra del Bentayga	Tejeda	27° 59' 7.723" N / 15° 38' 15.168" O

Table 1. Geographical coordinates of the most significant milestones of the nominated property Source: prepared by the author.

I.e Maps and plans, showing the boundaries of the nominated property and buffer zone

Map 1.1. General

Area of the nominated property and buffer zone, including the areas with some of the most significant attributes areas.

Map 1.2. Zoning, place names and population centres.

Area of the nominated property, rural settlements and population centres, including the place names of scattered settlements.

Map 1.3. Administrative division.

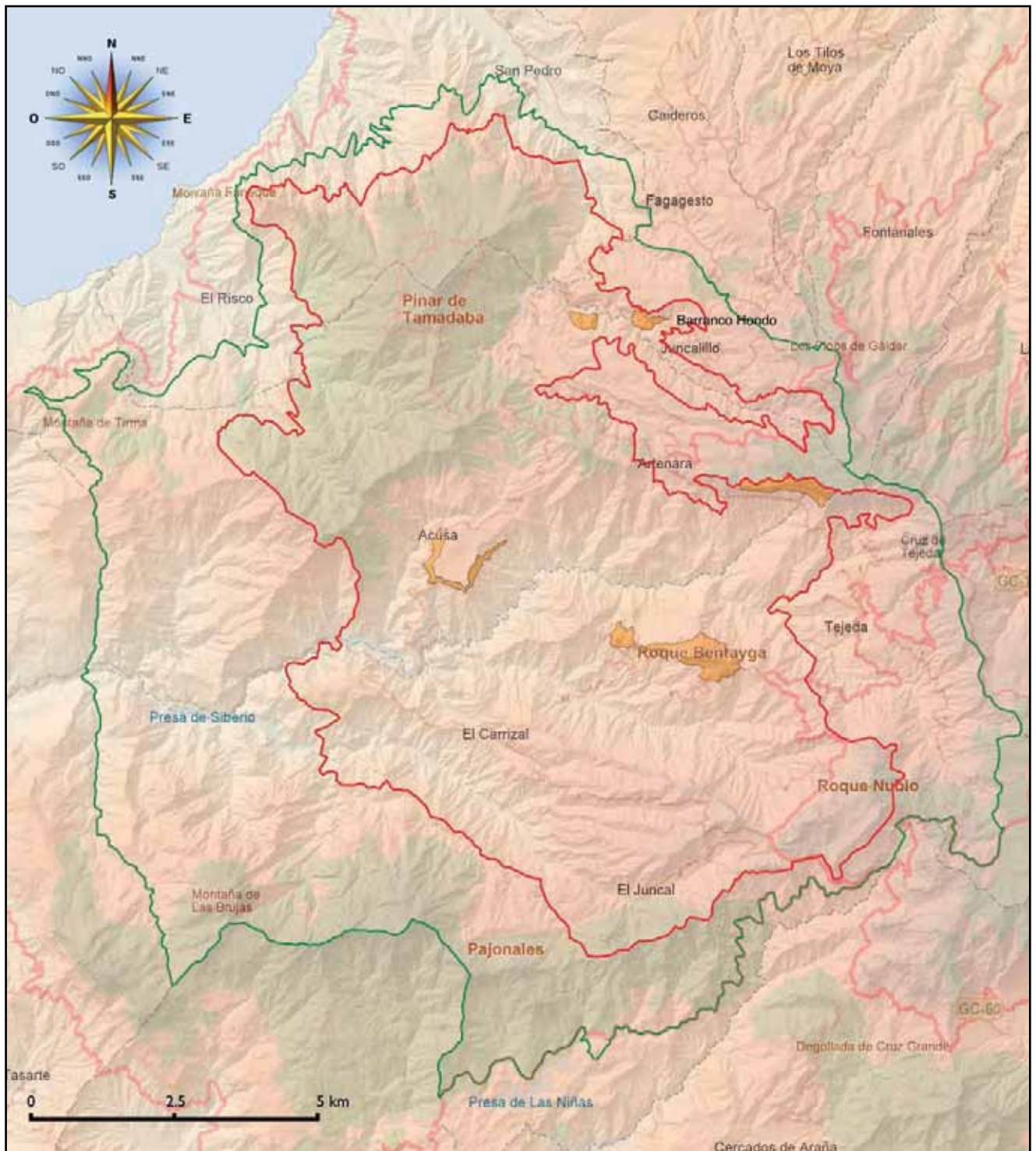
Area of the nominated property, zoning and boundaries of the municipal districts listed.

The detailed description of the boundaries of the nominated property and rationale for the buffer zone are presented in Chapter 2.a.ix on the description of the demarcation of the area.



Figure 1.2.. General view of the Tejeda Basin encompassing a substantial part of the nominated Cultural Landscape © Javier Gil León

Map I.I.

**Description:**

Area of the nominated property and the buffer zone. The most interesting troglodyte areas are highlighted.

Legend

- Main troglodyte settlements
- Nominated property boundaries
- Buffer zone boundaries

Base map:

Digital Terrain Model (DTM) over shaded map.
Source: Grafcan. Canary Island Regional Information System.
Canary Island Government.

Spatial reference system:

UTM projection
EPSG:32628 - WGS 84 / UTM zone 28N

Map I.2.

**Description:**

Area of the nominated property and rural settlements.
(D) = scattered

Legend

- Rural settlements
- Nominated property boundaries
- Buffer zone boundaries

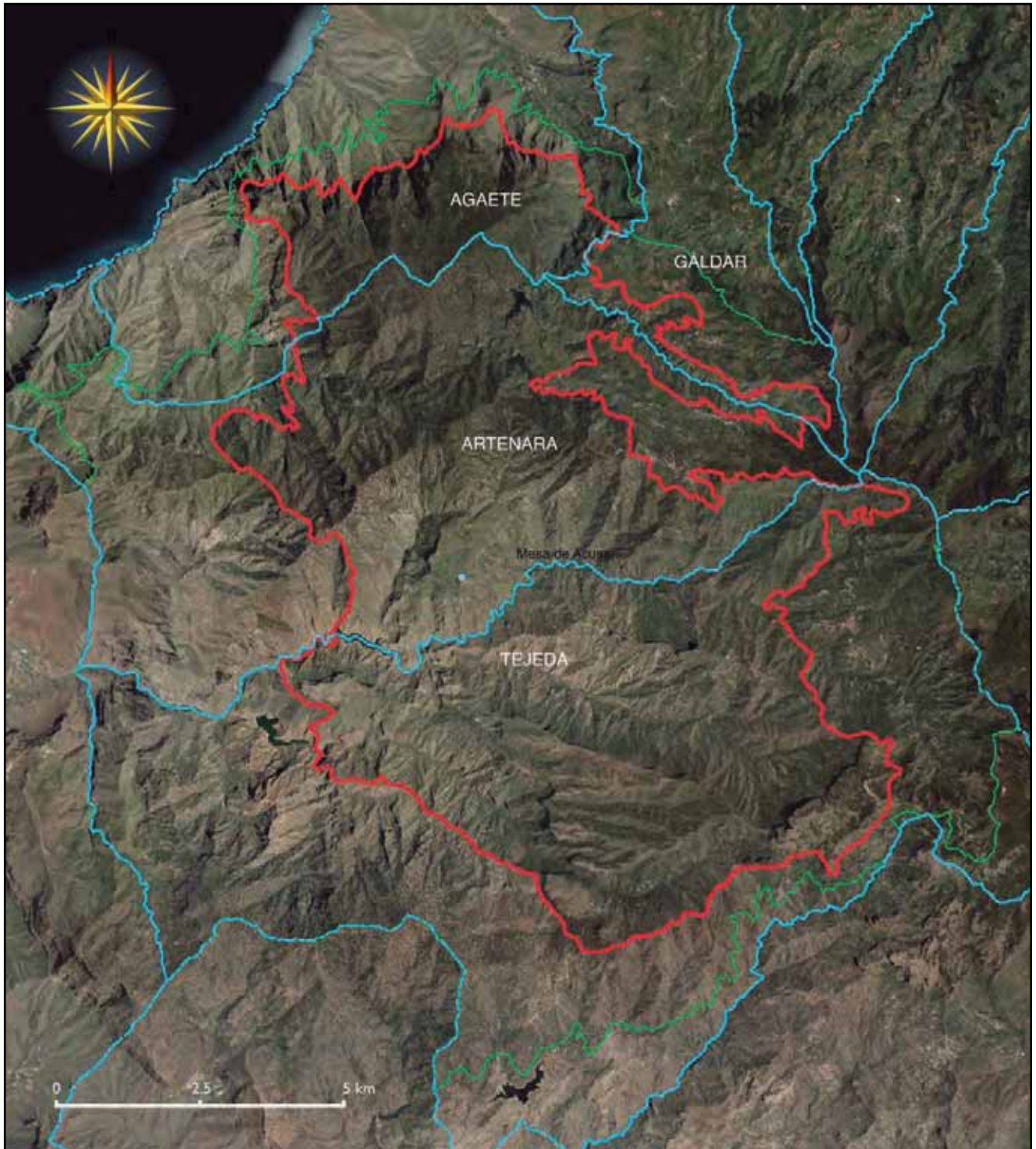
Base map:

Digital Terrain Model (DTM) over shaded map.
Source: Grafcan. Canary Island Regional Information System.
Canary Island Government.

Spatial reference system:

UTM projection
EPSG:32628 - WGS 84 / UTM zone 28N

Map I.3.




**Description:**

Area of the nominated property and administrative municipal division.

Base map:

Ortoexpress. High resolution orthophoto 2012-2013. Grafcan. Canary Island Regional Information System. Canary Island Government.

Legend

-  Municipal term limits
-  Nominated property boundaries
-  Buffer zone boundaries

Spatial reference system:

UTM projection
EPSG:32628 - WGS 84 / UTM zone 28N

I.f Area of nominated property (ha) and proposed buffer zone (ha)

The area of the property nominated as cultural landscape encompasses 9,425ha with a perimeter of 70km, including the entire Tejeda Basin. The area around the nominated cultural landscape is protected by a buffer zone of 8,557ha with an external perimeter of 86km.

Nominated property	Area of nominated property (ha)	Area of the buffer zone (ha)	Total Area
Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape	9,425	8,557	17,982

Table 1.2.. Area of nominated property. Source: prepared by the author.

N.B.: Annex I includes the different maps of the boundaries of the nominated property in DIN A2 format. These maps are also included in the digital documentation annexed to the nomination.: "Annex I - Maps" includes these maps in pdf format, and "Annex II - GIS" includes the digital mapping of the boundaries in ESRI Shapefile (SHP) and KML format.

The digital Annex II attached to the nomination dossier also includes all the digital cartography and thematic maps of the property in PDF, ESRI Shapefile (SHP) and KML format..



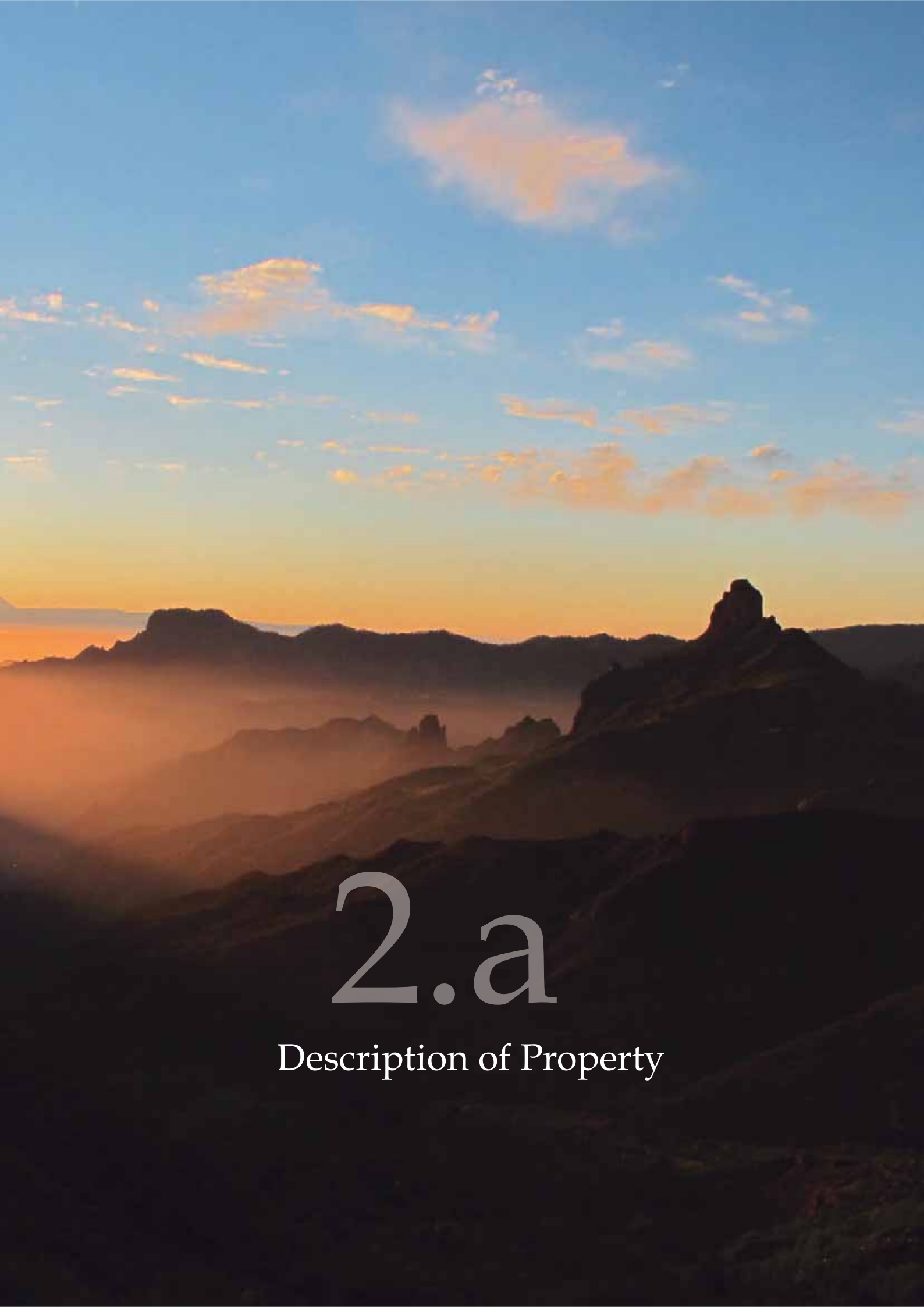
Figure 1.3. View of Roque Nublo at night, one of the symbolic references of the nominated property © Nacho González

2 Description





- 2.a.i The Cultural Landscape and its attributes
- 2.a.ii The Geodiversity of the sacred mountains
- 2.a.iii Nature, landscapes and biodiversity
- 2.a.iv Landscape and skyscape
- 2.a.v Troglodyte culture in the sacred mountains
- 2.a.vi Sanctuaries, symbols and rock art
- 2.a.vii Astronomical culture-related attributes
- 2.a.viii Ethnographic marks on the landscape
- 2.a.ix Demarcation of nominated property
- 2.a.x Glossary



2.a

Description of Property



2.a.i

The Cultural Landscape and its attributes

The nominated property as the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria is located in the heart of the island's mountains, sheltered by the colossal Caldera de Tejedá (see Figure 2.a.2). It encompasses practically the entire Tejedá Basin, the Tamadaba Highlands and the bed of the Barranco Hondo ravine, also known as Artevigua, the mythical settlement of the ancient Canarians (see Map 2.a.1).

The proposed property contains a set of well-conserved manifestations and works from an extinct island culture that evolved in isolation between the arrival of the first Berbers or *Amazigh* peoples from North Africa at the beginning of the Common Era, and the time when the island was conquered by the Crown of Castile in the late 15th century. In fact, there were some sporadic contacts with the islands in the 14th century, when sailors from the south of Europe were seeking new spice routes and the slave trade, but there was no significant influence on the area in question.

For at least fifteen hundred years, this culture evolved in isolation from its *Amazigh* roots to reach its maximum and very original expression in the sacred mountains, where the main temples, or *almogarenes*, are to be found. The ancient Canarians would go to these sanctuaries to hold their propitiatory rites and as mountainous refuge for troubled time.

Some of these temples, such as the Risco Caído and Roque Bentayga *almogaren*, combined sacred or ritual functions with obvious astronomical relationships. Along with certain symbolic landmarks of the landscape, such as Roque Nublo, there are manifestations that are associated with or represent the astronomical knowledge of the ancient Canarians, giving this space its sacred significance as a place that is intimately related to the skyscape (the elements that occur in or that cross the

skies). These temples connected with the sky, along with certain alignments of caves and markers, show that the skyscape is a fundamental component of the visual environment needed to fully understand these attributes and for them to work. These attributes were used either for keeping time or for marking special dates or for celebrating rituals and Risco Caído is the most complex expression of this in terms of how manifestations of this kind were constructed and their function.

The extraordinary profusion of aboriginal troglodyte settlements scattered all over this area is one of the expressions that leaves the deepest mark on the sacred-mountain landscape. At times they form populous settlements, such as Mesa de Acusa, Roque Bentayga, Roque de las Cuevas del Rey and Barranco Hondo. In general, these are complex, multi-purpose settlements that include dwelling caves of different kinds, storage spaces for food, burial caves and sacred sites. Some of



← Figure 2.a.1. Solar hierophany in the Risco Caído shrine (*almogaren*), one of the ancient Canarian sanctuaries with astronomical connections © Julio Cuenca

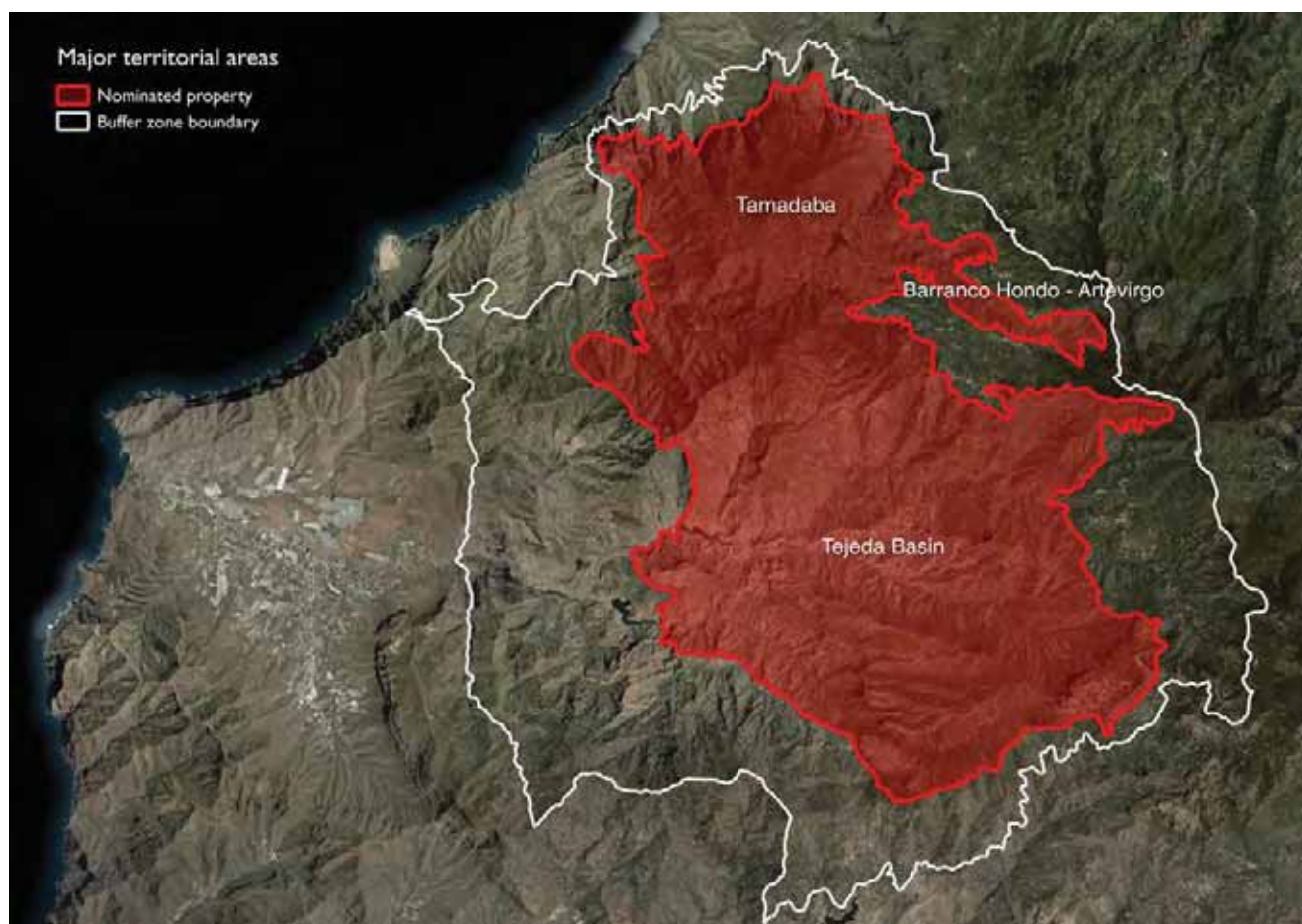
Figure 2.a.2. Location of the nominated property in the mountainous heart of the island of Gran Canaria © Otrtofoto Grafcan

these have outstanding expressions such as the impressive fortified granaries similar to those found in the Amazigh culture. Some groups of caves however, such as the archaeological complex of Risco Chapin (Cueva Candiles and Cuevas Caballero), are strictly religious or ceremonial by nature.

Another factor that distinguishes this set of troglodyte manifestations is that parts of the old settlements were used after the Conquest, and many of the old caves are still inhabited today. Furthermore, the troglodyte culture has survived to the present day, with new forms and tools, but the inspiration comes from aboriginal know-how, giving the whole area of this property, including the buffer zone, its identity. These manifestations of evolved-troglodyte habitat are especially intense all along the bed of the Barranco Hondo ravine, where we can see a genuine repertoire of aboriginal caves, practically in their original state, along with re-used caves and others created ex novo in recent times. The re-used or historically-created troglodyte spaces also provide outstanding expressions of syncretism between the two cultures that have influenced this landscape, making them too, unique attributes of the nominated property.

The nominated property contains a healthy repertoire of rock art manifestations linked to the aboriginal settlements, such as painted caves, alphabetic inscriptions and geometric and thematic engravings. These attributes include one element that stands out in sharp contrast from the rest, represented in profusion on the walls of certain artificial caves considered sanctuaries: the pubic triangle, one of the universal symbols of fertility. The proposed property contains one of the largest concentrations in the world of archaeological sites with rock engravings representing the female pubic triangle, which in itself endows it with outstanding value and moreover, reminds us of the important role that women played in this society. The Cueva Candiles sanctuary is paradigmatic of these manifestations.

The presence of several Libyan-Berber alphabetic rock engravings within the area of the Cultural Landscape is another outstanding attribute of this space. Beyond the mere fact of the presence of these unique rock inscriptions, their meaning and the language in which this is expressed, which in itself forms part of the cultural baggage of the societies that came from North Africa, represent one of the main linkages with the Amazigh cul-



Map 2.a.1. Zoning of the nominated property and location of the major territorial areas mentioned

ture in the proposed property that can still be glimpsed in oral memory.

The movable heritage relating to the property is also especially significant. The key tangible movable elements are the “pintaderas” (pottery stamps) and idols, a set of sculptures made in wood, stone and, primarily, in clay, basically representing anthropomorphic and occasionally zoomorphic figures.

Traditional water culture also maintains its expressions and practices in this area. The territory and landscape have been sculpted by following the language of water, to create unique farming terraces supported by robust, dry-stone walls, sometimes literally hanging over precipices, and unique water collection and distribution systems (alcogidas), that follow the traces of the former settlers. One striking, unique and outstanding form of these are the cave-pools of the ancient peoples, reused or copied by today’s farmers, that are dotted around the area of the proposed property. In addition, there are diverse historic expressions relating to the micro-management of water.

In this area, some of the ancestral practices of the aboriginal peoples regarding the use of the land and resources have survived over the centuries in a surprising manner, determining and creating a unique imprint on the mountainous landscape where the past links directly with the present. Apart from the survival of certain trades like that of the “piquero” - someone who digs caves or wells - and the traditional pottery of the pottery centres, a key characteristic is the enduring ancestral practise of transhumance (nomadic grazing). Along with nomadic livestock practices and the associated pastures, transhumance routes are also important attributes of the proposed property. This heritage is expressed in the form of an extensive network of tracks and ledges that still survives, offering ways through and around obstacles that were also used by the ancient Canarians.

The environmental quality of the proposed property as regards agriculture must also be emphasised. It is a space that contains an exceptional genetic heritage, including, for example, the Canary Island hairless goat, an eastern or Fuerteventura variety. But the most striking aspect is that it is here precisely, in this territory, where the original variety of barley is still grown. Genetic studies in this area show that modern barley is the same variety as that analysed from the fortified granaries, which has been shown in turn to have come from the north



Figure 2.a.3. View of the Bentayga Highlands set in the heart of the Tejeda Basin © Nacho González

of Morocco. Its presence here indicates that this is one of the few cases in the world, along with some enclaves in Sudan, China and Egypt, where prehistoric seeds are still grown.

Despite the enormous population and development pressure that the island of Gran Canaria has suffered in recent decades, the natural and human landscape has been modified very little in the area of the proposed property, making it a genuine island of authenticity within the island geography. The natural components of the property, highlighting its biodiversity, and the defining landscape elements such as escarpments, crags and deep ravines, along with emblematic and symbolic geological elements, are in an exceptional state of conservation. The forest masses of Canary Island pine in Tamadaba and in Inagua-Pajonales (buffer zone) constitute well-recovered elements of the original landscape of the ancients. The great escarpments and towers also contain an extremely rich and diverse wealth of flora and fauna. In fact, a substantial part of the proposed property is considered one of the hotspots of Canary Island biodiversity.

Apart from the predominantly natural spaces, there is also a traditional, perfectly integrated rural landscape that represents a valuable example of unique ethnographic expressions of mountain farming, with its small-holdings, terraces, allotments, threshing grounds and fruit orchards.

In sum, this is a cultural landscape that blends the marks of Amazigh culture, the troglodyte manifestations to be seen on its escarpments and slopes, and the survival of

ancestral techniques for managing the territory and its resources, along with the sacred nature of this mountain landscape and skyscape, expressed in the form of outstanding ancient Canarian temples and sanctuaries with astronomical connections. It was a very slow and respectful evolution process, simultaneously for natural and cultural features inside the landscape.

Here in this space, the symbiosis of the two cultures is attained in a highly integrated and unique fashion, which is one of the traits that makes this cultural landscape unique and distinguishes it from others. But if there is one thing that characterises this territory, it is the survival (in a good state of conservation) of countless remains of the ancient cultures of the island, some of which have remained in use right up to the present day. Many of the properties handed down in this Cultural Landscape encapsulate an easily recognisable, living impression of the past.

It is a landscape that, even now, acts as a powerful evocation of the adventures of an isolated island culture that integrated the skyscape into this landscape as a powerful foundation for their beliefs, rites and manifestations, and one that has now been fully incorporated into the imagery that comprises the island identity. All

of this exists against a powerful geological and natural backdrop that forms one of the best conserved areas in the Canary Islands, and indeed Macaronesia, in scenic and ethnographic terms.

For assigning this property to one of the three different categories established in Appendix 3 of the *Operational Guidelines* for applying the World Heritage Convention, the property proposed as a Cultural Landscape is a genuine paradigm. We find here the characteristic traits of a landscape that has evolved organically and, furthermore, in its two sub-categories. This is a relic (or fossil) landscape if we consider the archaeological expressions of the aboriginal world, whose culture became extinct after the Conquest, expressed in the troglodyte settlements and the rock art manifestations. On the other hand, it is also a living landscape, where many aspects of ancient Canarian life have continued to act as inspiration for organising and managing this territory. This includes aspects such as the continuity of the troglodyte habitat, water management, and the transhumant way of life and its ancestral routes.

But the factor that takes on the greatest force and continuity is its consideration as a cultural landscape in association with the skyscape and its associated attributes.



Figure 2.a.4. Three-dimensional image taken from a position to the south of the Cultural Landscape indicating its boundaries and those of the buffer zone. The Tejedra basin and the Tamadaba Highlands can be seen, in the area of the nominated property, together with the rim of the Tejedra Caldera that delimits the buffer zone. Boundaries superimposed on Google Earth viewer.

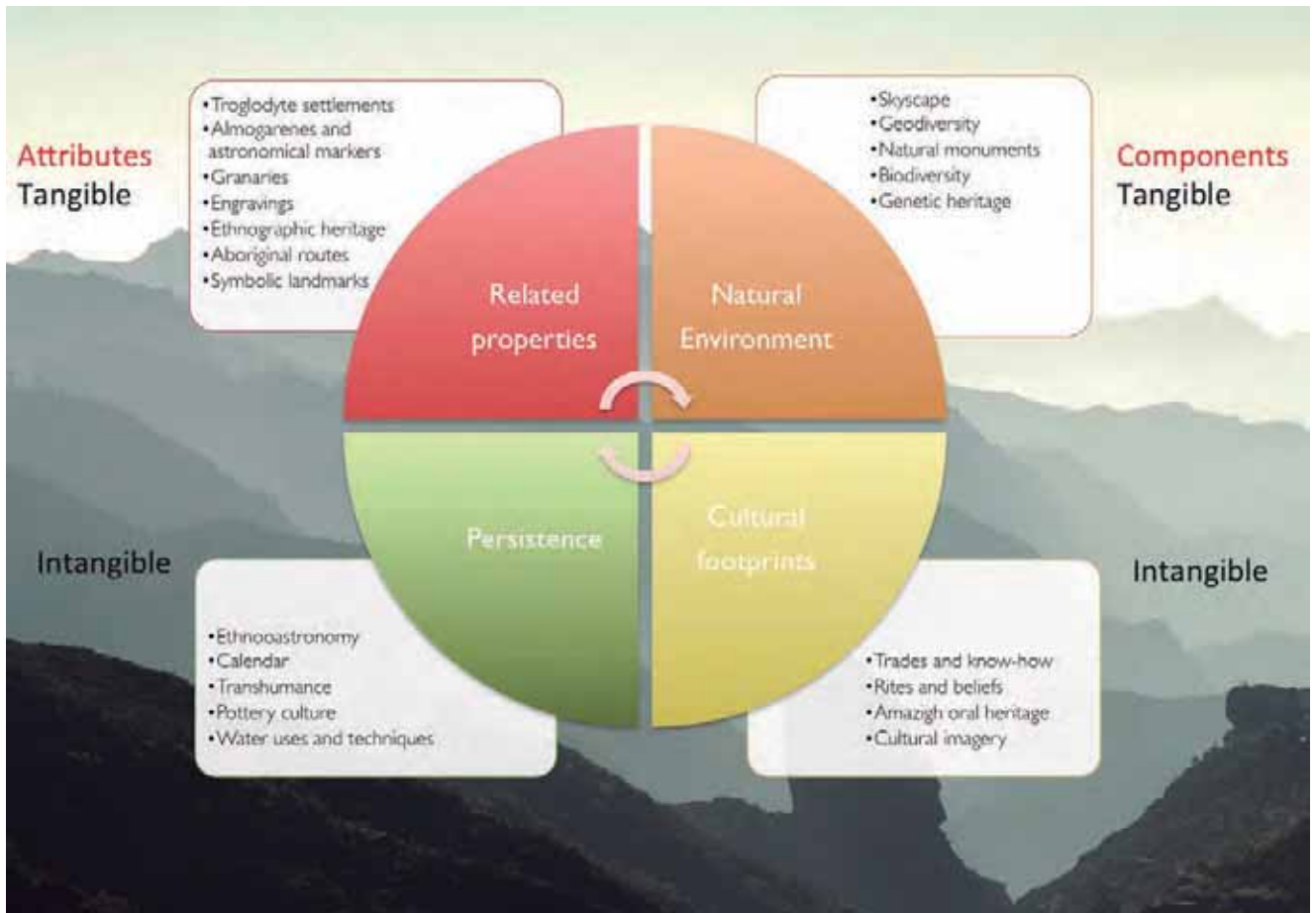


Figure 2.a.5. Matrix of attributes and components that comprise the cultural landscape and their support. The skyscape is included as a basic natural component of the property, understood as a leading and integral part of the surroundings perceived by the human communities that have inhabited this territory over time.

This relationship generated an amazing spatial cosmology and organisation of the territory, and its memory is guarded in the collective imagery and in the memory of some of its inhabitants. In fact, when we talk about Risco Caído and the sacred mountains of Gran Canaria, the term that is often used is “recuperar el cielo de los antiguos canarios”, or “to recover the sky of the ancient Canarians”.

A table and a summary matrix are provided as a prologue to the detailed description of the nominated property, in order to better understand and synthesise the complex relations between attributes and components of the nominated Cultural Landscape.

On the one hand, Figure 2.a.5 shows a summary matrix including the major categories and groups of attributes that comprise the cultural landscape. On the other, Table 2.a.1 shows the list of the attributes and components of the property, tangible and intangible, and their functional correspondence, either as sacred spaces, places related to the astronomical culture, rock art manifestations,

aboriginal granaries, or unique expressions associated with techniques and uses of the territory. It also points their aboriginal, historical (after the Conquest) or mixed character



Figure 2.a.6. Partial view of the nominated property, sunset in the sacred mountains of the ancient Canarians
© Orlando Torres

ATTRIBUTES AND COMPONENTS OF THE CULTURAL LANDSCAPE – FUNCTIONAL LIST

Name	Sanctuary Almogaren	Astronomy Skyscape	Fortified granaries	Rock art Engravings	Land-use trades and techniques
Tangible attributes of the nominated property					
Risco Caído complex (T)	A	A		A	A
Cueva de la Paja (T)	A			A	A
Barranco Hondo de Abajo (T)					A-H
Barranco Hondo – Artevirgo (T)					A-H
Roque Bentayga (T)	A	A	A	A	A
Roque de las Cuevas del Rey (T)			A	A	A
La Candelaria - Cruz de La Esquina / Acusa complex (T)	A	Evidence	A	A	A-H
Corrales de Acusa caves / Acusa complex (T)				A	A
Cruz del Álamo / Acusa complex(T)			A		A
El Hornillo / Acusa complex (T)				A	A
Cueva Candiles - Risco Chapín (T)	A	Evidence		A	A
Cueva Caballero – Risco Chapín (T)	A			A	A
Cueva del Cagarrutal – Risco Chapín (T)	A			A	A
Aartenara mountain granarie (T)			A		
Visique (T)			A	A	A
El Chirimique (T)					A
Mesa del Junquillo (T)	A			A	A
Montaña del Humo (T)			A		A
Andén de Tasarte (T)					A
Solana del Pinillo (T)			A		A
El Hornillo, Agaete (T)					A-H
Neighborhood surrounding the Virgen de la Cuevita, Artenara (T)					A-H
Libyan-Berber inscription stations	A	A	A	A	
Roque Nublo (M)		A		A	
Altavista Mountain (M)		Evidence			A
Idols and “Pintaderas”	A				A
Aboriginal transhumance routes					A-H
Network of aboriginal trails					A-H
Agricultural terraces and cultural heritage of water (“cadenas”, “bocaos”, “andenes”, “alcogidas”, cave-pools)	A				A-H
Cave huts, pens and refuges					A-H
Tamadaba forest					A-H
Intangible attributes of the nominated property					
Calendar (evidence)		A			A
Ethnoastronomy – knowledge of the sky		A-H			A-H

Table 2.a.I. Functional list of attributes and components: A = Aboriginal manifestation, H = Historical manifestation, T = Troglodyte settlement, M = Milestones with symbolic, religious or astronomical connotations

Name	Sanctuary Almogaren	Astronomy Skyscape	Fortified granaries	Rock art Engravings	Land-use trades and techniques
Transhumance					A-H
Aboriginal pottery					A-H
Land-use trades and techniques (water; farms)					A-H
Important components of the cultural heritage in the buffer zone					
Cave house settlements and farming landscape around Barranco Hondo					A-H
Tirma sanctuary	A				A
Leading components of the natural, ethnographic and scenic heritage in the buffer zone					
Tamadaba escarpment					
Inagua-Pajonales forests				A	A-H
Dams					H
Rural settlements and terraced landscapes					H
La Mina water galery					A-H



Figure 2.a.7. Panoramic view of the Tejada basin from the western part of the nominated property © Javier Gil León

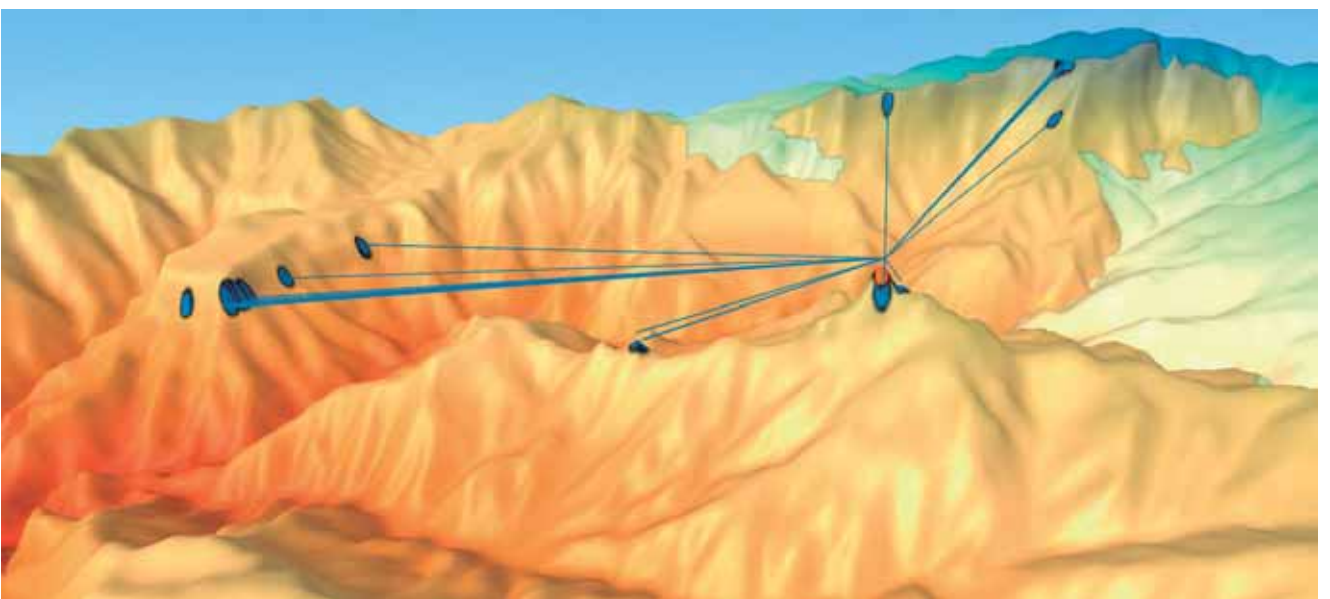


Figure 2.a.8. The layout and location of the main sanctuaries and caves with rock art were closely related to the symbolic references of the nominated property that could not possibly have been mere coincidence. The image shows how these caves are aligned with Bentayga, on the summit of which is an *almogaren* that shows evidence of being an astronomical marker. Author: Jose Carlos Gil



2.a.ii

The Geodiversity of the sacred mountains

The unique geological aspects of La Caldera de Tejeda

"The spectacle is imposing. All those black walls of the grand caldera, with their crests, which resemble battlements, with their lofty crags, offer the look of a Dante-like vision. No other thing can be the calderas of Hell that the Florentine visited. It is a tremendous shock of the bowels of the earth; it looks like a petrified storm, but a storm of fire, of lava, rather than of water..."
Miguel de Unamuno (1910)

Petrified storm. This is how the brilliant Miguel de Unamuno succinctly and rightly described the tormented landscapes of the heart of the island of Gran Canaria, the area of the cultural landscape. The proposed property is set in La Caldera de Tejeda, a landscape that started to take its current form 14 million years ago, where the monoliths of Roque Bentayga and Roque Nublo now stand out in its geographic centre, the latter converted into a symbol of the geography and the identity of the island of Gran Canaria.

The Tejeda Caldera, which shelters the entire space of the sacred mountains, holds an extremely outstanding geodiversity. Although its geological manifestations cannot be considered as attributes of outstanding universal value, based on comparative analyses, they do however provide a really unique dimension. Because of its peculiar characteristics, La Caldera de Tejeda is like an open book that you can look at and learn directly about a wide range of special geological formations like the formations of inverted reliefs and the cone-sheet swarm. This is a territory where the crags, ravines and cliffs clearly reflect the stages of formation of this complex geological history for the observer.

← Figure 2.a.9. Panoramic view of Roque Bentayga. It can observe the sequence of volcanic deposits that constructed the Roque Nublo stratovolcano. The breccia-type ignimbrites are on top of the sequence, promoting very distinctive erosional features. © Javier Gil Leon

The Canary Islands are located off the NW coast of Africa, between 29° 25' and 27° 37' N latitude and 18° 10' and 13° 20' W longitude. The archipelago rests on a Jurassic, oceanic lithosphere and its evolution over the last 25 million years is controlled by the slow east-north-east shift of the African Plate over a mantle plume (Holik *et al*, 1991; Carracedo *et al*, 2002; Carracedo and Trolls, 2016; and references in these publications).

The almost circular island of Gran Canaria is located at the centre of the archipelago. It is the third largest in size, with an area of some 1532 km² and a diameter of some 45km crowned by El Pico de las Nieves at the highest point (1949m). A dense radial network of deep ravines (barrancos) dissect the island, forming a rugged terrain.

Countless geological studies have been conducted on Gran Canaria since the end of the 18th century. These include a series of monographic studies that have provided a detailed geological knowledge of the island (e.g.

AGES (Ma)	LITOLOGY OF VOLCANICS & INTRUSIVE ROCKS	GEOLOGICAL FEATURES	VOLUMES (km ³)	STAGES	
PLIOCENE	Foidites-basanites	Phreatomagmatic maars Monogenetic field volcanoes NW-SE rift	≥ 20	RE-JUVENATED (ROQUE NUBLO & POST-ROQUE NUBLO VOLCANISM)	
	Alkali basalts-basanites to trachytes-phonolites	Roque Nublo stratovolcano	≥ 250		
MIOCENE	VOLCANIC INACTIVITY STAGE				
	Radial network of deep barrancos				
	Alluvial and marine deposits (LPDF)				
	7.3	Cone-Sheet	Stratovolcano	≥ 500	JUVENILE SHIELD BASALT VOLCANO. VERTICAL COLLAPSE CALDERA & SHALLOO POST-CALDERA RESURGENCE
	8.8	Intracaldera intrusions	Phonolites Trachytes	≥ 250	
	13.3	Sierytic stocks	Final caldera infilling	≥ 300	
14.1	Peralkaline rhyolite-trachytes	Explosive eruptions Ignimbrites	≥ 1,000		
14.5	Alkali basalts-trachybasalts	Shield volcano Fissural eruptions Giant landslides	≥ 8,700		
16.0	SUBMARINE VOLCANISM Seamounts construction		≥ 8,700	SUBMARINE VOLCANISM	

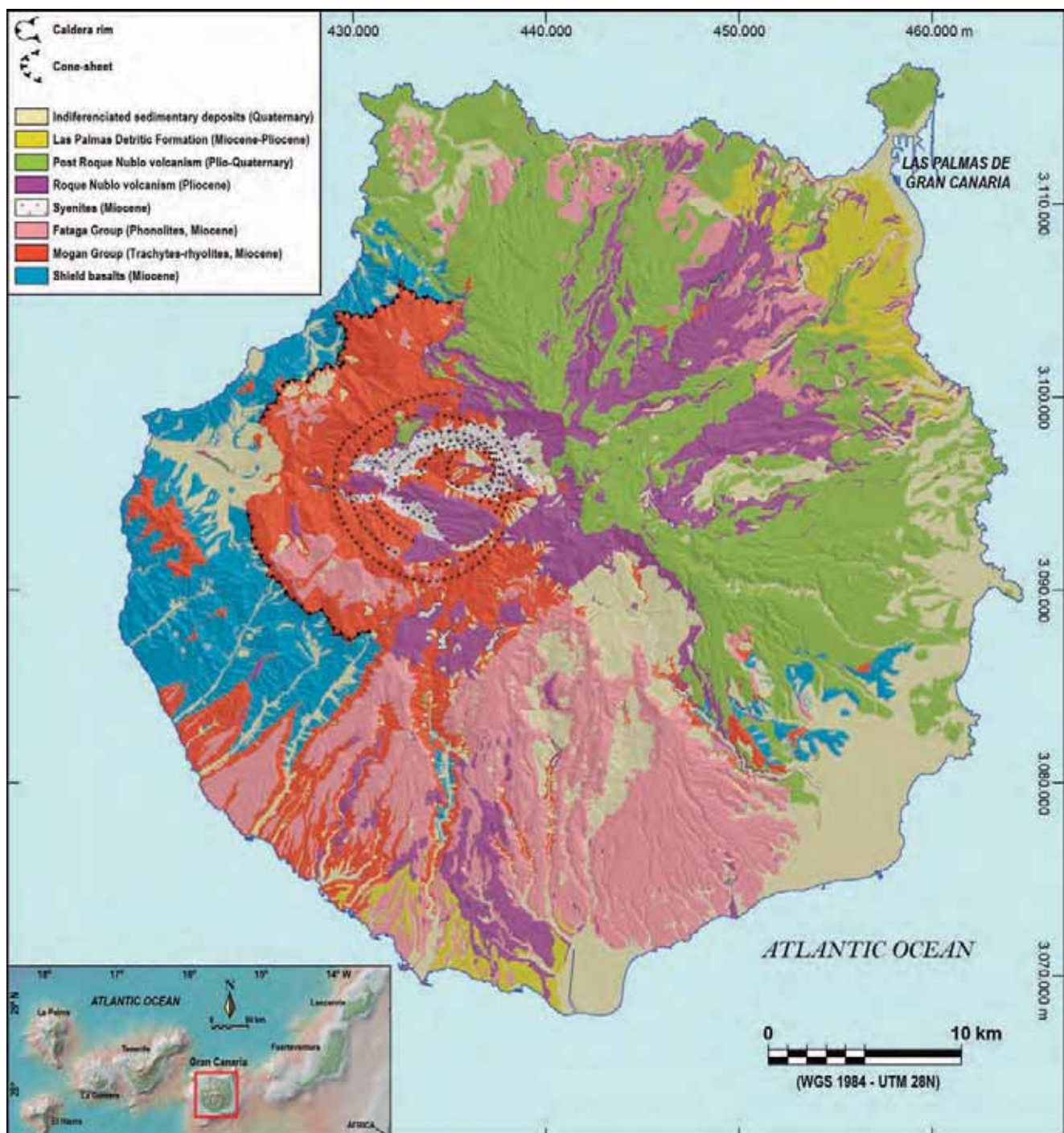
Figure 2.a.10. Summary table of the geological evolution of Gran Canaria (modified from Perez-Torrado, 2008).

Bourcart and Jeremine, 1937; Hausen, 1962; Fúster *et al.*, 1968; Schmincke, 1976, 1993; Perez-Torrado, 2008a). In 1990, the Spanish Geological Survey (IGME) carried out the geological mapping of the island and published fifteen geological maps that comprised the island, on a scale of 1:25,000, followed by a synthetic map of the whole island in 1992 on a scale of 1:100,000 (Ballcells *et al.*, 1992). Oceanographic work was conducted on the submerged volcanoclastic aprons around the island during the Ocean Drilling Programme (ODP), Leg 157 (Weaver *et al.*, 1998).

In short, it would not be unreasonable to claim that Gran Canaria is one of the most-studied intraplate islands in the world, with over 180 radiometric datings published.

I. Geological evolution of Gran Canaria

Like other intraplate, hot-spot, volcanic islands, the sub-aerial growth of Gran Canaria is characterised by a succession of three main stages (Fig. 2.a.10 and Map



Map 2.a.2. Simplified geological map of Gran Canaria (modified from Ballcells *et al.*, 1992; Perez-Torrado, 2008)

2.a.2): a juvenile stage (approx. 14.5-8.8 million years ago, including a basaltic shield volcano, a vertical collapse caldera and a post-caldera, felsic resurgence); a stage of volcanic inactivity (approx. 8.8-5.5 million years ago); and a rejuvenation stage (approx. 5.5 million year ago up to the present), including the Roque Nublo stratovolcano and the post Roque Nublo volcanic activity.

The uneven distribution of volcanic activity on the island has left a clear geo-morphological contrast between the south (almost exclusively volcanism from the juvenile stage) and the north (predominantly volcanism from the rejuvenation stage), which has led several authors to distinguish between Paleo-Canarian and Neo-Canarian volcanism. The combination of these geo-morphological factors, together with the prevailing N-NE trade winds, give rise to a pronounced climatological and biological contrast between the north-facing slopes (moist, fresh and with dense vegetation) and the south (hot, dry and with little vegetation) of the island.

Submarine volcanism

The rocks from the seamount stage do not surface in Gran Canaria, so the only data available have been obtained from oceanographic studies conducted off the shores of the island, particularly on ODP Leg 157. Seismic and bathymetric profiles indicate that the stage of submarine growth gave rise to at least 90% of the total volume of the island (Schmincke and Sumita, 1998). Boreholes up to 300m deep on the submerged volcanoclastic slopes indicate that there was no time lapse between the submarine and the later subaerial volcanic growth, with both forming part of the same magmatic event. We do not know when this stage of the submarine growth of Gran Canaria started, although Schmincke and Sumita (1998) suggest not long before the subaerial growth and that it only lasted a short time, possibly around 16 million years ago.

Subaerial volcanism. Juvenile stage. Shield volcano

According to Bogaard *et al* (1988) and Bogaard and Schmincke (1998), the growth of the shield volcano took place in a very short period of time, between 14.5 and 14 million years ago. It was characterised by Hawaiian-type eruptions with a swarm of feeder dykes and minor inter-layered pyroclastic deposits (alkaline basalts to trachybasalts), developing a complex shield volcano of over 1000km³ in volume, over 2000m high and 60km

in diameter. This complex volcanic edifice would have occupied practically the entire area of the current island, as well as several kilometres off-shore to the west (Fúster *et al*, 1968; Balcells *et al*, 1992; Schmincke, 1976, 1993; Carracedo *et al*, 2002; Perez-Torrado, 2008a).

The rapid accumulation of volcanic material during the growth of this shield volcano would have caused gravitational pressures, giving rise to gigantic landslides on its flanks. An intra-formational disconformity in the SW of the island (in the area of Hogarzales), along with the arched profile of the NW coast (from San Nicolás to Agaete) have been mooted as the escarpments of these giant landslides.

Subaerial volcanism. Juvenile stage. Collapse caldera (Caldera de Tejada)

Towards the end of the development of the shield volcano, a shallow (\approx 4-5km deep) magmatic chamber was formed, fed periodically from a deeper basaltic chamber (sub-lithosphere \approx 14km) (Freundt and Schmincke, 1992, 1995). The processes of differentiating the shallow magmatic chamber lead to the formation of felsic magmas (rhyolites-trachytes) that triggered the first highly explosive eruptions on the island, which in turn abruptly emptied the shallow magmatic chamber. This finally collapsed the summit of the volcano and created the Caldera de Tejada (Schmincke, 1967; Hernán, 1976).

At the same time as the caldera was formed, the shal-

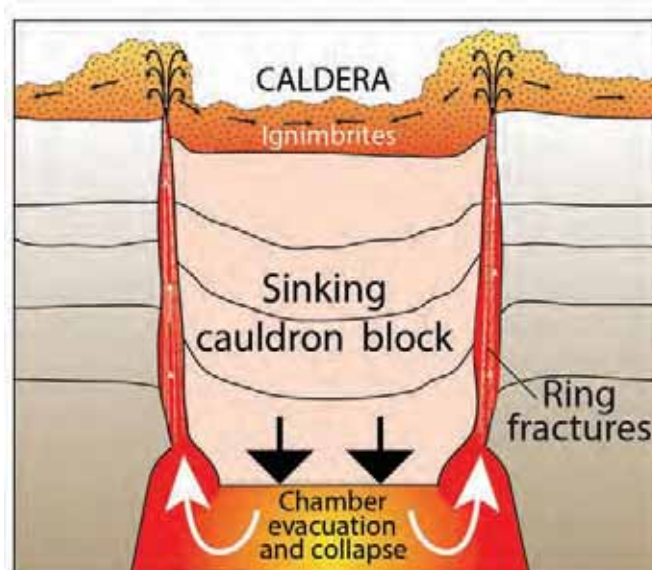


Figure 2.a.11. Sketch illustrating the formation of the Miocene Tejada Caldera and ignimbrite PI (modified from Carracedo & Troll, 2016).

low felsic magmatic chamber was replenished with basaltic magma from the deeper chamber. The weight of the subsiding block forced a violent emission of some 80km³ of rhyolitic-trachytic-basaltic ignimbrites through the vents in the rim of the caldera (Fig. 2.a.11) producing a single cooling unit denominated "P1" by Schmincke (1976, 1993). The "P1" ignimbrite formed a mantle covering over 400km² of the shield volcano that has been dated back to around 14 million years ago (Bogaard *et al*, 1988; Bogaard & Schmincke, 1998). Hence, the age of the "P1" ignimbrite can be considered as the age of the formation of the Caldera de Tejeda.

Subaerial volcanism. Juvenile stage. Post-caldera resurgence

This development stage is characterised by large volume eruptions ($\geq 1000\text{km}^3$) of felsic ignimbrites and lava issued from ring fractures on the rim of the caldera. Based on the distribution of the volcanic deposits in relation to the caldera, two volcano stratigraphic groups have been defined: the Mogán group, mostly comprised of peralkaline rhyolite-trachyte, and the Fataga group of trachyte-phonolite composition (Schmincke, 1976, 1993; Schmincke & Sumita, 1998, 2010).

Apart from the P1 ignimbrite, the extra-caldera deposits of the Mogán group (circa 14.0-13.3 million years ago) also comprise 15 cooling units up to 300m thick and with a combined volume of over 350km³ (Schmincke, 1976, 1993; Schmincke & Sumita, 1998, 2010). Radiometric dating and the absence of interbedded epiclastic deposits suggests high eruption rates (Bogaard *et al*, 1988; Bogaard & Schmincke, 1998). The intra-caldera volcanic deposits filled most of the Caldera de Tejeda, but later intense, magmatic intrusions have hindered stratigraphic correlation with the extra-caldera deposits. However, it seems obvious that both kinds of deposits came from the same source vents around the rim of the caldera.

The extra-caldera deposits of the Fataga group (circa 13.3-8.8 million years ago) formed sequences up to 1000m thick of ignimbrites and lava flows with a total volume estimated at over 500km³. Many alternating embedded epiclastic deposits can be seen, especially at the top of the sequence, pointing to long periods of inactivity (about 50 thousand years) between two successive eruptive episodes (Bogaard *et al*, 1988; Bogaard & Schmincke, 1998). The eruptions probably continued from the ring fractures on the rim of the caldera, and

also from a felsic stratovolcano located in the centre of the island (Schmincke, 1976, 1993; Schmincke & Sumita, 2010).

The intra-caldera activity of the Fataga group is mainly intrusive, consisting of three main episodes (Schmincke, 1967, 1976, 1993; Hernán, 1976; Schmincke *et al*, 1999): alkali syenite stocks (circa 12.2-8.9 million years ago), trachyte-phonolite cone-sheets (ca. 11.7-7.3 million years ago) and phonolite-nephelinite plugs (circa 8.5 million years ago). The similarity in age and composition between all these intrusions and the extra-caldera deposits of the Fataga group suggest that the former represent the subvolcanic facies of the latter.

Subaerial volcanism Volcanic quiescence stage

After the last post-caldera magmatic events (intrusive and extrusive), the island of Gran Canaria entered a period of about 3 million years of volcanic quiescence (circa 8.8-5.5 million years ago). During this period, it was exposed to intense erosion. A radial network of ravines was chiselled into the Miocene felsic deposits, often reaching the basaltic substrate of the shield lava. This network of ravines will later control the distribution of the rejuvenated volcanism, as most of the lava and pyroclastic deposits were channelled along them. Wide, flat abrasion platforms were formed in coastal areas.

The erosion material from the ravines was deposited as alluvial fans, primarily on the N-NE, E and SE coastal platforms, forming the Lower Member of the Las Palmas Detrital Formation (LPDF). The onset of the rejuvenation stage in Gran Canaria on the other hand, coincides with a phase of marine transgression (Lietz and Schmincke, 1975) that formed the coastal-marine deposits of the Middle Member of the LPDF (Balcells *et al*, 1992; Cabrera *et al*, 2008; Perez-Torrado *et al*, 2015).

Subaerial volcanism Rejuvenation stage

This stage comprises the volcanic activity of the last 5.5 million years, divided into two main phases: Roque Nublo volcanism and Post-Roque Nublo volcanism.

The Roque Nublo volcanism started with localised Strombolian eruptions in the centre and south of the island. About 4.6 million years ago, eruptive activity was concentrated on the centre of the island, building a

grand stratovolcano (the Roque Nublo – RN - strato-volcano) for at least one and a half million years (Perez-Torrado *et al*, 1995a; Perez-Torrado, 2008b). The activity of the RN stratovolcano started with the emission of a large amount of lava (basanites-alkali basalts to trachytes-phonolites), with some of these flows reaching the sea, forming large lava deltas in coastal areas of the N and NE of Gran Canaria (Perez-Torrado *et al*, 2015). When the magma reached trachyte-phonolite compositions (around 3.9 million years ago), then there was intense explosive activity around the summit of the stratovolcano, producing breccia-type ignimbrite deposits (Perez-Torrado *et al*, 1997). The eruptive activity of the stratovolcano ceased around 2.9 million years ago with the intrusion of phonolite plugs (Guillou *et al*, 2004).

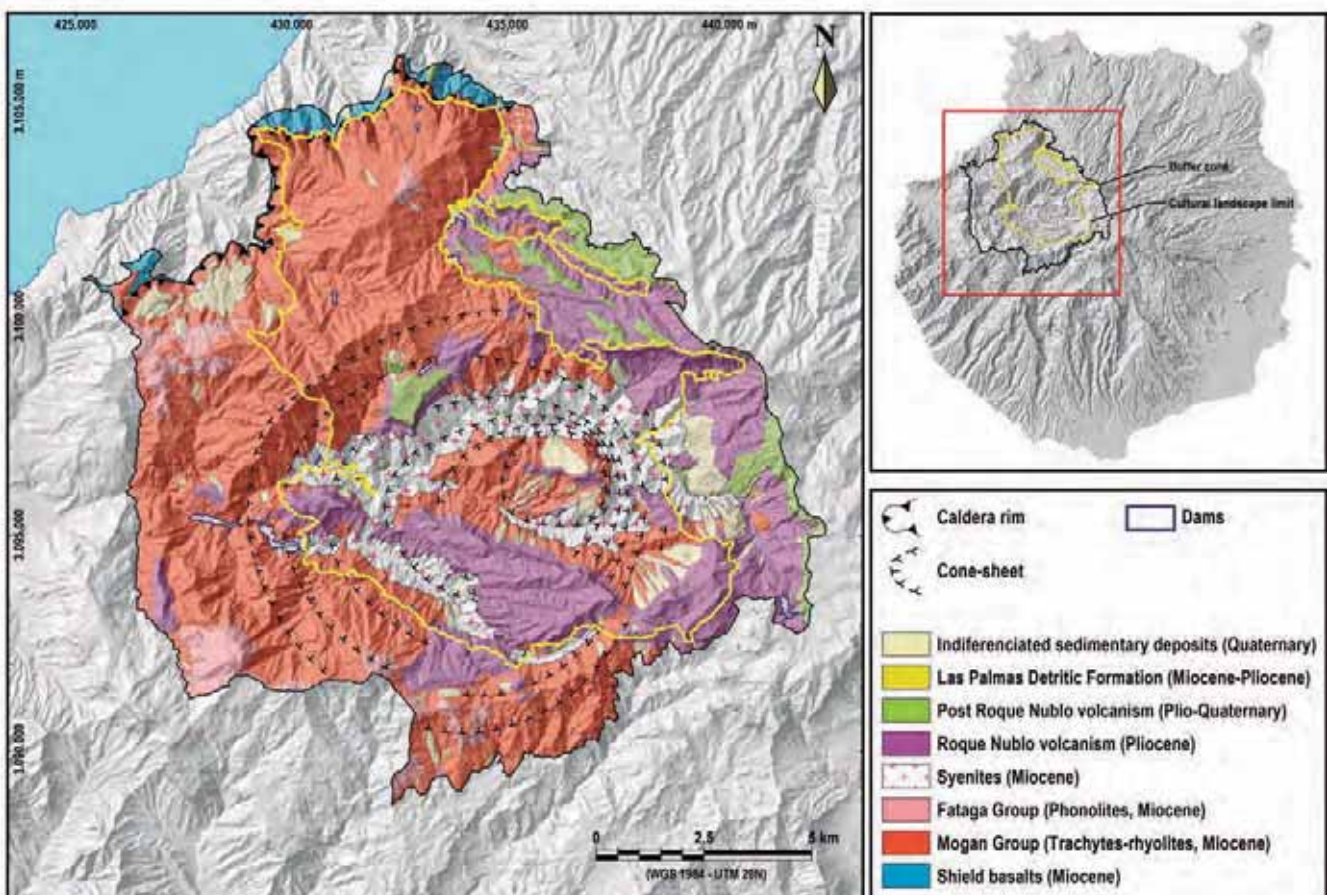
The distribution and geometry of the Roque Nublo stratovolcano (over 250km³ in volume) suggest that this volcano may have exceeded 2500m in height, with asymmetric flanks defined by extensive gentle slopes on the northern face and short, steep slopes on the south (Perez-Torrado *et al*, 1995a; Perez-Torrado, 2008b). Countless gravitational collapses, mainly on the south-

ern slopes, destroyed the RN stratovolcano, generating avalanche deposits over an area of some 25km (García Cacho *et al*, 1994; Mehl and Schmincke, 1999).

All the material from the Roque Nublo stratovolcano was channelled along the radial network of ravines that had been dug during the previous phase of volcanic quiescence, which, over time, gave rise to the formation of inverted reliefs.

The Post-Roque Nublo volcanism (from approx. 3.5 million years ago to the present day) is characterised by Strombolian vents along a rift running NW-SE, with basanite to foidite lava flows forming sequences up to 500m thick (about 20km³) that covers large areas of the northern slopes of the island (Guillou *et al*, 2004).

The most recent period of volcanic activity on the island was during the Holocene (last 11700 years) with 24 monogenetic, basaltic eruptions along the N and NE sector of Gran Canaria (Rodríguez-González *et al*, 2009). Most of these were Strombolian eruptions, but there was a certain amount of explosive phreatic-mag-



Map 2.a.3. Geological map of the area demarcated for the cultural landscape of Risco Caído and the sacred mountain sites of Gran Canaria.

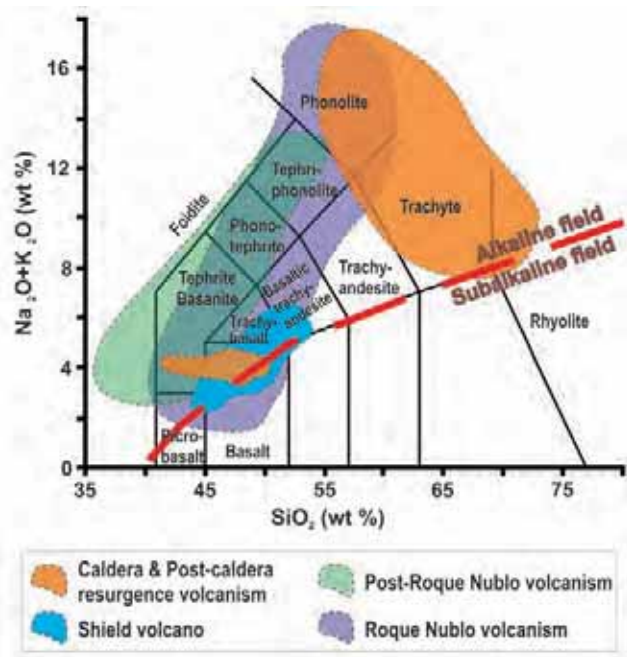


Figure 2.a.12. TAS diagram (Total Alkali vs. Silica) to classify volcanic rocks. See how volcanic rocks from different evolutionary stages of Gran Canaria, all represented in the cultural landscape, encompass all the lithological terms of the alkaline set (modified from Carracedo *et al.*, 2002; Perez-Torrado, 2008).

matic activity, forming small maar-type calderas.

The Bandama volcano represents the last eruption on Gran Canaria, dated by Carbon 14 to 1970 \pm 70 years ago (47 BC – 123 AD calibrated date). As pyroclastic fall deposits from Bandama cover aboriginal tools, the time of the Bandama eruption is an important piece of information for the pre-historic human settlements on the island (Alberto Barroso and Hansen Machín, 2003).

2. Geodiversity in the nominated property

First of all, the geodiversity of the area proposed is the greatest to be found anywhere on the island of Gran Canaria, as all the materials from the different stages of evolution of the island are represented here (Map 2.a.3). This has an immediate lithological implication, as the entire compositional spectrum of volcanic rocks to be found on the island, the most complete of all the Canary Islands (e.g., Schmincke, 1993; Carracedo *et al.*, 2002), can be found here (Fig. 2.a.12).

Notwithstanding the above, there are certain geological elements that stand out especially in the area described below. These geological elements are the Caldera de Tejeda, the cone-sheets, the Roque Nublo breccia-type ignimbrites and the inverted reliefs.

La Caldera de Tejeda

La Caldera de Tejeda is the only collapse caldera in the Canary Islands for which there is general scientific agreement on the mechanism that formed it (Schmincke, 1967, 1973, 1993; Troll *et al.*, 2002). As mentioned in the section on geological evolution, La Caldera de Tejeda originated some 14 million years ago, and it immediately started to fill up with felsic materials from the Mogán and Fataga volcano-stratigraphic groups. Consequently, since the late Miocene has no geomorphological representation in the landscape as collapse caldera.

The caldera is elliptical in shape, measuring about 28 km at its widest axis (NW-SE) and about 20 km at the narrowest point (NE-SW) and an estimated fault break of around 1000 m. Only the western half can currently be seen along about 30 km, in which contact is commonly marked by brightly-coloured hydro-thermally altered deposits known by the local place name of “Azulejos” (Tiles) (Fig. 2.a.13). Much of this visible part of the rim of the caldera is encompassed within the buffer zone of the proposed cultural landscape (see maps 2.a.2 and 2.a.3).

When they crop up in cross section, the edges of the caldera show slopes of 45-50°, always towards the interior of the island, with intra-caldera pyroclastic deposits accumulated against them that are gradually eroded by water and temperature sequentially. At least 4 levels of “azulejos” have been defined, highlighting the fact that the hydro-thermal activity linked to the fractures in the rim of the caldera was repeated at different periods of time (Cabrera *et al.*, 2006; Donoghue *et al.*, 2008).

The dimensions of the Caldera de Tejeda and the enormous volume ($\geq 1000 \text{ km}^3$) of felsic material (peralkaline rhyolites-trachytes-phonolites) associated with its resurgence have no comparison on other oceanic islands of the world. They are only comparable with volcanic calderas formed on the subduction margins of continental plates (Schmincke, 1993; Schmincke & Sumita, 2010).

The Cone-sheet

The cone-sheet has an elliptical distribution measuring 16 km at its widest point (E-W) and 12 km at the narrowest point (N-S), thus covering an area of more than 110 km², although only one third of this is covered by the latest materials of the rejuvenation stage (see maps

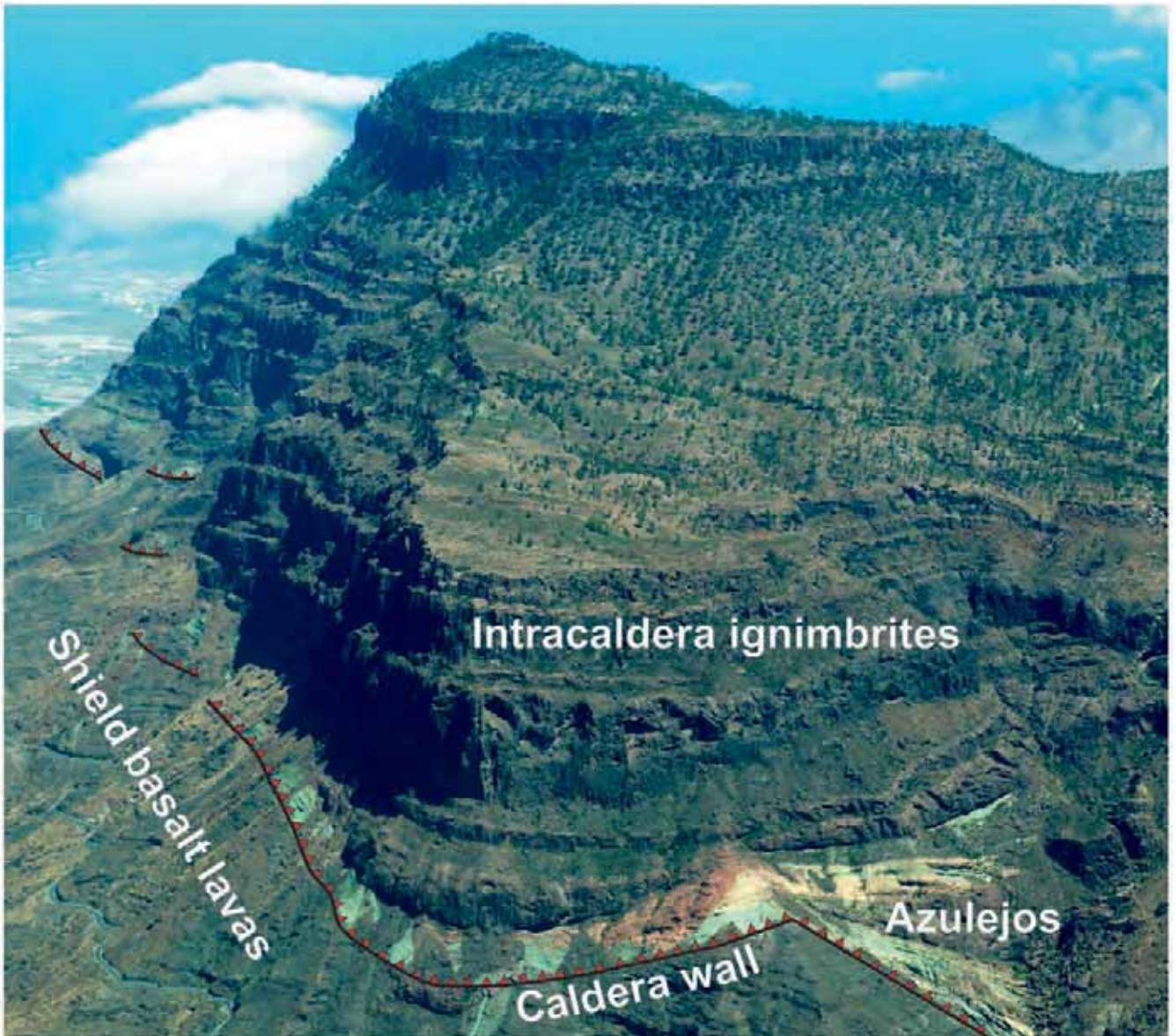


Figure 2.a.13. The rim of La Caldera de Tejada marked by the hydro-thermal deposits of "azulejos". See how a transversal profile in the area known as Fuente de los Azulejos, shows the inclination of the wall of the caldera towards the interior of the island and how the intra-caldera volcanic deposits build up against it.

© Claudio Moreno

2.a.2 and 2.a.3). The series of trachytic (the oldest) and phonolitic (the latest ones) dykes that comprise the cone-sheet intrude in the intra-caldera materials during and after their volcanic activity (circa 11.7-7.3 million years ago). The average interval for this intrusion has been calculated at around 5-10,000 years, far less than the 50,000 years calculated for the contemporary volcanic activity of the Fataga group (Bogaard *et al.*, 1988; Bogaard & Schmincke, 1998; Schmincke *et al.*, 1999). The volume of intrusive material in the cone-sheet is estimated at about 250 km³, which must have caused a bulge in the terrain in its area of influence of about 2 km (Schminck *et al.*, 1999).

The density of the injected dykes increases towards

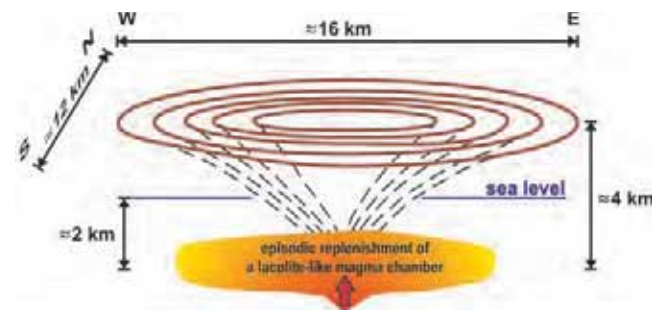


Figure 2.a.14. Geometric diagram of the floor plan and profile of the Gran Canaria cone-sheet (modified from Hernán & Vélez, 1980; Schminck *et al.*, 1999).

their internal zones of influence, which could account for over 90%, making it practically impossible to recognise the bed rock that they intrude. The dykes show a



Figure 2.a.15. Panoramic view of the cone-sheet from the look-out point at Mesa del Junquillo. See how the inclination of the dykes changes from one slope to another to converge towards a common point that would be several kilometres below the surface. A few of the many dykes that can be seen have been marked as orientation for the reader. © F.J. Pérez Torrado

fairly constant angle of 40-50°, although on the periphery, this may fall to 30°. Based on the floor plan distribution and the profile of the cone-sheet, Hernán & Vélez (1980) estimated that a swarm of fissures must have converged on a common focal point about 2km below sea level (Fig. 2.a.14), approximately directly below Roque Bentayga (see map 2.a.3). Schirnack *et al.* (1999) classify this common focal point as laccoliths that expand (when they receive deep magmatic injections) and shrink (when they inject material into the dykes) over time.

The cone-sheet of Gran Canaria is considered one of the best exposed in the world, with outcrops that offer exceptional exposures of over 1000m of difference in height in the relief and with very little vegetation cover (Schmincke, 1967, 1976, 1993; Hernán, 1976; Schirnack *et al.*, 1999). Its dimensions and the exposure of its structure, make it comparable with the prototypical example of cone-sheets in Ardnamurchan (Scotland), where this geological structure was first defined (Anderson, 1936).

In conclusion, the cone-sheets next to La Caldera de Tejeda in Gran Canaria could be considered outstanding geological monuments on a world-wide scale (Schmincke & Sumita, 2010).

Practically the entire area of influence of the cone-sheet falls within the area of the cultural landscape, meaning that it can be appreciated in all its splendour. There are many look-out points, such as the one at Mesa del Junquillo, from where you can see how the inclination of the dykes change to converge on the common point located in the sub-soil (Fig. 2.a.15).

The Roque Nublo Stratovolcano and its breccia-type ignimbrites

The remains of the Roque Nublo stratovolcano are the dominant features of the relief to be seen in the cultural landscape, especially in its core-zone. It includes all the materials that accumulated on top of each other in the evolution of the stratovolcano, from the lava in this first

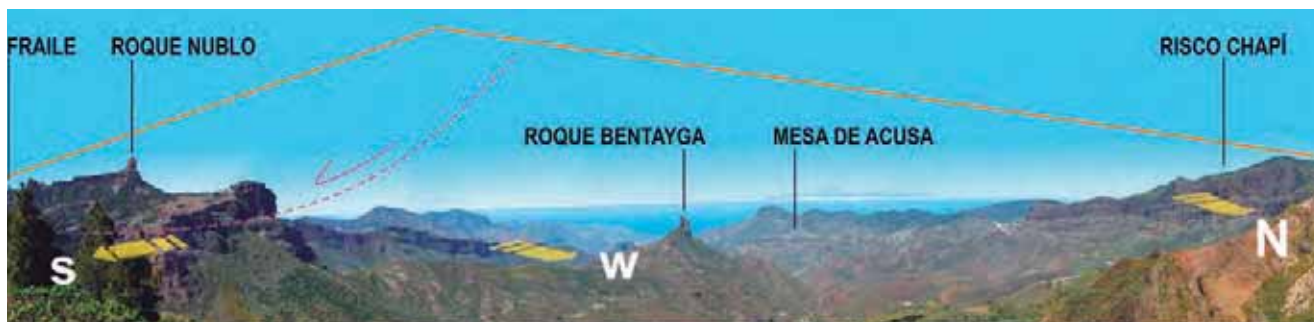


Figure 2.a.16. Panoramic view of the remains of the Roque Nublo stratovolcano seen from the lookout point of La Degollada de Becerra. Parts of its S, N and W flanks can be seen, marking the hypothetical original profile that the stratovolcano may have had and the gravitational collapse of its S flank. The process of inverted relief also stands out on the W flank, such that the material from the stratovolcano that once filled in the valley, now act as divide ridges between the current ravines. © F.J. Pérez Torrado

stage, to the breccia-type ignimbrites in its later, explosive phases, and finally, the deposits of avalanche volcanic debris linked to the giant landslides on its southern flanks. In fact, the Roque Nublo monolith, scenic symbol of the Gran Canaria mountain peaks, which lends its name to the volcano and to the whole volcano-stratigraphic group, is a mega-block of one of those volcanic debris avalanches (Figure 2.a.14).

As explained in the geological history of Gran Canaria, all the material emitted by the Roque Nublo strato-volcano was channelled through the radial network of paleo-ravines that had been formed during the stage of volcanic quiescence. Nowadays, as a result of erosion, all this material is left in inverted reliefs, forming watersheds, plateaus, ridges, etc. of the current network of ravines (see Figure 2.a.16).

Of all the materials that formed the Roque Nublo strato-volcano, breccia-type ignimbrites are the ones that really stand out in the relief due the peculiar way they erode. They were formed by the action of dense pyroclastic flows from explosive, Vulcanian-type eruptions from the crater of the volcano, located approximately below the area now occupied by Los Llanos de la Pez (Perez-Torrado *et al.*, 1997). The magma from these explosive eruptions had a phonolite composition, highly viscous and on the way up, it interacted with underground waters, triggering violent explosions that broke up the rocks of the vent and the magma itself. The result was a dense pyroclastic flow that carried this mixture of rock fragments (lithic) and magma (juvenile) in the heart of an ash matrix, impelled by the kinetic energy of the volcanic gases, at high speed at ground level. Shortly after falling to the ground, this ash matrix underwent chemical-mineralogical transformations, with the original volcanic glass shifting to form minerals of the zeolite group that act as cement between the different frag-



Figure 2.a.17. Close up of Roque Nublo ignimbrites. A) Heterometric and polymictic in nature, where we see a mixture of different sizes of both lithic (Lt) and juveniles (Jv) set in a cinerite matrix that acts as cement. You can also see a plant mark (Vg). B) Differential erosion that generated a typical relief of hollows as taffoni (S flank of La Mesa de Acusa). C) and D) Plant marks (samples in Risco Caído). © Claudio Moreno

ments (Perez-Torrado *et al.*, 1995b).

Hence, Roque Nublo ignimbrites are defined as a highly polymictic deposit (mixture of fragments of very different kinds, juvenile and lithic) and heterometric (fragments of many different sizes, from millimetric to metric) cemented by a zeolitic matrix (Fig. 2.a.17). Obviously, such a heterogeneous deposit will erode at different rates, as the different fragments offer different resistance to erosion. That is why erosion modelling of these ignimbrites offers morphologies in hollows by way of taffonis (see figure 2.a.17). These natural hollows were used widely by the aborigines, who built many of their caves in these Roque Nublo ignimbrites.

Finally, as an unusual aspect to highlight, there is the large number of plant marks that can be observed on some

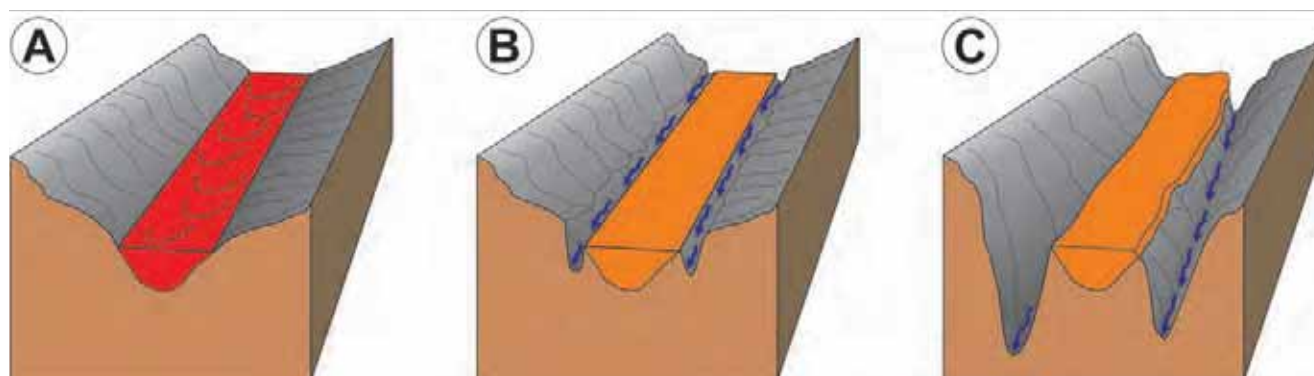


Figure 2.a.18. Diagram of how the erosive process of topographic inversion is formed, common in volcanic terrains. See text for details.

outcrops of these Roque Nublo ignimbrites (see figure 2.a.17), especially in the area of Risco Caído. These plant marks would be the result of forests being swept away by these pyroclastic lava flows.

Inverted relief

This is a process that happens with a certain frequency in volcanic terrains. To a certain extent, it converts the beds of ravines into future divide ridges. This process is shown in schematic form in figure 2. a.18: a). In a first stage, a volcanic eruption partially fills the bed of a ravine with lava flows; b) when the eruption ceases and the lava has petrified, run-off water once again tries to find the bed, but this has been invaded by a new rock that has not yet been weathered, thus offering greater resistance to erosion than the older, weathered rocks that form the substrate. This is the reason why run-off waters start to excavate small new channels on either side of the new, petrified lava; c) over time (>10000-100000 years) the beds develop broadly into new ravines and the petrified lava that once ran along the bottom of a ravine now acts as the dividing ridge between

the new ravines that have been formed.

This erosion process covers a large part of the cultural landscape, especially developed in the material from the Roque Nublo stratovolcano, as mentioned in the previous section. The final result is the formation of divide ridges on ramps, plateaus etc. The Acusa plateau, in the heart of the cultural landscape, is an outstanding example of this process of inverted relief (Fig. 2.a.19).

→ Figure 2.a.20. Canary Island pine (*Pinus canariensis*) on the road from Chimirique to Hoya de la Vieja with the Ayacata cliffs in the background. This wall is chiselled into the volcanic avalanche debris from the Roque Nublo stratovolcano. © Javier Gil León

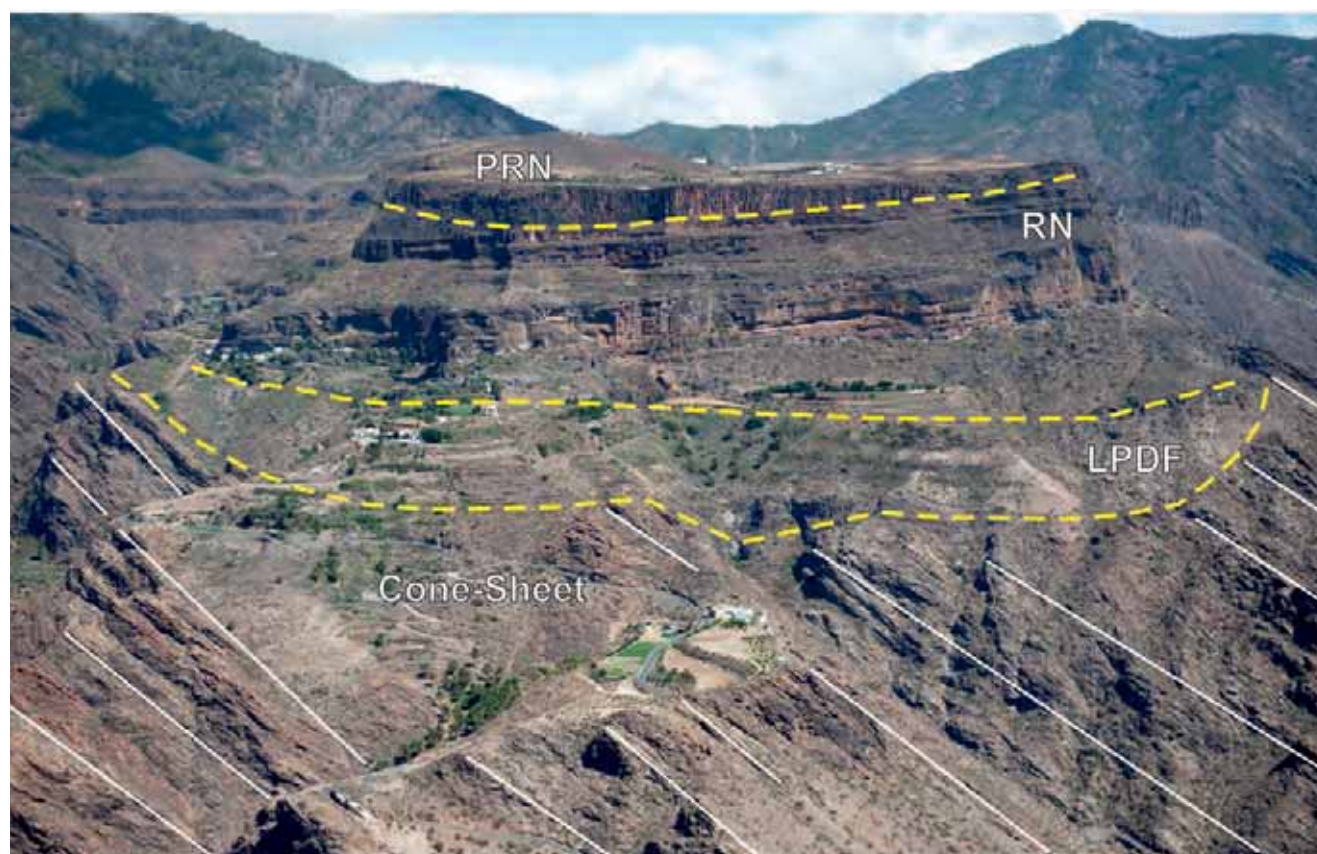
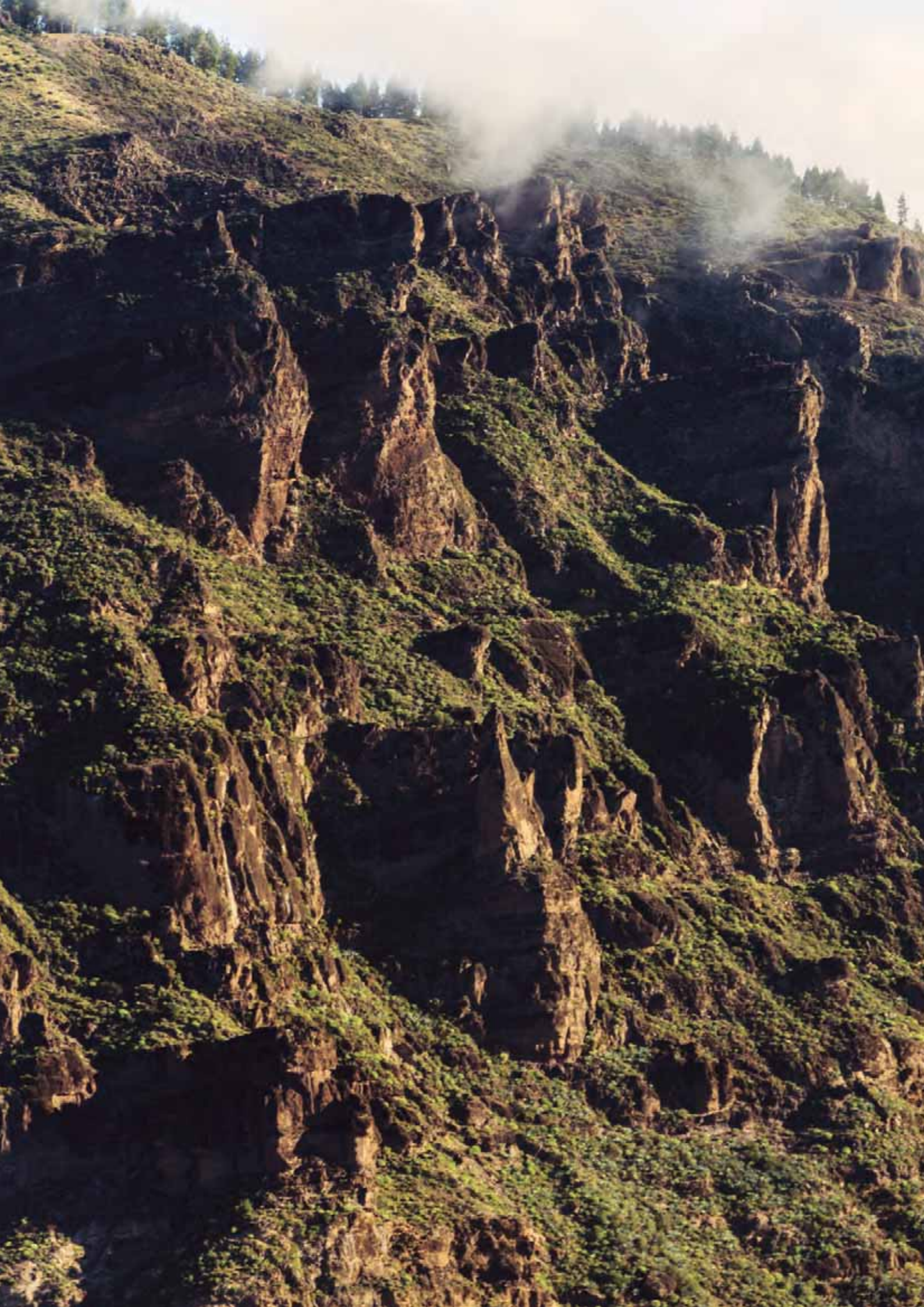


Figure 2.a.19. La Mesa de Acusa is an outstanding example of the process of inverted relief. © F. J. Pérez Torrado





2.a.iii

Nature, landscapes and biodiversity

The proposed area delineates the Cultural Landscape of Risco Caído and the Sacred Mountain of Gran Canaria. It encompasses an area of archaeological significance in a diverse natural environment, divided by an imaginary geological, bioclimatic and environmental line that divides the island in two along a diagonal axis running North-West to South-East. It is well defined geologically. Cycles I and II of the constructive phase of the island are predominant in the South-West half, called Tamarán, while in the North-East or neo-Canarian zone Cycle III basaltic volcanism prevails (Bourcart & Jeremine, 1937; Barcells *et al.*, 1990 a, b and c). Bi-

oclimatically, an axis imposed by the prevailing humid northeast trade winds differentiates the two zones from each other. This, combined with the altitude and differing rainfall levels on one side and the other (Del Arco *et al.*, 2002; Del Arco & González, 2003), facilitates a level of environmental zoning that can go so far as to distinguish between the Alisiocanaria zone in the northeast (more humid area due to the sea of cloud formed by the trade winds) and the Xerocanaria zone in the southwest (dry environment due to lack of humidity and high temperatures) (Pérez-Chacón *et al.* 1995).

← Figura 2.a.21. Cliffs of Los Riscos de Chapin, between Artenara and Tejeda © Cabildo de Gran Canaria

The north-western part of the nominated property appears to run along this axis, with the middle and upper basin of the Tejeda crater, the upper zone of the alluvial



Figure 2.a.22. View of La Montaña de Faneque from the genuine pine forests of Tirma-Tamadaba, a landscape that recreates the view that the ancient Canarians would have had. © Javier Gil León



Figure 2.a.23. Paleontological impressions of the trunks of ancient Pliocene laurel forests, in the area around Cuevas de la Paja, Barranco Hondo. © Águedo Marrero

fan of Tirma and part of Tamadaba falling under the influence of the Xerocanaria suprasystem (semi-arid environments of the South and West and the sub-humid environment of the West) and the escarpments of the alluvial fan of Guayedra and Barranco de La Palma, the area of the Coruña-Lugarejos region and the northern slopes of Tamadaba falling under the influence of the Alisiocanaria environmental suprasystem (humid environments of the mid-altitudes and the humid mountain summit environment).

From a vegetation and flora perspective, persisting relicts allow us to explore the paleontological and anthropological landscapes of the indigenous era and study the potential natural vegetation and current vegetated landscapes. These aspects play a vital role when deciding what actions to take to enhance and rehabilitate the proposed property, including the successful reforestation activities carried out in recent decades.

I. The paleontological dimension: remembering the primeval landscapes of the area.

The paleontological dimension of the Cultural Landscape is directly linked to the Roque Nublo Volcanic Breccia and the sedimentary deposits fossilised by it, evidence of which is found in numerous archaeological sites across the entire island (Pérez Torrado, 2000; Marrero, 2013). The existence of a lush wooded landscape in the Pliocene Epoch is revealed particularly, but not solely, on the windward side, where pines, ivies, palms, dragon trees, numerous lauroid leaf fossils etc can be identified (Schmincke 1967, 1968, 1976; Anderson *et al.*, 2009; Marrero, 2013).

Schmincke (1967, 1968) describes impressions of leaves of laurel, palms and 'bamboo-like' cane in Pajonales. In El Hornillo-Berrazales, Anderson *et al.* (2009) encounters frequent traces of trunks, branches, twigs, leaves, fruit/capsules, of Lauraceae or eudicotyledons and stems and leaves of monocotyledons: genera of Lauraceae, *Arbutus* (Ericaceae), *Ilex* (Aquifoliaceae) and *Hedera* (Araliaceae), fern fronds of the type *Asplenium* and fragments of Gimnosperma wood, possibly *Tetraclinis*, and in respect of Pajonales he speaks of carbonised *Pinus* wood. In sites also associated with the Roque Nublo Breccia on the northern side of Gran Canaria, Marrero (2013) encounters fossils of *Dracaena*, *Limonium*, *Phoenix*, *Rumex*, etc, and more than twenty other taxa that are difficult to classify. Finally, in the areas near Risco Caído in Artenara, evidence of *Smilax* and *Pinus* in particular, have been found, alongside other lauroid leaves yet to be identified. Lauroid fossils found in the same area as pines, palms and other conifers from the windward areas to Pajonales bear witness to the existence of mixed dense forests in the Pliocene Epoch that extended far beyond the current delineations. This would lead us to believe that the climate at that time was more subtropical and humid than what we have now (Marrero, 2013). The Mediterranean climate that now encompasses the Canary Islands has developed in the last 2 million years (Ibáñez, 2006) and, in terms of their origins in space and time, the flora that now comprises the Monteverde or laurisilva (laurel forest) is in disharmony with relict elements and other more modern ones (Kondraskov *et al.*, 2015).

Hausen (1962) emphasise the importance of Pliocene sedimentary deposits associated with possible lacustrine formations that appear below the different layers



Figure 2.a.24. *Dracaena tamaranae* or Gran Canaria dragon tree, a species found in the area that is endemic to the island of Gran Canaria, related to the *Dracaena draco* (dragon tree) and other *Dracaena* species of East Africa. © Águedo Marrero



Figure 2.a.25. Tree heather (*Erica arborea*), a tree species found in the damp pine forests of Tamadaba.. © Águedo Marrero

of the Roque Nublo Breccia, in which evidence of plant fossils can be found. The almogaren or sanctuary at Risco Caído is hewn from these sedimentary deposits and the archaeological site has a powerful breccia roof that, through the imprints and hollows of its encrusted logs, bears witness to the sudden disastrous collapse of the animal and plant life of Gran Canaria caused by the dismantling of the volcanic layers of Roque Nublo (Marrero & Francisco Ortega, 2001; Marrero, 2013), which constitutes a paleobotanical rarity in island volcanism. The fossilised remains in the walls and ceilings of dwellings, evidencing these processes, would lead one to think that these were somehow significant symbols and important in the cosmogonic world of the early settlers and this, to an even greater extent when they directly witnessed active volcanic eruptions.

2. The landscape of the indigenous inhabitants.

How was it? And how has it evolved?

Studying the natural landscape of the pre-Hispanic settlements in the nominated area is a study of the potential vegetation of this area. It can be tackled from the standpoint of: a) knowledge of relicts of the current vegetation, b) environmental sectorisation (Sánchez *et al.* (Coord.), 1995), c) the interpretation of bioclimatic data (Del Arco *et al.* 2002, 2006; Del Arco & González 2003; Del Arco & Rodríguez, 2003) and d) an archaeobotanical (carpology, anthracology, palynology) and geoarchaeological analysis of deposits from the sites.

In summary, the area included in the Cultural Landscape and in the buffer zone is home to: laurel forests to the north (Risco Caído, Las Hoyas-Lugarejos, upper parts of Guayedra-Tamadaba), montane and downwind slope pine forests (Moriscos-Cuevas del Rey, Tirma, Tamadaba,

Bentaiga-Tejeda, Artenara), and thermo sclerophyllous formations at the mid-altitudes of the Tejeda basin (Paralillo, Mesa de Acusa, Altavista-Tirma mountainsides and Guayedra mountainsides). These are accompanied by riparian communities or communities at the bottom of ravines and rock communities. All of these communities and types of habitats add value as is indicated in Annex I of Directive 92/43/EEC, known as the Habitats Directive (see Annex X).

From the bioclimatic perspective, the entire Canary Archipelago is included in the Mediterranean macrobioclimate (Rivas-Martínez *et al.*, 2001, 2002; Del Arco *et al.* 2002), which can be broken down into different bioclimates in accordance with thermotype and ombrotype (Del Arco *et al.* 2002, 2006; Del Arco & González 2003). Annex X includes a synopsis of the phytosociological communities found in the area in question.

Potential Vegetation, environments and bioclimates

ALISIOCANARIA

I. Dry windward sclerophyll forests (with no direct incidence of trade winds).

Low transitional zone, altitude of 700-800 m, with 300-500 mm annual rainfall, upper-semiarid xeric inframediterranean and upper-semiarid xeric thermomediterranean bioclimates. Wild olive trees, mastic trees and *Cistus monspeliensis* rockroses with thymes (*Micromeria spp.*), from the low escarpments of Guayedra and the north of Altavista-Tirma. *Olea*, *Phoenix*, *Pistacia* and probably *Dracaena draco* and other shrub species



Figure 2.a.26. *Pterocepalus dumetorus*, endemic to the Central Canary Islands, around El Roque Nublo. © Águedo Marrero

like *Withania aristata*, *Lavatera acerifolia*, *Dendriopterium menendezii* or *Cheilolophus arbutifolius*.

2. Monteverde and Laurel grove (with direct incidence of trade winds)

a) *Thermophile Laurel Forests* High transitional zone, altitude of 800-900 (1000) m, with 300-500 mm annual rainfall, pluviseasonal dry inframediterranean and thermomediterranean bioclimate. Northern borders of Tamadaba-Guayedra and in the foothills of the north of Altavista-Tirma), laurel groves of *Apollonias*, *Heberdenia*, *Visnea*, *Sideroxylon*, *Arbutus*, *Phyllirhea*, etc.

b) *Fire-tree and heath forest and laurel forests*: Humid mid-altitude environment between 700-1400 m, 600-900 mm annual rainfall with sub-humid pluviseasonal thermo Mediterranean and mesomediterranean bioclimate, with laurel forests and fire-tree and heath forests. Barranco Hondo-Coruña-Lugarejos and more sheltered parts of Guayedra-Tamadaba. The ravines and high altitudes are dominated by lauroid formations (lau-

risilva), The bottoms of ravines are comprised of terraced groves of saos (willow groves), with other lianoids such as *Rubus*, *Hedera*, *Convolvulus*, etc.

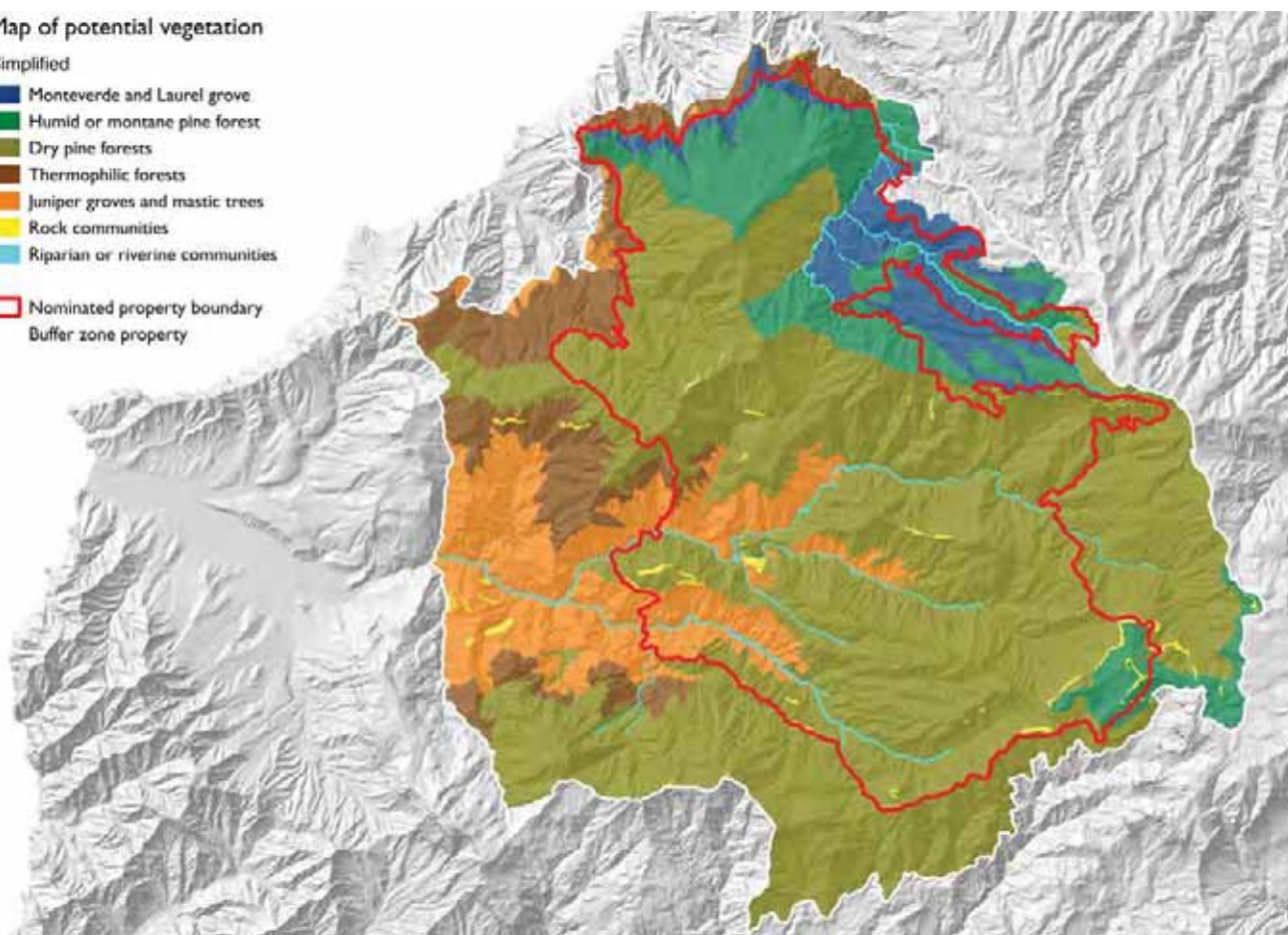
3. Humid or montane pine forest (with no direct incidence of trade winds)

Montane humid environment, 1400-1950 m altitude, with between 800-1200 mm. rainfall annually. Bioclimatic zones - pluviseasonal sub-humid and humid lower mesomediterranean and pluviseasonal sub-humid and humid upper mesomediterranean. Montane pine forests in the upper part of Riscos de Chapín-Cueva Caballero cliff and the area around Roque Nublo. Pine forests with tree lucerne, broom or gorse with *Pinus canariensis*, *Chamaecytisus proliferus*, *Teline microphylla*, *Adenocarpus foliolosus*, as well as *Sideritis dasygnaphala* or *Pterocephalus dumetorus*. Also included here are the mixed pine woods of Tamadaba, with *Ilex canariensis*, *Erica arborea*, *Cistus ocreatus*, *Phillyrea angustifolia*, *Micromeria pineolens* or *Dendropoterium menendezii*.

Map of potential vegetation

Simplified

- Monteverde and Laurel grove
- Humid or montane pine forest
- Dry pine forests
- Thermophilic forests
- Juniper groves and mastic trees
- Rock communities
- Riparian or riverine communities
- Nominated property boundary
- Buffer zone property



Map 2.a.4. Map of the potential vegetation of the nominated property, approximating the characteristics that this area had in aboriginal times. Map source: Canary Island Government

XEROCANARIA

4. Juniper groves and mastic trees, in the mid basin of Tejeda and Tirma.

Semiarid environment of the South and West at an altitude of 400-800 m and with 200-500 mm. annual rainfall. Bioclimatic zones - upper semiarid xeric inframediterranean, semiarid zeric thermomediterranean and lower dry pluviseasonal thermomediterranean. Characterised by palm groves, mixed juniper groves with pines or rock-rose and thyme scrub. Areas of Parralillo and Siberio, Mesa del Junquillo, borders of Acusa and mid-altitudes of Altavista-Tirma. *Phoenix canariensis*, *Olea cerasiformis*, *Juniperus turbinata* subsp. *canariensis* and *Pistacia atlantica*, and a host of shrub species and woody shrubs that include *Dendriopoterium pulidoi*, *Marcetella moquiniana*, *Cistus monspeliensis*, *Carlina canariensis*, etc., and the notable, unique presence of the Gran Canaria dragon tree *Dracaena tamaranae*.

5. Dry pine forests

Sub-humid environment of the West between 800-1400 m (1600 m) altitude with 400-600 mm rainfall. Bioclimatic zones - dry, sub-humid and pluviseasonal thermomediterranean and dry pluviseasonal lower mesomediterranean. Dry pine forests of the south and mixed juniper groves in the basin of Tejeda, Inagua-Pajonales, Altavista-Tirma, leeward side of Tamadaba and upper basin of Tejeda. Pine forests with mesophyll scrub in undergrowth and open scrub: tree lucerne, rockroses and gorse. *Chamaecytisus proliferus* subsp. *meridionalis* and *Cistus horrens*, and other species such as pennyroyal *Bystropogon organifolius*, *Echium onosmifolium*, etc.

6. Rock communities

Azonal but characteristic of cliffs, thick walls and escarpments, frequent in the entire area, with many species of the families *Crassulaceae* and *Compositae*, as well as others. In the higher zones *Greenovia aurea*, *Aeonium simsii*, *A. percarneum*, or sow thistles such as *Babcockia platylepis*, and species of other families like *Limonium* or *Globularia*. In the mid-altitude zones sow thistles and alpisillos such as *Sventenia*, *Chrysoprenanthes*, *Atalanthus*, and other species of *Lotus*, *Cheiroplophus*, etc.

7. Riparian or riverine communities

Azonal, dependent on emerging water, such as the willow groves of *Salix canariensis*, frequently accompanied



Figure 2.a.27. Spectacular spurge (*Euphorbia canariensis*) located in Tirma, species declared one of the natural symbols of the island of Gran Canaria. © Cabildo de Gran Canaria

by thorny *Rubus bollei* or reeds (*Scirpus*), or communities of ferns etc.

The landscape of the indigenous people

It has been established that, although they kept livestock, the diet of the native people of Gran Canaria was essentially based on cereals and figs, which are rich in carbohydrates. According to paleodietary studies meat may have been eaten only occasionally. The main crop was barley and, to a lesser extent, wheat, but legumes such as lentils, beans and peas were also grown. Most of the agricultural land was concentrated in the coast and lowlands of the north and east, with the thermo sclerophyll strip being the most heavily occupied. They also gathered fruit from at least: palma canaria, almacigo, mocan, Canary bellflower, "leñabuena" (*Neochamaelea pulverulenta*), "balos" and "zarzas", and for other uses they collected: white broom, Canary Island flatpod and some *Lauraceae*, amongst others (Morales Mateos, 2006;



Figure 2.a.28. Grove of *Salix canariensis* in gallery formation, following the bed of the Barranco de Tejeda, with groves of palm trees and pine trees among the thermo-sclerophyllous vegetation, an example of the diversity of ecosystems to be found in the sacred landscape. © Águedo Marrero

Jiménez González, 1999). The plants collected, although rarely eaten, were important resources for other activities: homes, fodder; utensils or for use in pit-fires for firing pottery.

The more than one thousand five hundred years during which the indigenous people occupied Gran Canaria would logically have effected the existing biodiversity on the island. However, this impact would have been small as can be inferred from the reports of the first explorers and chroniclers, as well as from archaeological data (Cabrera, 2001; Morales Mateos, 2006). In addition, when the trade wind cloud areas are superimposed onto Jiménez González's archaeological map of Gran Canaria (1999) it becomes apparent that the Monteverde zones were hardly explored by the early settlers (Marrero, 2008).

In light of the above, it can be deduced that the forest vegetation in the native environment was very similar to the potential vegetation described above, which was hardly altered, if at all, with the exception of the areas immediately adjacent to the villages where polycultures were grown on plots and terraces. The fig tree was the

only cultivated fruit tree, livestock keeping was limited and gathering from the mountainsides was sustainable.

3. The current landscape and biodiversity Main characteristics and values

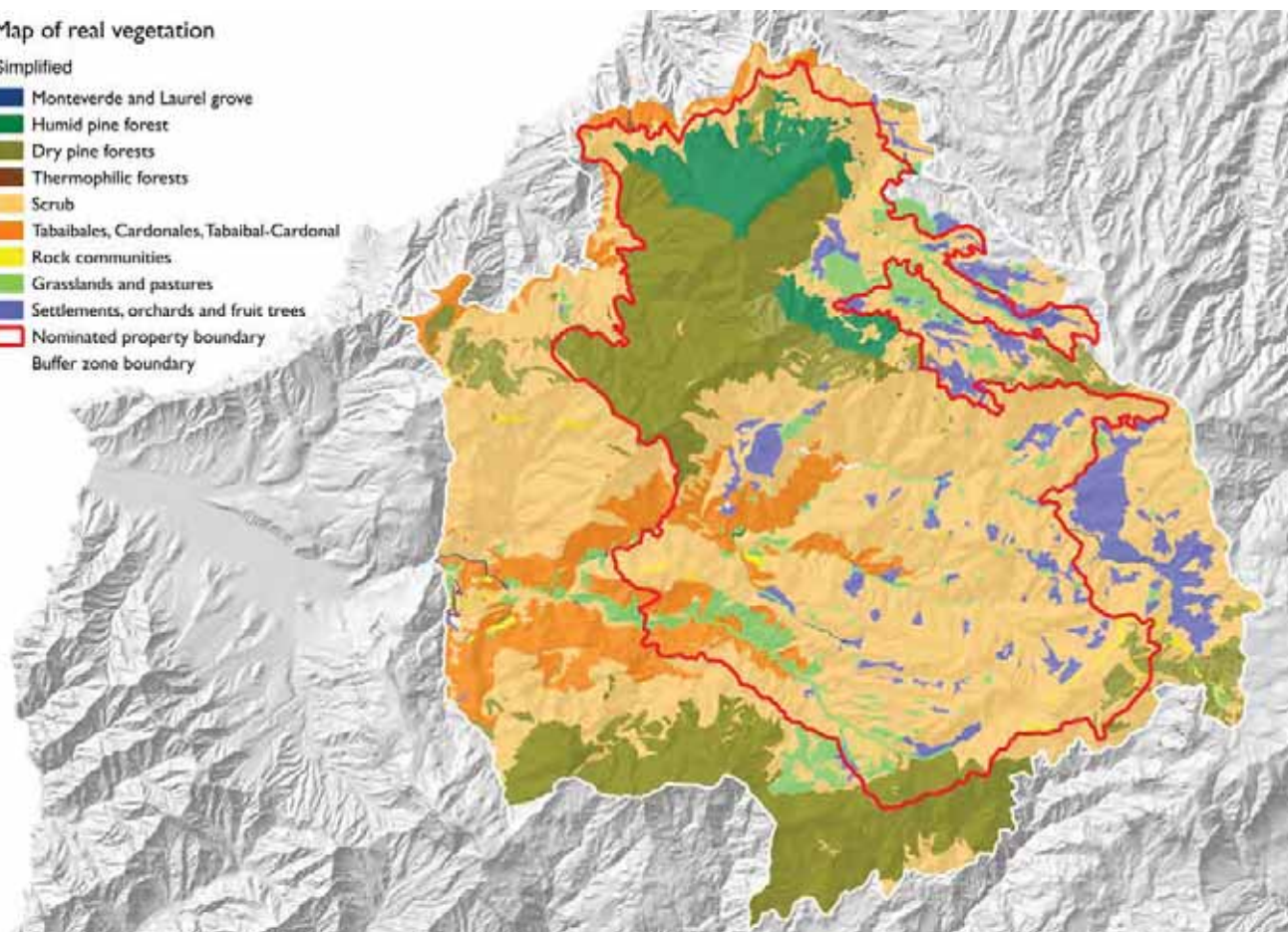
Gran Canaria, and specifically, the nominated property, has supported many different uses since the time it was occupied by the first settlers to the present day: Usage was moderate in the areas immediately adjacent to the native villages and intense from the time of the conquest, reaching its peak in the middle of the 20th Century. Today use can be described as moderate to residual, as a result of the island switching to a service economy and the gradual decline of agriculture and livestock keeping and, consequently less pressure on the land.

The area in question includes two locations where native pine forests and biodiversity are conserved well: Tamadaba-Tirma, with remnant pine forests supported by various repopulation and reforestation programmes, zone included in the Tamadaba Nature Park, and the pine forests of Pajonales-Ojeda-Inagua, with reforesta-

Map of real vegetation

Simplified

- Monteverde and Laurel grove
- Humid pine forest
- Dry pine forests
- Thermophilic forests
- Scrub
- Tabaibales, Cardonales, Tabaibal-Cardonal
- Rock communities
- Grasslands and pastures
- Settlements, orchards and fruit trees
- Nominated property boundary
- Buffer zone boundary



Map 2.a.5. Simplified map of the current vegetation in the area. Map source: Canary Island Government.

tion support, included in the Inagua Strict Nature Reserve (buffer zone). Added to these are the montane pine forests, regenerated through various reforestation programmes and currently in a good state, with the undergrowth providing shelter to many of the endemic montane species of the island (Pérez de Paz *et al.*, 1994). On cliffs and escarpments genuine endemic communities are maintained, also serving as refuge for other species that have been limited to inaccessible areas, offering high levels of biodiversity overall. This is the case in the escarpments of Tamadaba-Guayedra, Riscos de Chapín and Nublo cliffs or in the escarpments and crags of the areas around Inagua or the Tejada-Artenara basin itself.

In the rest of the basin, reduced grazing and agricultural activities have given rise to the regeneration of ecological successions with the formation of dense gorses (*Teline microphylla*), tabaiba amarga scrub, (*Euphobia regis-jubae*), taginastales (*Echium decaisnei*) and in the shadier broom areas, with a high density of Canarian endemic species, mixed in with plantations of fruit trees, mainly almonds, which on some mountainsides and ravines form authentic woods. In the areas immediately adjacent to the main urban areas terraces are maintained with their fruit trees and vegetable patches.

Laurel is now rarely found at the bottom of the ravines and inaccessible cliffs of Barranco Hondo and Lugarejos, a region where intensive agriculture is practised both on mountain ridges and mountainsides. However, farming has been abandoned and this has given rise to the regeneration of white broom (*Chamaecytisus proliferus* subsp. *proliferus*) interspersed with various fruit trees, which on the right south-facing slope has led to a proliferation of century plants (*Agave americana*) introduced as a fodder plant and for its fibres. Rebuilding houses, generally caves, as second homes, has helped save some terraces or bocados (small plots of land for tillage) that are tended to at the weekend. But the pasturelands on the ridges and mountainsides are being lost at the expense of the native scrubland (gorse, broom etc.) that is gradually weakening.

Important aspects of the flora and fauna of the Cultural Landscape

Despite the changes to the environment in the past five centuries and thanks to the contribution of the best conserved or recovered areas in the region, as is the case of Tamadaba-Tirma, or to the places of shelter that the escarpments and crags offer and, to a degree, to



Figure 2.a.29. Image of the current process of recovery of the native vegetation in the area of the Cultural Landscape, in this case, at the expense of the chestnut groves. © Águedo Marrero

the natural recovery as a consequence of the reduced human pressure in the area delineated as Cultural Landscape, a total of 163 taxa endemic to the Canary Islands are represented (130 sp., 33 subsp.), with 183 species endemic to Macaronesia (150 sp., 34 subsp.).

This wealth of flora breaks down into: 63 taxa endemic to Gran Canaria (48 species, 15 subspecies); 100 taxa endemic to the Canary Islands (82 sp., 18 subsp.) and 21 endemic Macaronesian species (20 sp., 1 subsp.), to which can be added 10 taxa of interest for communities (9 sp., 1 subsp.), comprising an important part of the outstanding biodiversity of the Canary Islands, Spain and Macaronesia (See Annex). Of these taxa, at least 28 are threatened in some way (Law 4/2010, of 4 June, of the Canary Island Catalogue of Protected Species), 7 are “endangered”, 8 are “vulnerable”, 7 are “of interest to Canary Island ecosystems” and 1 is afforded “special protection”. In addition, another 5 species are included



Figure 2.a.30. *Todaroa montana*, another expression of the floral wealth of the area, located in the domain of the laurel forest and pine forest, used traditionally for medicinal purposes. © Águedo Marrero



Figure 2.a.31. Gran Canaria blue chaffinch (*Fringilla teydea polatzeki*), classed as endangered with extinction by the National Catalogue of Endangered Species and considered a priority species for designating SPAs in the EU Birds Directive. Its population is currently restricted to two areas: Tamadaba (core area) and Inagua, Ojeda and Pajonales (buffer zone). © Colectivo Ornitológico de Gran Canaria (Gran Canaria Ornithological Group)

in the National Catalogue (see Annex X).

In the Tambada pine forest, as well as in other pine forest areas in the buffer zone, two species of important endemic birds with healthy populations here are worthy of special note, the Gran Canaria blue chaffinch (*Fringilla teydea polatzeki*) and the great spotted woodpecker (*Dendrocopos major thanneri*). Endemic arthropods are

also well represented here.

Given these conditions it is not surprising that the area of Tamadaba, a large part of which is included in the Cultural Landscape, is described as the most important biodiversity hotspot of Gran Canaria, followed by the areas of Cruz de Tea, Brezal-Barranco Oscuro, Maspalomas, Ayagaures, Riscos de Tirajana, Tenteniguada and Güigüí, as is described in the Canary Island biodiversity Atlas (Martín, 2010).

The biodiversity in the area is reflected in its protection status, as the entire area is included in one or other of the categories of the Canary Island Network of Protected Areas (ENP), and most are included in Natura 2000 Network, with the two applicable directives overlapping in much of the territory, which has a noteworthy presence of habitats of Community interest (See Section 5.b.i).

In essence, these data rank the proposed property and its area of influence as a place of extraordinary richness and interest for conservation and the study of biodiversity, with unparalleled numbers of endemisms and protected species, when compared with the majority of the protected continental areas in North Africa and Southern Europe.



Figure 2.a.32. The result of conservation and reforestation policies over recent decades is the progressive recovery of Canary Island pine forests in the area and in the buffer zone. © Javier Gil León

Catalogue of endemic plants in the Cultural Landscape of “Risco Caído and the sacred mountains of Gran Canaria”

Endemic species of Gran Canaria

63 taxa) (48 sp., 15 subsp.)

Aeonium arboreum (L.) Webb & Berthel.
Aeonium canariense (L.) Webb & Berthel. ssp. *virgineum* (Webb ex Christ) Banares
Aeonium percarneum (R. P. Murray) Pit.
Aeonium simsii (Sweet) Stearn
Aeonium undulatum Webb & Berthel.
Aichryson bituminosum A. Banares
Aichryson pachycaulon Bolle ssp. *praetermissum* Bramwell
Andryala pinnatifida Aiton ssp. *preauxiana* (Sch. Bip.) G. Kunkel
Argyranthemum adauctum (Link) Humphries ssp. *canariense* (Sch. Bip.) Humphries
Argyranthemum adauctum (Link) Humphries ssp. *gracile* (Sch. Bip.) Humphries
Argyranthemum frutescens (L.) Sch. Bip. ssp. *pumilum* Humphries
Argyranthemum lidii Humphries
Asplenium terorense G. Kunkel
Babcockia platylepis (Webb) Boulos
Camptoloma canariense (Webb & Berthel.) Hilliard
Carlina canariensis Pit.
Carlina texedae Marrero Rodr.
Chamaecytisus proliferus (L. f.) Link ssp. *meridionalis* Acebes
Cheirolophus arbutifolius (Svent.) G. Kunkel
Chrysoprenanthes pendula (Sch. Bip.) Bramwell ssp. *flaccida* (Svent.) Bramwell
Chrysoprenanthes pendula (Sch. Bip.) Bramwell ssp. *pendula*
Cistus horrens Demoly
Cistus ocreatus C. Sm. in L. von Buch
Crambe scoparia Svent.
Crambe tamadabensis Prina & Marrero Rodr.
Dendriopoterium menendezii Svent.
Dendriopoterium pulidoi Svent. ex Bramwell
Descurainia artemisioides Svent.
Descurainia preauxiana (Webb) O. E. Schulz
Dracaena tamaranae Marrero Rodr., Almeida-Perez & Gonzalez-Martin
Echium callithyrsus Webb ex Bolle
Echium decaisnei Webb ssp. *Decaisnei*
Echium onosmifolium Webb ssp. *Onosmifolium*
Erysimum albescens (Webb & Berthel.) Bramwell
Globularia ascanii Bramwell & G. Kunkel
Globularia sarcophylla Svent.
Isolexis isabelliana (Webb & Berthel.) Masf.
Lotus spartioides Webb & Berthel.
Micromeria benthamii Webb & Berthel.
Micromeria canariensis (P. Pérez) Puppo subsp. *canariensis*
Micromeria canariensis (P. Pérez) Puppo subsp. *meridialis* (P. Pérez) Puppo
Micromeria helianthemifolia Webb & Berthel.
Micromeria lanata (C. Sm. ex Link) Benth.
Micromeria leucantha Svent. ex P. Perez
Micromeria pineolens Svent.
Micromeria tenuis (Link) Webb & Berthel. ssp. *Tenuis*
Parolinia filifolia G. Kunkel
Parolinia ornata Webb
Paronychia capitata (L.) Lam. ssp. *canariensis* (Chaudhri) Sunding
Pericallis webbii Sch. Bip. & Bolle
Scrophularia calliantha Webb & Berthel.
Sideritis dasygnaphala (Webb & Berthel.) Clos emend. Svent.
Sideritis guayedrae Marrero Rodr.
Silene tamaranae Bramwell
Sonchus brachylobus Webb & Berthel.
Sventenia bupleuroides Font Quer
Tanacetum ferulaceum (Webb) Sch. Bip.
Tanacetum oshanahanii Marrero Rodr., Febles & C. Suárez

Tanacetum ptarmiciflorum Sch. Bip.
Teline microphylla (DC.) P. E. Gibbs & Dingwall
Teline rosmarinifolia Webb & Berthel. ssp. *eurifolia* del Arco
Teline rosmarinifolia Webb & Berthel. ssp. *rosmarinifolia*
Vicia filicaulis Webb & Berthel.

Endemic species of the Canary Islands

(100 taxa) (82 sp., 18 subsp.)

Adenocarpus foliolosus (Aiton) DC.
Aichryson laxum (Haw.) Bramwell
Aichryson parlatoarei Bolle
Aichryson porphyrogennetos Bolle
Aichryson punctatum (C. Sm. ex Buch) Webb & Berthel.
Allagopappus canariensis (Willd.) Greuter
Allium canariense L.
Andryala pinnatifida Aiton ssp. *pinnatifida*
Arbutus canariensis Veill.
Artemisia ramosa C. Sm. in Buch
Artemisia thuscula Cav.
Asparagus plocamoides Webb ex Svent.
Asparagus umbellatus Link ssp. *Umbellatus*
Atalanthus capillaris (Svent.) A. Hansen & Sunding
Atalanthus pinnatus (L. f.) D. Don
Bosea yervamora L.
Bryonia verrucosa Dryand.
Bupleurum salicifolium R. Br. in Buch ssp. *aciphyllum* (Webb ex Parl.) Sunding & G. Kunkel
Bystropogon canariensis (L.) L'Her.
Bystropogon origanifolius L'Her.
Campylanthus salsoloides (L. f.) Roth
Carduus clavulatus Link
Carex canariensis Kuk.
Carlina salicifolia (L. f.) Cav.
Ceballosia fruticosa (L. f.) G. Kunkel
Ceropogia fusca Bolle
Chamaecytisus proliferus (L. f.) Link ssp. *Proliferus*
Convolvulus canariensis L.
Convolvulus floridus L. f.
Convolvulus perraudieri Coss.
Dactylis smithii Link ssp. *smithii*
Dorycnium broussonetii (Choisy ex Ser. in DC.) Webb & Berthel.
Dracunculus canariensis Kunth
Dryopteris oligodonta (Desv.) Pic.-Serm.
Echium strictum L. f. ssp. *Strictum*
Echium triste Svent. ssp. *triste*
Erucastrum cardaminoides (Webb ex Christ) O. E. Schulz
Erysimum bicolor (Hornem.) DC.
Euphorbia aphylla Brouss. ex Willd.
Euphorbia balsamifera Aiton ssp. *balsamifera*
Euphorbia canariensis L.
Ferula linkii Webb
Festuca agustinii Lindling.
Forsskaolea angustifolia Retz.
Fumaria coccinea Lowe ex Pugsley
Gesnouinia arborea (L. f.) Gaudich.
Globularia salicina Lam.
Greenovia aurea (C. Sm. ex Hornem.) Webb & Berthel.
Habenaria tridactylites Lindl.
Hypericum grandifolium Choisy
Hypericum reflexum L. f.
Ilex canariensis Poir.
Juniperus turbinata Guss. ssp. *canariensis* (A.P. Guyot in Mathou & A. P. Guyot) Rivas-Mart., Wildpret & P. Perez
Kickxia scoparia (Brouss. ex Spreng.) G. Kunkel & Sunding
Kleinia nerifolia Haw.
Lavandula minutolii Bolle
Lavatera acerifolia Cav.
Lobularia canariensis (DC.) L. Borgen ssp. *canariensis*
Lobularia canariensis (DC.) L. Borgen ssp. *intermedia* (Webb) L. Borgen
Marcetella moquiniana (Webb & Berthel.) Svent.
Maytenus canariensis (Loes.) G. Kunkel & Sunding
Monanthes brachycaulos (Webb in Webb & Berthel.) Lowe

Neochamaelea pulverulenta (Vent.) Erdtman
Olea cerasiformis Rivas-Mart. & del Arco Aguiar
Ononis angustissima Lam ssp. *angustissima*
Ononis angustissima Lam ssp. *longifolia* (Willd.) H. Forther & D. Podlech
Orchis canariensis Lindl.
Pancratium canariense Ker-Gawl.
Paronychia canariensis (L. f.) Juss.
Pericallis tussilaginis (L'Her.) D. Don in Sweet
Phelipanche lavandulacea (Rchb.) ssp. *trichocalyx* (Webb) Carlon, G. Gomez, M. Lainz, Moreno Mor., O. Sanchez & Schneew.
Phoenix canariensis Chabaud
Pinus canariensis Sweet ex Spreng
Plantago webbii Barneoud
Plocama pendula Aiton
Poa pitardiana H. Scholz
Polycarpha aristata (Aiton) DC.
Pterocephalus dumetorus (Brouss. ex Willd.) Coult.
Reichardia ligulata (Vent.) G. Kunkel & Sunding
Reseda crystallina Webb & Berthel.
Reseda scoparia Brouss. ex Willd.
Rosa canina L.
Rubia fruticosa Aiton ssp. *fruticosa*
Rubia fruticosa Aiton ssp. *melanocarpa* (Bornm.) Bramwell
Rubia peregrina L. ssp. *agostinhoi* (Dans. & P. Silva) Valdes & G. Lopez
Rumex lunaria L.
Salvia canariensis L.
Scilla dasyantha Webb & Berthel.
Scilla haemorrhoidalis Webb & Berthel.
Seseli webbii Coss.
Sideroxylon canariensis T. Leyens, W. Lobin & A. Santos
Sonchus acaulis Dum. Cours.
Sonchus canariensis (Sch. Bip.) Boulos ssp. *canariensis*
Tamarix canariensis Willd.
Teucrium heterophyllum L'Her. ssp. *brevipilosum* v. Gaisberg
Todaroa montana Webb ex Christ
Tolpis lagopoda C. Sm. in Buch
Viburnum rigidum Vent.
Vicia chaetocalyx Webb & Berthel.
Vicia cirrhosa C. Sm. ex Webb & Berthel.

Species endemic to Macaronesia (20 sp., 1 subsp.)

Adiantum reniforme L.
Apollonias barbujana (Cav.) Bornm. ssp. *barbujana*
Asparagus scoparius Lowe
Cedronella canariensis (L.) Webb & Berthel.
Cheilanthes pulchella Bory & Willd.
Heberdenia excelsa (Aiton) Banks ex DC.
Hedera canariensis Willd.
Hypericum canariense L.
Laurus novocanariensis Rivas-Mart., Lousa, Fern. Prieto, E. Dias, J.C. Costa & C.
Lolium canariense Steud.
Periploca laevigata Aiton
Persea indica (L.) C. K. Spreng.
Phyllis nobla L.
Piconia excelsa (Aiton) DC.
Ranunculus cortusifolius Willd.
Salix canariensis C. Sm. ex Link
Tamus edulis Lowe
Urtica morifolia Poir.
Visnea mocanera L. f.
Withania aristata (Aiton) Pauquy

Species of interest in the communities (9 sp., 1 subsp.)

Asplenium hemionitis L.
Asplenium onopteris
Cistus monspeliensis L.
Davallia canariensis (L.) Sm.
Erica arborea L.
Euphorbia regis-jubae Webb & Berthel.
Morella faya (Aiton) Wilbur
Phillyrea angustifolia L.
Pistacia atlantica Desf.
Smilax aspera L. ssp. *mauritanica* (Desf.) Malag.

→ Figure 2.a.33. Barranco de los Palos, a bastion of biodiversity on the edge of the northern zone of the nominated property
 © Águedo Marrero







2.a.iv

Landscape and skyscape

One of the most peculiar characteristics of the proposed Cultural Landscape hinges on the inextricable relations of many of its attributes with the “skyscape”, in the sense that this space acts as a stage for the events occurring in the sky to unfold in relation to certain emblematic landmarks of the landscape. Certain outstanding tangible and intangible attributes and manifestations of the property, such as some of the sanctuaries and caves with astronomical relationships, or the aboriginal calendar itself, can only be interpreted by including the dimension of the sky as an integral part of the environment and the original support of the cultural landscape and its associated values.

1. The sacred mountains skyscape

There is a tradition of archaeoastronomical studies in the Canary Islands that now stretches back two decades. Statistical analysis of the astronomical implications of certain sites and the spectacular nature of some of the astronomical hierophanies discovered (with very little possibility of them occurring by chance in most cases) clearly indicate the intentionality of the astronomical relationships discovered so far. All these arguments strongly suggest that following the path of the celestial bodies was an important aspect in the construction and the final purpose of many pre-Hispanic sanctuaries. Montaña Tindaya and the alignment of footprints with its summit, the most southerly moonrise over Roque Nublo and the sunset over Teide at the summer solstice, observed from the sacred sites of Bentayga and Gamona, respectively, may also be classed as outstanding examples of a close relationship in which both landscape and skyscape played a crucial role in aboriginal Canary Island culture (or cultures). Indeed, the recently discovered effects of light and shadow at Risco Caído are another highlight.

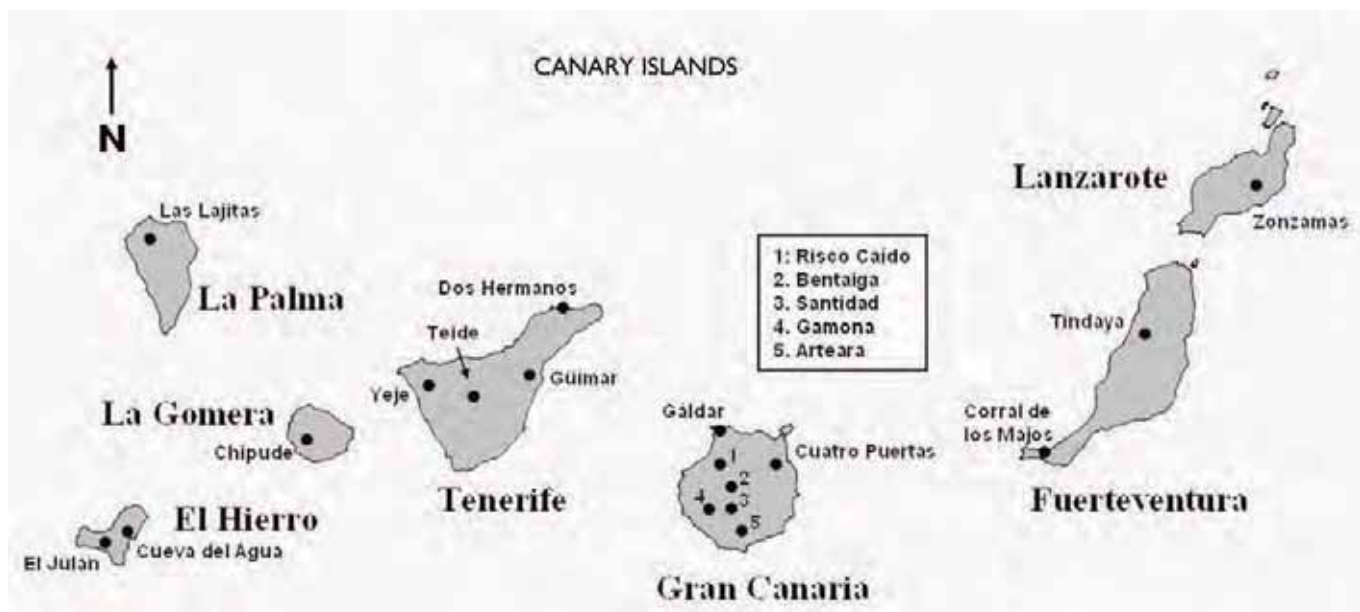
The term “skyscape”, analogous to “landscape”, is intended to convey that (along with the visible landscape) the sky forms an integral part of the total environment perceived by human communities. This includes the observation of the events that occur in the sky, from a sunrise or sunset to the rise of a star or an asterism, their vision of the sky, or even the observation of unusual meteorological phenomena such as strikingly shaped clouds, that may have attracted the attention of our forefathers. The term will be widely used in this dossier when we refer to phenomena that occur in the sky.

For the western world, the Canary Islands were rediscovered by the Crown of Castile in the 15th century. At that time, each island was inhabited by a different cultural group, almost totally isolated from one another. The islanders almost certainly came from the nearby African mainland and were possibly related to proto-Berber (Libyan) groups or tribes, as the cultural remains and the ethnohistorical sources seem to indicate.

This pre-European population probably settled in the islands around the time of the birth of Christ. Their cultural diversity, reflected in their material remains, economic activities and social organisation, could be explained by the arrival of migratory waves from the mainland at different (albeit almost contemporary) moments, of different peoples with different levels of culture. Moreover, the significant ecological differences between the islands could have enhanced this diversity through specific processes of adaptation to particular environmental characteristics. In this sense, Gran Canaria and the area of the Caldera de Tejeda present a paradigmatic example of adaptation, offering an excellent horizon on which the land and the sky could come into contact and permanent interaction.

Many of the ancient historians and chroniclers of the conquest talk about the existence of sacred places in the pre-Hispanic Canary Islands, a fact that has been borne out to a large extent by archaeological fieldwork. They vary in kind from one island to another and even

← Figure 2.a.34. Hierophany from the Risco Caído almogaren. One of the windows related to the skyscape in the sacred mountains © Julio Cuenca



Map 2.a.6. Map of the Canary Islands showing the most significant of what are probably astronomically-important site either discussed or mentioned in the text. Gran Canaria and the nominated property stands apart in the number and importance of these sites.

within the same island. In Fuerteventura, for example ceremonies were performed in circular buildings with stone walls called “esequenes”. A different custom was apparently used on La Palma, where some religious rituals took place around piles of loose stones, built as high as was possible without causing them to collapse (Abreu Galindo, 1977). A large number of petroglyph stations, including alphabetical inscriptions, have been reported for all the islands. The most important of these include the examples of Risco Chapín and Risco Caído in Gran Canaria, with the largest collection of pubic triangles in the world; El Julán in El Hierro, with what is presumed to be astronomical symbolism related to the aboriginal alphabet; and Tindaya in Fuerteventura, with the largest collection of footprint engravings (known as podomorphs) in the world.

Gran Canaria undoubtedly presented the most evolved and richest pre-European culture of the archipelago. The social structure was complex and hierarchical, similar to that of a proto-state. One especially interesting fact is the existence of priests, known as “faicans”, who belonged to the nobility and performed religious, political and social duties, possibly including observing the sky and keeping time. The relatively advanced cultural level of the ancient Canarians or “Canarios” - a name later extended to include the rest of the archipelago - is clearly illustrated by the existence of irrigated land agriculture, with the harvest stored in communal fortified granaries such as those at Mesa de Acusa. The dead were not only buried in natural caves – the typical cus-

tom on other islands – but also in burial mounds, concentrated either in small groups (some within the limits of the application) or in huge necropoleis such as those of Arteara or El Maipés in Agaete. Also distinct from the rest of the Archipelago are the religious images they worshipped (idols) and the “pintaderas”.

Some general aspects of the religious world of the aboriginal population of the Canary Islands, notably Gran Canaria, and its connections to cultural astronomy can be inferred from ethnohistorical sources. These were written by Europeans, or Europeanised islanders, shortly before, during and after the conquest. For example, the chronicles tell us of the importance of star worship and divinities amongst the ancient Canarians and other peoples of the islands (see e.g. Abreu Galindo 1977, Marin de Cubas 1993).

In fact, the sun, the moon and probably other celestial bodies (certain stars and planets) were their main deities (Jiménez, 1990; Tejera Gaspar, 1992). There are also numerous but, unfortunately, rather vague ethnohistorical references to the existence of a calendar (see Section 2.b.iv), and their use of the position of the sun and the moon and probably some stars, such as Sirius or the Pleiades, for calculating time for organising farming activities (Barrios García 1997, Belmonte and Hoskin 2002). Finally, some elements of continuity may be reflected in the traditions of the rural Canary Islanders after the conquest. For the people of the countryside, certain stars (notably Sirius, Orion’s belt and the Pleia-

des—see Section 2.b.v) acted as markers of time and for forecasting the weather. The case of Venus appearing in the evening as the star that brings water (Belmonte and Sanz de Lara, 2001) could be a reflection of pre-Hispanic fertility worship.

From an archaeological point of view, several places have been suggested as the remains of pre-Hispanic *almogarenes*, where particular rituals took place at precise moments of the year. Basically, these rituals consisted of pouring goat milk and fat over certain ritual elements. Some of these sanctuaries are situated in relatively low locations but typically, they occupy high spots, often near a troglodyte village or burial caves. Most of them consist of flat platforms sculpted into the rocky ground with a number of cup-marks sometimes connected by grooves. The shrine at Roque Bentayga is paradigmatic. Other examples can be found in cave-sanctuaries—almost always artificial—located in outstanding places with special features. They often contain highly sophisticated decorations, such as engravings and paintings. One well-known case, and fundamental for this application, is Risco Caído, but Cueva Pintada in Galdar and the main cave of Cuatro Puertas are also worthy of mention.

Another kind of site found in Gran Canaria are considered possible places of worship, given their archaeological context. These special sites frequently include several dry-stone, truncated conical structures called “*torretas*” – or turrets - which are usually associated with horse-shoe-shaped or ellipsoidal structures. Some places have large numbers of turrets, for example Llanos de Gamona or Los Altos del Coronadero.

Extensive archaeoastronomical work has been carried out on all the islands since the mid-1990s (see map 2.a.6), and Gran Canaria has received the most attention. Many solstice and equinox “markers” have been discovered, or are postulated, to relate to the information about the calendar that appears in historical sources (Belmonte *et al.* 1994). One of the earliest discoveries in the islands was the probable astronomical connection of the footprint engravings of Montaña Tindaya (Perera Betancort *et al.* 1996). The data showed that these petroglyphs, numbering in the hundreds, are clearly there for orientation purposes rather than just following a random distribution, with a concentration in the W-SW sector of the horizon (see Figure 2.a.35). Different hypotheses have been put forward to explain this model and the most suggestive of all is the one postulating a relationship with the period of maximum rainfall

and the vision of Venus in the evening in combination with the winter solstice crescent moon (Belmonte and Hoskin 2002).

Fieldwork in Gran Canaria strongly suggests that most of the *almogarenes* were related to solar observations and probably with worship of the heavenly bodies (see e.g. Esteban *et al.* 1996/7). Landscape also played a role: these sanctuaries are often sited at high spots dominating a wide, and often imposing panorama. These sanctuaries at the top of significant mountains and on the escarpments of the huge volcanic calderas were used for particular rituals taking place at precise moments of the year. One of the best studied is Cuatro Puertas (Belmonte *et al.* 1994, Esteban *et al.* 1994). This is a huge archaeological site built on top of 319m-high hill. It contains two possibly sacred elements; the *almogaren*, excavated in the rock and located at the summit, and a sanctuary (in an artificial cave) with four entrances, hence the name. This cave-shrine is the only element of the settlement located on the northern slope of the mountain that practically faces true north. A very curious hierophany (see Figure 2.a. 28-a) can be seen from inside the cave-shrine. An observer located inside the cave at sunrise at the summer solstice would have seen



Figure 2.a.35. Tindaya Mountain in Fuerteventura, as seen from the ancient “*esequen*” (stone circle) of Llano del Esquinzo. The southern peak is practically covered in footprint engravings (podomorphs) in a non-random astronomical orientation pattern. © J.A. Belmonte (top) and adapted from Perera *et al.* (1996).



Figure 2.a.36. (a) Sunrise at the summer solstice in Cuatro Puertas. (b) Sunset at the summer solstice behind Pico Teide, observed from the sacred area of Los Llanos de Gamona. (c) Sunset at the summer solstice behind the peak of Inagua, aligned with one of the two entrances to the Montaña Santidad sanctuary. (d) Photograph taken at equinoctial sunrise at the necropolis of Arteara, when the first rays of the sun illuminate the so-called 'king's tumulus'. Adapted from Belmonte (2015).

a very thin ray of light entering the artificial cave through one of the entrances, illuminating the back wall for a few minutes. The geometry of the cave is such that the summer solstice is the only moment when sunlight reaches inside, perhaps a deliberate design feature that would subsequently be reproduced on an extraordinary scale at Risco Caído. Solstice markers have also been identified at archaeological sites on other islands, such as La Degollada de Yeje in Tenerife, Lomo de las Lajitas in La Palma and perhaps Chipude in La Gomera and Cueva del Agua in El Hierro (Belmonte and Hoskin 2002, see Map. 2.a.6).

Archaeoastronomical research (Esteban *et al.* 1996/7) suggests that the Roque Bentayga almogaren was a sort of solar and lunar “observatory”, presenting spectacular hierophanies relating to the movements of both celestial bodies. These will be explained in greater detail in Section 2.a.vii. Be this as it may, the geometrical analysis of the different natural and artificial elements that comprise the site suggests the presence of a very precise

equinoctial marker. The importance of the equinox was further emphasised by findings at other sites on Gran Canaria (e.g. the necropolis of Arteara and the nearby Fortaleza Grande, see Figure 2.a.28.d), and also on other islands (see Map 2.a.6) such as Zonzamas in Lanzarote or Tablero de los Majos in Fuerteventura (Belmonte and Hoskin, 2002) and Dos Hermanos in Tenerife (Delgado and Esteban, 2007).

A large ellipsoidal structure at a place called Montaña Santidad has a western access open to the sunset at the summer solstice over the top of Montaña de Inagua, an important peak on the western horizon (Gil and Belmonte 2009; see Figure 2.a.36 c). This is one of several aboriginal sites in the south-west of Gran Canaria, containing a large number of turrets and associated horse-shoe- and ellipsoid-shaped structures, at some of which this connection could be even more accentuated (Aveni and Cuenca, 1994).

The most peculiar of these sites is Los Llanos de Gamo-

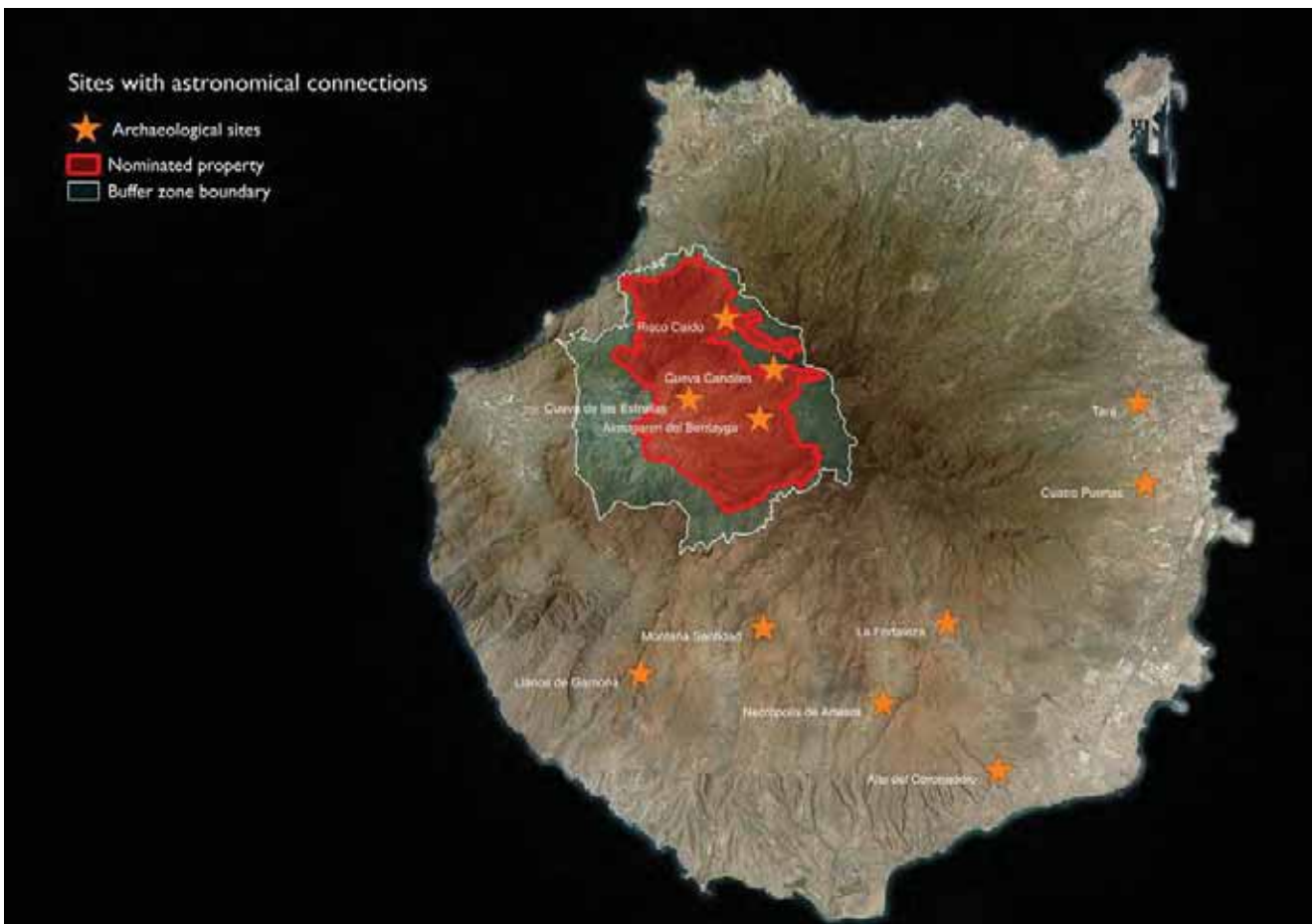
na, where no fewer than twenty turrets (mostly in ruins) and several horseshoe-shaped structures have been catalogued. One noteworthy aspect is that sunset at the summer solstice occurs over the peak of the distant Mt. Teide volcano on the island of Tenerife (see Figure 2.a.36 b; Gil and Belmonte 2009). This fact suggests that Gamona may have been selected as a special sacred place owing to the solar phenomenology occurring on the western horizon.

Mt. Teide is the highest mountain in the Canary Islands and it is visible from all over the archipelago. It probably had a presence in the pre-Hispanic mythology of all the islands (Tejera, 1992). The existence of close parallels between Canarian customs and those of the ancient religious world of the proto-Berbers of northwest Africa is highly suggestive. The sacred character of certain mountains was, in fact, mentioned by Herodotus in his History. According to Herodotus, Mount Atlas was a Pillar of Heaven for the ancient Libyans.

Gran Canaria, and the nominated property in particular, is an outstanding place to study the relationship be-

tween archaeology, landscape and skyscape. Risco Caído is the most recent, and perhaps the most important discovery to justify this relationship. Apart from the other elements, there are several artificial caves at the site that have been identified by ethnohistorical sources as *almogarenes*. These have been discovered, excavated and restored recently by archaeologist Julio Cuenca and his team. The sanctuaries are decorated with engravings of pubic triangles and cup-marks of different sizes and types. The sanctuary with the largest number of triangles was carefully excavated with a dome-like ceiling including a window open to the skies. The particular geometry of the cave allows the early rays of sunlight to illuminate different decorative elements in successive periods of the year, producing an elaborate combination of light and shadow effects throughout the year (Cuenca 2012). The precise configuration of this phenomenology over a complete annual cycle will be discussed and analysed in greater detail throughout this application (see Section 2.a.vii).

The Canary Islands in general, and Gran Canaria in particular, have proven to be an excellent laboratory to an-



Map 2.a.7. Map of Gran Canaria island showing the sites with special astronomical relations, highlighting the main manifestations included in the nominated property. Source: prepared by the author.

analyse the close relationship between the landscape and the skyscape in detail within the broad field of human cultures. The area of the island included in the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria represents a paradigm in this particular setting, standing proud as a wonderful example of a cultural landscape in which the skyscape is seen in all its splendour:

2. Starlight and skyscape

The celestial bodies and the astronomical scenario that comprise the landscape of the night sky, i.e., the skyscape, cannot become attributes of a site according to the terms of the World Heritage Convention for obvious reasons. But as the ICOMOS-IAU Thematic Study on “The Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention” rightly points out: “... given that an important aspect of the heritage of many ancient and historical sites is the observation of certain naked-eye astronomical phenomena, the possibility of actually ob-

serving those phenomena today is a relevant consideration in valuing and preserving that heritage... and taking into account that many sites relate to night-time observations, a consideration of considerable importance in this respect is the visibility of the dark night sky...” (Ruggles and Cotte, 2010).

When we talk about the quality of the night sky in the present day, we refer to it having optimal conditions of darkness. In other words, it is free from light pollution and has other prerogatives of excellence, such as clarity and transparency. We talk about the ability to see the same sky as, or a similar sky to, the one observed by the ancient Canarians. This dimension enhances the intrinsic natural value of the place with respect to its outstanding attributes.

Against this backdrop, the nominated property, and by extension, the entire area of the Biosphere Reserve around it, has been certified as a Starlight Reserve and Destination, an initiative that has the support of UNESCO's MaB Programme. The measurements taken



Figure 2.a.37. Full moon shortly before it is hidden behind Altavista observed from Mesa de Acusa. The moon was a leading reference in the skyscape of the ancient Canarians. © Javier Gil León



Figure 2.a.38. The Milky Way over the Bentayga Highlands, observing the same sky as the ancient Canarians © Nacho González

during the certification process gave darkness values for the sky in the area that always exceeded 21 mag/arcsec^2 . In a substantial part of the area, however—especially certain areas inside the Cuenca de Tejeda, along with Tamadaba, Mesa del Junquillo and Inagua y Pajonales in the buffer zone—these values reached $21.4 \text{ mag/arcsec}^2$, implying an excellent quality of the sky.

Annex IX includes the strategy document for the area as a Starlight Reserve and Destination. This sets out the specific action plan in matters of protecting the sky and the monitoring measures and actions aimed at controlling light pollution. Certification of the area as a Starlight Destination and Reserve also highlights the natural and cultural values associated with stargazing to be preserved and provides guidelines on promoting intelligent, responsible tourism in the area, based on this resource.

In summary, this is a space that aspires to recovering the sky of the ancient Canarians as an essential element of the sacred mountain landscape, guaranteeing that it will

be conserved for contemplation by both current and future generations.



2.a.v

Troglodyte culture in the sacred mountains

The Tejeda Caldera and its proximities contains one of the most outstanding and extensive sets of troglodyte manifestations in island cultures on Earth. This is one of the largest known, well-preserved concentrations of this kind of human habitat, which reveals an outstanding conception of the settlements of the ancient island cultures, constituting the leading and most original manifestation of these expressions on oceanic islands anywhere in the world.

According to the early chroniclers and historians the native inhabitants of the Canary Islands were primarily a cave-dwelling people. It appears that all of these structures in the Canary Islands originated in the North of the African continent, and that they were built by

the Berber or *Amazigh* communities that arrived to the archipelago at the beginning of this era. These communities introduced the concept of cave dwellings to the different islands where they were used to varying degrees. Many contemporary Berber communities still live in troglodyte settlements very similar to those found in the Canary Islands. Indeed, the artificial caves of the early inhabitants of the Canary Islands bear striking resemblance to many of those still inhabited to this day in parts of Tunisia, the Kabyle and Atlas regions (de Leon, 2016).

Gran Canaria is the only island where large settlements of artificial caves were constructed. This distinctive feature makes this territory unique in terms of patterns and models of this type of settlement (Gómez Navarro, 2008). These structures find their greatest expression in the mountains of Gran Canaria where an engineering

← Figure 2.a.39. Roque de las Cuevas del Rey © Julio Cuenca



Figure 2.a.40. View of Roque Bentayga and Roque Nublo from one of the caves in the troglodyte settlement of Acusa. The image clearly shows the alignment with this epicentre that was sacred to the ancient Canarians. © Nacho González



Figure 2.a.41. Partial view of one of the group of caves on the slopes of Mesa de Acusa © Javier Gil León

feat of great proportion perforated entire mountains with passageways, galleries, doors, stairs, granaries and windows suspended from impressive precipices (de León, J. 2016).

This cultural landscape associated with the use of cave dwellings is the enduring legacy of the first inhabitants of the islands and their history in the nominated property. Many of the villages established in the area, some of which are partially inhabited to this day, showcase the extraordinary range of strategies employed to adapt this cultural pattern to the different environmental niches in the terrain. This type of vernacular architecture also constitutes a splendid example of constructed space cleverly adapted to an extreme and complex natural environment.

The clever manner in which settlements were positioned and located in caves adds to the exceptional



Figure 2.a.42. Reused indigenous cave in Barranco Hondo © Julio Cuenca

nature of these sites, which were essentially natural fortresses. Many of the troglodyte settlements are situated on steep cliffs with severe gradients to form unique vertical villages (González Navarro, 2008). And so it was that in some historical references their inhabitants were compared to birds living on the rocky cliffs (Viera y Clavijo, 1982:395). The mountainous interior of the island also surprised other illustrious authors and travellers in later periods, such as Grau Bassas or Unamuno, who observed the significant number of cave dwellings with remarkable thermal properties, extreme cliff locations and excellent living conditions.

Other enlightened authors and travellers of later times, such as Grau Bassas or Unamuno, were surprised by the interior of the island, observing the large number of cave settlements, highlighting their thermo-regulating characteristics, their extreme location on crags and the good living conditions that Madoz also mentioned in the mid-19th century, "*these dwellings are fresh in summer, sheltered in winter, inside which, you hear neither the rain water nor the roar of the most impetuous winds: they are believed to be the work of the ancient Canarians*" (Madoz, 1986:45).

If you look at the multitude of troglodyte expressions, the way they are adapted to the different geological materials and strata of the Tejeda Caldera is also surprising. Practically all these settlements use the different levels of volcanic tuff that can be found scattered over the area like veins. To dig a cave, the ancient Canarians would preferably chose areas dominated by volcanic, Roque Nublo-type breccia material and tuff sands that are relatively easy to excavate, allowing hollows to be chiselled out in a wide range of different designs, both in the pre-Hispanic stage and when they were reused in the centuries after the conquest. This is how they built their caves with stone or bone instruments. The description made by engineer Leonardo Torriani at the end of the 16th century is enlightening:

"When they wanted to build this way, first they chose the slope of a hill, so that, when they dug horizontally, they had room to expand upwards. And when they had gone some way in, they made a large entrance that acted as a gateway, and next to this, two washing pits as tanks: and above the door, they opened up a small window, through which the light entered every room in the house.

Afterwards, at a height of ten to twelve feet opposite the door, they dug a long room, and its door almost as large as its length. In the middle of each wall, they later exca-

vated a door, and from there, they dug out rooms large and small, depending on their families and needs. But when they reached above the entrance, at the height of the lounge, they made another small window, through which all the rooms received second and third light. Afterwards, they made many niches, both around the lounge and in the other rooms, slightly above the height of the floor, to sit in and to place some manual things of their house in. The Canarians made these rooms in the caves in the mountains, or they excavated them in the tuff or in the earth, without wood or iron or any other instrument, except with bones of goats and with very hard stones'. (Torriani, 1978: 100-102).

Geology and human ingenuity thus became key protagonists in moulding this cultural landscape. The major troglodyte settlements of the area are spaces that combine a kind of vertical urbanism, marked by the high gradient of the slope in settlements like Cuevas del Rey in Tejeda, and horizontal urbanism, where the settlements follow the tuff strata that act as a support for excavating and hollowing out, as is the case of El Hornillo in the municipal district of Agaete.

A large proportion of the troglodyte settlements of the Tejeda Caldera were fortified, because they were built in inaccessible places, always at the top of rock tors or close to the rugged peaks of certain mountains. This can be clearly seen in the troglodyte settlements of places including Ronda, La Solana del Pinillo, Montaña del Humo, Andén de Martín, Cuevas de La Mesa and La Mesa del Junquillo. But the most important Canarian fortification on the island stands apart from these: the fortress of Bentayga, set in the geographical centre of the Caldera (Cuenca Sanabria, 2008).

Another singular aspect lies in the fact that, contrary to what could be expected and unlike what happened on other islands, settlements of this kind were used after the Conquest, and the habit has continued to this day. In his "Diccionario geográfico-estadístico-histórico de España y sus posesiones de Ultramar" (Geographic-statistical-historic dictionary of Spain and its overseas possessions) (1845-1850), Pascual Madoz, referring to places in the municipal district of Artenara at that time, tells us that "... and between all of them, they have some 500 caves that act as habitation for the residents and 2 stone-work houses ..." (Madoz; 1986: 45). Up until the early 20th century, practically all the houses in the area were still caves.

Thus, surprisingly, the most extensive catalogue of troglodyte elements has survived over time in the landscape of the sacred mountains: settlements of natural and artificial caves, granaries, sanctuaries, burial sites and other elements used for a wide range of purposes, such as those associated with the water culture.

This is a set of archaeological manifestations that co-exists with troglodyte settlements that were inhabited until today. All of them talk of the preference that the ancient settlers felt for caves, not just as a place to live, but also as sacred places where they practised their ancestral rites of worship and as burial grounds.

The cave sanctuary of the ancient Canarians

The ancient Canarians used certain caves as places of worship to hold rituals. This is not just a case of references in the old chronicles, there is also archaeological evidence to corroborate this in one way or another, especially for the case of the cultural landscape proposed, where there are numerous documented cases of artificial caves with rock art inside them, in the form of engravings and paintings, on the walls, ceilings and floors.

The value of these caves lies not only in the fact that they contain rock art, which in itself is why they are given the highest possible level of protection and interest, their importance also lies in the fact that they are the outstanding vestiges that still remain of the sanctuaries of the ancient Canarians. They are cultural manifestations that now help us to better interpret and understand the complex world of the cultural practises and beliefs of those peoples.



Figure 2.a.43. Panoramic view of the interior walls of Los Candiles cave sanctuary in Risco Chapín. © Tarek Ode



Figure 2.a.44. Qsar Nalut fortified collective granary in Djebel Nefusa, Libya. © Juan Antonio Belmonte

The most important cave sanctuaries are characterised by showing amazing engravings, sometimes in large numbers, with triangular forms in the shape of an equilateral triangle with the apex pointing downwards, which is interpreted as the female public triangle, the symbol of fertility par excellence, that was already represented by groups of human beings of the Late Stone Age, 30,000 years ago. There is also something that all these caves have in common: they present complex systems of cup marks excavated into the floor, and numerous domes on the walls. The Cueva de Los Candiles and the Risco Caído *almogaren* are outstanding examples of those ancestral mountain sanctuaries where the fertility of Mother Earth was worshipped.

La Caldera de Tejeda in itself is a sacred landscape, as this was the location of the main sanctuaries or *almogarenes*,



Figure 2.a.45. Excavation work inside of El Alamo, one of the fortified granaries of Acusa
© Cabildo de Gran Canaria

and this is where the entire population of the island headed for their rituals (Cuenca Sanabria, 2008). These manifestations were related to the agrarian rituals that the Berber peoples celebrated at certain times of year in their cave sanctuaries. With an infinity of variations, these rites have been celebrated all over North Africa, with the participation of the entire population, and they are always associated with certain, sacred, caves.

The collective granaries: a heritage treasure

Granaries are especially important in the archaeology of Gran Canaria, and particularly so in the sacred mountains, where a large number of these storage structures are concentrated (Velasco Vázquez *et al.*, 2001). The spectacular nature of some of these, their relative abundance and the economic role that has been attributed to them are partially responsible for this significance (Onrubia Pintado, 1995). Archaeological evidence indicates that cereals and other agricultural produce played a fundamental role in the diet of the ancient Canarians, and therefore, storing this food properly was basic for their survival (Morales Mateos, 2002).

The first data on the use of collective granaries by the aboriginal population of Gran Canaria come from the analysis of historical texts from the 15th to the 17th centuries A.D., from the time of the process of contact between these and the first European settlers. These include the ethno-historical documents drafted by the first travellers and explorers to reach the archipelago, where mention is made of the indigenous people of Gran Canaria using collective granaries to store their crops. The first chroniclers said that "*they enclosed these products in the highest caves in the mountains so that they were better guarded and would last longer*" (Sedeño, in Morales Padrón, [1500/1525] 1993:373).

Consideration must be given to the fact that storing in collective granaries is a very characteristic practise of the historic inhabitants of North Africa that is closely associated with the Berber people (Capot-Rey, 1956; Ferchiou, 1979; Lefébure, 1985; Onrubia Pintado, 1986; Onrubia Pintado, 1995), although similar structures have been documented in other parts of the world (Sigaut, 1988).

The different storage spaces documented in Gran Canaria include those known as collective or common granaries. This is the generic term given to those that consist of a set of silos, sometimes in large numbers,



Figure 2.a.46. View of Roque Bentayga, troglodyte village and fortress. One of the reference centres of the cultural landscape and of the vision of the cosmos of the ancient Canarians © Javier Gil León

excavated in the rock, on cliffs and places of difficult access. Apart from the collective granaries, silos excavated inside of other structures, identified as dwellings, have also been documented.

Most of the pre-Hispanic granaries are generally comprised of a chamber excavated into a volcanic tuff, with a set of silos dug into the ground and walls, arranged in concentric circles or in parallel rows, and one on top of another. These granaries are often built by adding more chambers, where more silos are dug at parallel levels, which are usually inter-connected by steps or passageways. The most spectacular of all these constructions is the Valerón granary (also known as “Cenobio de Valerón” –Valerón’s Monastery), outside the designated area, where over two hundred silos have been counted excavated into the rock (Onrubia Pintado, 1995; Morales Mateos, 2002), but this is located in a district some distance away from the proposed cultural landscape.

Until recently, the best-known facet of these archaeological sites was their spatial organisation. This can be applied to their location and distribution on the island and also to the internal structure of some examples. But very little data was available about the time line and function of these spaces.

This situation has changed in recent years, as several research projects have been implemented by the University of Las Palmas de Gran Canaria, funded by the Spanish Ministry of Economy and Competitiveness (HAR2010-19328 y HAR2013-41934) with objectives that included studying the contents of these granaries. The results of the analysis of the El Álamo granary, in Acusa (one of the largest in the area of the Cultural Landscape), indicate that the silos still conserved remains of the food originally kept in these spaces and hence, they have enormous potential for producing important data on prehistoric storage practises.



Figure 2.a.47. Close up of a silo inside the El Álamo granary, from where seeds of pre-Hispanic barley have been obtained, showing that the current local variety is the same one that was introduced by the first Amazigh settlers.

© Jacob Morales

But the most surprising aspect is that these studies, along with others carried out in collaboration with the University of Linköping (Sweden), have also confirmed the extraordinary presence of archaeological DNA in seeds recovered from the granaries, including the Acusa site. DNA conserved in archaeological seeds is very rare, it has only been documented in a few sites in Sudan, Israel and China (Hagenblad *et al.*, 2017). The DNA obtained from pre-Hispanic barley has been compared with modern DNA from barley grown today in the Canary Islands and other parts of Africa and Europe; and the conclusion drawn is that the barley grown today in the area is the same as the barley that the aboriginal Canarians introduced. This case is unique, giving us genetic evidence that a plant has continued to be planted in the same territory for over one thousand years (Hagenblad *et al.*, 2017). These data confirm the enormous scientific potential of these granaries, constituting a genuine heritage treasure trove.

The cave dwelling

A cave dwelling could be natural, using existing hollows, or artificial, although whether it was one or the other,

it was always a built or manipulated space. In the group of artificial caves, which is the case in question, dwelling caves are usually globe-shaped, square or rectangular, and often built in the shape of a cross, representing a clear example of a standard building technique or pattern, by repeating or inspiring the kind of houses built outside.

The interior walls were sculpted with a straight-line layout. With few exceptions, the only ventilation and illumination gap was the entrance itself, which was always closed with heavy pine doors that swung on a hinge, also made of wood, set in hollows dug into the floor and ceiling of the cave.

The houses of the ancient Canarians were decorated inside, either in white covering the entire room or preferably, with a skirting painted with red ochre.

The cave has reached us today as evidence in the landscape. Its surprising survival in the mountains of Gran Canaria is due not only to reasons of identity and custom. In reality, caves continued to act as dwelling places because they offered better living conditions and protection against the weather in these places, compared with imported models. And this is still the case.

N.B.

The quotes from the chroniclers of the Conquest are translated and adapted from old Castilian Spanish into English.



Figure 2.a.48. Refuge Caves in Barranco de Viagroé ravine
© FEDAC



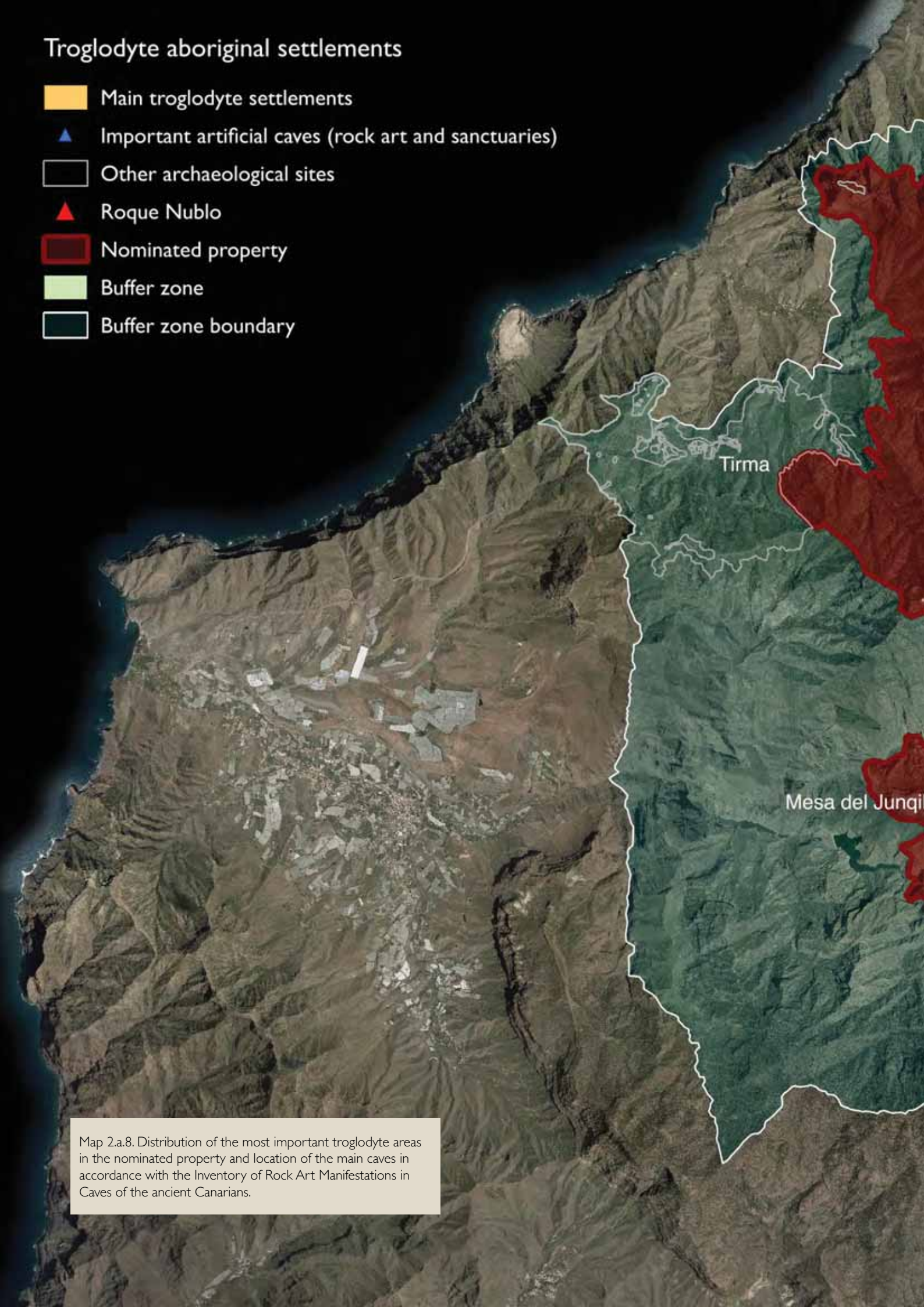
Figure 2.a.49. Photogrammetric survey of Cueva de La Paja, near Risco Caído on the slopes of Barranco Hondo, Cloud of spots and 3D view of the floor plan showing the layout of this complex of artificial caves that contains a large collection of pubic engravings.
© Carlos J. Gil Sarmiento



Figure 2.a.50. Solapón de Barranco Hondo de Abajo. Cave reused in historical times and currently in the process of excavation.
© Julio Cuenca

Troglodyte aboriginal settlements

- Main troglodyte settlements
- ▲ Important artificial caves (rock art and sanctuaries)
- Other archaeological sites
- ▲ Roque Nublo
- Nominated property
- Buffer zone
- Buffer zone boundary



Map 2.a.8. Distribution of the most important troglodyte areas in the nominated property and location of the main caves in accordance with the Inventory of Rock Art Manifestations in Caves of the ancient Canarians.



Description

The inventory of rock caves is quite exceptional, with hundreds of artificial, pre-Hispanic caves of this kind to be found, either scattered apart or clustered together in settlements throughout the nominated cultural landscape and the buffer zone, constituting what on occasions are highly complex settlements.

The most impressive attributes and components of the cultural landscape relating to troglodyte settlements and the rock art found in caves listed on the different inventories, include the following:

I. Barranco Hondo – Artevirgo area

Barranco Hondo ravine is one of the largest troglodyte settlements on the island of Gran Canaria. The marks of human settlement are clearly visible from the head of the ravine at La Montaña de Los Moriscos (1772 m) all along its entire course. Cave dwellings, water tanks, huts and artificial terraces for growing cereals, vegetables and some fruit trees comprise the predominant landscape. Almost uninhabited nowadays, but up until the mid-20th century, Barranco Hondo was one of the largest inhabited troglodyte settlements in the highlands of Gran Canaria.

Although Barranco Hondo is now a name that identifies only part of the original troglodyte settlement, Juncalillo and El Tablado, two other cave settlements located along the upper reaches of the ravine, must also have formed part of this large settlement in the past. Another



Figure 2.a.51. End of the basin of Barranco Hondo in the Los Pérez dam. The highly-populated and legendary settlement of Artevirgo was located here. © Cabildo de Gran Canaria



Figure 2.a.52 Troglodyte dwellings in Barranco Hondo de Abajo that are still in use to this day. © Cabildo de Gran Canaria

troglodyte village in the proximities of Barranco Hondo that must have formed part of the original settlement is Lugarejo. Apart from its troglodyte habitat, it also has an important pottery tradition that dates back to pre-Hispanic times (Cuenca Sanabria, 1981), although it is now all but entirely gone. All of this is probably the legendary Artevirgo, or Artevigua, described as Artenara in some chronicles.

The large number of artificial caves that have been dug on both banks of this great ravine over the centuries is really quite striking: La Gloria, El Tablao, Hoya Casa, El Andén, Hoya de Moreno, El Pedregal, Era de Las Toscas, El Majadal, La Montañeta, Las Lajillas, El Solapón (according to legend, the place where the first Canarian settlers lived), La Poza, La Hoyeta, Telde, El Pocillo, La Solaneta, La Caleta, Risco Grande, Cueva de Las Cenizas, Andén Gómez, Piedra Blanca, Baja Lobo, Roque del Pino, Risco Caído, La Solaneta, La Cueva de La Paja, Raja de Peraza, Lugarejos, Las Hoyas, are all names that refer to cave settlements found in the area.

There are several reasons for the development and extension of the troglodyte settlements since the pre-Hispanic era. Firstly, because Barranco Hondo is remote and fortress-like with steep sides and mighty slabs of volcanic tuff where it was relatively easy to dig out caves. However, the main reason is that this ravine was extremely rich in water resources and, consequently, it also had dense vegetation. In fact, this zone is on the edge of the rainforest of the north of Gran Canaria. Furthermore, its inhabitants had fertile soil available, along with the resources offered by the nearby Tamadaba pine forest.

The Barranco Hondo troglodyte ecosystem

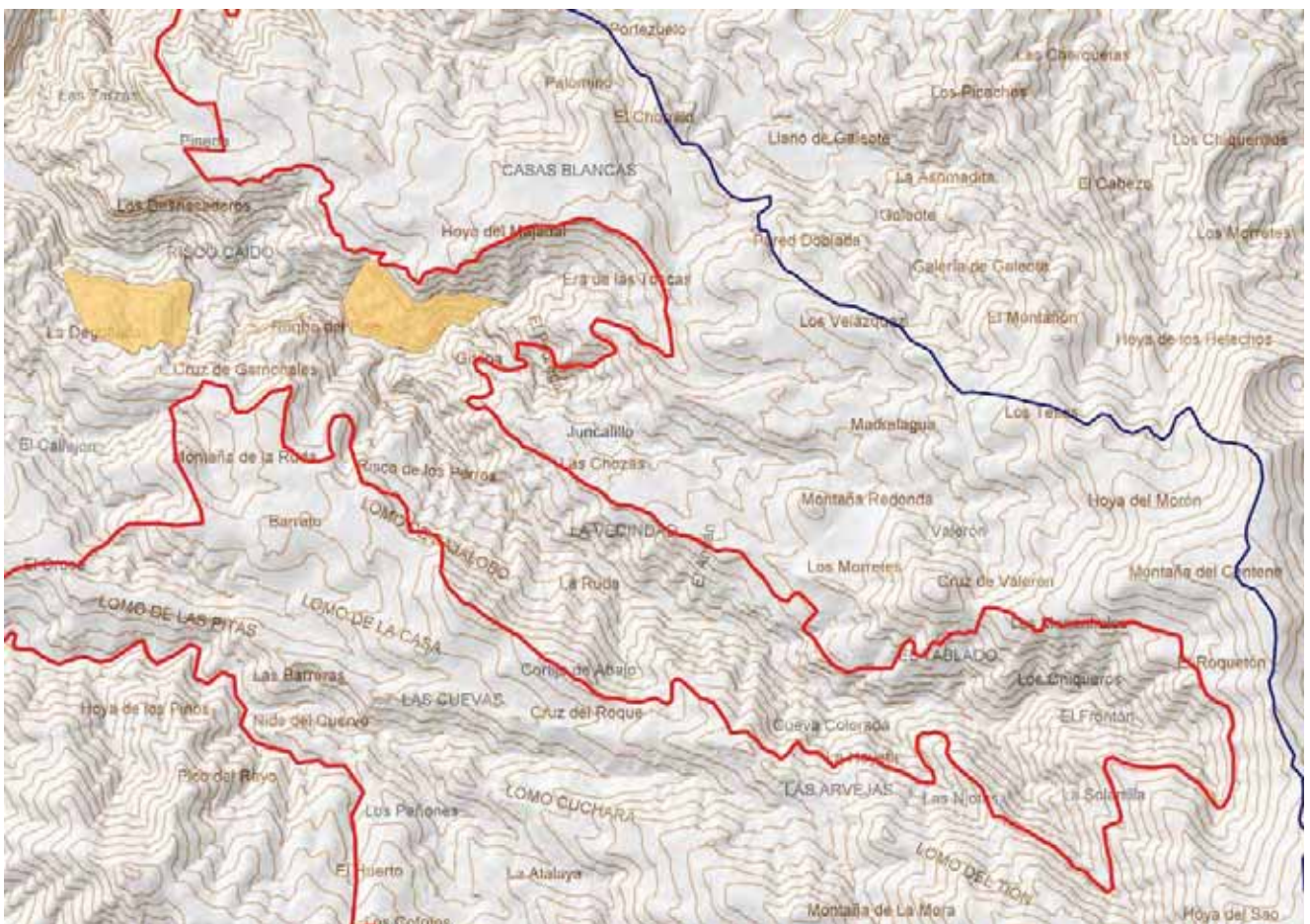
One of the most outstanding aspects of this area, articulated around Barranco Hondo, and included in the nominated property, can be seen through the uninterrupted survival and continuity of the troglodyte habitat and its associated culture over the centuries. Like an open book, here we can find old settlements and aboriginal sanctuaries and a whole sequence of manifestations of this habitat, where its entire evolutionary process can be seen in the new caves dug and in the ancient ones that have been re-used over and over again. As of itself, this is an outstanding troglodyte ecosystem that has continued its way of life almost unchanged since pre-Hispanic times.



Figure 2.a.53. Cave houses in Las Machas, Barranco Hondo.
© Cabildo de Gran Canaria

The overall setting for the farming and settlement area in this zone is all the lands that benefit from the waters running down Barranco Hondo and the slopes of the two hills, on the left and right, of the lower part that form plains for sowing dry-land crops.

From a functional standpoint, Barranco Hondo is structured into different environments. At the head of the ravine, porous land predominates in a myriad of rough, black tongues. All of the upper slopes of the Caballero, Culatón, Madrelagua and Fuentebruma Barrancos (Ra-



Map 2.a.9. Area of Barranco Hondo included in the nominated property. The troglodyte sites of Risco Caído and Barranco Hondo de Abajo - declared BIC (Property of Cultural Interest) under Canary Island legislation - are indicated.



Figure 2.a.54. Troglodyte site in the area of El Andén in Barranco Hondo, showing cave dwellings, some sheltered under overhangs, and the old farming terraces. © Ricardo Santana

vines), which drain into Barranco Hondo, are volcanic lapilli (“picón”, or coarse, volcanic sand). This is highly porous and ideal for absorbing the water vapour carried on the mist and fog that lends its name to many of the landmarks of this sacred mountain landscape. Many volcanic islands of the world (Madeira, Hawaii, Canaries, Sicily, Azores, Greek Islands, the Falklands and Cape Verde) use this porous rock in their farming structure. In the case of Barranco Hondo, traditional ethnographic knowledge of the terrain has enabled people to tap the natural absorption of water vapour carried in from the Atlantic on the Trade Winds.



Figure 2.a.55. Structure of terraces and overhang in the area of Barranco Hondo. © Ricardo Santana

The existence of countless springs in the area is an exceptional trait, as in many cases, they reveal highly particular techniques for tapping this water, consisting of digging into the earth at exact locations to raise life-giving water that is then distributed among everybody as a common good for generations. Place names like Fuentecaballero, Naciente del Culatón, La Vuelta del Agua, El Caidero, El Naciente de Valerón, El Charco de la Arena, Madrelagua and Fuentebroma indicate spots where water rises. Sharing the water among the community this way enables the water to flow freely, skilfully channelled along mining galleries, reservoirs, water courses, canals, tanks and cave ponds, waterfalls, dells, culverts, irrigation ditches and grooves down to the fields to irrigate the crops. The local community is an intrinsic part of these galleries and of the water distribution. Ever since anyone can remember, usufruct of the water for irrigation has been shared with water associations distributing “dulas” (unit of water), “asadas” (another unit of water), hours, and days of irrigation that have been passed on from one generation to the next. Everyone’s holdings were watered with this system of common ownership.

In the intermediate reaches of Barranco Hondo, we find settlements of dwellings in the shelter of “solapones” (overhangs from cliffs and crags with caverns and caves). Generally, these are concentrated on the northern slope – the sunny slope- of the ravine. It is a sunnier, drier and healthier place to live. These settlements are scattered from the upper reaches (near the heads of the ravine) all along the middle and lower reaches. Here we find congregations of caves in a row (from five to

twenty in number) under enormous, high-density basalt facades, known as “cuchillo”, “solapón”, “frente” or “cantil”. In general, these facades are horizontal, or with very little slope, a large edge and mechanically strong, highly impermeable, on top of another stratum of soft tuff that has been naturally eroded and finally, excavated to form the artificial caves that characterise this area. The local inhabitants have created their living and refuge spaces underneath these “solapones” or overhangs.

The cave-dwelling life style is seen basically in these dwellings, although this is really only part of the way life is organised here. This way of life means sleeping in caves and working on the farm lands (arable terraces contained by dry-stone walls), while water rises from the springs and runs over the ground through the crops. The artificial terraces of the sections close to the bed of the ravine are built on stone walls built of high-density basalt. One unique aspect of this system is the fact that there are many planting surfaces that are smaller than the surface area of the wall that sustains them, indicating the hard work that goes into this activity. These walls can be four or even six metres high, while many of the horizontal farming terraces are narrower than that. But these lands are watered, they get the sun and they are protected from the wind on the lower, damper, sunny-



Figure 2.a.56. Close up of a staircase carved into the volcanic tuff in the area of Barranco Hondo. © Ricardo Santana



Figure 2.a.57. Graphical representation of the troglodyte settlement of El Andén on the banks of Barranco Hondo, highlighting the elements that comprise this unique cultural landscape. © Ricardo Santana

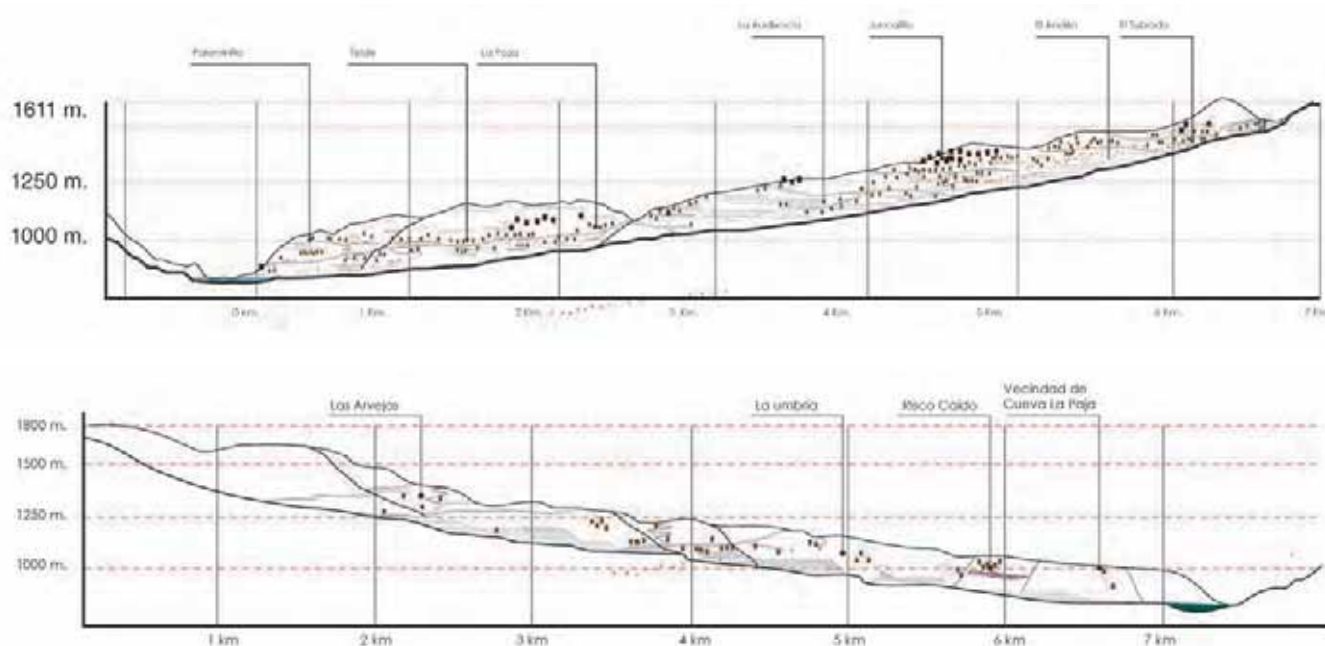


Figure 2.a.58. Longitudinal cross sections along the course of Barranco Hondo showing the distribution and density of cave dwellings and troglodyte sites. The top image shows the cross section of the sunny side, the lower one the shady side of the ravine.

© Ricardo Santana



Figure 2.a.59. Partial view of the troglodyte settlement of La Vecindad in Barranco Hondo. © Ricardo Santana

slopes of the ravine. The irrigation waters do not reach other places, further up the slopes of the ravine or on the nearby hillsides. In this case, the rolling highlands are for cereal crops (rye, barley, wheat) and for vegetables (chickling peas, lentils, white lupins, peas) and pastures for animals. This latter area completes the structure of this specific cultural landscape that is located in the buffer zone.

The lower part of the ravine has the common or shared-use area. Here, apart from the large cereal plains and grazing (neither of which require irrigation), is where the people work in a more communal manner. This trait of common work is another characteristic that has been maintained to the present day, when the “cogidas de papas” (potato harvest) comes around, everybody pitches in at crucial moments of the job. The lower slopes, with better climate conditions, is also where other important social tasks are performed. On the higher edges of the lower slopes, where the wind can reach (tides), is where the threshing grounds are, where the wheat is separated from the chaff, another communal job. The “gofio” (toasted cereal flour) mills, the washboards and drinking troughs were in the bed of the ravine. And it was around these specific spots that exchanges were made, consumer products were stored and where areas were set aside for communal seated work (stripping the outer leaves off the cobs of corn, shucking the corn off the cob, knitting). This is an area for other social ac-

tivities too, such as digging out and protecting the most remarkable caves, meetings and relations between the different families, commercial transactions or bartering of utensils and goods, prayers, superstitions or beliefs, observing the stars, the clouds and the wind, the damp and the lights.

It is here in this mythical place of Artevirgo that the important rock art stations and sanctuaries of Risco Caído and Cuevas de La Paja are located, constituting outstanding attributes that provide unique evidence of the aboriginal troglodyte settlements and their culture. Together with the troglodyte settlement of Barranco Hondo de Abajo, these enclaves are included in the area of the nominated cultural landscape because of their outstanding values, they are representative of the area and they currently have the maximum level of cultural protection as a Property of Cultural Interest (BIC).

Barranco Hondo de Abajo

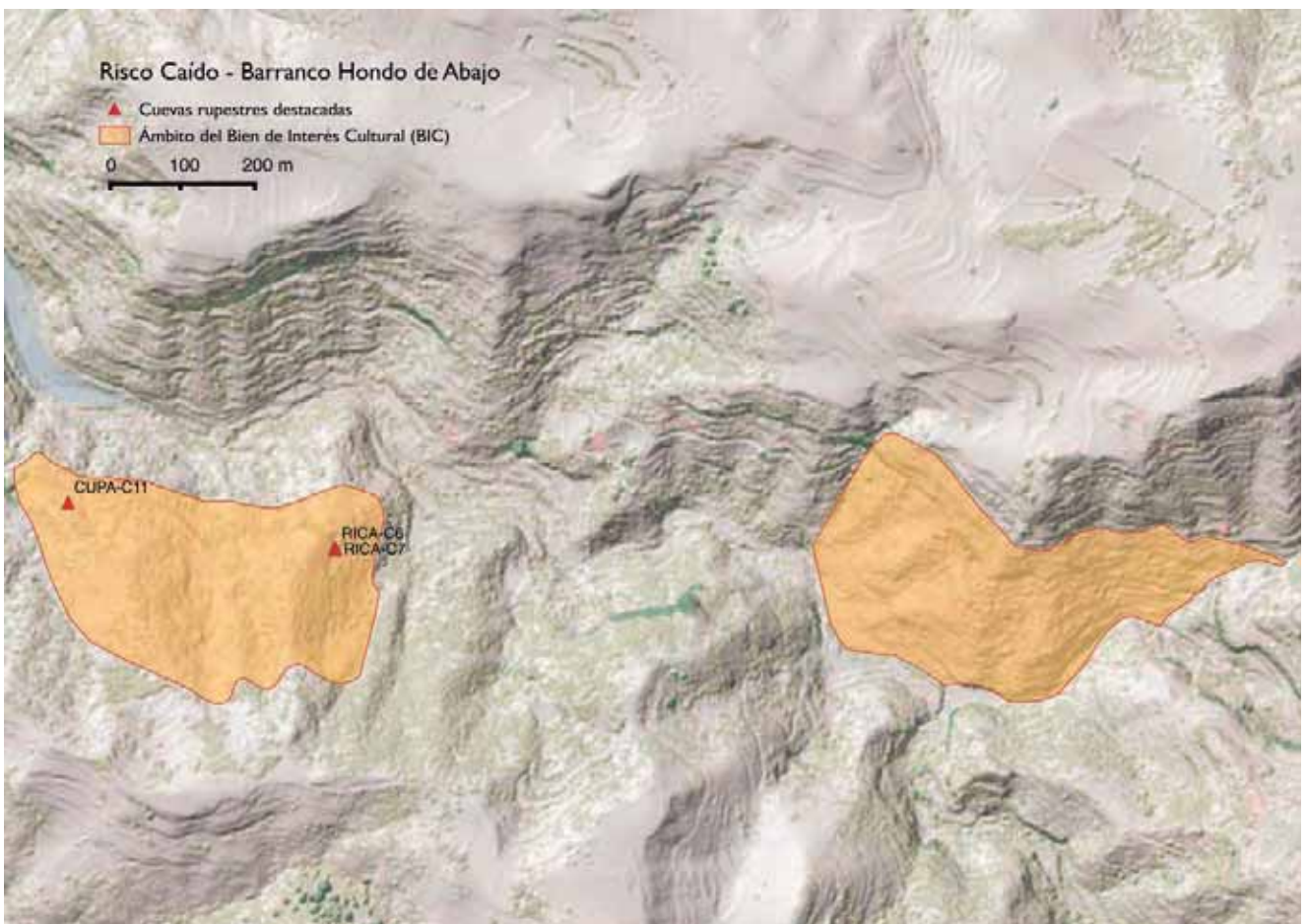
The Barranco Hondo de Abajo troglodyte settlement



Figure 2.a.60. Landscape of agricultural terraces and caves in the areas of Barranco Hondo and Risco Caído.

© Cabildo de Gran Canaria

occupies the sunny slopes of this steep valley that drains into Los Pérez reservoir. As indicated in the declaration of Cultural Interest as an historical complex, what makes it unique is that it is an inhabited village of artificial cave dwellings with floors and walls made of stone and mud, without mortar of any kind, blending in with the rock face they form part of.



Map 2.a.10. Areas protected as cultural heritage sites (BIC) within the Risco Caído archaeological ensemble (left) and the troglodyte settlement at Barranco Hondo de Abajo (right). The locations of the rock art caves considered of most interest from an archaeological perspective, are marked. Source: Cabildo de Gran Canaria.

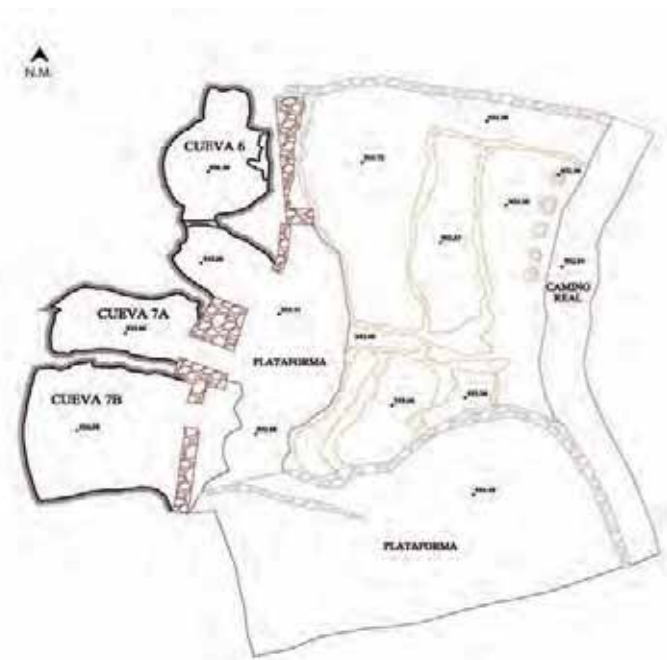


Figure 2.a.61. General floor plan of Risco Caído sanctuary (almogaren). © Carlos Gil Sarmiento, PROPAC.

The complex remains almost in its original state, as a kind of habitat that has been inherited from the pre-Hispanic world and therefore, highly significant in helping us to understand how different societies evolved in this same area over time.

Thus, Barranco Hondo de Abajo acts as a real-life laboratory of how the aboriginal people evolved and adapt-

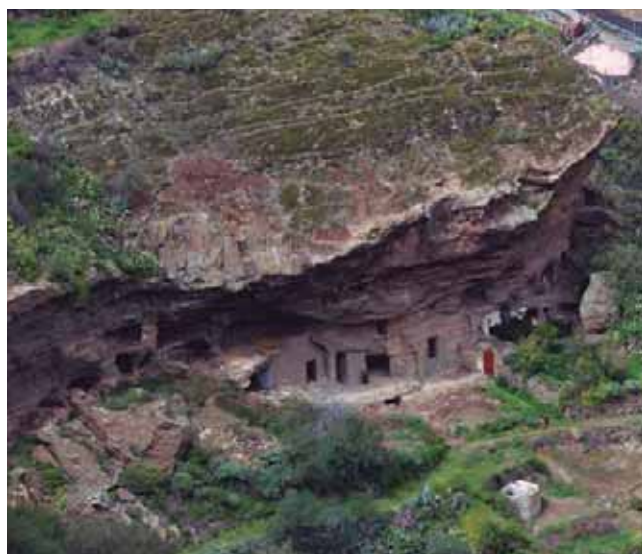


Figure 2.a.62. General view of the Risco Caído archaeological complex © Cabildo de Gran Canaria

ed over time. From an urbanistic standpoint, the troglodyte village offers an extensive catalogue of imaginative solutions. No two caves are the same, no two staircases, no two paths or dwellings are the same. Each one is unique and irreplaceable, although the habitat model follows similar patterns.

Risco Caído Troglodyte Settlement and Almogaren

On the left bank of the lower reaches of Barranco Hondo, some 100 metres above the riverbed, is the ancient troglodyte settlement of Risco Caído, in an environment rich in paleontological remains.

The settlement comprises a total of 21 caves dug out of the volcanic tuff at the top of a steep cliff that protrudes over the left-hand banks of Barranco Hondo, between the gullies of Parral and Los Linderos. This ancient village has been abandoned since the mid-20th century.

Not all the caves at Risco Caído were dwellings; some were used for storing feed and livestock. But the set of three artificial caves with their entrances aligned to face the rising sun at the northern end of the village are particularly striking. These caves were used as hay barns, at least in the final stages of occupation of the settlement, and what is remarkable is that they are the largest caves there. In other words, the ones requiring the greatest effort to excavate and, moreover, they are the only ones that have remained totally unaltered from their original state.

There are two caves that really stand out from the rest for their astronomical, ceremonial and symbolic significance: caves C6 and C7, situated to the north of the settlement. They are probably the oldest and they served as one of the most important mountain sanctuaries of the ancient Canarians. The caves have been profusely decorated with engravings of pubic triangles and cupmarks. The engravings were made with deep incisions marking the outline of the figure and then the stone inside the outline was chipped out to leave a bas-relief motif.

Cave C6, known as Risco Caído *Almogaren* or Sanctuary, is a hollowed-out area with a circular floor plan. Furthermore, the parabola-shape of the dome, the uniform measurements and proportions, the way the materials were worked, all show a formal originality and the gen-

esis of a building style that is highly unusual in a culture with such limited technological resources.

The building aspect is extremely important, as no other cases of aboriginal island architecture have been reported regarding artificial caves with such complex and perfectly vaulted roofs. With the exception of the troglodyte settlement of Tara (Telde), outside the area in question, there are no other known cases of artificial caves with vaulted roofs of this scale and complexity (Cuenca Sanabria, 2008).

But, apart from the very special architecture, the most significant aspect is that this cave has a deliberately excavated optical device or light tunnel that projects the light from the sun or the full moon onto one of the walls of the main chamber, which is exactly where the rock art is in the form of cup-marks and pubic triangles engraved in bas-relief. This is a unique manifestation that shows an extraordinary visual language for these cultures; a hierophany consisting of a dynamic projection of the sunlight that penetrates this opening that has been specifically designed for the purpose, creating a surprising sequence of images projected over some of the engravings. The light show tells a story of symbolic and astronomical sig-



Figure 2.a.63. Interior of cave C7 of the Risco Caído sanctuary. © Julio Cuenca

nificance in a language of moving images that has been told over and over again since time immemorial. In fact, cave C6 is a solstice and equinox marker of extremely complex and unique design.

The sanctuary site is completed by an annex chamber (Cave C7) that has been hollowed out next to it, which has a complex system of engraved cup-marks covering practically the entire floor.

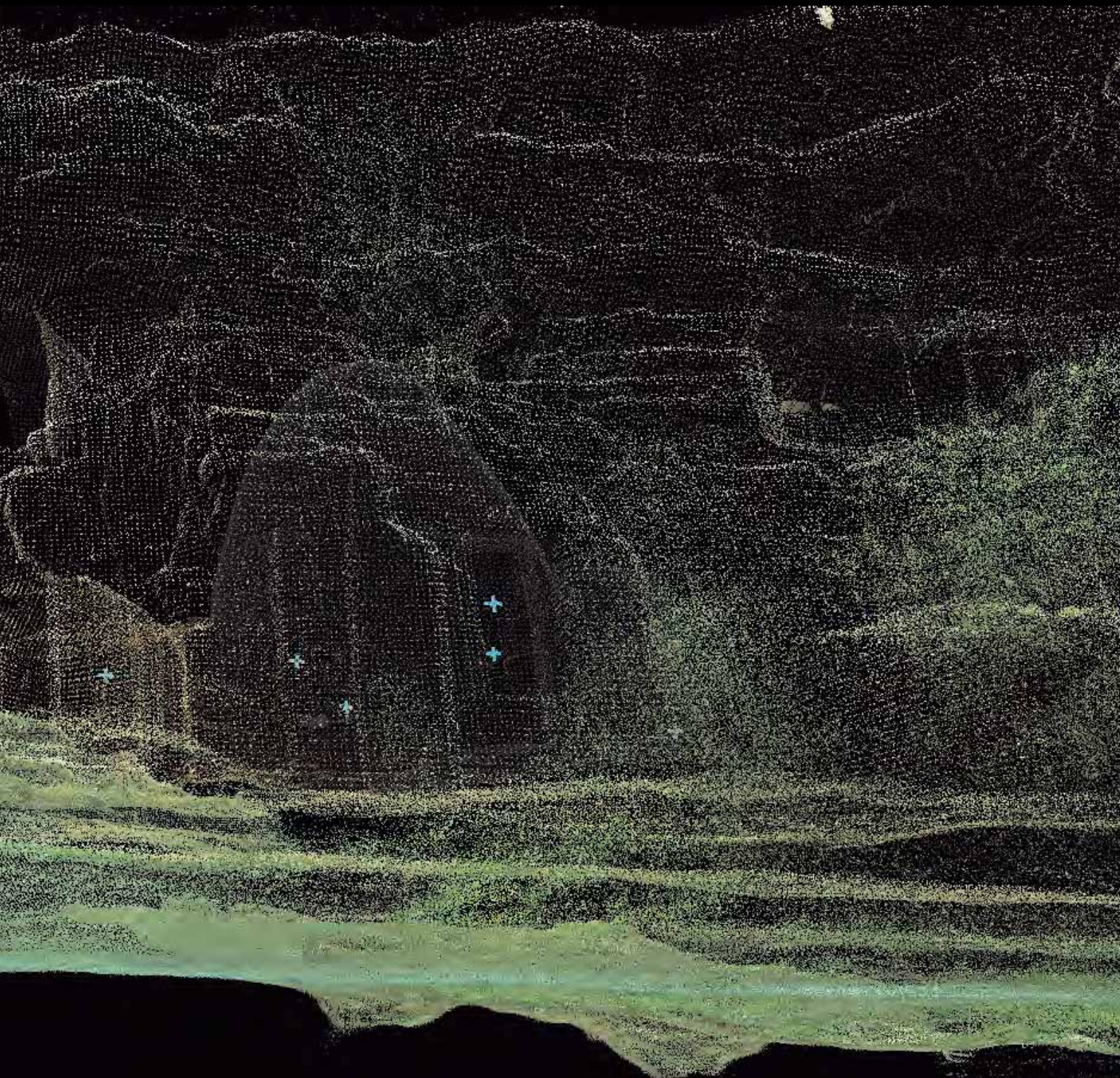
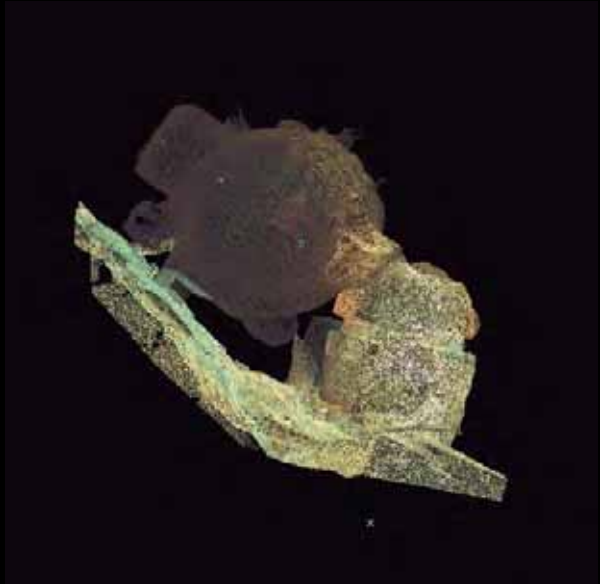
Another remarkable feature of this cave is that, like the



Figure 2.a.64. View of the dome of Risco Caído sanctuary (Ref. RICA-C6), where light is projected onto the interior wall covered by carvings © Cabildo de Gran Canaria

Figure 2.a.65. Cloud of dots created by the laser scan survey of the Risco Caído complex
© Cabildo de Gran Canaria







cave sanctuary of Los Candiles, the three inside walls show bas-relief engravings of public triangles and vulvas and numerous associated niches or small cup-marks of different diameters. A total of 70 public triangle engravings have been documented, all of which reinforces the sacred nature of the site and its function as a site for performing rituals.

The exceptional nature of Risco Caído almogaren or sanctuary, together with its ritual and astronomical relations, design and structural characteristics are described in detail in section 2.b.vii on the cultural astronomy-related attributes.

Cueva de La Paja

Cueva de La Paja lends its name to a group of 13 artificial caves that were dug out of the top of a mighty slab of Roque Nublo volcanic breccia, on the cliff face of the left-hand wall of Barranco Hondo, close to where it intersects with Barranco de Las Hoyas. This settlement is located between Barranquillo de Los Linderos and El Paso de Los Pérez.

Canals and ditches have been excavated into the tuff outcrops along the path leading to the caves, to harness the rainwater that flowed along these channels to the unique tank or pond caves. A few dozen metres lower down, on the edge of the escarpment, there is another set of quite interesting canals and drinking troughs.

← Figure 2.a.66. Overview of the troglodyte Archaeological Complex of Sierra del Bentayga © Javier Gil León



Figure 2.a.67. Interior view of La Cueva de la Paja (Ref. CUPA-11). © Julio Cuenca

Most of the caves at La Paja have been used as sheds and barns. One cave, the one known specifically as La Paja cave (no. 11 on the inventory), seems to have been the only one that was later used as a dwelling, and this is the one that has a series of 12 engravings of public triangles on one of its inside walls. The floor plan is complex, comprising several adjoining and interconnected chambers.

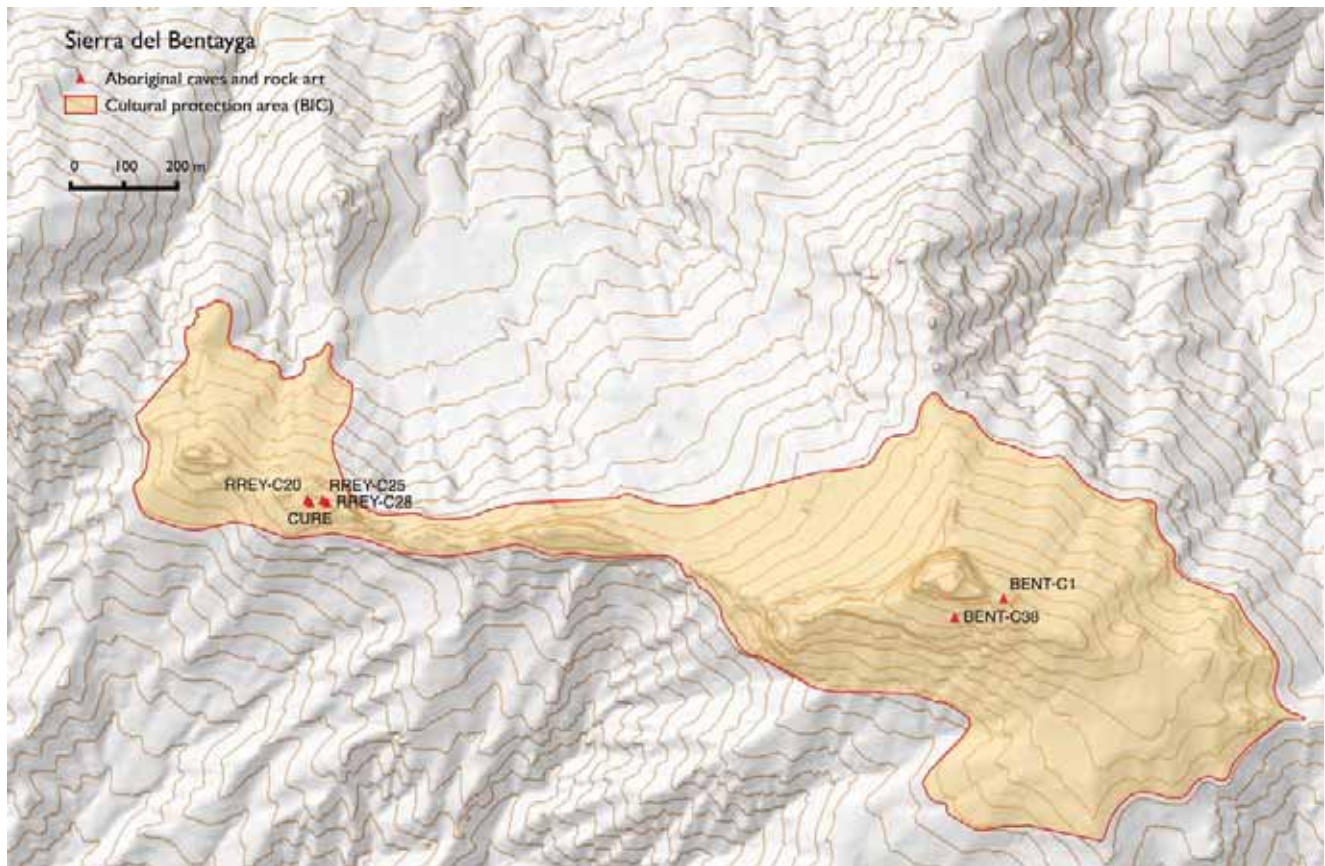
2. Sierra del Bentayga Archaeological Complex

The Sierra del Bentayga archaeological complex basically includes the Roque de Cuevas del Rey and Roque Bentayga sites. The former is remarkable in that it houses an outstanding, dense troglodyte complex that acted as a collective granary, and it is also the site of one of the most significant examples of Canarian cave sanctuaries, Cueva del Rey, decorated with peculiar pictorial motifs. The latter is the true epicentre of the symbology and cosmology of the ancient Canarians.

Roque Bentayga was also used as an impenetrable fortress until its final siege and capture by the Spanish troops at the end of the 15th century. The chroniclers of the Conquest themselves, when describing the battles that took place in Caldera de Tejeda, where the Canarian people took refuge at the height of the war of conquest, describe with fear and admiration what they considered at the time the most important "fortress" of the Canary Islanders: "*They arrived at Montaña Bentayga, which is of a very red ochre earth and on top it has an admirable product of nature, which is a crag of extremely high ridges and slopes around it with a very dangerous climb to the top; at the foot there are many caves and homesteads used as tombs for human bones ...*" (Sedeño, 1978).

Roque Bentayga

Roque Bentayga is an extraordinarily rich archaeological site in which, alongside the village itself, there are walls, burial grounds, caves with rock art, alphabetical inscriptions and the almogaren or sanctuary of Bentayga. It represents one of the most outstanding examples of the fortified villages built by the ancient Canarians. It is no coincidence that the main strongholds of the native Canarians were situated in this sacred territory. El Bentayga, situated in the epicentre of the Caldera, together with Mesa de Acusa and El Junquillo, are the best examples. The imposing rock mass is an impressive sight that



Map 2.a.11. Area protected as a Cultural heritage site (BIC) in Sierra del Bentayga archaeological ensemble. The locations of the rock art caves considered of most interest from an archaeological perspective are indicated together with the corresponding rock art cave inventory code. Source: PROPAC, Cabildo de Gran Canaria.

is clearly visible from any point of the crater:

There were over one hundred caves at Bentayga, cave dwellings, mostly natural caves, although almost all of them show some signs of excavation, and there are examples of wholly artificial caves. However, the most



Figure 2.a.68. Entry to the cave sanctuary that forms part of the Roque Bentayga *almogaren* (Ref. BENT-C1). © PROPAC

outstanding features of the archaeological complex of La Sierra – and of Roque Bentayga too – are the large fortified collective granaries. These granaries were hollowed out and built in the most inaccessible parts of the rock tors. Another striking feature is the presence of dense necropolises in caves that drew the attention of the first chroniclers because of the amount of bones of “nobles” that they contained.

Another noteworthy feature is the presence of the *almogaren* or sanctuary of Bentayga, an important place with astronomical connections that symbolised and connected the troglodyte elements to be found throughout the Tejeda Basin. The design and positioning of the *almogaren* reveals a surprising natural alignment with Roque Nublo and indicates its astronomical use as an equinox marker. As such, it is outstanding archaeological evidence of the tales told by the chroniclers of the Conquest about the peculiar aboriginal calendar. The exceptional nature of Risco Caído *almogaren* or sanctuary, along with its ritualistic and astronomical use, design and structural characteristics are described in detail in section 2.b.vii on the cultural astronomy-related components and attributes.



Figure 2.a.69. Bentayga algomaren, central element of the Roque Bentayga as astronomical marker and ritual space.
© Julio Cuenca

On the south face of Roque Bentayga are caves with pubic triangle and cup-mark engravings. Furthermore, also on this face and to the west, there are Libyan-Berber alphabetical inscriptions, the writing used by the ancient Canarians.

Roque de las Cuevas del Rey

As with Roque Bentayga, this is an example of the emblematic fortresses of the ancient Canarians. Unlike Roque Bentayga, all the caves at Roque de Cuevas del Rey are completely artificial. The most impressive one of the whole complex is undoubtedly the cave dug into the north face - the steepest and most inaccessible face. The caves are laid out on five levels or ledges that are connected by narrow paths and steps carved out of the rock.

The perfection and the work involved in digging out these caves is surprising. They have perfectly finished walls, roofs and floors, with cruciform, rectangular or quadrangular floor plans and side rooms. The entrance apertures show signs of closing mechanisms where timber doors were slotted in place and hung on hinges. Many of these chambers are decorated with pictorial motifs, and especially popular was the use red and white colours, obtained from mineral pigments.

This dense troglodyte complex was closely related to the control and management of the numerous silos that were excavated at the site. It houses an enormous collective granary that is concentrated basically on levels III

and IV of the north face. The granaries contain numerous silos excavated in the floor and walls, some offering a large capacity. Remains of the tools used by the Canarians have been found outside the silos: fragments of circular stone mills, tools made out of stone and bone or pine wood chips. The granary situated on level IV is the most striking because of its size. This, in turn, is laid out on 4 levels or ledges, where 16 caves were dug out.

In addition to the granaries, another remarkable cave is the one known as Cueva del Rey or Cueva del Guayre, as mentioned by Grau Bassas at the end of the 19th Century. (Bassas, 1980). The floor of the main chamber shows a complex system of different sized cup-marks - but all roughly circular in shape - arranged around a large central cup-mark. The bottom third of the three walls of the main chamber were painted. The signs of circles in alignment are conserved here. These were painted with pigments and formed part of a pictorial composition that included red circles, also described by Grau Bassas. Such a profusion of cup-marks, pictorial



Figure 2.a.70. View of the collective granaries located on the northern face of Roque de Cuevas del Rey. © Julio Cuenca



Figure 2.a.71. Cueva del Guayre cave, with its impressive vault, is one of the most important sanctuaries of this sacred space. The two excavated silos are visible as are the traces of red ochre on the baseboards (Ref. CURE). © PROPAC

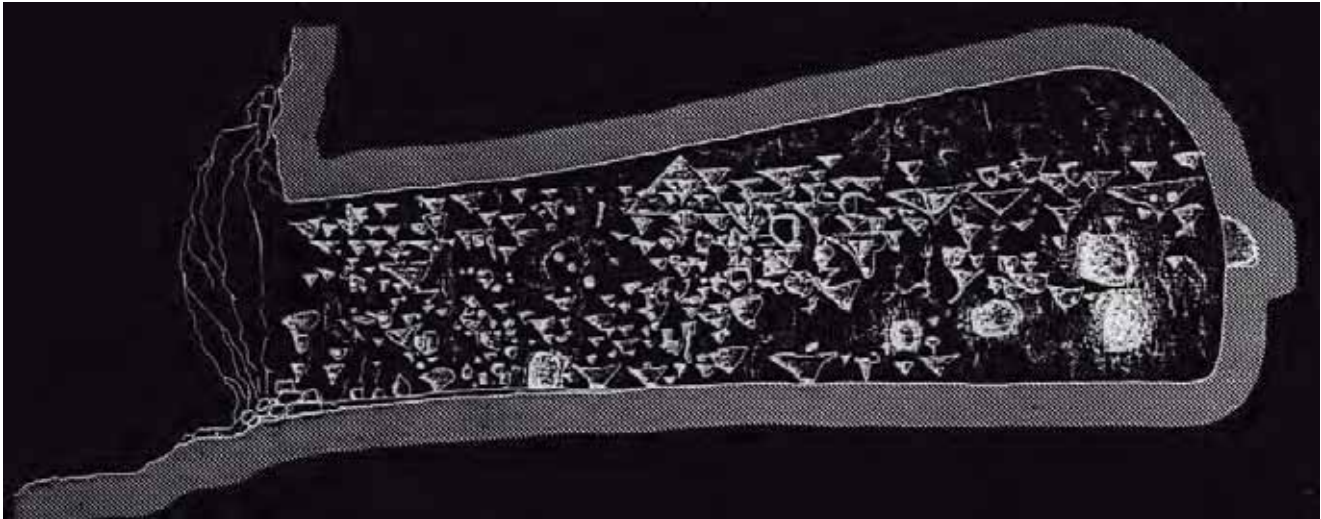


Figure 2.a.72. Los Candiles sanctuary houses the largest collection of pubic triangle impressions on the island and possibly in the world. In the image, representation of the engravings on the left wall of the sanctuary (Ref. CCAN). © PROPAC

motifs and the existence of two large silos excavated in the east wall of the great cave, suggest a ritualistic and ceremonial use of this space, making it one of the most significant examples of the cave-sanctuaries of the ancient Canarians.

3. Risco Chapín Sanctuary

The spectacular cliffs that rise up at the foot of Artenara mountain in the municipal district of Tejeda, was the site chosen for excavating an exceptional group of highly symbolic and ceremonial caves that are clearly in alignment with Roque Bentayga.

The set includes Cueva de los Candiles, the group of seven caves jointly referred to as Cueva Caballero and Cueva del Cagarrurtal. The largest set of engravings of



Figure 2.a.73. View of the interior of Cueva Candiles almogaren © Tarek Ode

pubic triangles known is to be found in this small space, along with a vast profusion of cup-marks and bas-reliefs. This troglodyte complex as a whole shows a pronounced ritualistic and ceremonial nature, arranged as one of the main mountain sanctuaries of the ancient Canarians.

Cueva Candiles

The name comes from the refences that used to be made to lights or lamps inside the cave. It is an artificial cave with a rectangular floor plan. Most of the interior walls are covered with engraved figures of pubic triangles. There are 345 engravings of this kind, decorating the walls like a tapestry. This is one of the largest collections of this ideogram of any archaeological site in the world. Apart from these mountain areas, there are very few sites on the island where this kind of pubic engraving – related to fertility and fecundity – has been recorded. 230 of the engravings are on the west wall, the wall with the highest concentration of rock art by far. Practically the entire wall has been engraved, from floor to ceiling. The east wall contains 80 engravings of this kind, and the north – or back wall of the cave – has 10 engravings with three associated niches in line that were excavated half-way up (Cuenca and Rivero, 1994).

Apart from the pubic triangles, there are other, associated engravings in the form of numerous niches of different sizes.

The members of the CAMC (Canary Island Museum Archaeology Committee) received interesting informa-

tion from a local man of the village of Artenara in the mid-1970s, when they first started to draw up an archaeological map of the island. The person in question, whose name was Juan Vega Rodríguez, told them that his grandfather was the one who discovered the cave and when he entered it for the first time: *“he found the cave with no wall in the entrance, and inside, he saw well-conserved skeletons, large, rough, short-handled wooden spoons...”* (CAMC, 1976).

Cueva Caballero Troglodyte Complex

The troglodyte complex of “Cuevas del Caballero” or “Cueva Caballero”, comprises a total of seven artificially excavated caves. The caves face south towards the interior of Caldera de Tejeda. The first three have irregular floor plans, but this is not the case of the others, particularly C4, C5 and C6, where the interior has been finished so well that the roofs, walls and floors are smooth straight lines with hardly any protrusions. All of the caves have cup-marks or domes chiselled into their

floors. Caves C1, C2, C3 and C4 also have engravings on the walls, including the striking pubic triangles. In addition to these engravings, there are others such as the cruciform ones in cave C1, or the dot-shaped ones in



Figure 2.a.74. Cave C2 of Cueva Caballero archaeological ensemble has the largest quantity of rock art manifestations: niches, pubic triangle carvings and cup-marks. (Ref. CABA-C2) © PROPAC



Map 2.a.12. Protected area of Cultural interest (BIC) of the Risco Chapín sanctuary. The locations of the more interesting rock art caves from an archaeological perspective are marked. Source: PROPAC, Cabildo de Gran Canaria.



Figure 2.a.75. Exterior and entrance of Cueva del Cagarrutal cave (Ref. CCAG) © PROPAC

C2. There are also dome shapes of various sizes on the inside walls of all the caves on the inventory.

Cave C1 has striking connotations. It also known as Cueva de Las Machas, because legend has it that this cave was inhabited by women who practised witchcraft, although the name is more probably due to a distorted tale that said that the women who lived here spent their time in worship, which reaffirms the character of this area as one of the main mountain sanctuaries of the ancient Canarians.

Cave C2 contains the most complex manifestations of rock art of the entire Cueva Caballero troglodyte settlement. It also has the largest number of engraved motifs. The main panel opposite the doorway has a composition of motifs made up of roughly-circular domes of different sizes and pubic triangles. Caves C5 and C6 are the most elaborately-worked caves in the complex, with walls, roof and floor sculpted to make smooth, level surfaces.



Figure 2.a.76. Granary of the Artenara Mountain. © Patrinet

Cueva del Cagarrutal

Cueva del Cagarrutal is located at the base of a large escarpment situated under Cueva Caballero. This is an artificial cave with a roughly-square floor plan and sculpted and levelled walls, floor and roof. The cave has been excavated in a layer of very compact reddish tuff. It has a small, shallow alcove with a rectangular doorway on the south wall, very close to the entrance, as a silo. The presence of circular locking orifices carved into the base and floor at the entrance lead us to believe that it was closed from the outside. There is a kind of niche with a rectangular frame on the north wall of the cave. This is about 30cm deep and has no locking orifices.

The pubic carvings found in this cave are also noteworthy. The highest concentration of rock art is found on the north wall of this cave, where there are at least 8 representations of pubic triangles of different sizes and 10 associated circular domes of different diameters. On the floor, there are different shallow, circular cup-marks.

Granary of the Artenara Mountain

On the east face of Artenara Mountain, in the proximities of the Risco Chapín sanctuary, there is a large aboriginal granary. This is a fortified granary and the only access is from the bottom, climbing up narrow ledges and steep steps. Basically, the granary is laid out on two levels. There are 8 natural caves on the first level, with silos excavated into the walls and floors. The only way onto the upper level, now inaccessible, was via steps leading up a vertical tunnel.



Figure 2.a.77. Sea of clouds in the surroundings of Risco Chapín © Cabildo de Gran Canaria



Figure 2.a.78. Mesa de Acusa (Acusa plateau) which, in itself constitutes an impressive geological monument, was one of the largest and most spectacular troglodyte settlement of the ancient Canarians © Julio Cuenca

4. Mesa de Acusa

Mesa de Acusa (Acusa plateau), an impressive geological monument in itself, is home to one of the largest and most spectacular troglodyte enclaves of the pre-Hispanic inhabitants of the island. This impressive settlement is on the escarpments of the large fertile flat plain that is the edge of the plateau.

Viewed from any direction, Acusa looks like a natural fortress and that is precisely what drew the aboriginal Canarians to choose it as a safe place to establish their villages. Furthermore, the large fertile plain that makes up the platform of the Mesa offered an area for farming in a place that enjoyed a “coastal climate” as the locals still call it today (Cuanca Sanabria). Other areas of Acusa were and still are rich pasturelands for livestock, particularly the ledges of the plateau itself and nearby lands, such as Gomastén and Barranco Grande. They also had the resources of the nearby Tamadaba pine forest to supply timber and other forest resources.

Villages were excavated in strategic places, preferably

at the base of cliffs. Collective granaries occupied the most inaccessible part of the cliff, and some were absolutely impenetrable, like the one at El Álamo, which is the most heavily fortified of all the ones still conserved in Gran Canaria. Cave dwellings were also fitted with silos inside sometimes.

Doorways to the caves were closed off with stone walls with jambs fitted to them for wooden doors. Although now worn away by time, cave dwellings were often decorated with paint made from red ochre and a white pigment, also of mineral origin, that they used to daub on the walls, and even the ceiling. Usually, it was applied to make skirting boards and the jambs of inner chambers. Cueva de Las Estrellas (Cave of the Stars) is the only example of a cave decorated with white spots on a smoke-black background that looks like a starlit night sky.

Caves have also been found that were used as burial places. These caves tended to be situated in places further away from the villages, on high ledges in remote areas or close to granaries. Mummified remains of



Figure 2.a.79. Partial view of the Acusa Seca settlement. Some of the caves are still in use. © Cabildo de Gran Canaria



Figure 2.a.80. Cueva de las Estrellas (Cave of the Stars) in La Candelaria archaeological ensemble, is a sacred space that is decorated with motifs that appear to represent the celestial vault (Ref. CAND-C9). © Julio Cuenca



Figure 2.a.81. View of the interior of cave C4 in La Candelaria archaeological ensemble. The baseboards are adorned with red ochre pigment (Ref. CAND-C4). © Julio Cuenca

adult men and women have been found in Acusa. Their entrails had not been removed and they were found wrapped in goat skin and reed mats.

Acusa Verde, Acusa Seca, Los Corrales, El Álamo, La Candelaria, El Hornillo, Fortamaga and El Vedado del Tablón, are the current names of the different troglodyte settlements known today in Acusa. Many of these are no longer inhabited, but it should be noted that up until the 18th Century, Acusa had more inhabitants than the village of Artenara itself, which was the main town of the municipality. Indeed, Acusa, with its “coastal” climate, its water resources and fertile plains on the extensive flatlands of the plateau, was always one of the main “granaries” of this part of the island. Acusa Seca, El Hornillo and Acusa Verde are the enclaves that still maintain a stable population today.

Most of the troglodyte sites of Mesa de Acusa are located on the east, south-south-east and south-west cliffs of the Mesa. The main archaeological complexes are as follows:

Candelaria- Cruz de La Esquina archaeological complex

The village comprises some 22 artificial caves laid out on four levels. The cave dwellings are found at the base of the escarpment. Above these, there are other caves, most of which are granaries. La Candelaria granary is worthy of special mention. The cave designated C9 in the Inventory of Caves with Rock Art (Propac, 2009) is known as Cueva de La Estrellas (Cave of the Stars). The presence of this cave decorated with white dots on a black background, in combination with other elements like cup-marks and hidden barley seeds, and the context - a granary - forces us to consider this cave, and therefore the whole granary, a ritual space associated with agrarian worship.

Cuevas de Corrales de Acusa

The archaeological complex encompasses a series of 13 caves and stone walls, located under a large natural overhang. Cave C4 is the best preserved of all the Corrales de Acusa caves in terms of decoration, despite the significant deterioration it has suffered. The pigments used for the paintings were red and white.

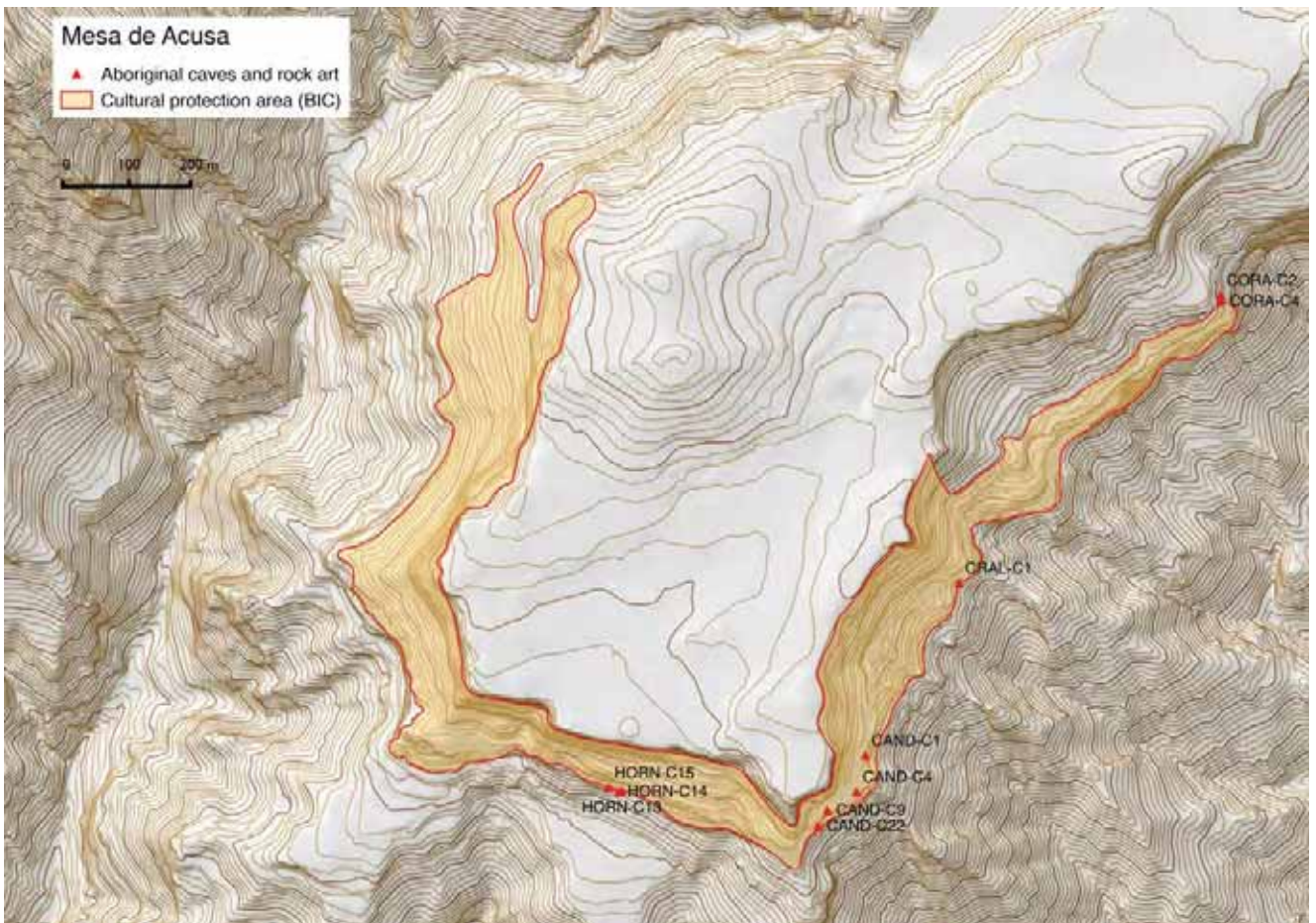
Cruz del Álamo

The troglodyte village of El Álamo (Acusa Seca) is comprised of 14 artificial caves associated with 9 stone and mud structures that form an enclosure of thick, high walls. Some 200 metres north of the village is the Granero del Álamo, or El Alamo Granary, perhaps the best fortified “Agadir” of Gran Canaria. This granary was carved into the summit of a spur or outcrop that forms the vertical escarpment of the east face of Mesa de Acusa.

All the El Álamo caves face east, into the interior of the Caldera de Tejeda. It is also important to note that most of them have their entrances aligned with and facing Roque Bentayga and Roque Nublo, which can be seen from all of the caves, looking out through the entrance from inside the chamber



Figure 2.a.82. Group of caves in Corrales de Acusa archaeological ensemble (Ref. CORA-C2). © PROPAC



Map 2.a.13. Cultural protection area (BIC) within the group of troglodyte archaeological ensembles distributed across the slopes of Mesa de Acusa. The most relevant rock art caves included in the inventory are indicated.

Source: PROPAC and Cabildo de Gran Canaria.



Figure 2.a.83. View of the spectacular El Álamo granary, suspended from the cliffs of Mesa de Acusa. © Javier Gil León



Figure 2.a.84. Fragment of laurel leaf (*Laurus novocanariensis*) found in the granary of El Álamo, Acusa. This is an exceptional find as it is one of the few archaeological proofs in the world of the use of plant insecticides in ancient times. © Jacob Morales

El Álamo granary

The granary is located on the south wall of the Acusa plateau, relatively close to an extensive complex of caves that were used for purposes that include dwellings and burial places. The granary is built on two levels: a first level that can be entered via an entrance in the rock, with marks of having been fitted with a door; and a second level that can only be accessed after passing the first level and after a difficult climb up the wall of the plateau. This second level comprises a chamber with 12 silos distributed around it. The difficulty of access to this second level has meant that part of the original contents of the silos has been conserved, providing unique

information on the economic strategies associated with food production in aboriginal times. Furthermore, this is the first collective granary on the island of Gran Canaria that has been systematically analysed (Morales *et al.*, 2014).

The results of the studies conducted on the silos have documented the presence of over 10,000 remains of vegetable food items. These include evidence of cereals (barley and wheat), legumes (beans, lentils and peas) and fruit (figs and dates from the Canary Island palm tree). The proportion of the species found in the silos is very similar to the proportions found in the dwellings, with barley as the main cereal identified. The data confirm barley as the most important cereal in the diet of the pre-Hispanic inhabitants of Gran Canaria (Morales *et al.*, 2014).

The recovery of a large number of sheaves and chaff from inside the silos indicates that the grain was stored on the sheaf. The likely objective of this peculiar storage method, in which the grain is conserved inside the sheaves and the pods, is to protect the seeds from disease, insects and animals. In the case of figs, they were dried before storing, which was confirmed by the appearance of a complete dried fig in one of the silos. Dates were probably stored still on the branch, as fragments of the rachis (date stalks) have been found.

Fragments of laurel leaf (*Laurus novocanariensis*) were found in several of the silos that were studied in depth. The laurel is a tree that is endemic to the Canary Islands that grew basically in the extensive laurel forests that carpeted the northern part of the area. The leaves and berries provide essential oils that act as insecticides and anti-fungus, and they have been traditionally used as insecticide and to eliminate domestic pests (Rodilla *et al.*, 2008). This is an exceptional find as it is one of the few archaeological proofs in the world of the use of plant insecticides in prehistoric times.

El Hornillo

The settlement is built on four levels. The first level, the most accessible, is comprised of 29 caves, 18 of which are dwellings and the remaining 11 were used as sheds and stables. Also on this first level, adjoining the caves, there are other structures built from dry stone and stone and clay, with roofs made of pine poles, cane, and water-proofed with wattle and daub. These rooms, generally square in shape, have a door and a small window.



Figure 2.a.85. View of Roque Bentayga from Altavista mountain. A clear view of the fertile Acusa plateau with its slopes bordered with a series of exceptional prehispanic troglodyte settlements © Javier Gil

They were generally used as kitchens. There is also evidence of small-sized ovens and a single chamber, used for baking bread.

In the roof of cave C14, there is a panel comprised of geometric motifs, a complex pictorial composition that is unprecedented in the archaeological context of the island. The ancient Canarians used mainly white to make these paintings, with the odd touch of dark brown, on a black background that was the result of deliberately smoke-blackening the ceiling.

El Hornillo is now all but abandoned, with just a few caves used by farmers in the area. However, up to the 1960s, El Hornillo and Acusa Seca comprised one of the most populated settlements of La Mesa de Acusa.

As was already noted in the case of El Álamo, a fundamental feature of this area is the fact that the entire troglodyte complex of the eastern slopes of La Mesa, from Los Corrales to El Hornillo, is where you will find

the largest number of artificial caves of Mesa de Acusa facing the interior of Caldera de Tejeda, specifically Roque Nublo and Bentayga. These emblematic landmarks act this way as reference points of the symbolic view of their inhabitants. In this context, it is worth bearing in mind that the landscape of the zone has scarcely



Figure 2.a.86. View of the troglodyte settlement of El Hornillo (Acusa). © Julio Cuenca



Figure 2.a.87. View of the cave known as Cueva de las Brujas (witches cave) in the troglodyte settlement of Mesa del Junquillo. © Julio Cuenca

changed in the last two thousand years, and what we can see now from these caves is practically the same as its aboriginal inhabitants saw at the time.

5. Other troglodyte settlements

Risco Chirimique

Overlooking Montaña del Aserrador at 1549 metres above sea level, El Chirimique is a remarkable example of an aboriginal pastoral settlement. Mid and high altitude archaeological sites have revealed evidence of major human activity from at least the 17th century, practically up to the present day, with some of these overhangs being used by herdsmen in historical times. This is an enclave that is representative of the former transhumance that was practised up until modern times to exploit the highland pastures.



Map 2.a.13. Area of the troglodyte settlement El Chirimique
Source: Archeological Map of Tejeda

Mesa del Junquillo

Mesa del Junquillo plateau is flanked by high walls, lying between the Siberio and Parralillo reservoirs, with different groups of artificial dwelling caves, storage spaces and burial caves located along its terraces.

Special mention must be made of a group of four caves on the north face, laid out along a light-coloured ledge that have always been known locally as Las Cuevas de las Brujas, or caves of the witches. Remnants of red and white artwork can be seen in the side chambers and on the door of one of these.

Montaña del Humo

There is another important site in the vicinity of Bentayga, located between the ravines of Toscón and El Juncal, that bears witness to the significant pre-Hispanic occupation of this district in virtually inaccessible places. Montaña del Humo is a settlement consisting of natural and excavated caves with a granary in the uppermost section.

The main troglodyte settlement is located on the S-SE face of the mountain, laid out on three ledges or levels. Access to this fortified village is along an old cobbled track that starts out from the foot of the mountain.

Andén de Tasarte

Another important group of cave dwellings is located in this area. In reference to Andén de Tasarte, Grau Basas remarks that "it is formed of a triangular plateau flanked by cliffs on all sides and a ridge that is separated from

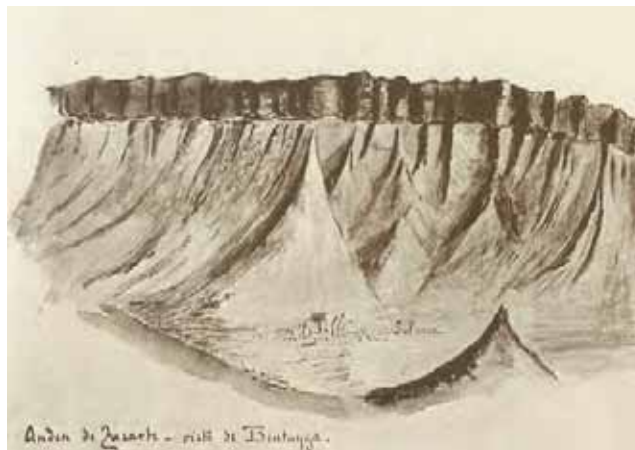


Figure 2.a.88. Reproduction of the drawing produced by Grau Bassas made at the end of the 19th Century which reproduces the Andén de Tasarte. Source: Museo Canario.



Figure 2.a.89. View of Mesa del Junquillo. This troglodyte settlement known locally as Cuevas de las Brujas hangs off the upper slopes, on almost vertical walls. © Javier Gil León

it by a depression running alongside the mountaintop. The base of the plateau faces east and forms the valley named Juncal, with its imposing Andén de Tasarte cliff to the north which offers impressive views to the south of fanciful waterfalls and the interesting monolith known as Roque de Palmés which, if not the highest, is at least the boldest and most elegant of all those on the island.” (Bassas, 1980).

Solana del Pinillo

The troglodyte settlement of Solana del Pinillo is located on the right-hand bank of the Cañada de la Burra ravine, a tributary of the Taguy ravine. This is a fortified village of some fifty caves, built on an almost vertical wall near the summit. The caves are partially natural and were formed in layers of volcanic lava between hard basalt layers and other Roque Nublo-type volcanic breccia materials. In these latter layers, the caves are almost all artificial; in the others, the aboriginal Canarians merely

enlarged existing natural hollows and adapted the interior space to their needs.

There are dwelling and, above all, granary caves. Some ten dwelling caves have been documented. The one at the eastern end of the settlement has been excavated to a large extent, to create a sizeable area. It has two silos inside and the walls conserve remnants of red ochre artwork on a lime mortar. Several burial caves are located on the other side of this small ravine, facing the settlement at the base of Risco Tablón cliffs.

Visvique

This is a spectacular archaeological complex comprised of numerous artificial dwelling caves and granaries excavated into the volcanic tuff, laid out on several levels. Like all the aboriginal place names, and as it is a dead language, there are different ways of spelling it: some say



Figure 2.a.90. View of Montaña del Humo slope on which the caves are located. © Julio Cuenca

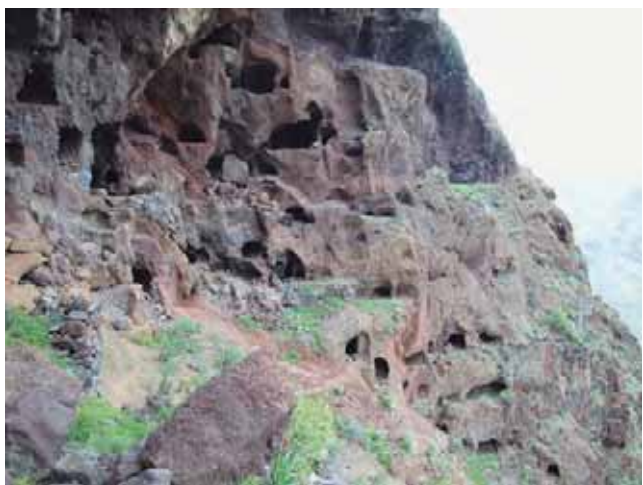


Figure 2.a.91. Troglodyte settlement of artificial caves at Visvique en route to the high-mountain area. © Julio Cuenca



Figure 2.a.92. Location of the fortified troglodyte village of Taguy in La Solana del Pinillo, Caldera de Tejada. © Julio Cuenca

that it is Berbique, which is how it appears on current maps, others write it as Birbique or Bizbique.

The complex is made up of some thirty-odd caves that comprise the village situated in the district of El Valle de Agaete (Agaete Valley), on the road up from San Pedro to Tamadaba. It is set at a site that gives it visual control over all the surrounding territory. This, along with the difficult access to the area, offers defensive advantages. This is a traditional strategic communication spot between the flat lands of the north of the island and the mountainous highlands.

In general, these caves have a rectangular or square floor plan. Some of them have niches or silos and numerous holes in the floor. They conserve vestiges of white paint decoration forming skirting boards and jambs. There are also indications of a burial ground in the vicinity of the village. This is also one of the special places where Libyan-Berber alphabetic inscriptions have been recorded.

El Hornillo (Agaete)

Situated on the road from Fagajesto to Barranco Hondo, hanging over the Agaete Valley from the crag, this is a remarkable settlement where vestiges of the past can still be found, as it has one of the best-conserved settlements of inhabited hanging caves and terraces.

The site is made up of both natural and artificial caves, laid out on several levels or ledges, one above the other, some of them inaccessible, which are the ones that have been least altered by the continued re-use of this space as a village. El Hornillo was also an important landmark on this route into the interior that runs along the ravine of Barranco de Agaete up to the mountain tops.

Another striking feature of this village are the stepped terraces for farming and the survival of small pools dug out of the rock.

N.B.

The quotes from the chroniclers of the Conquest are translated and adapted from old Castilian Spanish into English.

Traditional cave settlements

SURVIVAL, CONTINUITY AND ADAPTATION

The traditional cave houses of this Cultural Landscape and its buffer zone, together with the villages they form that have evolved from pre-Hispanic settlements, still play a vital role in the social organisation of the region and indeed, this form of intervention lends value to the land that marks the history and human geography of the area.

The most impressive attributes and components of the In the traditional space, the architecture of hollowing out rock created shapes and uses that enriched and revived the existing models of land use, passing down and improving upon knowledge and techniques inherited from aboriginal engineering practises, to the traditional period, by building ponds in caves, galleries to tap or channel water; hay barns, sheds, animal pens, churches or refuges inside the earth, all done by specialist cave-diggers known as *piqueros*. Once a trade in great demand, it is now all but lost, along with the know-how garnered from professional practise. (González Navarro, 2008). Here, there are evolved aboriginal settlements, such as the those of Mesa de Acusa and Barranco Hondo, alongside new cave settlements built here since the 18th century.

It is important to note that, while living in a cave became associated with poverty and living on the margins of



Figure 2.a.94. Cave dwelling in the middle of the last century. La Cilla, Artenara. Source; Ayuntamiento de Artenara



Figure 2.a.93. Barranco Hondo de Abajo is an evolved prehispanic troglodyte settlement occupied to this day. © Cabildo de Gran Canaria

society in modern times, this was a phenomenon that did not occur in this particular area. The cost of a cave in the housing market has been modest ever since the 17th century, as the price of a cave of similar or larger dimensions than a detached house was about one third of the detached house, except in the area of the Caldera de Tejeda, with a deep-rooted tradition of living in caves (Quintana Andrés, 2008). Over the last three hundred years, the economic and social value of the cave has remained more or less steady in these parts, which has served to further strengthen its identity. It is common nowadays for cave dwellings to be reused and revalued as second homes for those that have moved to other parts of the island. They have also become a popular accommodation choice for rural tourism.

The cultural dimension of the caves represents just one aspect of their inherent value. From the point of view of cultural ecology, cave dwellings represent a fine example of adapting to the terrain, and the tradition goes back to the pre-Hispanic villages that they are founded on. Local traditional villages are a cultural continuity of these living spaces that, in some cases, have been in use for two thousand years, from the time they were occupied by the ancient Canarians right up to modern times. There are no houses on the Canary Islands that have been occupied for as long as caves, which have been refurbished and improved over time to suit their different uses.



Figure 2.a.95. Typical interior floor plan of the traditional cave dwelling, Barranco Hondo. © Julio Cuenca

Not all the traditional caves in the area were occupied at the same time. With changing trends over the centuries, the same unit may have seen several different uses: sometimes caves were used as dwellings and other times they were used for housing livestock or for storage. Changing trends over the centuries (in terms of use) together with improved tools (pickaxes and jackhammers) and materials, together with changes to living space criteria and tastes, have led to many alterations, particularly in caves that have continued to be used past the 1950s. Traditional indigenous features are best preserved in caves that were abandoned early on, or that are located in isolated areas that are difficult to access by car.

The style of the interior of these cave dwellings has not changed much since the time they were inhabited by the aboriginal Canarians. Generally speaking, a square-shaped central floor area is dug out and one, two or three small rectangular chambers are excavated into



one of the walls as bedrooms. The central space is used as an “entrance hall” or room where the most prized possessions are stored: the cabinet, the strongbox, a table and some stools and chairs. Niches carved out of the walls were the only shelves for placing objects. The floor of the cave is always sculpted and levelled, and may have been covered with palm-leaf mats. The floor could also be made of slabs of local stone. Washed cement was used from the early 20th century, using ropes to make decorative patterns.

Based on the kind and population of the settlement, first of all, we find the large settlements, characterised by a high concentration of cave dwellings on the sides of hills of ravines, making up settlements of over 100 housing units. Good examples of these include the town centre of Artenara, the aforementioned Acusa site (Acusa Sea, Fortamaga, El Hornillo, La Candelaria and Acusa Verde), which includes re-used caves, and the Barranco Hondo corridor (de Abajo and de Arriba) and El Tablao. El Tablao is one of the largest troglodyte centres on the island, divided into various sections along the ravine. These are dense, ribbon-like developments with some dwellings scattered irregularly around the edges (Cuenca Sanabria, 2008).

In terms of common services, the urban structure of these centres was the same as that of settlements of ordinary houses. The caves in the Acusa settlement, for example, include chapels, a shoemaker’s, a dancing cave, a still and even a prison. Settlements like Artenara also had all their services in caves, as bemused traveller Olivia Stone described in her visit at the end of the 19th Century (Stone, 1887). In the larger settlements like Acusa or the town centre of Artenara, the tuff has been carved to form steps, or cobbled sections laid to make it easier to tackle steeper slopes.

A second group of larger settlements includes between 25 and 50 units. Although there are several different layouts, usually the dwellings are clustered together in no particular pattern, such as in Lugarejo, Las Hoyas and Las Cuevas in Artenara. The latter are located in the buffer zone.

A third group consists of small settlements not exceeding twenty inhabitants. These are also laid out in an irregular pattern or in rows and suffered the greatest population loss over the last few decades, such as El Tescón, El Roque and Ronda (Tejeda) in the cultural landscape area, or El Hornillo (Agaete), in the buffer zone.

Finally, there is another type of settlement, further away from the steep mountain slopes. Hewn from the volcanic tuff and uniform clays of the lower slopes that are easy to excavate, this type of settlement is different from those normally found in this region. These villages tend to be more dispersed, as it is no longer necessary to take shelter under the bedrock. Examples of settlements of this kind in the area include Las Arbejas, Las Cuevas, Las Hoyas, La Breñas in Artenara, or El Tablao and Juncalillo in Gáldar (Santana Rodríguez, Pérez Luzardo, Pérez-Luzardo Díaz, 2008).

The traditional artificial cave was not limited to use as a dwelling. Other specific types of cave found in the area have been used for pottery making and as pond caves and ovens. These aspects are discussed further in the sections on water, ethnographic heritage and trades (Section 2.a.viii).

Other unique manifestations bear witness to a syncretism of the indigenous sanctuaries with the catholic temples of the new world order after the conquest. The two most impressive and outstanding expressions of this are the cave chapels of Our Lady of the Cave, "Virgen de la Cueva" (Artenara) and Our Lady of Fátima, "Virgen de Fátima" (Barranco Hondo de Abajo).

The sanctuary of Our Lady of the Cave dates back to the 17th Century. Like the sanctuaries of the aboriginal settlers, all the elements of worship in this sizeable cave are carved out of the rock. Miguel de Unamuno described it perfectly at the beginning of the last century: *"We arrived at the village of Artenara, a village of caves that hang from the cliff over the abyss. This is where the chapel of Our Lady of the Cave is; a chapel hewn out of the rock itself to form an altar, pulpit and confessionals. All hewn from a single rock"* (Unamuno, 1911). It houses a figure of the Virgin Mary that has been associated with the island since the 16th Century, in the wake of Majorcan and Catalan expeditions accompanied by evangelising Franciscan monks carrying out Papal Bulls to convert the Canary Islanders to Christianity. In contrast, the rock-hewn chapel of Our Lady of Fatima was built

Evidence of cave dwellings after the Conquest

El mundo aborígen prehispanico sobrevivió a la coloniThe pre-Hispanic aboriginal world survived Spanish conquest, not only because the culture itself adapted to the new system of relations, but also because of the

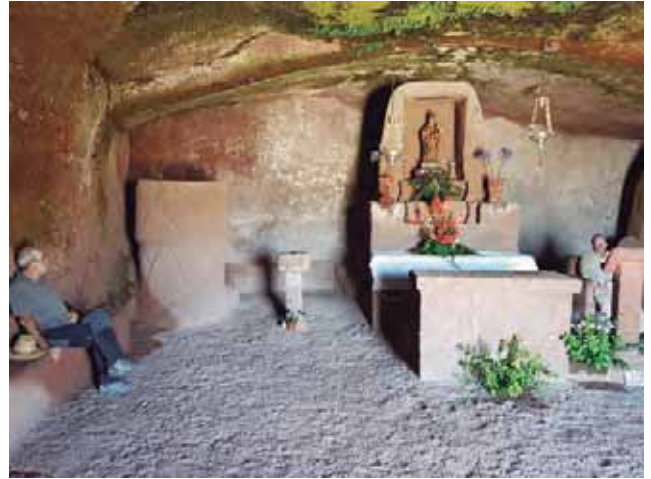


Figure 2.a.96. Virgen de la Cueva (Our Lady of the Cave) sanctuary in Artenara. All the elements of worship are carved from stone. An example of the syncretism between the indigenous sanctuaries and the temples of the conquistadores. © Javier Gil León



Figure 2.a.97. The Ermita de Fátima chapel at Barranco Hondo de Abajo dates back to the middle of the last century. © Cabildo de Gran Canaria



Figure 2.a.98. Caves reused and adapted for the new wine cellars of Tejeda. © Javier Gil León

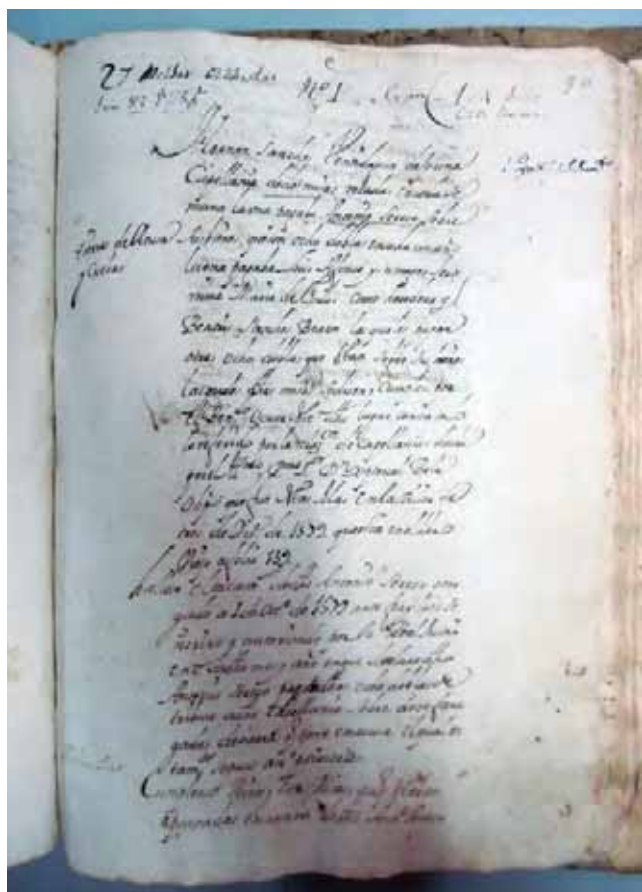


Figure 2.a.99. Hernán Sánchez Ventidagua's Manda pía (compulsory bequest to holy places) Agaete parish archives. Libro de últimas memorias y misas (Book of last memories and masses). © Pedro Quintana

physical survival of the very structures that embodied the culture, which notably include the type of home these people lived in. The native peoples of the Canary Islands did not suddenly disappear from island history as is frequently argued. What is more likely is that the record of the continued existence of the aborigines from the 15th Century onwards was lost against the backdrop of the major transformations taking place and the new world order that was being introduced into the region.

The annals make abundant reference to the continued

existence of the native world up to the first third of the 16th Century, although their presence slowly diminishes until it finally disappears completely in subsequent decades. The indigenous people were not annihilated. Instead, the culture adapted and was absorbed - to a greater or lesser extent depending on the particular group and area

At the end of the 16th Century, documentary sources indicate that the populated areas of Artenara, Acusa and Barranco Hondo, all of which fall within the nominated property, survived as a paradigm of the island's cave dwelling culture. Even outside the zone, this tradition was kept alive: at the end of the sixteen-hundreds, almost half of the inhabitants of Gáldar lived in caves that were once the dwelling places of the ancient aborigines or excavated after the time of the conquest (Quintana, 2016).

Up until the first third of the 17th Century, many of the cave dwellings were linked in some way to the indigenous tradition or were used as temporary dwellings when agricultural work had to be done on lands far away from populated areas. However, from this time onwards, as life on the island began to change, cave dwellings began to proliferate due to the increasing numbers of low-income small farmers and farm labourers coming into the district. In this context, the cave also became a link between pre-Hispanic traditions and the cave dwelling models of the mainland found in certain areas of the Iberian Peninsula (Sacromonte, Córdoba, Guadix, Valencia).

What is surprising is that vestiges of the indigenous culture survived through the 16th and 17th centuries, meaning that certain groups could trace their ancestry to the ancient pre-Hispanic "nobility" of the Canary Islands as a symbol of distinction. This way, the descendants of the indigenous nobility could display an aura that allowed them to stand out among the new populace

Population and housing in the area 1802-1850

	Inhabitants 1802	Inhabitants 1845-50	Households 1845-50	Number of inhabited caves 1845-50
Agaete	1.399	2.058	373	40
Artenara	4.162	1.074	502	500
Tejeda	1.805	1.966	440	

Sources: Madoz, P: Geographical-statistical-historical dictionary of Spain and its overseas possessions 1845-1850, Salamanca, 1986. Escolar y Serrano F.: Statistics on the Canary Islands. 1793-1806, Las Palmas, 1984. Created by: Pedro Quintana (2016).

with its obvious baroque mentality of ostentation and grandeur. This fact was recorded and shown in the village of Gáldar in the mid-17th Century. This was “*the seat and residence of the Guadartermes or Kings of that island; it is a place where many of the rooms are underground, in natural and artificial caves; there are many houses hewn from older ones, but with the passing of time they have fallen into decline, and although the owners can build them, as the caves are the houses of those natural ancient nobles, it is considered a matter of pride that they be preserved*” (López de Ulloa, 1646).

A high percentage of the caves occupied in the period between 1500-1850 were refurbished and extended with new rooms hollowed out, while others were dug out afresh where the terrain and volcanic tuff was suitable. The low value of these hollowed out houses— if they had an owner at all—; the speed with which they could be carved out of the tuff; the minimal use and cost of tools; the possibility of extending them continually; easy maintenance; or the optimum conditions of thermal stability and humidity throughout the year were fundamental factors in attracting a considerable group of day labourers, herdsman or smallholders to use them (Quintana, 2016).

In the period between 1700 and 1750, the documentary sources studied, although complex and few and far between, have led to the discovery of a good number of inhabited caves at that time, notably the following settlements: Acusa (pop.: 65), Artenara (78), Las Cuevas (8) and Barranco Hondo (51) (Quintana, 1995). A hundred years on, the most accurate inventories and statistics continued to show the prevalence of cave dwelling in the area, which is clearly evident in the case of the data supplied for Artenara (See Table).

Throughout the period analysed, between 1500 and 1850 (Quintana, 2016), natural caves, although in demand, and subsequently adapted to the needs of their owners, are less frequent in the sources consulted than those built by their occupants or by official specialist cave builders (“caubuqueros/picadores”). With the exception of families with meagre resources or with large dwelling caves, most of the owners had a group of cave dwellings situated around a shared patio or an interconnecting path, with each compartment dedicated to a specific function. Some were used as granaries – outstanding examples of caves with walls and floors lined with timber to store grain are documented in Artenara—; main dwelling; kitchen; and some used as hay

barns, dove cotes, cheese drying sheds, chicken coops or animal pens.

Caves were also used by medium and large landowners as stores, cellars, pens or temporary housing for their employees in growing and grazing areas. Amongst the ordinary people, caves were the cornerstone of their estate, with the number of cave dwellers increasing from the end of the 18th century, as a substantial part of the rural population got poorer and poorer.

However, documentary sources contained not only references to the presence of cave dwellings but also to the historical and emblematic descendants of the indigenous people that owned them in the 15th Century. Within the realm of the Cultural Landscape and its surrounding areas, mention must be made of Fernando Guanarteme, who owned the sizeable property of Data de Guayedra, or Hernán Sánchez Ventidagua, mayor of

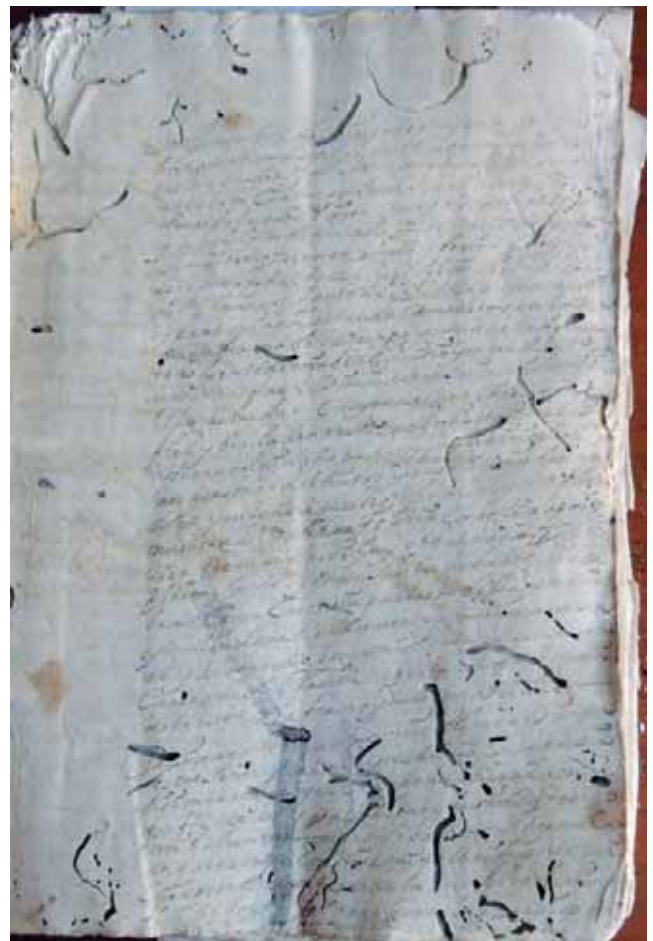


Figure 2.a.100. First folio of the last will and testament of María Téllez, resident of Artenara who died in 1718. Historical Provincial Archive of Las Palmas. Section: Notarial records. Docket: 1584. © Pedro Quintana



Figure 2.a.101. An example of the constant adaptation of the indigenous people that has continued up to the present day. Barranco Hondo de Abajo. © Cabildo de Gran Canaria

Agaete, owner of the Tirma estate, and of landmarks of great symbolic-religious significance such as El Bentayga (Fructuoso, 1964).

The properties of some of these illustrious indigenous islanders included certain *almogarenes* or temples of the ancients, and it is surprising to see how, up until

well into the 18th Century, a very specific method was employed in passing down these sanctuaries from one generation to the next. This is the documented case of Francisco López, who owned the Tirma estate at the beginning of the 18th Century. López was a descendant of the aforementioned Hernán Sánchez Ventidagua, who had sold him several caves and *almogarenes*. On his death, he bequeathed one of his sanctuaries (*almogaren*), situated above his cave dwelling, to his brother, Alonso Hernández, on the condition that it could not be transferred, destroyed or sold. On the death of the beneficiary, ownership would fall to María Téllez, the niece of both. In order to take possession of this property, Alonso had to seek a guarantor, the only way to take possession of it whilst ensuring that the testator's wishes would be met. The *almogaren*, in turn came with four "fanegadas" (unit of measurement) of dry land so that the rent generated could be used to pay for masses to be held in Agaete church, all for 2,000 Maravedis. (A.H.P.L.P., 1684).

These references bear witness to the legacy left by the aboriginal world through their caves and *almogarenes* over the centuries, a legacy that to this day constitutes the very essence of the cultural landscape.



Figure 2.a.102. Indigenous cave reused in the past and restored by Cabildo de Gran Canaria. Acusa © Javier Gil León

2.a.vi

Sanctuaries, symbols and rock art in the sacred mountains

Like many other Mediterranean cultures, Imazighen societies (Berbers) of the Maghreb attributed powers to certain mountains. And of course, the Imazighen peoples in the Canary Islands did the same. Idolising the mountains may have been due to some outstanding topographical feature, but it was probably the fact that they rose up towards the heavens that made them the best place to reach out to what was considered the home of the gods to ask for their help and protection. The existence of mountain sanctuaries in Gran Canaria, and the rituals associated with them, is well documented thanks to archaeology and the chronicles written during European colonial expansion.

Take the example of two passages of these texts. The first, which forms part of one of the versions of the first chronicles of the conquest of Gran Canaria, was written by a member of the family circle of conqueror Alonso Jáimez de Sotomayor in the early 16th century. It tells us of two of the island's main mountain sanctuaries, Tirma and Amagro, and of the right to asylum afforded to those that sought refuge within their sacred boundaries. The second, taken from a story that was probably compiled at the end of the 16th century, supposedly by a Franciscan friar from Andalusia, Juan de Abreu Galindo, contains an account of one of the great collective rituals performed on the island, in these mountain sanctuaries: the ceremonies and prayers for rain.

“And these Canarians had two crags as sanctuaries, called Tirma and Cimarsó, each of which was two leagues around, that border the sea, and any wrongdoer who took refuge among these mountains was free and safe, and he could not be taken from there if he did not wish, they were safeguarded here and they were worshipped like churches, and just as we protect the holy house of Jerusalem, they swore allegiance to Tirma and Margo” (Ovetense, in Morales Padrón, 1978: 161).

“When there were no rainstorms, they went in procession, with sticks in their hands, and the ‘magadas’ with glasses of milk and lard and palm branches. They went to these

mountains, and there, they spilled the lard and milk and they danced and they sang laments around a rock tor; and from there they went to the sea and lashed the water with their sticks, shouting out in unison” (Abreu Galindo, 1977: 157).

Archaeology in turn, has documented a whole series of pre-Hispanic constructed sites at the highest points of the island that would be difficult to interpret as anything but the material remains of these mountain sanctuaries. These include a series of artificial cavities with triangular signs engraved on the walls. These are representations of pubic triangles and vulvas; anatomical elements that are also eloquently ever-present on the indigenous terracotta idols, most of which are human and female. Circular orifices are often found carved in the rock beside them. When viewed alongside these same statues, these orifices could be identified as navels. As with the idols, these engraved motifs relate these areas to fertility practices, initiation or transit by means of representations linked to the cycle of life: fertilisation, gestation, birth.



Figure 2.a.103. View of the imposing Roque Nublo, one of the pillars of the sacred mountains for the ancient canarians. © Javier Gil

These manifestations are outstanding expressions of a world full of symbolism that is still conserved today, frozen in time, sculpted by the ancient Canarians in the countless caves of Caldera de Tejeda and on the rock faces of their mountains.

I. The main rock art manifestations: engravings and painted caves

The island of Gran Canaria has a fine catalogue of rock art created by the aboriginal people that can be broadly grouped into paintings and engravings, located both outdoors and inside caves or stone structures. Although these rock art stations, valuable in both heritage and scientific terms, are widely distributed all over the island, they are especially concentrated in the east-south-east strip and in the centre of the Island, particularly at archaeological sites within the area of the Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria.

The rock engravings can be classified into two large groups, depending on their kind and morphology: geo-



Figure 2.a.104. Engravings of pubic triangles with indication of vulvar fissure in Cave C07 of the Risco Caído. © Julio Cuenca

metric and thematic. Geometric engravings can be rectilinear or curvilinear. The rectilinear engravings found at sites like El Tescón de Tejeda or Risco Chapín includes lines, swathes, squares, rectangles and reticular and ladder-shapes, etc. Although curvilinear geometric petroglyphs are less abundant than the rectilinear ones, examples of these have been found in some locations on the island, although not within the nominated property.

The themed engravings can be grouped into representations of humans or animals (anthropomorph and zoomorph), alphabetic inscriptions and pubic triangles. The alphabetic inscriptions are basically panels of Libyco-Berber script engraved using a technique of chipping and rubbing, scratching and cutting incisions. These are found at sites such as Roque Bentayga, Cuevas del Rey, El Tescón (Tejeda) and Visvique (Agaete), which are explained in more detail in the specific section of this chapter, although there are other manifestations worthy of mention outside the area, such as Los Letreros in Barranco de Balos in the southeast of the island, outstanding in terms of its richness and thematic variety.

Anthropomorphic figures appear in great numbers in different locations on Gran Canaria, concentrated basically in the east and south east of the island. These are isolated figures, forming pairs or groups and they tend to be associated with other representations such as geometric or alphabetical petroglyphs. There are many life-like figures; sometimes the sex is obvious and sometimes it is not, although more schematic figures have been documented too. There are stations with this kind of manifestations in the immediate vicinity of the area in question, such as Majada Alta and the anthropomorphic engraving station of El Morro Santiago on the edge of the buffer zone.

The other thematic group is represented by the pubic triangles that appear in great numbers, almost always in caves. These are inverted equilateral triangles, some of which have a line bisecting them from the bottom angle to the centre of the triangle, indicating the presence of the vulva. The unusual nature and sheer volume of these manifestations is analysed in detail in section 2 of this chapter.

Pictorial representations constitute the other large group of rock art manifestations created by the indigenous communities. Although the rock engravings are characterised by their varied nature, how they were made, type of support, siting and spatial distribution,

as far as the paintings are concerned, this seems to be a practise that is restricted almost exclusively to the world of artificially hollowed-out caves and stone structure where geometric motifs predominate, with the exception of some very specific examples, and most of these are situated in the area of the Cuenca de Tejeda, over 800m above sea-level. This singularity is another of the distinctive features of the nominated Cultural Landscape.

However, there are other important testimonies of painted caves in the north, east and centre of the island; some are paradigmatic, such as the painted cave in Galdar - Cueva Pintada de Gáldar - hollowed out of the volcanic tuff and adorned with geometric motifs in red and white. This is undoubtedly the most spectacular example of this type of manifestation on the island. But more than half of the archaeological sites that contain painted caves, around 67 on the whole island, are located in the sacred mountains. There are 24 enclaves at the Bentayga, Cuevas del Rey, Risco Chapín, Acusa, Solana del Pinillo and Mesa de la Punta and Cuevas de La Mesa sites.

Generally, these are caves that form part of troglodyte settlements, many of which are thought to have been dwelling places, in which case we could see a certain intentionality in decorating them, as remains of red and white paint have been found (pigments of mineral origin) applied to create skirting boards, frames of interior doorways and hollows, even daubed on to cover whole ceilings and walls. However, in light of the kinds of motifs and other features found in some cavities, one could infer that a small number of these sites may have been for uses other than essentially domestic purposes. These include distinctive motifs like those found in Cueva de las Estrellas. Recent spectroscopic analyses even provide evidence of pictorial decoration in certain almogarenes such the Risco Caído almogaren.

The largest group of motifs found are undoubtedly those with a wide variety of different geometric decorations. Here, we could distinguish between the caves with paintings of large uniform designs (most of them) featuring selective or total daubs, swathes, skirting boards or frames; and those with geometric figures like triangles, circles, squares, rectangles or dots. In most cases the colours used are red (the most common) and white. Other colours have also been detected however, including black, light grey and other earthy colours, always used very sparingly. Natural ochre clays were used to



Figure 2.a.105. Painted cave in La Candelaria archaeological ensemble © Javier Gil

obtain the red colour, while white was obtained mainly from salic volcanic material such as trachyte, phonolites, tuff or pumice stone and, to a lesser extent, clays or carbonated formations such as caliches.

Daubs have been found in many caves of the complex at Mesa de Acusa and in the sites of Cuevas del Rey, La Solana del Pinillo and Mesas de la Punta. All these sites



Figure 2.a.106. In the emblematic archaeological sites of Cueva del Guayre or Cueva del Rey, another of the sacred areas, the bases of the walls are adorned with ochre pigment. © Javier Gil



Figure 2.a.107. Anthropomorphic representations located in the troglodyte site of Majada Alta, on the border of the buffer zone.
© Julio Cuenca

have abundant examples of red and white paintwork, or a combination of the two, or even with one colour painted over the other; inside the caves along the walls, inside the different chambers and even in silos, either as frames around doors or chambers, skirting boards

running around the walls or completely covering whole rooms or walls.

Although these painted caves are a significant finding in these settlements and they are associated with a dwelling or even storage function, they are still only a small proportion of all the caves found in these troglodyte settlements, so they must have played a special and clearly different role for all the other ones. We can mention paradigmatic cases in each and every one of these enclaves, including Cave 7 at Acusa, Cueva del Rey (Roque de Cuevas del Rey), Cave 3 at Solana del Pinillo or Cave 14 at Mesa de La Punta.

Only a very small number contain geometric figures, leading us to believe that these cavities perhaps had a special meaning, not only for the village itself but also for the island. We could also interpret Cueva de las Estrellas at Acusa in this manner; situated in an area acknowledged as a granary, which displays areas of white dots



Figure 2.a.108. Spectroscopic analysis of the interior walls of Risco Caído in which traces of pigments have been found.
© Julio Cuenca



Figure 2.a.109. View of Mesa del Junquillo. The breath-taking landscape of the mountains of Caldera de Tejeda impregnated the beliefs, symbols and rituals of the ancient inhabitants of the Canary Islands. © Javier Gil López

on part of its walls over the dark background of the cave itself, creating what appears to be a representation of the heavens, as another singular case. This motif is very rare on the island, where only two other examples are found: Cueva Pintada de Rosiana (San Bartolomé de Tirajana) and La Cueva de Malpaso (Telde), although in the latter two cases, the white dot motifs are found alongside applications of red paint.

Finally, we must highlight some outstanding caves with rock engravings, fundamentally pubic triangles and, specifically, at the sites that contain most of these representations: Cueva de los Candiles and Risco Caído. These have drawings made with red pigments associated with the engravings. In the case of Cueva de Los Candiles, two circles have been drawn in ochre next to a group of triangles on the right-hand wall of the cave, near the entrance. Risco Caído contains remains of red pigments on one of the walls that contains pubic engravings, but the extent of the alterations made means that we do

not know whether the paint covered the entire wall, or if it was part of some specific motif.

N.B.

The quotes from the chroniclers of the Conquest are translated and adapted from old Castilian Spanish into English.



Figure 2.a.110. Interior view of one of the artificial caves of the archaeological site of Cuevas de Las Brujas, Mesa del Junquillo, Tejeda. © Julio Cuenca



Figure 2.a.111. Artificial cave decorated in red and white natural pigments painted over frames and interior walls of two small chambers. Cave C04, Corrales de Acusa. © Julio Cuenca

2. Sanctuaries and pubic triangles

The graphic expressions made by the ancient people in the nominated property include one outstanding element represented in profusion on the walls of certain artificial caves considered sanctuaries: the public triangle, one of the universal symbols of fertility. The Cultural Landscape hosts the largest concentration in the world of archaeological sites with rock engravings representing the female pubic triangle, which in itself, is reason enough to consider it a place of outstanding value.

Expressions of this kind are clearly associated with the



Figure 2.a.112. Piece of indigenous pottery from Gran Canaria showing the use of triangular motifs. © Museo Canario

sacred sites known as “*almogarenes*”, according to the term recorded by the chroniclers, who referred to these as prayer houses. The meaning of the name *almo-ga-ren*, meeting place or sanctuary, is the same as the meaning attributed by certain linguists, such as D.J. Wölfel, to similar words in the Berber language (Wölfel, 1993). These places were used for celebrating rituals that consisted of making offerings, such as milk and probably the blood of slaughtered animals to Higher Beings, the Sun and the Moon. This is how it was explained by chronicler Gómez Escudero when he said that “*there, they invoked and made sacrifices, sprinkling milk each day, which their God above looked down upon and they kept livestock for this purpose*”.

Ideograms interpreted as pubic triangles or vulvas (inverted equilateral triangles) were found inside these unique caves, engraved or chiselled in bas relief. Although these cavities can be found all over the island, most of the engraving stations of this kind are in the mountainous centre of the island, in the sacred mountains that surround La Caldera de Tejeda. It is here that the islanders built their main sanctuaries and places of worship and ritual. Thus, it is in this sacred land of the indigenous Canarians, where La Cueva de Los Candiles, Cuevas de Caballero and Cuevas del Cagarrutal in the sanctuary of Risco Chapín, are all found. Similar manifestations are found at Roque Bentayga, la Cueva de la Paja and at the *almogaren* of Risco Caído, where the ideogram of the female pubic triangle also reaches one of its maximum expressions as they are related to solar hierophany.

These schematic symbols are frequently associated with domes and cup-marks that may have been related to sexual practises associated with fertility, fecundity, initiation, transit or piacular ceremonies linked with birth. The idea of fertility was the foundation of food production in this culture, whether it be growing crops, rearing livestock or the food provided by nature itself, because reproduction and the continuity of the human group is rooted in fertility. This theory may explain why special emphasis is placed on all aspects of survival, manifested through glorifying reproductive attributes.

The pubic ideogram is also found on certain baked clay or wooden anthropomorphic sculptures, on pottery receptacles or in the “*pintaderas*” found in many of the island’s archaeological sites, particularly in the area of the nominated property.

Drawings of representations associated with the pubic

triangle or vulvas are related to the first symbolic manifestations engraved or painted by homo sapiens during the Aurignacian period of the Late Stone Age around 30,000 years ago. These first manifestations of religious expressions were initially made on movable supports but later in the Solutrean and Magdalenian periods, between 20,000 and 10,000 years ago, cave walls were lavishly adorned with them (Duhard, 2016). Thus, the tradition of engraving vulvas as an abstract symbol both on walls and on almost naturalist female figures lasted from the Mid-Magdalenian to the Cycladic era. And interestingly, these are found in the indigenous context of Gran Canaria in considerably more recent periods. Hence, this is a tradition that has lasted for many thousands of years, linked to the beginnings of symbolic religious or spiritual representations.

The first written accounts of indigenous rock art in Gran Canaria date back to the end of the 19th Century, when A. Marínez Escobar reported the discovery of a burial cave in Gáldar, with its interior walls adorned with ideograms of this kind. No more findings of this kind were reported during the 20th Century until in 1974, when the Canary Island Museum published a preliminary inventory of rock art sites on the island, which included a considerable number of important rock art stations with engravings of triangular motifs: La Cueva Grabada del Barranco de Silva and la Cueva de Los Papeles in Telde; Las Cuevas del Caballero and Cagarrutal in Tejeda and La Cueva de Los Candiles in Artenara. (Cuenca Sanabria, 1992).

As archaeological surveys of the island intensified, the distribution map of this type of rock art stations grew with new findings like the Roque Bentayga station, discovered and studied in 1992 (Cuenca Sanabria, 1992) or the most recent findings made in Las Cuevas de Risco Caído in Barranco Hondo (Artenara), Cueva de la Paja and Cuevas de Lezcano in Barranco de Teror.

The sites found outside the Cultural Landscape worthy of mention include the site at Cuevas de Lezcano, undoubtedly the most important triangular engraving station outside the area of this Cultural Landscape. This is a set in which six panels have been identified, where at least forty-three pubic triangles associated with domes have been found. These are distributed among four artificial caves. However, as we have already indicated, most of the rock art sites with pubic triangles are located in the area of the nominated property.



Figure 2.a.113. *Pintadera* stamp with opposite triangles joined at vertex with drilled appendix. The landscape is defined by impressions of pubic triangles (Inventory reference: 3134). © Museo Canario

Risco Chapín sanctuary

Risco Chapín, situated between the highland municipalities of Tejeda and Artenara, is an imposing natural cliff, just over 3km long, that encloses the northern rim of the enormous Caldera de Tejeda. This cliff reaches a maximum height of 1,771m above sea level at La Montaña de Los Moriscos. To the west, Chapín is bordered by the 1,485m high Artenara mountain, where the troglodyte settlement of the same name is situated. This almost vertical cliff face rises more than 500m above the bed of Barranco de Tejeda ravine. Although Chapín appears to be unassailable and impassable, narrow paths run along certain ledges that were used in the past to



Figure 2.a.114. Panel of public triangle engravings on the inside wall of one of the chambers of Cuevas de Lezcano, outside of the nominated property. Teror, Gran Canaria © Julio Cuenca



Figure 2.a.115. Panel of pubic triangle carvings on the east wall of Cueva de los Candiles © Julio Cuenca

connect the different sacred troglodyte sites that the Canarians dug into these walls.

The lay-out of the archaeological sites at Risco Chapín, together with their prominent topographical and geographical position in a breath-taking landscape, on one of the main routes followed by the clouds formed by the Trade Winds into the interior of the La Caldera crater, create an exceptional setting which must certainly have had special significance for the ancient inhabitants of this mountain region.

Other indicators that tend to define the location patterns of certain archaeological sites, such as visibility, orientation and viewshed, may have had an important influence in choosing the location of the Risco Chapín sites. This place commands a spectacular view of the outstanding landscape, encompassing practically all of



Figure 2. a.116. Cueva de Las Machas. The last rays of sunset on the winter solstice light up the walls of the great cave turning the large engraving of a pubic triangle sculpted into the east wall red. © Julio Cuenca

Caldera de Tejada and the high mountains of the west of the island. Important places, such as Roque Nublo, Roques del Bentayga and Cuevas del Rey, Montaña del Humo, Mesas de Acusa and El Junquillo, or mountains like Altavista, Inagua, Las Monjas, and then much further away, to the west, the mountains of Hogarzales and El Cedro, make up much of the local horizon that is perfectly visible along this entire cliff. Suffice it to say that most of these sanctuaries are in alignment with Roque Bantayga, the cosmological epicentre of this area.

Cuevas del Caballero or Las Machas Caves.

This is a set of twelve artificial caves located 1400m above sea level in the central part of the rim of the Risco Chapín escarpment, near La Montaña de Los Moriscos. The caves are aligned along an east-west axis and face south-southwest towards the centre of La Caldera de Tejada.

Although some of the caves have individual names such as El Solapón, La Agujerada, Cueva Chica, Cueva Caída, Cueva Gacha and Cueva de La Albarda, the place name Las Machas covers the caves as a whole. This name comes from the popular belief that the place was inhabited by women who practised witchcraft, reinforcing the magical or religious nature of this enclave.

Rock art manifestations have been found inside five of these artificial caves. These include engravings and excavated structures, grooves and cup-marks. Panels representing pubic triangles, associated with domes and niches, are found in four of the caves. At least twenty representations distributed among various panels have been counted. The panel in Cueva de Las Machas, the largest cave of the set and which houses a complex set of grooves and cup marks, has been linked to the winter solstice, when the setting sun illuminates the triangular engravings.

Cueva del Cagarrutal cave

The lowest of the caves housing engravings at Risco Chapín is La Cueva del Cagarrutal, halfway between the bed of the Guardaya Ravine and the summit of El Chapín, at a height of about 1,300m above sea level.

La Cueva del Cagarrutal is isolated, aligned vertically below Las Cuevas del Caballero, which can be reached by climbing up a difficult track running between ledges. This is an artificial cave that uses part of a pre-existing overhang that was partially extended to build the chamber in which most of the engravings are found. Apart

from some motifs that are difficult to identify, most of the rock art manifestations documented in this cave are pubic triangles, associated with domes and cup marks.

La Cueva de Los Candiles (Cave of the Lamps)

This is situated in an isolated location at the northwest tip of Risco Chapín, close to the top of the crag and to Montaña de Artenara. This cave has the most difficult access of all the caves at this site. It can only be reached by climbing a steep slope between ledges, along steps hewn from the rock leading to a dead-end. According to local legend, the origins of the place name lie in the fact that, on certain nights of the year, lights could be seen here moving along the ledge and at the entrance to the cave.

This cave is undoubtedly the most unique in the archaeological area of Risco Chapín. Its uniqueness lies in the extraordinary number of engravings representing vulvas or pubic triangles that literally cover its interior walls. 320 engravings of these schematic representations of the female sex have been documented, together with a large number of domes, cup-marks and engravings that continue to prove difficult to interpret for the moment.

As well as carvings, six niches were carved out at the back, half-way up the back wall. Five of these are aligned and a sixth one is located below them. Several niches, with a clearly circular tendency, have also been carved out of the side walls. Five of these can be seen on the left-hand wall, one of which is at ground level.

The largest number of engravings are located on the west wall, measuring about 10 metres long with a maximum height of 3.5m. There is a total of 231 inverted equilateral triangular figures, which also represent female pubic triangles. Some domes or round cup marks have also been counted that appear to be associated with the triangular engravings. Finally, other signs have been found, but for the moment, any interpretation of them would be highly doubtful.

80 engravings of pubic triangles are distributed along the east wall, all with a clearly-defined inter-labial fissure, consisting of a bisecting line running from the bottom angle to the centre of the figure or towards the outside. There is a set of domes of different sizes associated with the pubic triangles, together with four artificial hollows forming niches. Two of these are large and situated at floor level.



Figure 2.a.117. Pubic triangles engravings in Cave 6 of the Risco Caído sanctuary. © Cabildo de Gran Canaria.

There are 11 pubic triangle engravings scattered along the north wall. Occupying a central position on the wall, one particular engraving stands out. It is a unique pubic triangle engraving, with a deep incision running towards the exterior of the figure. The most important aspect of this wall however, apart from the pubic engravings, is the fact that there are six cupboards dug into and running in line along the wall, underneath the engravings. With respect to how they were made, almost all the engravings at this archaeological site were made using the chip and rub technique and many of them are sculpted in bas relief.

The almogaren of Risco Caído

As we have said, within the setting of the troglodyte settlements of the area (Chapter 2.a.v), Barranco Hon-do, Lugarejo and Juncalillo are now three present day places that formed part of the great settlement of Ar-tevirgo in the past. These three troglodyte settlements in the municipal districts of Artenara and Galdar are set in a thoroughly humanised landscape, characterised by an extraordinary wealth of farming terraces contained by strong dry-stone walls that climb from the bed of the ravine all the way up to the tops of the mountains. However, what is really striking is the large number of artificial caves that have been dug out over the centuries on both sides of the great ravine.

The settlement of Risco Caído comprises 16 artificial caves. Three of these are striking because of the important manifestations of public triangles, which are described in detail in Chapter 2. a. v.

Cave C6

This is the most exceptional cave in the set due to its structural complexity and astronomical and calendar-

related connotations and its unique, extremely remarkable light-related hierophany (see Chapter 2.a.vii).

The back wall, facing the original entrance, where the lighting effect is projected, is adorned with some 30 engravings of inverted equilateral triangular motifs, forming two parallel rows. There are also numerous artificial domes associated with these pubic expressions and forming part of the same panel. When these were first discovered, they were bricked up with stones, which in turn, were covered with white mortar. On the same section of wall, there are two large niches. The largest of these is rectangular in shape. On the right-hand wall, at the top and to the left of the entrance, we found another triangular engraving similar to the kind described above. We can also find another two triangular motifs on the left-hand wall, next to the access doorway on the south side, and there are probably some more that may have been destroyed when the access opening was widened at a later date.

The engravings were done by making deep incisions to mark the outline of the figures and then the surface within the outline was chipped out to leave a motif in

bas relief, using the excavated tuff walls of the cave as a support.

Cave C7

The ceiling and walls of the main cave are completely blackened by the effect of resin and smoke, suggesting that they used to light a fire inside, possibly with torches made of the heartwood of the Canary Island pine. The three walls of the cave also present bas relief engravings that tend to be the shape of equilateral triangles, associated with countless domes of different diameters and some niches too. A total of some 70 pubic motif engravings have been documented.

When the rock art was traced, the left-hand wall, the most affected by collapse, showed at least 24 engravings of this kind, with some 30 associated domes of different diameters. The engravings have been sculpted into a very compact volcanic tuff, using incisions to mark the outline of the figure, followed by chipping out the stone inside the outline to leave a figure in bas-relief.

The back wall has 32 pubic triangle engravings, some with a bisecting line either running into the centre of the



Figure 2.a.118. Distribution of the pubic carvings inside Cave 6 of the Risco Caído sanctuary where a wide range of morphologies can be seen that express the different states of the female pubis. © Julio Cuenca



Figure 2. a. | 19. Engraving of a pubic triangle representing a unique form. North wall of cave C7 of the Risco Caído almogaren © Julio Cuenca

figure or towards the outside of the triangle. There are at least 30 domes of different diameters associated with these geometric engravings. The set of triangular engravings is laid arranged around a roughly-rectangular niche. There are three circular niches in line at the bottom of the right-hand end of the wall. Finally, the right-hand wall has a total of 18 engravings.

Cueva de La Paja

This is the generic term used to refer to a group of 13 artificial caves that were dug out of the top of an imposing slab of Roque Nublo volcanic breccia, which forms the cliff wall of the left bank of Barranco Hondo ravine near its mouth or confluence with Barranco de Las Hoyas. They are situated very close to Risco Caído.

The caves are strategically situated and are difficult to locate in this rugged terrain. Several irrigation ditches and canals have been dug out of the tuff outcrops along the access path to the caves to capture the rainwater and channel it along the canals to cave reservoirs. Most of the caves at La Paja have been used in historical times as sheds and hay barns. Only one cave, the one known as Cueva de La Paja, seems to have been the only one in the set to have been used as a dwelling and it is also

the only one with pubic triangle engravings on one of its interior walls.

This artificial cave, also described in Section 2.a.v., has a complex floor plan comprised of several chambers or adjoining and interconnected rooms. The main chamber contains three quadrangular areas with carved walls and ceilings. Near the entrance, on the right-hand wall, there was an access opening that was sealed off with a stone and mud wall, with a layer of lime spread over it. This was removed during archaeological excavations in 2016 to reveal that one of the walls that made up one of the jambs of this doorway was hidden by the stone wall and that behind the stone wall, there were pubic triangle engravings and domes, together with engravings in the form of deep incisions. These could be stelae, which could also be related to the engravings on the north wall of the main chamber.

The main cave, containing three chambers or quarters, has twelve engravings of pubic triangles on the bottom third of the right-hand wall of the main chamber. These were made with deep incisions to outline the motif and then the area inside the outline was chipped or scraped out, to turn the engraved motifs into bas-reliefs.



3. The importance of the Libyan-Berber alphabetic inscriptions

The presence of several Libyan-Berber-type alphabetic engraving stations in the Cultural Landscape provides further exceptional testimony to add to the attributes of this area. These inscriptions represent one of the leading material proofs of the Amazigh roots of this culture, allowing us to build an exciting bridge that links the past of the Canarian people with the Berber Maghreb.

Basically, these are panels that represent Libyan-Berber-type writing that has been chipped, rubbed, scratched and cut into the stone. The inscriptions found in the area are located at the Roque de Cuevas del Rey and the Roque Bentayga sites, the symbolic centre of the Tejeda basin, and Montaña de Visvique, in the area of the cave village at the head of the Agaete Valley. Thus, they are exceptional manifestations of the use of this script among the aboriginals, and also documented in other areas of the archipelago.

The origins of this script are to be found on the neighbouring African continent, where it was used since ancient times in a broad territory that includes an area that runs from the Canary Island archipelago to Libya, and from the Mediterranean to the Sahara Desert. Its use throughout this vast territory over a prolonged period of time gave rise to differences between the different alphabets. Traditionally, distinctions have been made between different modalities that make up different groups. There is the Libyan script, the “old” Saharan scripts and “Tifinagh” characters, and now we must add the Libyan inscriptions of the Canary Islands.

The study of the Libyan-Berber writing however, the only one present in all the Canary Islands before European settlement, still triggers heated debate. Certain authors suggest closer ties between the Canary Island texts and the modalities to be found on the Mediterranean coast (North of Tunisia and Algeria basically) than with those to be found in the Sahara Desert or the Atlantic seaboard (Springer, 1994). This latter hypothesis relating these writings to the “Saharan” alphabets of the neighbouring regions, has been questioned by most of the researchers working in this field.



Figure 2.a.121. Lybic-Berber alphabet inscriptions on the west face of Roque Bentayga. © Julio Cuenca



Figure 2.a.122. Lybic-Berber engravings in Roque de Cuevas del Rey. A digital replica has been superimposed to give a better view of the carvings. © Julio Cuenca



Figure 2.a.123. The researcher group shows the location of the engravings in Roque de las Cuevas del Rey. © Julio Cuenca

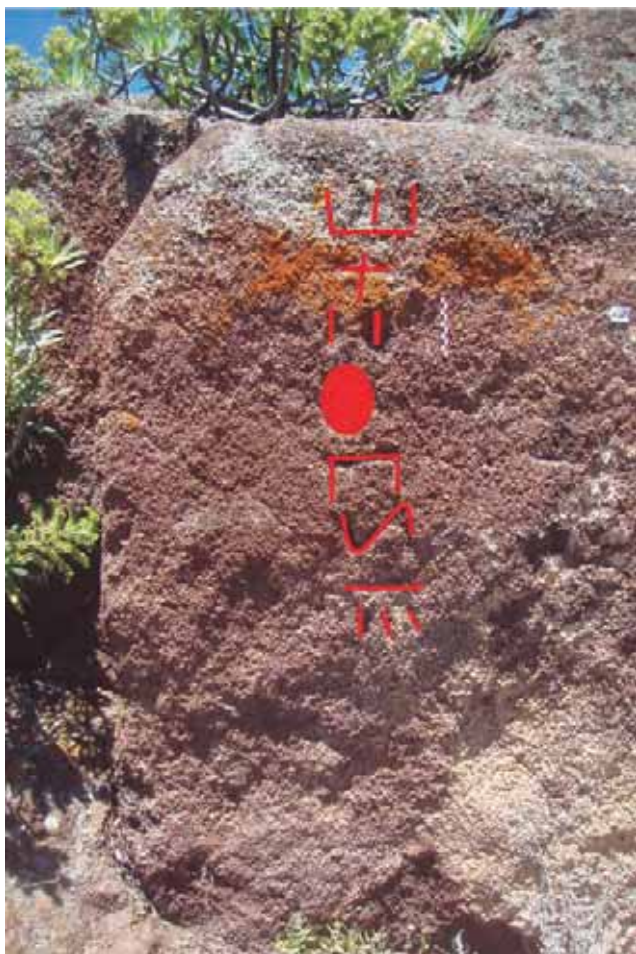


Figure 2.a.124. Lybic-Berber inscriptions in the troglodyte settlement of Visivique. The characters are highlighted in red.
© Julio Cuenca



Figure 2.a.125. Barranco de Balos (Gran Canaria) inscription together with a small spiral carving located outside the sacred mountains. This is another of the many rock art sites of this type found across the island.
© Antonia Perera

But research has also produced other, attractive and certainly surprising results about the relationship between Canary Island writings, and particularly those that are identified in the area of the sacred mountains, and the writings of the old Kingdom of Numidia, which would relate this area and the Canary Islands with the more distant regions of North West Africa (Tunisia and Eastern Algeria in this case). The Libyan-Berber writing system was developed in Numidia, taking inspiration from the Punics, at some moment around the time that the new kingdom was created, and it would have later spread towards the Sahara and the Atlantic seaboard. The Canary Island inscriptions however, could be situated between the Numidian alphabet and those of the ante-desert (on the borders of the Kingdom of Numidia), bearing closer family ties to the former. This would confirm the idea that the writing that reached the islands was generated in the area of these regions (Belmonte, Perera Betancort and González-García, 2016).

This is crucial for one of the most hotly-debated issues in the archaeology and historiography of the Canary Islands, as we have seen: the origin of the tribes that settled the seven islands and when these islands were colonised. But no alphabet has been discovered to date that is identical to the one used in the islands, and in particular, in the area of the property application.

The rock stations indicated in the area also offer certain singularities in comparison with the other islands. Basically, we are talking about Roque de Cuevas del Rey. In fact, very few places can boast the presence of writing-type lines of such different characteristics regarding the technique used, the direction of the lines, the depth of the grooves and even the size of the characters, in such a small area – less than two metres. Here, we find eleven vertical and horizontal lines, made using cutting and chipping techniques, apart from the fact that some of these are more visible than others because of the depth of the grooves and how they were carved. This suggests that they were made by different authors, but also that they were made at different times. It would explain the writing of the messages in a cultural context that, although we do not fully understand it, suggests that it was part of certain social acts that were performed in certain places, probably repeatedly on significant dates.

The presence of the inscriptions also indicates that writing was maintained and consolidated among the aboriginal population. This population had to adapt to the necessities generated in a new environment and obvi-

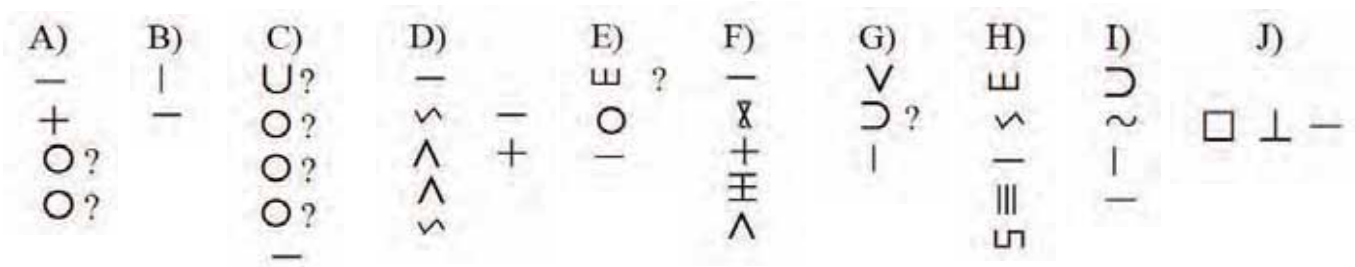


Figure 2.a.126. Lybic-Berber inscriptions at the Roque de las Cuevas del Rey site. © Julio Cuenca

ously, in different conditions from those of their place of origin, with different social situations that had evolved in isolation, which would have most certainly had a decisive impact on the use of this writing.



Figure 2.a.127. Elephant frieze (High Atlas, Morocco), typical inscription in ancient 'Saharan'.
© Juan Antonio Belmonte



Figure 2.a.128 Shimitu stela (Tunisia). Lybic inscription typical of the Kingdom of Numidia era. © J.A. Belmonte

4. “Pintaderas” and Idols

The first references to “*pintaderas*” – wooden or pottery stamps – date back to French scholar Sabin Berthelot, although fellow Frenchman and anthropologist Rene Verneau was the first to call them “*pintaderas*”. He said that this is what the inhabitants of Santa Lucía de Tirajana called these unique pieces of the material culture of the ancestral people of Gran Canaria (Verneau, 1883). They were made from clay, wood or stone and represent one of the most characteristic pieces of the material repertoire of the island’s pre-Hispanic past.

Pintaderas are generally flat with geometric patterns engraved on them. They have an appendix protruding from the back to hold them in place, which is sometimes pierced, as if to hang them from or mount them on something. The flat surface may be triangular, circular, rectangular, square, rhomboid-shaped, hexagonal or even a combination of some of these shapes. In most of the documented cases, the decoration is frequently based on symmetrical figures, yet each piece can be considered unique.



There have been a variety of hypotheses regarding the use of pintaderas, from the first approaches at the end of the 19th century, suggesting that they were used as body adornments, lucky charms or some sort of magic-religious elements that were worn as pendants hanging from the neck, to 20th-century theories regarding an economic use, specifically as ownership stamps, or to identify the family that owned the cells or silos in the collective granaries, as personal seals.

Although there is no specific data that can help to clearly define the use of these materials, it is now clear that, on the one hand, there seems to be an established pattern regarding the geometric compositions of pin-

taderas and the organisation of the decorative motifs, in which the use of symmetrical patterns plays an essential role (Molina, J. 2014) and, on the other, the spatial relations of the decorations have been established, linking shapes to specific places. Hence, we could be talking about a symbolic use of geometric motifs, as occurs in different cultural contexts, also found in other local cultural manifestations like pottery or cave walls, to identify or distinguish different human groups, families or clans.

These materials do not really abound in the area of the Cultural Landscape. The inventory of pintaderas of the Canary Island Museum only includes seven catalogued for this area. Six of these were from the municipal district of Artenara, two from the archaeological sites of Acusa, four from Casillas Canarias de Tirma, and one is from Tejeda, from the archaeological site of La Solana del Pinillo. Significantly, the two pintaderas from Acusa were found in silos of granaries of this archaeological site. Although few in number, their morphology and their decorative motifs are a good representation of the variety of these materials in the archaeological context of Gran Canaria.

Aside from the difficulties entailed in archaeological interventions in these mountainous enclaves, which have constrained the possibility of bringing to light an ample catalogue of materials, the working hypothesis for their scarcity is that this is because there are no major settlements of stone houses in the area, given that practically the entire population live in caves. The pintaderas found and catalogued on the island are all associated with living above ground, rather than in caves. Suffice it to say that four of the seven pintaderas mentioned were found in one of the few aboriginal settlements of stone houses to be found in the area of the Cultural Landscape, more precisely, in Las Casillas Canarias de Tirma (Artenara), in the buffer zone.

Idols

The idols, along with the pintaderas, are perhaps one of the most outstanding elements of the material culture of the ancestral peoples of Gran Canaria. Idol is the term used for a set of sculptures made in wood, stone and basically in baked clay, representing figures, fundamentally anthropomorphic figures, although zoomorphic figures have also been found, such as the case of a pig's head found in Lomo de Las Casillas de Tirma; or a combination of them that has been related to diabolical and bestial characters. Whatever the case, these are materials that can be associated with the symbolic, magical and religious world of Gran Canaria in ancestral times.

The largest group of figures is undoubtedly the group that presents essentially human features, either realistically or schematically that, while they have also been found in stone or wood, were mainly sculpted in clay and baked. These human figures seem to represent markedly feminine sexual characters most of all, although there are some male idols. In the case of the idols found at sites around the nominated property, we have a female head, torso and arm from Acusa and another torso and a seated figure, also female, from Las Casillas de Canarias de Tirma. All the rest are fragments of human representations, but no sex can be attributed to them. These were also found at this latter site.

The sexual attributes represented on these statues are generally the genitals; penis and vulva, along with breasts. The more schematic female figures generally only show the breasts, while the more realistic representations also show other features, such as protruding bellies, perhaps insinuated pregnancy, broad hips, navel and vulva or the pubic triangle marked. In this latter case, we have seen how, once again, the triangle is a profusely-represented element, symbolically associated with the vulva or the pubic triangle in pintaderas, pottery, rock paintings or engravings, such as the case of the archaeological sites of Cueva de Candiles or Risco Caído. Thus, in the case of the idols, these are expressions of a religious spirit that are based on depicting the feminine aspect as a symbol of fertility, an important issue in societies that base their economy fundamentally on farming, as many authors have interpreted.

As many of the sites recorded in the space have yet to be prospected in depth, because of the complicated access, new findings of this kind are expected from cam-



Figure 2.a.129. Pottery piece of the head of a pig found in Lomo de Las Casillas de Tirma. One of the few zoomorphic representations found in the Canary Islands © Museo Canario

paings scheduled in the coming years. Just as a reference; seven of the eight statues catalogued by the Canary Island Museum in this area were found in the above-ground settlement of Lomo de Las Casillas Canarias; and the other one, the head and torso of a female figure, was found in the archaeological site of Acusa.



Figure 2.a.130. Tara idol. Terracotta figure identified with the fertility worship of the first settlers of the island of Gran Canaria. © Museo Canario



2.a.vii

Astronomical culture-related attributes

There are two outstanding manifestations in the proposed Cultural Landscape of Risco Caído and the sacred mountain of Gran Canaria that are representative of the astronomical culture and knowledge of the ancient Canarians. They give this space coherence as a sacred site closely related to celestial events - the sky-scape - for measuring time, for marking commemorative dates, and for holding rituals. In this context, they are outstanding attributes because of their singular astronomical significance in a culture that evolved in isolation from the ancient know-how imported from the Berber Maghreb, and which developed genuine expression in this new island environment. The first is the Risco Caído Almogaren or Sanctuary, an outstanding, complex cave temple with clear astronomical connotations, where patterns of sunlight and moonlight interact with a series of engravings, thus marking the passage of time between the solstices and the equinoxes. Just as significant is the Almogaren of Roque Bentayga, both a marker of the equinoxes and of the harvest festivals. Both of these are outstanding examples of sacred mountain sites where an amazing astronomical phenomenology has been found for cultures of this kind.

Tangible manifestations of cultural astronomy at this site are not limited to these two outstanding almogarenes. Another astronomically related element is La Cueva de las Estrellas (Cave of the Stars) in Acusa. Here, the combination of the base of the wall dyed with red ochre and the black domed ceiling with white spots painted upon it, as if they were lights or stars, mimics the earth and the night sky, suggesting that this could be some kind of cosmograph that reflects the way the ancient inhabitants of the island conceived the world. This is reminiscent (with all the necessary caveats) of other visions of the cosmos from North Africa, such as that of the ancient Egyptians, in which the universe was illustrated in a similar fashion, as can be seen from the ceilings of several tombs in the Valley of Kings.

← Figure 2.a.131. View of Roque Bentaga and the almogaren under the starlit sky of the sacred mountains.
© Nacho González

The internal organisation of a place can also make sense: thus the view northwards out from La Cueva del Guayre in the area of Cuevas del Rey, which has a domed ceiling, is focused on its access towards Roque Palmero, a striking element of the landscape on the northern rim of the Tejada Caldera. Ethnographic sources tell us of the importance of Roque Palmero as a reference point for marking time because of its relationship to the position of Venus as the Morning Star in its role as Zaharita (or diviner), as seen from the town of Artenara. This alignment is reminiscent of the alignments of La Cueva de los Candiles and the sanctuary of Our Lady of the Cave (Virgen de la Cueva) upon Roque Bentayga. Hence, La Cueva del Guayre must be recognised as another significant element in the relations between the landscape and the skyscape that are so pronounced in the nominated property.



Figure 2.a.132. Close up of La Cueva de las Estrellas, Acusa.
© Julio Cuenca



I. The almogaren of Risco Caído: the lost temple of the ancient Canarians

In 1996, archaeologist Julio Cuenca discovered the almogaren or ceremonial centre at Risco Caído in the mountains of Gran Canaria. This genuinely "lost temple" is a unique, outstanding, religious and astronomical archaeological site of the ancient Canarians. In truth, this was really the rediscovery of a place of exceptional symbolic significance for the indigenous people.

This archaeological complex is situated on the edge of the mythical Caldera de Tejeda, as described in Section 2.a.v, in the highlands of the north-western slopes of the island of Gran Canaria, 960 metres above sea level. It is located in a remote and secluded part of Barranco Hondo ravine, forming part of the nominated Cultural Landscape. Archaeological research indicates that the almogaren at Risco Caído was located at a strategic point

← Figure 2.a.133 Photograph of the light projected in the Risco Caído almogaren ©Julio Cuenca

on one of the main "sacred routes" used by the indigenous people of the northern lowlands to reach their main mountain sanctuaries situated in the Caldera de Tejeda and the surrounding mountains.

In these legendary lands occupied by the early inhabitants of the island, archaeological studies have recovered a series of sites that have been identified as places of worship and ritual. They are found either on the top of prominent rock tors, where structures were carved out of the surface bedrock or, more frequently, in hollowed-out caves located in the most inaccessible or secluded parts of certain mountains, as is the case here.

Risco Caído, a temple with connections to the sky

The two main and most remarkable caves of the Risco Caído complex (caves C6 and C7) comprise what the ancient Canarians called an "almogaren", that is, a temple, a place where rituals are performed, where people congregated at certain times of the year or when the rains were scarce and rituals were needed to pray for them so as to ensure the cereal harvests. As ethnohistorical sources relate:



Figure 2.a.134 View of the interior of Cave C6 showing the hierophany that gives this sanctuary of the ancient Canarians its outstanding significance © Julio Cuenca

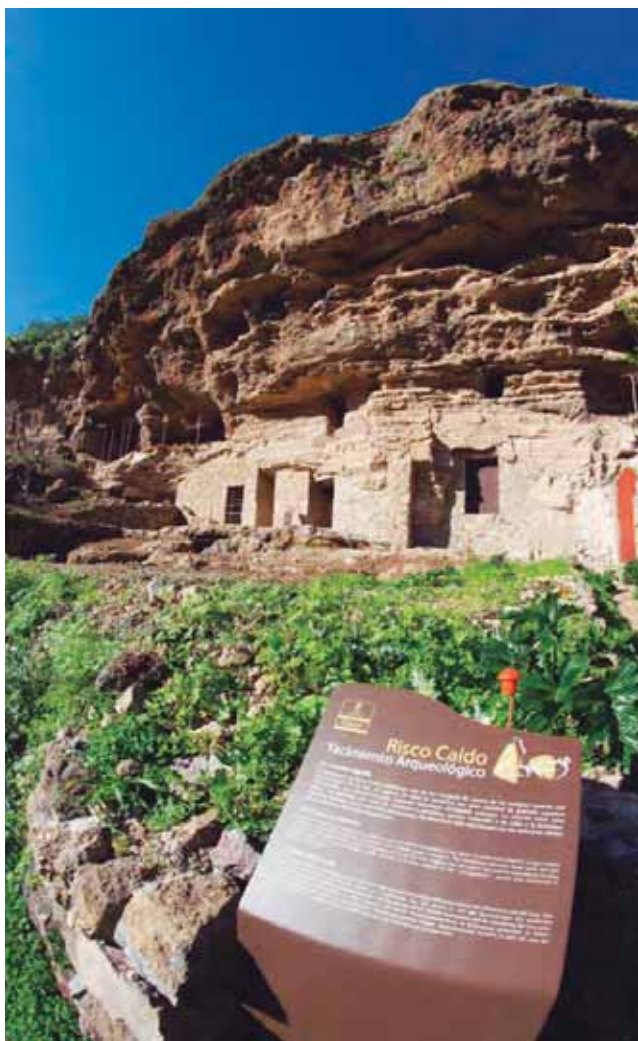


Figure 2.a.135. Exterior view of the archaeological site of Risco Caído © Cabildo de Gran Canaria

“The houses of religious women were sacred for delinquents, they called them Tamogante en Acorán, which means the house of God. They had another house on a high cliff called Almagaren, which is a sacred house; there they invoked the gods and made sacrifices, sprinkling milk every day, which their God above looked down upon and they kept livestock for this purpose. They also went to two very high crags: Tirmah in the district of Gáldar, and another in Tirahana called humiaia and white cliffs. They swore by these two crags with utmost solemnity, they came to them in procession with branches and palm fronds, and the Maguas or virgins with their pitchers of milk to sprinkle; they called out and raised their hand and faces to the heavens and circled the rocky tor and descended, from there, they went to the sea to thrash it with their branches”. Gómez Escudero, P. 1993 (1682), XIX, 440.

Archaeological evidence reaffirms the sacred nature of the site as one of the most important *almogarenes*

of the aboriginal Canarians. The first striking fact is that these troglodyte constructions are located on top of a mountain that had previously been covered by a dense laurel forest. Thus, this was a hidden, isolated place with abundant water, far from human settlement. Consequently, this is a very significant natural landscape, containing the mountain, rain forest, the cave, water sources and even plant fossils. Another archaeological indicator is the architecture itself. In this case, we have two unique hollowed-out caves that have been built differently from the caves used as dwellings or for economic use.

However, two other features unequivocally confirm the temple-like character of this site. One is the presence of symbols or bas-relief rock engravings on the inside walls, in the form of inverted triangles. These are clear representations of pubic triangles, a universal sign of fertility. The other is that there are numerous circular cup-marks chiselled into the inside walls and floors of both chambers. The presence of these cultural expressions is considered a definite indicator of a place of worship and ritual: they can even be found outdoors, as at Roque Bentayga.

The most outstanding feature of this remarkable site is the representation of the sacred sun and moon inside Cave C6, in the form of images projected by the light of the sun and the moon that change shape as the days and months pass and as they move along the wall with its altar-like representations of triangular engravings and cup-marks. These may also have functioned as reference points in a lunar-solar calendar. The calendar would have started at the spring equinox when the projected solar images first appear, continuing until the autumn equinox. From then until the next spring equinox, the light of the full moon between the months of October and February would have illuminated the engravings inside the temple.

Amazingly, it is still possible to watch this visual tale unfold; one that has been projected inside this temple for countless centuries. It is thought to relate to fertility rituals, the fertility of Mother Earth being represented here by the carved ideogram for the female pubic triangle.

Hence, this cave site is an ingenious creation that functions both as a sacred place and an astronomical marker, where certain astronomical events such as the equinoxes and the summer solstice are highlighted visually to coincide with the aboriginal Canarians' rituals, while also allowing them to keep an accurate calendar, which they

used to regulate farming and productive activities.

Archaeological research is ongoing at Risco Caído. Two C14 radiocarbon dates have been obtained so far; one in 2013 from a sample of wood from a Guelder Rose (*Viburnum rigidum*) shrub (1415-1450 A.D.), and the other in 2014 from an older organic sediment (1295 ± 25 A.D.), both collected from the inside walls of Cave C6. A thermally altered floor was discovered inside this cave during 2015: a sample taken from this awaits paleo-magnetic dating.

The most important features of caves C6 and C7 are as follows:

CAVE C6. This has a complex, original, and completely unique layout. The floor is practically circular. The cave has curved walls and a hollowed-out vault rising almost five metres from floor level, forming an almost perfect parabolic dome. This aspect is extremely important: no

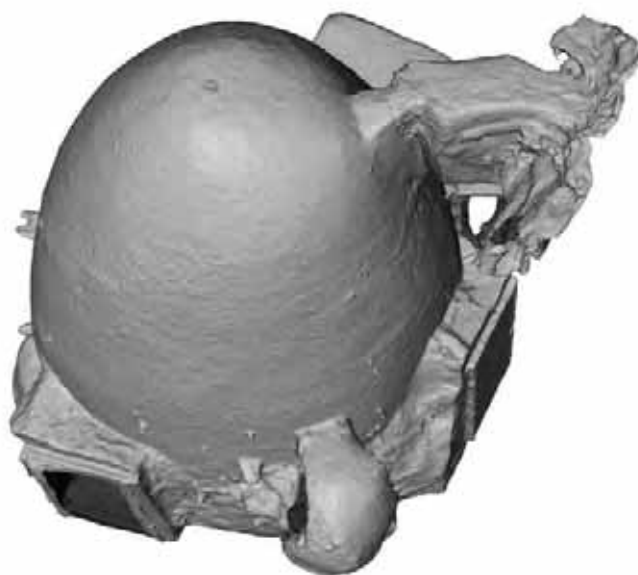


Figure 2.a.136. Digital model of Cave C6 using photogrammetry from the cloud of dots created with a three-dimensional laser scanner. The paraboloid shape of the dome and the conduit or optical system are visible.
© Carlos Gil Sarmiento



Figure 2.a.137. Close-up of the series of the engravings of pubic triangles, a symbol of fertility, and the cup-marks scattered over the west wall of Cave C6. © Julio Cuenca



Figure 2.a.138. Photogrammetry of the conduit or optical device of Cave C6 highlights the complexity of the design, which is evidently intentional © Carlos Gil Sarmiento

other example of an artificial cave with a domed roof of this complexity and shape is known in the aboriginal world of the islands.

On the eastern side of the dome, almost coinciding with the highest point, is a conduit or optical device facing east, allowing light to flow in through it. The incoming light hits the mural of rock engravings on the back wall, opposite this optical device or light tunnel. For six months of the year, sunlight illuminates this wall creating different shapes depending on the time of day and the season of the year.

On the northeastern edge of the interior of the cave, a small alcove with a square floor plan has been hollowed out to a depth of two metres. The inside walls have three hollowed-out niches of different sizes, which are blackened by the smoke produced by large torches of Canarian pinewood. The floor of the cave has also been worked and levelled, and a whole set of unconnected circular cup-marks have been chiselled into it. The largest concentration of these cup-marks lies at the base of the rock-engraving mural. Halfway up the south wall is what may have been a silo. The entrance is rectangular and it has opposing orifices on the floor and lintel for fitting the closing system.

Perhaps most strikingly, halfway up the west wall is a composition of thirty or so engravings of inverted equilateral triangle-shaped motifs, forming a decorative frieze of two parallel rows. Associated with these triangular motifs and forming part of the same panel, are numerous cup-marks and generally circular orifices. There are also two large niches within the same wall panel, the larger of which is rectangular in shape. On the right-hand wall, at the top left-hand side of the entrance opening, there is another triangular engraving with similar features to those described above. There are another three engravings of triangular motifs on the left-hand wall, next to the south door.

The cave currently has two entrances, one facing east and the other south. The research conducted to date suggests that the eastern entrance was the original one and, although it was sealed up with a dry-stone wall at the time of discovery, once it was uncovered one could see how the rays of the rising sun between the spring and autumn equinoxes are projected onto the floor, lighting up the cup-marks, before climbing up a section of the wall. Moreover, from outside the cave, looking back in through the entrance, one can see the extraordinary solar hierophany that we shall discuss later on.

With its unique architecture and the outstanding design of the optical device, together with its remarkable rock engravings, Risco Caído Cave C6 is a religious-ritualistic structure that is unparalleled in pre-historic Canary Island archaeology. As we shall see in greater detail, its design also incorporates astronomical and calendar-related relationships. The only cave sanctuary anywhere in the Canary Islands, or on the island of Gran Canaria, that bears any similarity is the Tara sanctuary, in Telde (Gran Canaria), although Risco Caído is certainly a more evolved and sophisticated version.

CAVE C7. The cave denominated C7 adjoins Cave C6. It comprises a large rectangular chamber with upright walls and a slightly vaulted roof. It is an artificial cave that has been elaborately hollowed out. The original entrance faces east (bearing 100°). The floor has a complex system of broadly circular cup-marks of different depths that cover almost the entire area. They were chipped out by hand and are not connected by grooves. Another unique feature of this cave is that the three inside walls have bas-relief engravings of pubic triangles and vulvas together with a large number of associated domes and small cup-marks of different diameters, and some niches, like the cave sanctuary of Los Candiles. A total of 70 engravings of triangle motifs have been documented.

As with Cave C6, the triangular engravings vary in size and shape: some have a deep incision running from the bottom angle towards the centre of the figure, or even towards the outside of the triangle; others do not.

The almogaren's astronomical connections

The Risco Caído sanctuary, and Cave C6 in particular, acted as an ingenious astronomical marker. The light of the rising sun illuminating the inside of the temple signalled the arrival of the equinoxes and the summer solstice, while the light of the full moon marked the passing of the months after the autumn equinox until the next spring equinox. These together provided an accurate calendar based on the solar year. The fact that this almogaren acted as a luni-solar astronomical calendar also allowed these aboriginal people to govern the vital yearly farming cycle.

One of the reasons for building this temple, therefore, was to keep time. To this end, the ancient Canarians oriented and designed the monument and its components so as to allow the sunlight and moonlight to penetrate the interior at certain times of year.

The cave's significance as an astronomical marker was clear from the moment of its discovery. The fact that the light of the sun's rays enters two days before the spring equinox and that the phenomenon continues until the autumn equinox was confirmed and documented in 2012, as part of the research work carried out during the first phase of the "Archaeological Conservation, Protection and Research of the Cultural Complex" project. Every day at sunrise during the summer half of the year, the cave is illuminated by a beam of light. This is



Figure 2.a.139. Panoramic view of Cave C7, where more than 70 pubic triangle engravings have also been documented. © Julio Cuenca

projected onto the west wall and changes shape and direction as the sun rises in the sky. Each day, the descending beam of light illuminates the pubic triangles and niches located in the middle part of the mural, changing shape until it fades out in its path across the panel. After six months of illuminating the cave every day, these effects disappear altogether at the autumn equinox.

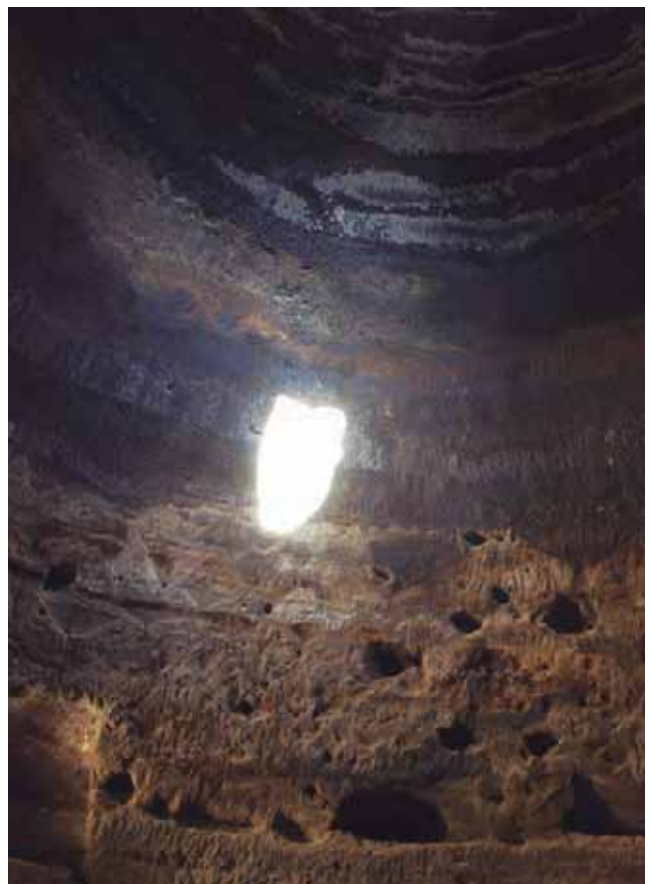


Figure 2.a.140. Beam of light projected onto the panel of pubic engravings © Julio Cuenca

Research work and evidence collected over almost a decade have enabled us to gain a more accurate understanding of the astronomical function of the site. Thus, it is not only sunlight that penetrates Cave C6. The light of the full moon as it rises during the winter months of October to March (the time of the highest rainfall when the moon signals the seasons in traditional Canarian agricultural) also illuminates the main panel of engravings.

An astronomical and statistical study of the panel of engravings carried out in 2016 also suggests a possible connection between astronomical events and the pubic triangle engravings that are highlighted on the panel as the light that penetrates through the window hits them. This introduces the possibility that people used counting to create a calendar, possibly represented on the panel by the engravings of pubic triangles and cup-marks on the west wall.

But what is indisputable, and directly supported by empirical observations and subsequent astronomical calculations, is that the light enters through the cave's optical

system, striking the dome for the first time each year almost exactly at the time of the spring equinox.

This fact coincides with information gathered on the island of Gran Canaria by several of the chroniclers of the Conquest:

...they counted the year by 12 months, and months by moons, as days were counted by suns and a week by 7 suns. They called the year Achano. Their year ended in the fourth month: that is, their year commenced with the spring equinox and it was in the fourth month that they commenced sowing, in the month of June, and they had great feasts for nine consecutive days... (Atribuido a Sedeño, H. 1505).

...they counted their year called Acano by lunar months of 29 suns from the day of the new moon, they commenced with the summer when the sun enters Cancer from 21 June onwards, the first conjunction, and for 9 days running, they held great dances and banquets and weddings and having harvested their crops they made lines into slabs, wall or



Figure 2.a.141. The west wall of cave C6, with the shapes of the extant pubic triangles superimposed for emphasis, viewed on the morning of the equinox. The patch of projected sunlight can be observed as it starts to descend the wall. The other arrow indicates the path of sunlight at the solstice. Most of the central engravings on the panel are covered by sunlight at some time, and even more by moonlight.

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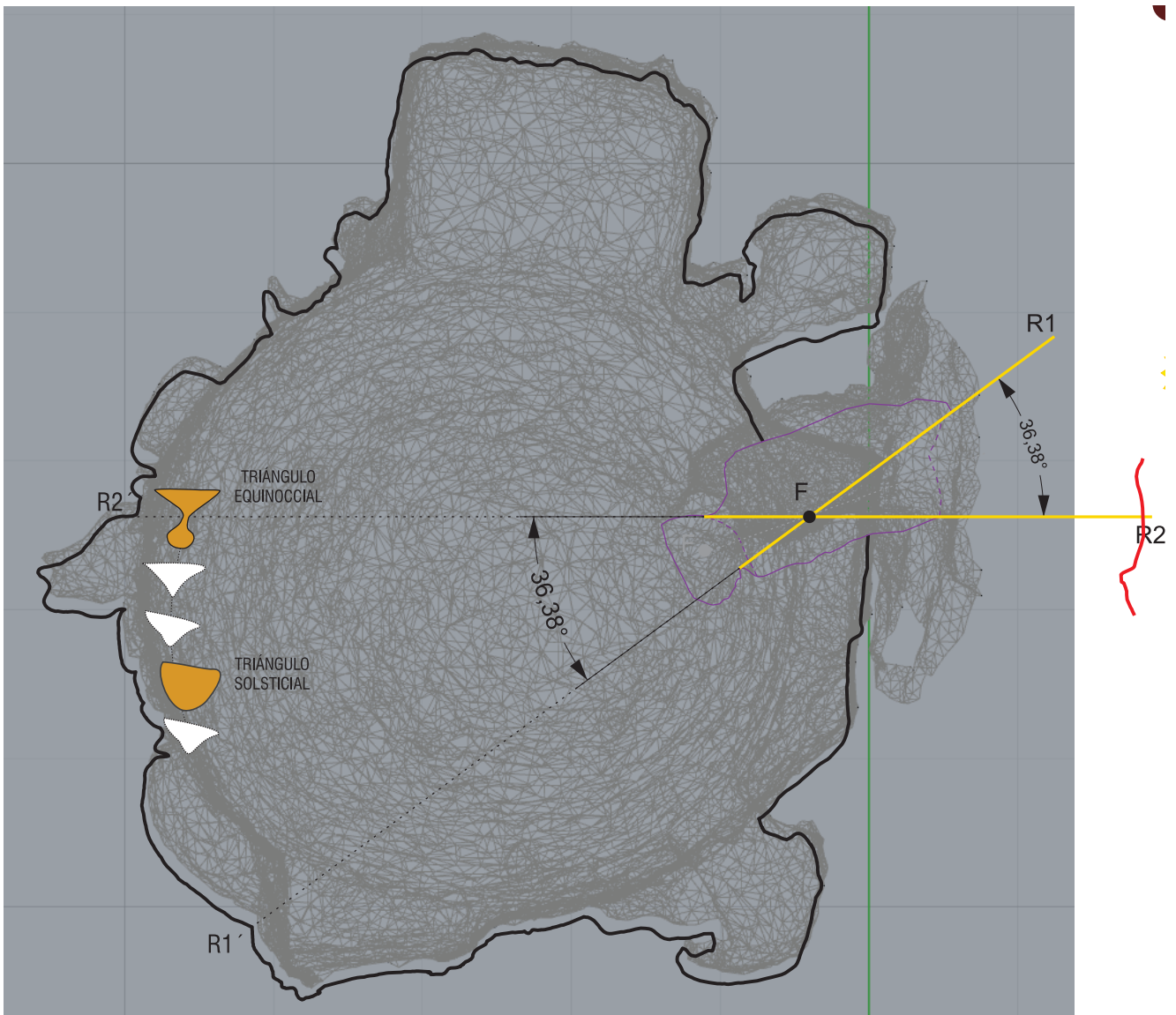


Figure 2.a.142. Angular aperture range of the optical system. Line R2 represents the first moment at which the beam of light enters, on 19th March (close to the spring equinox), with an azimuth (bearing clockwise from due north) of 95.05° at the moment of sunrise.
© Julio Cuenca and José Carlos Gil

rocks; they referred to this as *tara and tarja*... (Marín de Cubas, 1694).

This information not only confirms the luni-solar nature of the aboriginal Canarian calendar but also corroborates that they began the year with the spring equinox or the summer solstice on 21 June and that it lasted for four months.

All this is consistent with the sunlight and moonlight hitting the panel or altar of engravings. The recurring effect of the sunlight on the engravings would have progressed from two days before the spring equinox until the summer solstice, when the sunrise reaches its most northerly point on the local horizon of Risco Caído and its most southerly position on the panel of engravings,

before turning back along the same track until two days after the autumn equinox, when the phenomenon of the sunlight entering the cave comes to an end.

The full moon also has the power and capability to illuminate the interior of the cave, which happens from around the time of the autumn equinox and at each subsequent full moon until around the time of the vernal equinox. The moon's movement is regulated by the 18.6-year lunar node cycle. This, together with the fact that full moons fall on different dates in different calendar years, mean that moonlight will not always fall on the same engravings from one year to another. During every 18th or 19th year, the moon's follows its most northerly path through the sky (the "northern major lunar standstill limit"), which is beyond where the sun



Figure 2.a.143. "Areas of declination on the panel of engravings. The numerical labels, referenced on the orthoplane of the west wall of cave C6, indicate the declination of the sun or moon when its light would strike the point in question. The light green area covers all points that are lit up by the beam of sunlight at certain times during the daily and yearly cycle. All these points can be lit up by moonlight as well. The grey area to the left covers points that are lit up by the moon but not the sun. The engravings within the orange area are never lit up by either the sun or moon. © Julio Cuenca and José Carlos Gil

ever reaches. At these times, full moonlight can illuminate triangles beyond those illuminated by sunlight even at the summer solstice, lighting up some of the triangles situated to the left of the sweeps during the seasonal cycle between the spring and the autumn equinox.

The sun was used for the basic unit, the day, but its annual movement was also observed to mark out the lunar cycles. The chronicles of the Conquest reiterate the importance of the equinoxes (and particularly the spring equinox, as shown by the chronicles of Sedeño) and of the solstices, which are implicitly mentioned with the sun entering the sign of Cancer. Both are considered key moments in the annual cycle, as shown in the chronicle of Marín de Cubas (Belmonte, 2016).

The ethnohistorical evidence suggests that there were several key moments in the annual cycle:

- the spring equinox, the key moment to start counting the lunar cycles;
- the fourth month, or moon, from that equinox, when the harvest festivals were held (in other words, if the equinox occurs at the end of March, this would be new crescent moon between the end of June and the end of July); and
- the summer solstice itself (as the harvest festivals are held after the next conjunction, or new moon, which is fully consistent with the preceding point).

In fact, the second and third are two different ways of describing exactly the same idea.

The Annex X includes the detailed results of the astronomical and statistical calculation of the panel of engravings.



Figure 2.a.144. The diagram, a superimposition of several photographs, shows the image projected by sunlight onto the panel of engravings at the first moment the sun's rays enter on various dates within the seasonal cycle between the spring and autumn equinoxes. The two separate dots on the extreme right mark dates that are very close to the two equinoxes while the large phallic image on the left marks the summer solstice. The sun's rays penetrate the chamber for the first time around the spring equinox and for the last time around the autumn equinox. In the intervening months of spring and summer, the image takes different forms that illustrate a rich visual language ranging from a 'primeval seed' to a 'fertilising phallus' (at the time of the solstice, time of harvest) and then to an image that resembles the Palaeolithic Venuses which, in turn, are reminiscent of certain female idols found in Gran Canaria. This, together with the presence of pubic triangles, domes and niches along the light's path, illustrated in the following figures, suggests that we are dealing with a unique astronomical and symbolic hierophany related to fertility cycles and timekeeping. © Julio Cuenca and José Carlos Gil



Figure 2.a | 45. A series of superimposed photographs showing the path of the sunlight down the west wall on a day between the equinox and the summer solstice (about Apr 29th or Aug 13th, when the solar declination is $+14.5^\circ$). The original image, almost in the shape of an obelisk, becomes more rounded as it starts to interact with the engravings on the wall, eventually disappearing completely when it enters a dome sculpted into the volcanic tuff. This is suggestive of a symbolic visual language whose meaning we cannot fully understand.

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Figure 2.a.146. Photographic overlay showing consecutive images of the path of the sunlight at the summer solstice (declination $+23.5^\circ$). The image, in the form of a phallus or shield, falls upon or fills several pubic triangles during its sweep down the wall, eventually becoming a dot that disappears into a niche, the lowest one illuminated by the rays of the sun or moon. This cycle of images is little different from the one that occurred in aboriginal times. This beautiful hierophany is possibly related to the fecundity rituals performed at the sanctuaries of Gran Canaria, at the great feasts celebrated one month after the summer solstice. © Julio Cuenca and José Carlos Gil



Figure 2.a.147. Not only sunlight penetrates the interior of cave C6. The light of the full moon also illuminates the main panel of carvings, as it rises during the winter months of October to March (the time of highest rainfall when the moon signals the seasons in traditional Canarian agriculture). This sequence of photographs shows the path of the light of the full moon following the winter solstice (in December or January), at a time in the 19-year lunar node cycle furthest from the major lunar standstill, when the moon's declination is around $+18.5^\circ$. This is statistically the most likely path of the first full moon of winter, projecting its final rays of light onto a large niche. Some 9 years earlier or later, around the time of the major lunar standstill, the path would be considerably further to the left, well beyond the sun's route at the summer solstice. We will have to wait until 2025 to observe the phenomenology associated with this path. © Julio Cuenca and José Carlos Gil



Figure 2.a.148. View of the interior of the *almogaren* of Tara, situated in Telde, in another zone, far away from the area of the nominated property, recently discovered by the scientific team of the Risco Caído and the Sacred Mountains of Gran Canaria Project. Its characteristics, including the manifestation of a solar hierophany and an optical device, mean that it can be considered as the same kind of temple as Risco Caído, albeit less sophisticated in its design and rock art manifestations. The photograph shows the upper chamber of this sanctuary illuminated by the sunlight on the day of the Spring Equinox.

© Julio Cuenca

The outstanding architectural and constructive conception of Risco Caído

As an architectural construction, the Risco Caído temple is the most complex and perfect example of building techniques by the aboriginal Canarians anywhere on the island. The ingenious execution of this device in an isolated culture, which did not even use metal, is a real paradigm of technological, architectural and astronomical know-how. It is an excavated chamber with a circular floor plan, which is highly unusual in itself among this kind of building on the island. Moreover, the parabolic shape of the vaulted ceiling, which adheres to a uniform pattern of measurements and proportions, together with the way in which the materials were worked, demonstrates a level of originality and constructive genesis that is unusual in a culture with such limited resources.

In the case of the temple of Risco Caído, the synchrony that unites it with the cosmos required perfection in its

shape, proportion and execution that, in itself, represents a technical achievement with profound significance for the island society that designed and built it. The layout of the different architectural elements is based upon structural and compositional laws that transcend time and continue to be found today.

Risco Caído is comprised of a number of caves hewn out by the aboriginal Canarians as an outstanding, composite action that, while it was conceived as a whole, may have been executed all at once or in stages over time, but clearly in accordance with a master plan. All the caves are correlated according to patterns that follow certain geometrical ideas governed by the same rule of measurement, and they manifest special relationships and particular and general proportions within a single programme of action. This set of caves located selectively at the foot of a mountain escarpment, was evidently conceived as if it were a single unit and, moreover, linking this sacred place to the sun and the moon.

To this end, they chose the place to site and hew out this *almogaren* with surprising geo-technical expertise. Risco Caído is a unique location on the island with a concentration of sedimentary, cineritic sands that are thick, even, compact and stable enough and relatively easy to mine. From a geological standpoint, they are the result of the collapse of the original lake that contained them.

In architectural terms, after analysing all the components, one can deduce that a work of this kind would inevitably have required a gestation period that involved combining an overall idea, conceived in advance, with the features of the site it was placed in. As a preliminary step, the adaptation requires a formulation of the project to be carried out as a whole. To do this, the lines of the essential geometry must presumably have been drawn on the prepared and levelled ground of the terrace that it borders upon. Then, in order to transfer this design into the mountain, they would have established reference levels coinciding with selected layers of the cliff that can be seen, and there would be support marks to cross-check the data (basic starting points to sketch out the geometry, alignments, the final layout, intersections and measurements). All of this must have been done in order to achieve in practice the work that had been imagined in the abstract, building into the mountainside with great exactitude, so as to construct the precise openings and illumination effects. The evidence also indicates that they carried out continual checks of the measurements during the building process (verify-

ing data and supervising orders and instructions) so as to achieve remarkable geometrical precision, and a final hierophany connected to the sky. Once the main building work was completed, they doubtless carried out any final, supplementary adjustments that were necessary.

The interior of Cave C6, overlooking the amazing functional organisation of the Risco Caído site, is where the most interesting and significant astronomical lighting effects occur. There are a variety of images associated with important dates, which may have acted as tangible markers of seasons and times. These were essential for organising the social life of this community that designed and built this device before Europeans first reached these shores.

The structural profile of the ceiling of this cave is unmistakably a parabola, unlike all the other known caves on the island. Some have flat and some have domed ceilings, but their perimeters are generally rectangular and they usually have intentionally rounded corners, so as to reduce the maximum concentration of tangential forces where the ceiling meets the vertical faces of the walls. These, in turn, are vertical or lean in slightly towards the inside of the cave. From the point of view of its size, cave C6 could perfectly well have been built like all the others, in a perceptibly prismatic shape.

The headroom of cave C6 makes use of the favourable litho-stratigraphic sequence, whose stability made it possible to work inside safely and easier to achieve

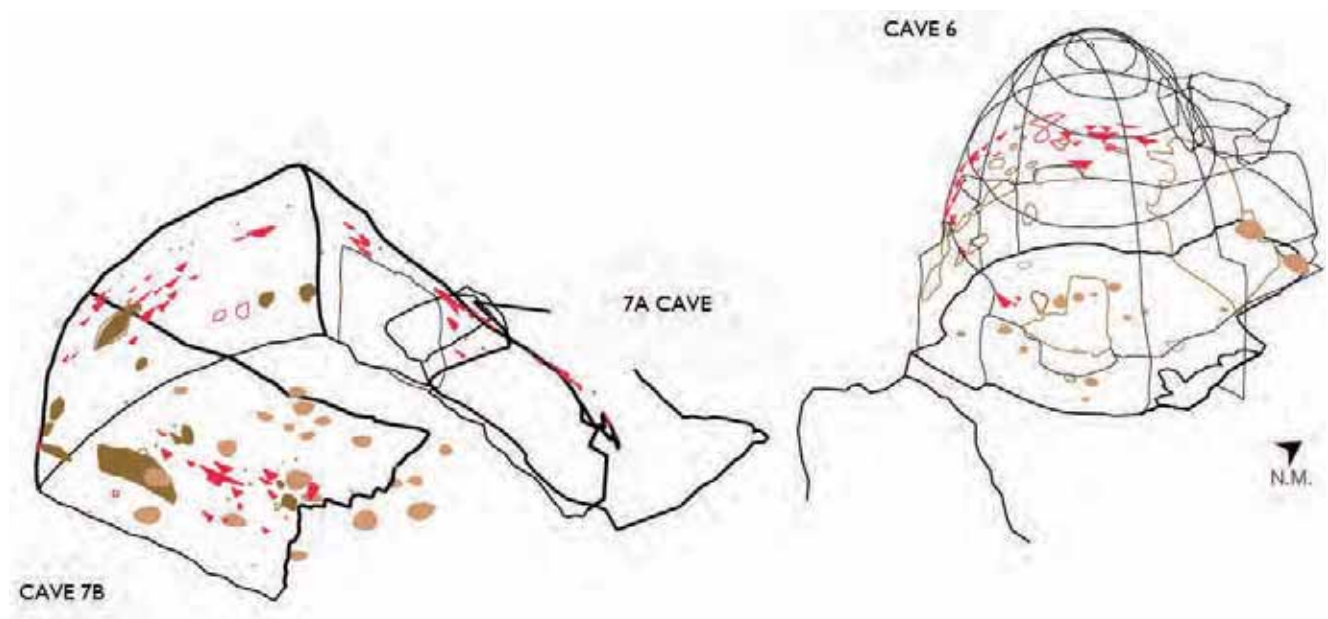


Figure 2.a.149. Three-dimensional survey of the Risco Caído caves. © Carlos Gil Sarmiento. PROPAC.

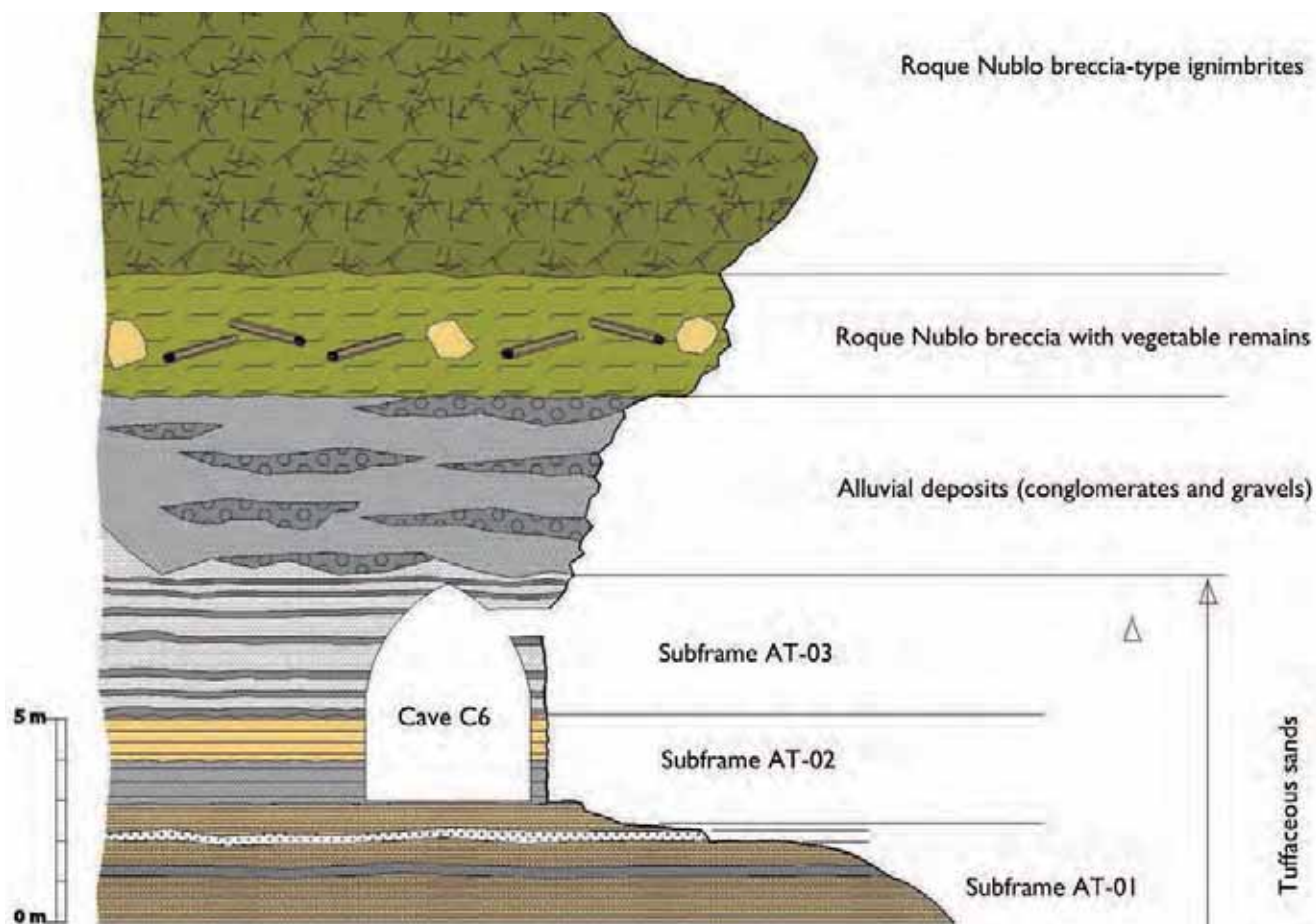


Figure 2.a.150. General litho-stratigraphic column of the Risco Caído caves, showing the choice of volcanic tuff as the ideal material for excavating these caves. © ISCG Ismael Solaz Alpera

the parabolic shape they sought. The builders could hew into the core only as far as was strictly necessary, with the least possible effort and the greatest versatility. The layout of the rock strata was visible before the excavation work started, and was followed in accordance with what could be predicted from the outside.

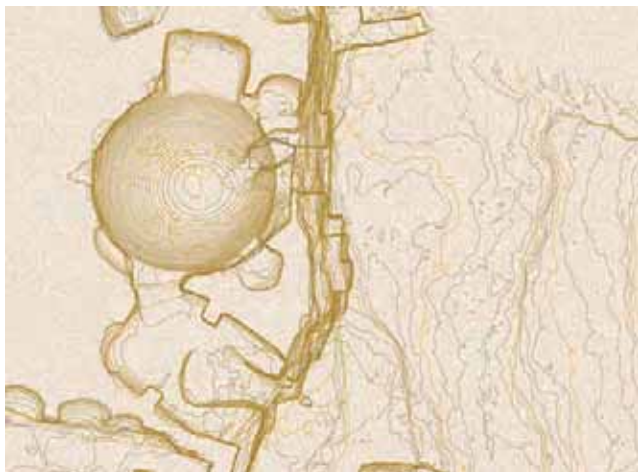


Figure 2.a.151. Topographical survey of Risco Caído Cave C6. © José Miguel Márquez Zárte

Faced with the unusual shape of cave C6, predominantly circular, they presumably designed and increased the height of the vaulted ceiling until they had the optical device or natural sky-light that they wanted. In other words, they maintained its shape and worked up along a vertical axis to make a cylinder until it was finished, either in a horizontal or inclined plane. Creatively and intentionally, the excavation and final ascending shape of the cave is a vaulted dome with a variable parabolic profile, with the main focus at the height of the window or oculus, facing east, through which natural light penetrates. In this way, the cave harnesses the geometrical qualities of a parabola not only to create a space that protects and embraces but also to obtain a uniform and concentrated distribution of the light that it captures, as well as the best diffusion of sound. These conditions enhance its quality as a space of sensations and beliefs.

Natural sunlight and moonlight—directed and, in turn, modified by the conduit that channels it like a spotlight into the cave—generates a series of images projected on to the opposite (west) wall that functions as an astral

marker and stone altar. In addition to this, the beam of light that crosses the focus of the parabola creates indirect general lighting because its reflection is intensified by the alternating white rings of salts adhering to the surface of the upper laminar strata of the cave. These irradiate most of the complementary diffuse light that is concentrated downwards towards the base or inhabitable surface of this superb architectural masterpiece. Furthermore, thanks to its shape, the cave is evenly lit, without any extensive shadows or dazzling, apart from on the aforementioned stone altar where the solar and lunar hierophany unfolds. The structural and geological conditions are also effective in providing reasonable stability and safety over time, apart from the natural deterioration of the escarpment, as is evident from the present-day condition of the cave.

The construction process, assembly or system is one that, at the very least, materialises significant functional, structural, artistic and astronomical knowledge. It is a creation that has never been seen before in the islands; a work of outstanding value for an isolated culture like

the one that produced this design of overall, integral conception.

The architectural expression of the sacred site of Risco Caído, and the way it functions as an astronomical marker, is outstanding for that historical period on the Island of Gran Canaria, because the inhabitants applied what they learned from constantly observing the skies, because of the lack of auxiliary resources and, above all, because it is an eminently social creation conceived in abstraction. It is a construction that must have been conceived in the abstract before it was materially implemented, at first using stakes and ropes, probably marked or knotted, and then by transferring certain exterior measurements into the mountain, with great precision and exactitude, by transforming them into detailed instructions for the excavators, based on astronomical reference points and axes. In particular, in order to formulate the necessary cross-sections and profiles so that these could be applied by those roughly hewing out the chamber in the hidden innards of the mountain, the surveyors must have used a dihedral system laid out on the



Figure 2.a.152. View of the inside of Cave C6 of the Risco Caído complex showing the exceptional parabolic profile of the dome.
© Julio Cuenca

flattened soil of the terrace, at the foot of the escarpment, prepared for the purpose beforehand.

Excavation techniques using abrasion and/or hammering, mainly using stone tools, are known from various cave sites in the nominated property and on other parts of the island. Evidence of this can also be clearly seen inside cave C6 from a fragment of fractured stone, used as a wedge, driven into a niche to the north-west of the chamber, near what is known as the “presidency” or “functional place of honour”. Despite the ancient Canarians’ shortage of technical resources, the high degree of precision both in the planning and the execution of the forms and effects that they sought is very impressive. The broader evidence indicates that the aboriginal Canarians likely used different kinds of stones in constructing the cave, including obsidian for cutting, together with hard woods, hemp for ropes (knotted or knot-free as a calibrator), hides to regulate ventilation to eliminate dust in the air from working areas, punches or drills (of bone and/or thorn) and water containers, possibly udders (being more resistant to the accidental blows or falls that can so frequently occur in a building activity of this kind).

An analysis of the geometrical proportions of the temple indicates that the builders were aware of the golden ratio and applied it in practice, although there is no evidence of them having done so numerically or algebraically. Nevertheless, using their geometry, the result is a model of spatial harmony that allows us to contemplate a standard of beauty or proportion that has been widely recognised in both prehistoric and historic communities.

The ancient Canarians knew how to write and they worked with a standard unit of measurement in their main construction projects. Studies conducted in the area have managed to establish this standard as 0.65m. The evidence shows that people were governed by this standard measurement, not only when designing Risco Caído, but also at all the cave sanctuaries located at this site. The Spaniards then imposed their language and their new “measuring stick” on this culture, as part of a process of cultural assimilation that ended up eliminating this benchmark in people’s conception of the habitat, with the possible exception that it may have survived in trades such as that of the “Piquero”, related to the still-existent art of building caves.

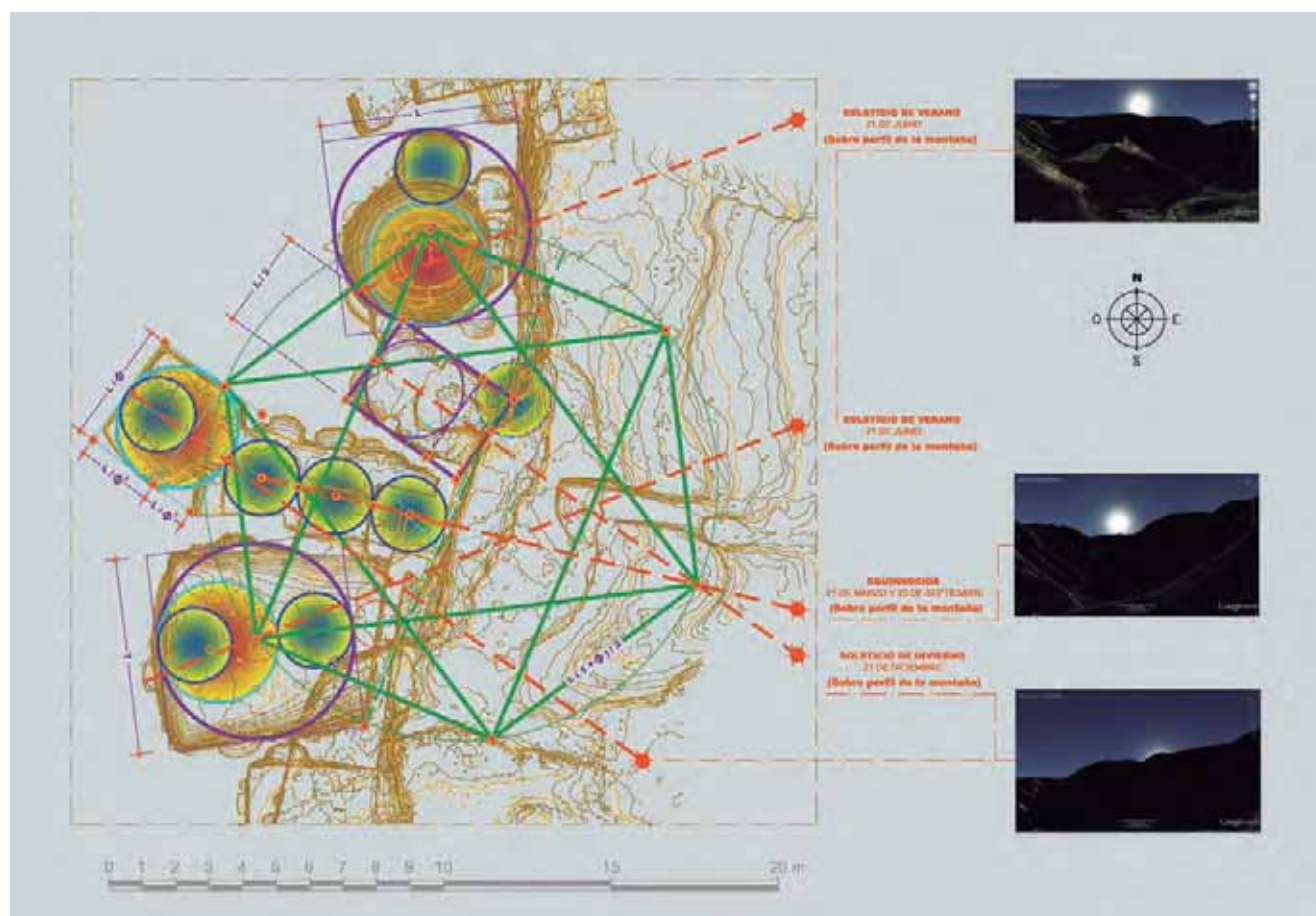


Figure 2.a.153. Outline of the Risco Caído archaeological complex showing geometrical construction elements
© José Miguel Márquez Zárata

Architecture is an eminently social art and, in this context, one might be tempted to claim that the Risco Caído site is among the poorer examples because of the builders' lack of resources and the austerity of its appearance. On the contrary, its conception is extraordinarily fertile, magnificently harmonious and original, and it is unique in its structural implementation. This results in the integrity of the forms and the intangible and practical functions that make it outstanding for a people isolated in the middle of the ocean, and in particular those that inhabited Gran Canaria in pre-Hispanic times.

The Risco Caído almogaren is unique and exceptional owing to its form, design and function and because of the materials used. As with all rock art, its message is always present, it never disappoints and its meaning is renewed by the gaze of each generation. And, as is the case with all good architecture, apart from providing the right response to its function, Risco Caído has no lack of "outstanding character" or "radical style": it stands as a faithful and precise expression of the thinking that generated it. Its existence bears enduring witness to the devoted manual labour of its builders, and the artistic beauty inherent in the monumental construction and geometrical form, the visual impact of its remarkable engravings, and the material expression of its sacred relationship with the cosmos in the form of still-visible hierophanies all fit together to make it a vibrant and living symbol of the achievements of a remote and extinct civilisation.

The synchrony that connects the Risco Caído temple to the cosmos itself requires a level of perfection in form, proportion and execution that speaks of the profound technical achievements of the island society that designed and built it. The layout of the different architectural elements is based upon structural and compositional laws that transcend time, which are still present and which speak of the eternal and the unchanging.

In short, it is an outstanding creation, sublime for the means that they had at their disposal, full of nuances and, at the same time, highly complex in its extreme conceptual simplicity. Annex X provides supplementary information on the conceptual elements of the design, proportions and patterns of measurement. Ultimately, the Risco Caído almogaren is a monument that opens a window for us into a culture fully integrated into its environment, and one that looked up to the skies. As Viera y Clavijo so rightly says:

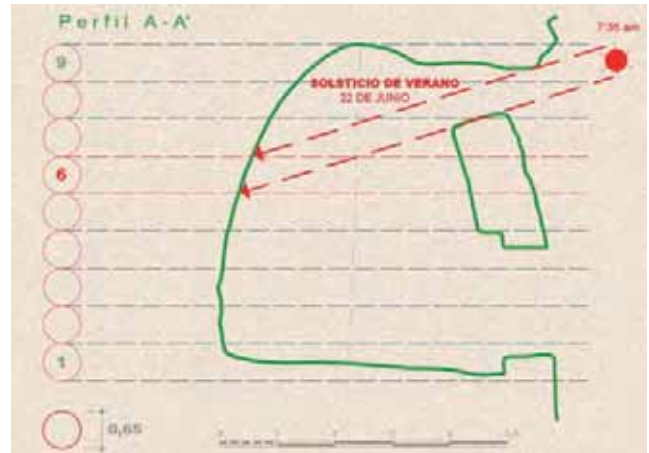


Figure 2.a.154. The presumed use of a standard unit of measurement in designing elements of cave C6 at Risco Caído. The evidence demonstrates that this standard unit was used in all phases of its conception. © José Miguel Márquez Zárte

"They did not talk of gold, or silver or of jewels, or of the other conventional goods, dependent on the whim or the dazzling of judgement: But of the rains on time; of the optimum harvests; of abundant grazing; of blessed young. Tranquil sleep, sweet peace, the fecundity of women, the strength of their arms, the blessing of Heaven spilled on their livestock and flocks, their granaries, their barns." (Viera y Calvijo, 1772).



Figure 2.a.155. Studies carried out at both Risco Caído and other cave sanctuaries located in the nominated property reveal a standard of measurement in their conception (0.65m). The study of this knotted rush rope could provide new evidence about the standard measurement used by the ancient Canarians for building almogarenes. © Museo Canario



2. The *almogaren* of Roque Bentayga: searching for the control of time

Archaeological investigations have shown several places in Gran Canaria to be the remains of pre-Hispanic *almogarenes* or sacred sites. They share a similar archaeological context and similar elements. Some of them are located in relatively lower places but, typically, they occupy high ground, close to or right at the top of mountains, dominating a broad, impressive panorama while usually being near a troglodyte village and/or burial caves. They typically consist of flat carved platforms in the rocky ground with a number of carved basins connected by channels. It is quite common to find petroglyphs in the surrounding area, some of them alphabetical. The Roque Bentayga *almogaren* is an outstanding example, demon-

strating all of these features (see section 2.a.v and Figure 2.a.157).

The different contexts where sacred life developed suggest different aspects of the religious world of the ancient islanders. At first sight the scattered *almogarenes* appear as disconnected elements within the cultural landscape, but a broader analysis of their tangible connections to prominent features both in the visual landscape and skyscape seems to provide a unifying scheme for understanding: (a) the location of at least a significant number of archaeological sites of a possible sacred character; (b) the purpose of some or even the most important elements of the sites; and (c) the geographical relationship between some of these sites and the local topography. Once again, Bentayga is a paradigm (see Figure 2.a.158), in that it exhibits these three qualities.

The skyscape element is not of evident importance for all types of site: for example, the communal granaries known as “Agadir” are generally south-facing, which can

← Figure 2.a.156. General view of Roque Bentayga, with the sanctuary (*almogaren*) on the top. © Julio Cuenca



Figure 2.a.157. General view of the Roque Bentayga *almogaren* showing the different important elements of the nomination. © Cabildo de Gran Canaria

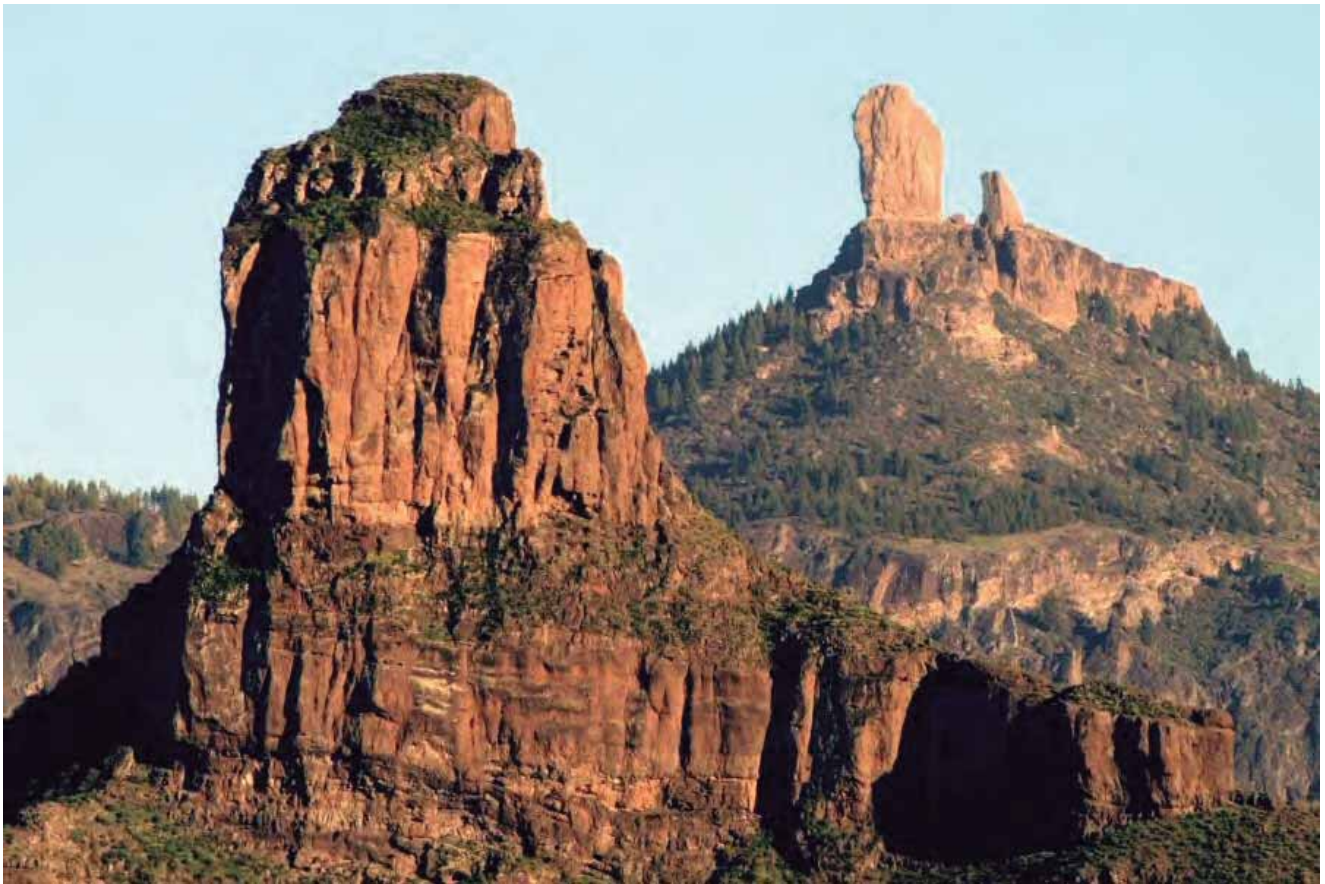


Figure 2.a.158. Roques Bentayga (foreground) and Nublo, symbols of Gran Canaria, as seen from the access to the Mesa de Acusa, another important aboriginal settlement in the area of the cultural landscape. Either by chance or by site selection, the winter solstice sun is seen to rise between the two peaks from certain locations of the settlement, including some of the troglodyte habitats. © Juan Antonio Belmonte

be explained by the necessity for dry places for storing grain. However, archaeoastronomical fieldwork studies in Gran Canaria dating back to the early 1990s (Aveni and Cuenca, 1994; Belmonte *et al.* 1994) have revealed the extraordinary astronomical potential contained in many of the pre-Hispanic remains on the island. In particular, statistical analyses of the almogarenes located at high spots as well as other sacred places and necropoleis, and the spectacular aspect of some of the astronomical hierophanies discovered to date – with a very low probability of these having occurred by chance in most cases – clearly suggests that the astronomical relationships discovered were indeed intentional. All of this strongly indicates that tracking the path of the celestial bodies was an important element in the purpose and function of several pre-Hispanic sanctuaries in Gran Canaria. The Roque Bentayga sanctuary clearly demonstrates these astronomical characteristics and can thus be considered paradigmatic (see Figure 2.a.159).

The almogaren at Roque Bentayga is located in the middle of the huge volcanic caldera of Tejeda, at the geographical centre of Gran Canaria, and in the heart of

the nominated property. The vicinity of Roque Bentayga also contains artificial caves, defensive walls and alphabetical petroglyphs. Archaeoastronomical fieldwork dating back to the 1990s (Esteban *et al.*, 1994; Belmonte *et al.*, 1994, Esteban *et al.*, 1996-7) indicates that the Roque Bentayga almogaren was a sacred site containing a series of natural and artificial time-keeping devices, presenting spectacular hierophanies related to the sun, the moon and other celestial bodies, such as the bright star Sirius (The “Estrella de los Caniculares” or “Dog Star” of the chronicles).

One of the most spectacular hierophanies at the Roque Bentayga almogaren is the coincidence between the shadow cast at equinoctial sunrise by a carved notch – located on a rocky promontory at the eastern edge of the precinct – and a circular symbol – some 70 cm of diameter – engraved on the ground of the central platform soon after sunrise at the site (see Figure 2.a.160). This phenomenon only takes place at the equinoxes (Esteban *et al.*, 1996) and there is an obvious comparison with the light hierophanies connected with the equinoxes at Risco Caído. Similar phenomena are also

found at Cuatro Puertas (for the solstices) and Arteara. This combination of two artificial elements, a notch and a petroglyph, suggests a kind of observational technique used by the ancient islanders. The coincidence between the shadow cast by the notch and the petroglyph at sunrise indicates the occurrence of the significant astronomical event. It is possible that the track of the shadow was followed at other times either for telling the time or to predict the exact day of an astronomical event.

There is also evidence of other equinoctial markers on the island, reinforcing the importance of this astronomical event for the ancient people of Gran Canaria, and consistent with Sedeño's statement (see Section 2.a.vii. / I) that the vernal equinox was used to determine the beginning of the year in the pre-Hispanic calendar. It remains an open question whether the practical knowledge necessary to set up these markers was gained by the ancient Canarians themselves or imported at the time of the migration from the continent.

Another astronomical connection discovered at Bentayga relates to the moon when it is following its most

southerly path across the sky, known as the southern major standstill limit (see glossary). The eastern horizon looking down from Roque Bentayga is really impressive, comprising the highest peaks of the island, but by far the most conspicuous feature of the horizon is Roque Nublo, a very high rocky monolith 3 km away that is currently considered one of the most representative symbols of the island (There is another small *almogaren* at the base of Roque Nublo.). As the most southerly moon rises in the sky, viewed from the centre of the *almogaren*, it just clips Roque Nublo (Figure 2.a.161). At the time when the island was colonised, c. 2000 years ago, this phenomenon would have been even more impressive (Esteban *et al.*, 1994; Belmonte *et al.*, 1994; Belmonte and Hoskin, 2002; Gil and Belmonte 2009), and it could possibly account for the location and the sacred importance of the *almogaren* of Roque Bentayga itself. Furthermore, as this event can only occur in every 19th year, this suggests that the ancient Canarians were aware of what we know as the 18.6-year lunar node cycle, or at least highly organised and developed in carrying out their astronomical observations.

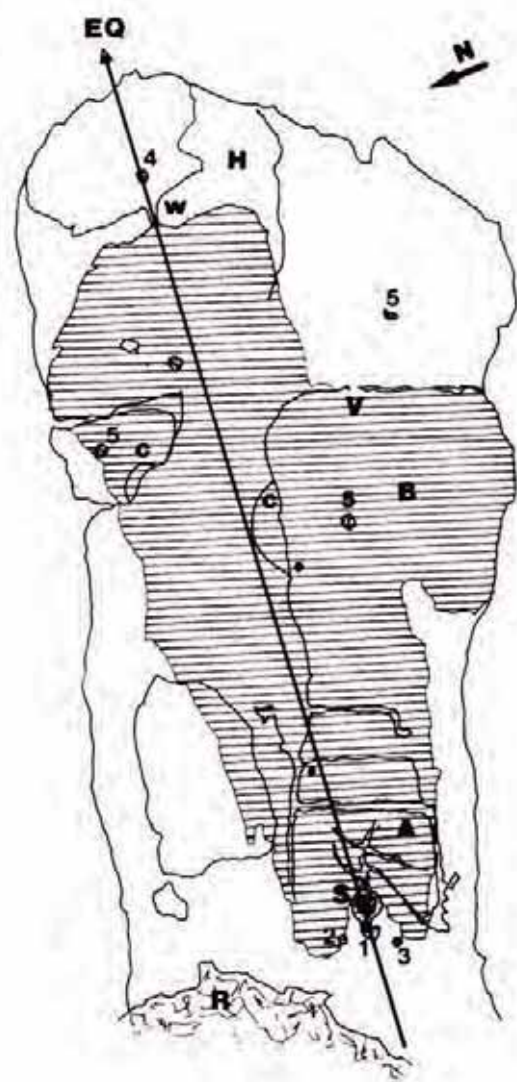


Figure 2.a.159. Image of the eastern horizon as seen from the central platform of the *almogaren* (sanctuary) at Roque Bentayga. The key elements of the site and landscape that act as references for the skyscape are: (W) an artificial window (possibly an elaborated natural notch) in the rocky outcrop dominating the site; (V) an artificial window framing Pico de las Nieves, the highest peak of the island; (S) a large circular glyph carved into the floor of the central platform; and (RN) the impressive Roque Nublo, symbol of the island.

© Juan Antonio Belmonte



A third important astronomical connection of the almogaren concerns window V, a notch that is certainly artificial. This notch frames Pico de las Nieves, the highest peak of Gran Canaria. As observed from the sanctuary, the star Sirius rises over this peak today, and would also have risen here centuries ago in pre-Hispanic times (see Figures 2.a.162-163), the effect of precession being negligible in this particular case. This would have provided an additional time-keeping device that fits with the chronicles, where Sirius is mentioned as Estrella de los Caniculares (see Section 2.b.v) and was reportedly used to mark the beginning of the harvest festivals.



Finally, two alphabetical petroglyph stations are located on the western side of Roque Bentayga (Cuenca, 1994), on the slope opposite to the location of the almogaren. The western horizon and the coastline can be clearly seen from this position. The most prominent feature of this part of the horizon is Mount Teide (on the neighbouring island of Tenerife), which from here is visible just behind Montaña de Altavista, a striking visual coincidence. It is worthy of note that the first early crescent moon seen at the time of, or after, the summer solstice sets in the vicinity of Mount Teide throughout the 19-year cycle. In fact, the average direction coincides with the position of the peak of the mountain. This fact could well have been used as a calendrical reference for the festivals held at the beginning of the year within the local luni-solar calendar, as suggested by the chroniclers (see section 2.b.iv).

Aside from this, the cultural significance of the Bentayga-Altavista-Teide alignment is evident not only from the positioning of the Bentayga alphabetical petroglyph inscriptions where the alignment just comes into view, but also from the presence of pre-Hispanic constructions on the top of Montaña de Altavista that appear to be oriented towards Roque Bentayga to the east and Mount Teide to the west (Aveni and Cuenca, 1994). The placing of many of the petroglyph inscriptions – notably the alphabetical ones – appears to have been strongly influenced by the visual topography and/or by astronomy.

Figure 2.a.160. Plan of the almogaren of Roque Bentayga. The circular glyph S is located within carved flat platform A. B is a secondary platform. C and c are artificial caves. W and V are carved notches, the latter located on rocky outcrop H. Several small artificial cup-marks are indicated by numbers. The vertical wall of Roque Bentayga, R, delimits the western side of the almogaren, closing off the view in that direction. When the sun rises at the equinoxes in window W, as seen from the central platform (above), rocky outcrop H casts a shadow on the platform which fits perfectly with circular glyph S at a certain stage. This only occurs on a single day. The second window, V, allows observers to see Sirius rising over Pico de las Nieves. Most of these elements have been excavated on the rock, making Bentayga sanctuary the closest thing to an “observatory” that one can imagine within the high mountain open sanctuaries of Gran Canaria. Adapted from Esteban *et al.* (1997).



Figure 2.a.161. The rising moon at its southern major standstill limit (i.e. following its most southerly path across the sky) touching Roque Nublo, as observed from the sanctuary of Roque Bentayga. The circle represents the same phenomenon as would have been observable 2000 years ago. © José Carlos Gil

In summary, the high-mountain sanctuary, or *almogaren*, of Roque Bentayga is one of the best examples in the world of a sacred mountain place where a sophisticated astronomical phenomenology, presumably related to time-keeping, has been found. The equinox marker, the rise of Sirius and the lunar connection to Roque Nublo constitute three different time-keeping devices used both for religious and sacred purposes (festivals) and for more profane ones (determining the timing for harvest). The Bentayga *almogaren* is an outstanding example of a monument intimately connected to both the cultural landscape and the skyscape.

→ Figure 2.a.162-163. Top: Close-up of window V, showing Pico de las Nieves, the highest peak of Gran Canaria, in the background. Bottom: The light path of Sirius, the “Estrella de los Caniculares” of the chronicles, as it rises, showing the corresponding astronomical alignment as seen from the centre of the *almogaren* at Roque Bentayga. © Juan Antonio Belmonte and Oswaldo González.



3. Analysis of the visibility and astronomical orientation of the main caves and sanctuaries of the Tejeda Basin

A statistical analysis of the visibility, orientation and astronomical potential of the main cave sites and sanctuaries was undertaken in 2015, using geographical information system (GIS) tools and a digital elevation model of the terrain (DTM). The aim was to reliably establish the astronomical relationships between the most significant caves, ceremonial sites and temples and the main landmarks of the area of the Tejeda Basin. In particular, the study generated the azimuth (bearing) and declination (which determines the astronomical correlates) of the two outstanding landmarks of the interior landscape, El Roque Bentayga and El Roque Nublo, as seen from the main rock caves in the Tejeda Basin (Gil, 2016).

Several of the conclusions of the analysis support the idea that certain astronomical events played a key role in the conception and design of the most significant caves, or at least in the conception of the skyscape

that permeated the main sanctuaries that the ancient Canary Islanders created in this area. The main conclusions drawn from the analysis of the orientations and the astronomical relationships of attributes such as Las Cuevas del Rey, Risco Chapín Sanctuary and important caves on La Mesa de Acusa are as follows:

a) From the positions of Las Cuevas del Rey, the sun would have been seen to rise over Roque Bentayga on the equinoxes and over Roque Nublo close to the winter solstice. Furthermore, from Roque Bentayga, the full moon rising at its southern major standstill limit would have passed behind Roque Nublo, as explained in the section above.

b) The Corrales de Acusa broadly face the direction of winter solstice sunrise. From la Cueva Pintada of Los Corrales de Acusa, in particular, the winter solstice sun rises over Roque Bentayga. Roque Nublo appears between the direction of winter solstice sunrise and moonrise at the southern minor standstill limit. Obviously, these observations coincide with the cave sites of Acusa that have line-of-sight visibility of these places.

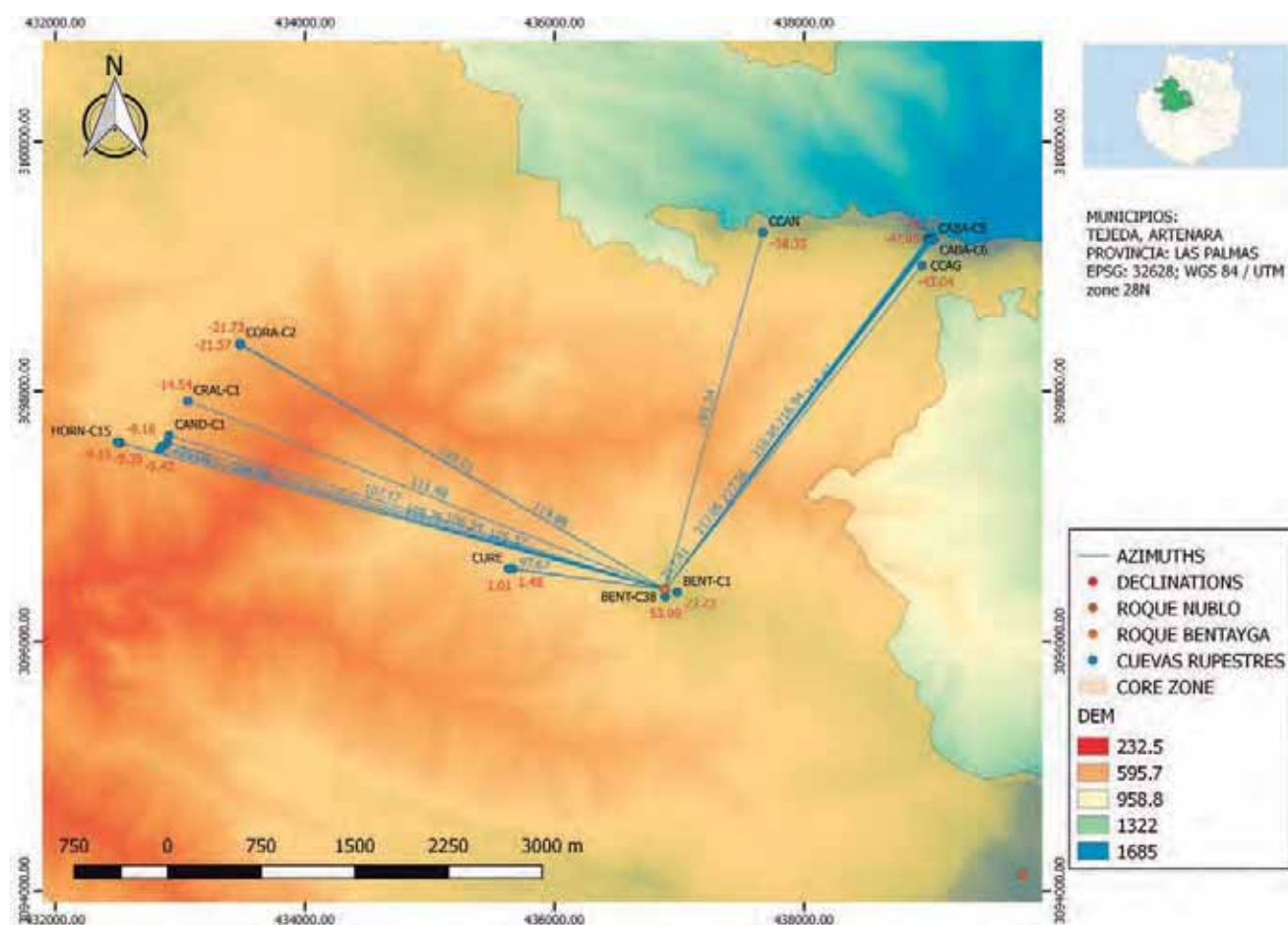


Figure 2.a.164. The astronomical potential of caves oriented towards Roque Bentayga. Drafted by: José Carlos Gil

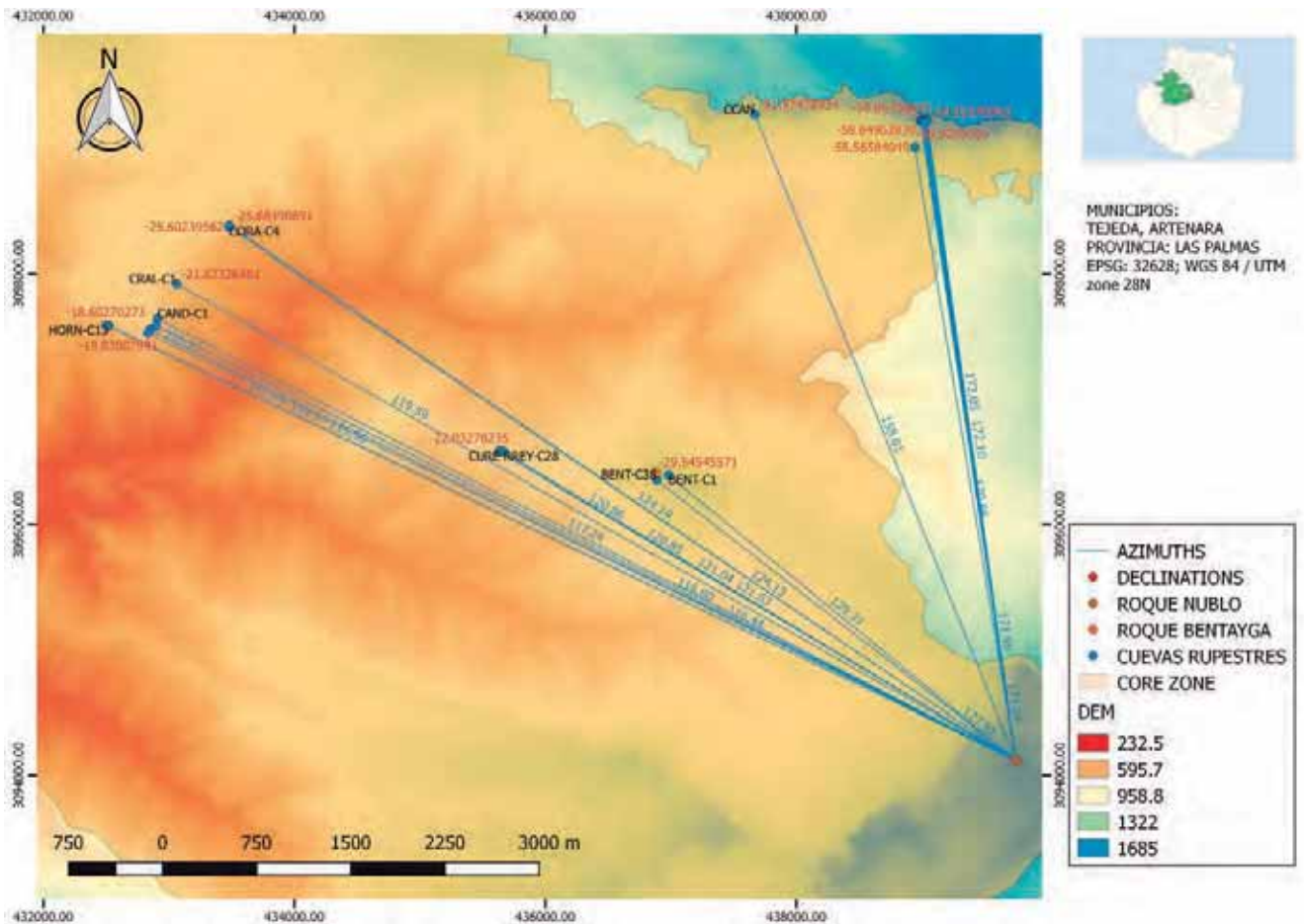


Figure 2.a.165. The astronomical potential of caves oriented towards Roque Nublo. Drafted by: José Carlos Gil

c) From the positions of Cueva Candiles and Caballeros, one can observe low-lying stars far to the south, including Canopus (second brightest), Achernar and Gacrux (the lowest star visible over the horizon of the Gran Canaria Highlands). In the case of Cueva Candiles, the view from the interior and its orientation from the back wall is exactly in line with Roque Bentayga,

These results lead to the general conclusion that the patterns of orientation of the main caves and sacred sites in the proposed property are no mere coincidence. The analysis clearly shows that these sites were intentionally located and constructed in relation to topographic landmarks and astronomical targets. Thus, they constitute a set of expressions that decisively encapsulate both the landscape connectivity and the connectivity between landscape and skyscape.

In particular, the analysis emphasizes the importance of the skyscape in shaping the cultural landscape of the sacred mountains, at least in respect of some of its leading tangible attributes.

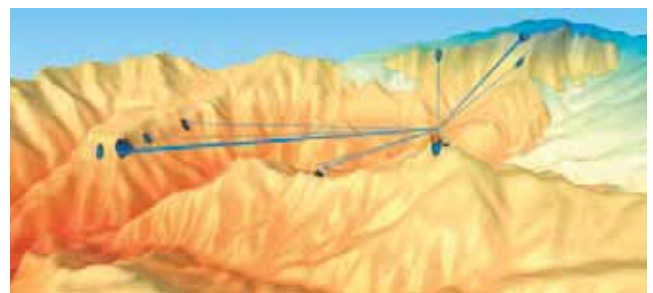


Figure 2.a.166. Visibility of caves oriented towards Roque Bentayga. Drafted by: José Carlos Gil





2.a.viii

Ethnographic marks on the landscape

Over the centuries, from aboriginal times to the present day, man has always left his mark on the land, along with a cultural legacy that still survives in the form of singular manifestations, uses of the land, techniques and trades, which in general, show a surprising ability to adapt to the environment and its resources.

Some expressions become outstanding and enhance the material and non-material attributes of the Cultural Landscape proposed. In this area, forms of grazing, including transhumance - inherited from the ancient Canarians and sustained by the tracks and grazing trails that have seen the herders go by with their flocks for centuries -, survive to this very day. Other ancestral techniques for harnessing resources are also conserved. These include the expressions that consolidate the sin-

← Figure 2.a.168. Troglodyte potteries of Gran Canaria in the 19th century © Carl Norman, 1893. – FEDAC

gular water culture, in which techniques and manifestations from ancient times can still be seen, such as the amazing cave pools, or the network of tanks, ponds and canals carved from the volcanic tuff that dots this area, many of them adapted or maintained over the centuries.

The Cultural Landscape also offers a terraced farmland, sometimes literally hanging over precipices, an expression of the determination to domesticate the steep slopes by building, sometimes cyclopean terraces and “bocados”.

And furthermore, there are the trades that have been kept alive over the centuries, like the “piqueros” who still carve out artificial caves, woodworkers and the forestry holdings, or the survival of the pottery tradition of the ancients in places like Lugarejos, and many other traditions and equipment associated with farming and the typical rural settlements of these lands.



Figure 2.a.169. Wood cutters in the Inagua-Pajonales pine forest and their singular tools and techniques © Julio Cuenca



I. Water heritage and landscape

Water has been the leading player in giving shape to the Cultural Landscape, as the element that has sculpted its current relief to the greatest extent (see network of ravines on Map 2.a.2). But from aboriginal times to the modern day, water and its uses has also defined the organisation of these lands and has moulded many of the important lines of the landscape and its attributes. It has determined the location of the arable land, it has been a reference point in the location of many of the sanctuaries of the sacred space and how they work, and it has dotted the geography with expressions, sometime unique ones, that talk to us of the mark left by water through the hand of its inhabitants.

Determining the historic water landscapes therefore requires an exploration of these circumstances following a diachronic sequence.

The water landscape during the pre-Hispanic period

First of all, it is worth remembering that this was a water-rich landscape, despite its stony harshness. Today, it is difficult to count the number of springs and streams in

← Figure 2.a.170. Partial view of the El Nublo or Don Gregorio dam in the course of the Barranco del Nublo ravine. © FEDAC



Figure 2. a.171. Water as the main sculptor of the rugged ravines of the area. In the photograph, snow over the sacred site of Risco Chapín, with the Tejada Basin spreading out below. © Orlando Torres

the area, which have diminished in their volume or have disappeared altogether due to very recent, exogenous reasons as we will see. The records show that water was abundant all year round in the past and it ran along the major ravines that run down from the mountains in this part of the island up until the early 20th century. As Torriani stated in 1592:

“(The island) To a large extent is rough, but it also has some very pleasant places and an infinity of excellent streams, numbering five thousand in all, that later meet and form rivers” (Martín de Guzmán, C. 1984).

This abundance was due to the fact that the sub-soil of the central Highlands of the island comprises a rich perched water table fed by thousand-year-old filtrations of rain, snow and moisture from the Trade Winds, which has a geo-morphological spatial configuration (lava and pyroclastic material from the Post Roque Nublo Cycle and lake sediment) that offers suitable hydro-geological conditions for water circulation and storage.

It is also important to mention the fact that the pre-Hispanic communities could have made significant modifications to the landscape. Their activity created an incipient farming landscape, which has left a mark that can still be seen in the landscape today. There is evidence to show that they cleared and ploughed the few alluvial terraces, such as the Acusa and Los Junquil-



Figure 2. a.172. Photograph of a stretch of the Vigaróe ravine, part of the drainage system of the north-west slopes of the Pajonales pine forest highlands, which contributes its waters to the Tejeda Ravine. © Orlando Torres

los plains, and the scree slopes to grow irrigated crops. They logged timber as an energy source, they opened up clearings in the forests for grazing land. They also used fire to stimulate the growth of grazing meadows. Thus, when the Europeans arrived, much of the forest that grew in the cultural landscape before any kind of human interference would have been partially thinned out, as explained in greater detail in Section 2.a. ii.

There was very little settlement of this part of the island because the terrain is so rugged, the weather conditions extreme in the context of the island and, as a very important point, because of the lack of alluvial terraces along the beds of the ravines, caused by highly fertile sediments being deposited by the run-off water. Had these existed, they would have been perfect for farming, thus attracting settlers to these enclaves, as happened in pre-Hispanic times, but along the lower reaches of the major ravines that cut into the island.

But the archaeological digs that have been done on many of the ancient Canarian sites in this part of the island have shown that they did grow cereal crops. Except for the crops grown on gentle slopes, especially on the

extensive slopes of the Acusa plateau, these crops were grown on small plots sited around the beds of the ravines with permanent running water, or on the colluvial deposits left on slopes close to springs to facilitate irrigation. The agricultural importance of the Acusa plain is highlighted by the fact that some of the largest granaries on the island are to be found among the escarpments of the plateau. The many silos of La Sierra del Bentayga stored the grain from the crops that were grown in Las Calabaceras and Los Llanos de la Higuera, immediately to the north of these sharp crests, on colluviums and scree slopes.

Hence, the lack of alluvial terraces and, in the end, water determined a good proportion of the singular elements of this landscape and they had an influence on its peculiar system of settlements and territorial organisation.

There are documentary records of how the ancient Canarians used the water infrastructure. Thus, some chroniclers, referring to Gran Canaria, claimed that:

“Most of what they grew required irrigation, for which they built large canals, whose crystalline waters were broken up

into streams, which bathed the meadows. This way, they harnessed the water, channelling it artfully and carrying it very far. In many parts, they had tanks in which they kept it after nightfall, if the soil was cool and when there was no need of it (...) And when they had a shortage of water in some valleys, over steep mountains, and they could not pass them with canals, as streams were so abundant and the springs so copious from which it came, they drilled the crags even if they were solid, opening up a mine in their bowels (...)" (Sosa, en Martín de Guzmán, C., 1984).

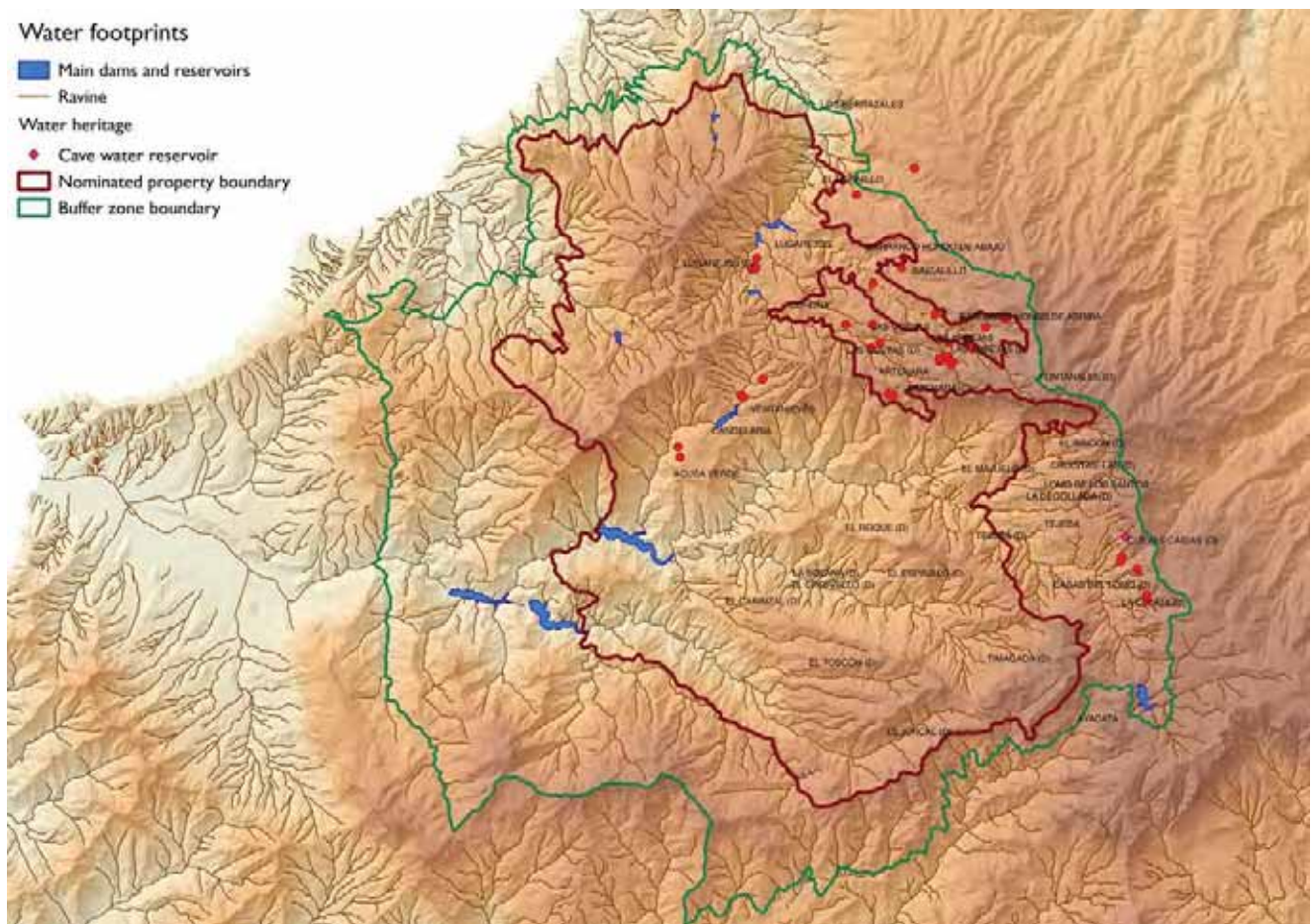
In the first half of the 16th century, when lands and water were shared out among the settlers of the island, reference was also made to the existence of the hydraulic structures of the indigenous Canarians, with special mention of an important canal in 1537:

"(...) Juan de Çiberio Regidor (...) begs they do him the favour of granting him some pieces of waterless lands where there could be up to thirty "fanegadas" (1 fanegada = 5248 m²) more or less ... bounded below by the walls of those water rights and above by the old canal of the

Canarians as far as a gully they called Los Lomos Altos... " (Aznar-Vallejo, E. y Ronquillo, M., 1998).

There are two particular aspects that can be deduced from the lasting survival and evidence of the water culture of the ancient Canarians in the area. The first mentions the peculiar catchment systems as "alcogidas". The slopes of the mountains or the edges of the ravines were worked to catch rain and surface waters. The starting point of the peculiar water system was the multi-purpose use of the infrastructure that included preparing tracks or platforms, chiselling canals into the volcanic tuff next to it and the way the water was distributed to the "albercones" (water tanks) or to the strategically-located cave pools. Furthermore, the troglodyte culture even extended to include the process of tapping water sources, whereby they dug into the rock in search of water and created filtering galleries, precursors of the modern-day Canary water mines.

Evidence of this water culture is conserved today in places such as La Cueva de la Paja, Acusa Seca and La



Map 2. a.14. The landscape has been sculpted by water as shown by the complex network of ravines in the area. The map shows two expressions of the water culture in the area, the dams and reservoirs of modern times, basically since the 1940s, and the cave ponds, amazing works that survive from the aboriginal culture. Source: Cabildo de Gran Canaria and FEDAC



Figure 2. a.173. View of Cueva Piletas, more commonly-known as the Almogaren del Alto del Campanario, and acknowledged as such by Grau Bassas in the 19th century, as, in his work, he says that at this place "... the Canarians had a church...". Here, we can see the evidence of a sacred place in which flowing of water constituted an essential component. © Orlando Torres

Culata de Tejeda. Map 2.3.15 also shows the distribution of the most important cave pools in the area. These are building works that are sometimes re-used and adapted, but which maintain the layout and the constructive and functional concept of the original settlers, which represent striking attributes of the water culture in the Cultural Landscape. Some of these underground water reservoirs (caves) are filled from streams, but normally, they collect run-off waters (See Figure 2.a.153).

The sacred and symbolic dimension is the other major component associated with the water culture. The profusion of cup marks and canals chiselled into the rock that can be seen at many of the *almogarenes* mentioned in Section 2.a.v, considered collectors and channels for spring water, show evidence of their religious or symbolic use, including fertility rites. Apart from the cases already mentioned in Section 2.a.vi, the cave of Cueva Piletas, more commonly known as the Almogaren del Alto del Campanario, should be highlighted as an example, which was acknowledged as such by Grau Bassas in the 19th century, as he says that there: "... *the Canarians had a church...*". The cave shows the evidence of a

sacred place where water, which continues to rise there, constituted an essential component (see Figure 2.a.152).

Ravines, springs, the "*alcogidas*", the canals and the water tanks (cave pools and tanks) and also some *almogarenes* are all elements that, when put together, formed the water landscapes of this territory. Many of these elements, also found scattered over the rest of Gran Canaria, gave rise to the first outlines of the water-management system that, once the island had been conquered, and with the passing of the years, were enhanced or transformed by bringing in new techniques and infrastructures.

The water landscape and the effects of European conquest and colonisation

In the half century following the Conquest, a new territorial structure was organised that was to form the substrate of the different landscapes that succeeded one another until the mid-20th century, which can still be glimpsed. But there was no sudden break away from the pre-Hispanic territorial structure, whose common esplanades and grazing grounds have continued to func-

tion in the same fashion in the new society.

But the use and ownership of the water changed radically, in terms of the peculiar management system that came about in the islands, with special impact on the area of the property proposed. "*heredades*" or "*heredamientos de aguas*" (water rights associations) were born with the distribution of water and lands made after the Conquest. The water that rose from the highland peaks was bound to the lowlands. The water streams, once the needs of the population had been met, were channelled towards the sugar cane plantations with their sugar mills, nearby settlements and water mills, and toward the fields of grain, vegetable and fruit orchards (Suárez Moreno, 2012). Land and water went together when its ownership started to be passed on from parents to their children, or sold on from one owner to the next. Every plot of land had its proportion of water from a canal. The waters from every ravine and river basin were channelled through the main canal of each water rights association and its secondary branches.

But, as the first centuries of colonisation passed, the municipal by-laws that regulated these water rights moved

towards a progressive privatisation of water resources. The proportions of water of the water rights associations became free merchandise because the ownership of the water was transferred (by sale, inheritance, donations, etc.) separately from the land that it was initially bound to. Water even had its own independent law and justice system, based on municipal by-laws, that included the figure of a water mayor in each water rights association, to resolve the many conflicts that arose.

Thus, in the distributions of the 15th and 16th centuries, the water from the sacred mountains was allocated to the large landowners who grew sugar cane in the lower reaches of the major ravines of the island, at the expense of the plots situated in the foothills and in the highlands. But the agricultural expansion of these areas increased demand for water. Small landowners diverted water from the canals to guarantee water for their plots, until the dispute ended up being settled by privatising water resources, which ended up in the hands of the large landowners. Diverting the water from the highlands to the coastal plain lies at the origin of the conflict between the inhabitants of Tejeda and La Aldea that, since a sugar mill was built there in the early 16th cen-



Figure 2. a.174. Cave pond (underground water reservoir) on the Finca de La Laja, Artenara. One of the most amazing surviving traits of the aboriginal troglodyte culture in the area of the proposed property. © Orlando Torres



Figure 2. a.175. Hollow (*albercon*) in the proximities of El Juncal that collects the water from the springs and the run-off coming down from the crag. An example of the many, outstanding manifestations associated with grazing and water in the sacred mountains.
© FEDAC

tury, started to receive the waters that rose in the highlands where paradoxically, it started to become scarce.

The waters carried by the ravines became insufficient to water the spreading farm holdings, so the waters from the Tejeda Ravine ended up being diverted into a main canal, known as “Real” that took it down to La Aldea, to the branches that took it to the holdings scattered along the flanks of the river bed, which, in turn, also branched. This scheme was repeated in all the other major ravines of the island. The first fountains were set up to regulate irrigation, which were managed by the water rights associations, set up by the large landowners.

One building work that symbolises the process of diverting the waters from the highlands is the well-known Mina de Tejeda (1514-1526), situated in the buffer zone of the nominated property. Although it is not a mine per se, as really, it is a tunnel that taps the water from the richest spring on the island. It is the first large-scale building work that marked the start of a process of extraordinary water engineering in the Canary Islands that has drilled thousands of kilometres of mines or galleries

in the bowels of the earth in search of water. The process started when, on the 26th of July 1501, the Catholic Monarchs granted the Cabildo (island government or council) the rights to this spring as their own property. At the time, this spring provided 100 l/s (Suárez Moreno, 2014). These waters fed the incipient development of the thirsty Villa de Las Palmas, now the capital of the island, where the conquistadores sited the military camp of El Real de Las Palmas, and also watered extensive areas of the foothills along the route of the canal. But, at the same time, it reduced the amount of water flowing into the Tejeda Basin slightly.

Mention must also be made of the water mills, for their ethnographic value and as components forming part of the water heritage. Most of these had a pressure tank, known locally as “*molin*os vivos”, or “living mills”. They have now fallen into neglect, but there were up to several dozens of these mills in this area up until relatively recently. According to a communiqué from the Mayor of Tejeda addressed to the Ministry of Industry, in 1935, there were several dozens of mills of different kinds, devoted to milling *exclusively for a toll* (Díaz Rodríguez,

1988). The inventories carried out in the area suggest that there were at least eight of these devices, whose remains survive, including the mills of La Culata, Casa de la Huerta, Huerta del Barranco, Fondillo, La Degollada, El Rincón and El Majuelo.

Technological innovation and dams

Despite its distance from the major farming areas of the island, the spread of new techniques for water catchment, channelling, storage and irrigation ended up reaching the sacred mountains. Hence, new wells and galleries were drilled, and the existing ones were made deeper, sometimes thanks to the use of the internal combustion engine and water pumps that made it possible to bring the water up. Irrigation canals were built using techniques and materials that helped to reduce water losses. Larger tanks were built and irrigation was regulated to make it more efficient. The new infrastructure co-existed, and still does, with some strikingly rustic ones, testimonies to the way things were done in the remote past, which had remained almost unaltered since the island was conquered and settled.

The dams, the largest of which were built in the mid-20th century, make up one of the most striking hydraulic infrastructures on the island and they have an unquestionable reflection on the landscape. There is an ample representation of dams in the territory that comprises the cultural landscape and its immediate surroundings.

After several frustrated initiatives with legal support, in 1940, the Spanish government drafted the National Water Works Plan, which provided backing for building the great dams in the Agaete and Tejeda-La Aldea basins, designed by engineers from the Ministry of Public Works, taking advantage of the impermeable nature of the substrate, with a view to watering the crops of the Gáldar plain and La Aldea Valley respectively.

The distribution of the dammed waters required long canals that cut through the rugged island terrain. The Northern canal carried the water from the reservoirs of Las Hoyas, Lugarejos and Los Pérez to the banana plantations of the Gáldar flats and Guía. The waters from the dams of Caidero de las Niñas, Siberio and El Parralillo, in the Tejeda–La Aldea basin, were taken to



Figure 2. a.176. View of El Parralillo dam at the foot of La Mesa del Junquillo. The dam collects the waters from El Carrizal Ravine, Merino Ravine and Tejeda Ravine, known as La Aldea Ravine further downstream. It is managed by the Comunidad de Regantes de La Aldea (La Aldea Water Rights Community), an area outside and to the west of the area of the proposed property. © Orlando Torres



Figure 2.a.177. Conserved structure of El Molino de El Rincón (El Rincón Mill), in the Tejeda buffer zone. This was a curious double mill, fitted with two buckets and two pairs of millstones.
© Javier Gil León

supply the farms and La Aldea valley and to meet the demands of the population.

Finally, it is also worth mentioning another major change that has had a profound effect on the island water strategy, with a special impact in the highlands. In the 1880s, after the decline in the cochineal trade, almost immediately, the United Kingdom drove an expansion of banana and tomato plantations in the lowlands of the island, with a view to exporting them. These were large-scale, highly-mechanised plantations that boosted the demand for water, triggering the drilling of wells, canals were built and tanks and ponds built too, creating a new infrastructure to facilitate production. Drawing water through the countless new drillings triggered such a fall in the water table in the island the many springs, streams and water courses disappeared from this area. The resurgence of the countless springs and water sources in the highlands that Torriani mentioned will depend on



Figure 2. a.178. Washerwoman in the bed of the Tejeda Ravine around 1960. © FEDAC

turning this situation around after the island water table and the highland aquifers have recovered.

Survival of the water culture at home and in traditions

It would be fair to say that the entire area of the Cultural Landscape maintains a genuine water culture relating to the micro-management of water that constitutes a genuine model of sustainability and intelligence. Associated with the troglodyte, habitat we find solutions like the “*pilas*” or “filter stones” that are to be found everywhere, or the small-scale domestic solutions, in which the springs or other water source, are made part of the house.

This cultural continuity is also manifested in traditions. The contrast between dry-land areas and areas under irrigation reaches its maximum expression in the small-holdings situated in the depths of a ravine, where there are sometimes permanent, small water courses. This is the case of El Hornillo, for example, where most of the hamlet is located practically underneath a small waterfall. This spot provides a characteristic example of the complex relations that highlanders have with water in the form of the Cairete Fiesta, clearly a water worship rite. In the middle of summer, when the sun is beating down on the hillsides, baking the arid landscape, the entire populations congregates in the shadiest part of the ravine.

The intangible heritage associated with water and forest-related fiestas and rituals is addressed in section 2.b.X.



Figure 2. a.179. Water trough at El Hornillo, sculpted into the volcanic tuff. © Orlando Torres



Figure 2. a.180. Cave pool at Ventanieves (Artenara). © Orlando Torres



2. The mark of grazing and transhumance in the sacred mountains

The mark left by the aboriginal culture in this space is not just limited to archaeological manifestations, troglodyte expressions or the unique *almogarenes*; the activities around grazing and transhumance have been maintained over the centuries, offering an outstandingly valuable legacy, as well as the material survival of these practises over the centuries in the form of grazing trails, tracks and caves that underpinned these activities.

Livestock has played a fundamental role on the island throughout its history, impregnating extensive areas of the cultural highland landscape in particular, as a deep-rooted and economically-important activity up until a few decades ago.

Traditional agriculture was the economic foundation of the whole island up until the 1960s, especially in this area. Most families lived off what their fields and their

livestock could provide. Nowadays, tourism and the service sector in general are the main sources of wealth and appropriation of the land on the island. The survival of traditional activities in the sacred mountain landscape against this backdrop acquires a strategic value in terms of sustainability and maintaining the island identity and its heritage, especially against the backdrop of the profound transformations that have come about.

Grazing is one of those activity whose origins date back to the pre-Hispanic peoples and which has lost many of its direct players since the beginning of the 21st century. But its mark lives on in the landscape in the form of trails, meadows, utensils and a range of different infrastructures, endowing these areas with one of their many values. Herding should be considered a sustainable development model. After all, this activity is underpinned by a profound knowledge of the area, along with a respectful and coherent use of the different spaces. The herdsmen and their flocks become an economic and cultural resource, in fact a substantial part of the landscape is determined by these ancestral uses.

Even today, there are some 50 livestock holdings of a total of 150 on the island that continue to graze their flocks regularly in the area of the Cultural Landscape

← Figure 2.a.181. Transhumant flock in the mountains of the nominated property © Javier Gil León



Figure 2.a.182. Transhumant sheep grazing on Mesa de Acusa plateau © Javier Gil León



Figure 2.a.183. Grassland in Altos de Gáldar with Canarian breed sheep. Transhumant pastures. © Javier Gil León

and its proximities (See Map 2.a.15). The area under consideration sustains 3,150 head of sheep and 1,946 goats. The area grazed throughout the year in the zone covers 706.41 ha, plus 1009 ha that are used for nomadic grazing for 4 months of the year.

The basic product of this activity is artisanal cheese, made on the smallholdings themselves, where it is usually the men who care for the animals and the women who make the cheese.

Historical background

Livestock have been kept in the area and on the island since the times of the indigenous people. Many of the archaeological findings highlight the importance of this activity to the ancient settlers. It was an economy based on pastoralism combined with agriculture and other land resources and marine resources in the lowlands.

The livestock, with the indigenous names in brackets,



Figure 2.a.184. Sheep pastures at the end of summer. Slopes of Gáldar and Artenara © Javier Gil León

was comprised of sheep (*tahetan*), goats (*aridamán*) and, to a lesser extent, pigs (*taquasen*). Larger animals were only introduced after the islands were conquered. Some were brought over from Africa but most came from mainland Spain.

It is important to point out that after the Conquest, many of the island's indigenous people were used as shepherds - treated almost as slaves - as they were familiar with the livestock tracks, the best areas for seasonal grazing and they knew how to handle and care for the animals.

Land at that time was a fundamental asset and it was classified into different categories. The first category was land used to grow wheat and corn, the second was land used for barley and rye and the third was the land used to grow legumes. Uncultivated land was considered to be in the third category and was used for grazing livestock. (Hernández Rodríguez, 1983-1984).

Livestock breeds, a genetic heritage

Continued practice of livestock breeding and traditional grazing has meant that a genetic resource of undoubted value has been preserved, secured by the high level of environmental protection of this area (see section 5.b) and, fundamentally by the efforts of its leaders, who have managed to keep this activity alive despite modern day challenges. Nowadays, the sacred mountain area and its summits are allowing native species to be preserved. The different livestock species are described below:

Goats. The largest numbers of the Canary Island breed of goats (*Oriental* or *Majorera* breeds) are found on Gran Canaria. This breed is one of the best in the world for milk production in arid zones. The high number of specimens, the practical inexistence of flocks of other breeds and the prohibition on importing foreign animals into the area has guaranteed conservation of the breed in principle. These animals are very hardy, very well adapted to the different habitats in which they are found. Yield is high even in the most unfavourable conditions.

Sheep. This large mountain and foothills area has the greatest concentration of sheep on the Archipelago and, as with cows, livestock keepers from the other islands tend to come here to acquire breeding stock, in this case rams so that they can introduce genetic variability to their flocks. The Canary Island sheep breed

(wool sheep) is included in intensive or semi-intensive operations, forming part of pure sheep stock or mixed caprine-ovine stock.

This breed is prized by breeders for hardiness, adaptability to the environment, good health and high milk yield (around 1.8 l/day). All milk production is used for producing artisan cheese, either exclusively from sheep or mixing sheep with goat's milk, as sheep milk gives the cheese a higher fat content and, thus, makes it creamier.

Cows. This island also has the highest numbers of this breed, the Canary Island cow, although actual numbers are very low and the breed is endangered due to widespread crossbreeding with foreign breeds, mainly Frisian.

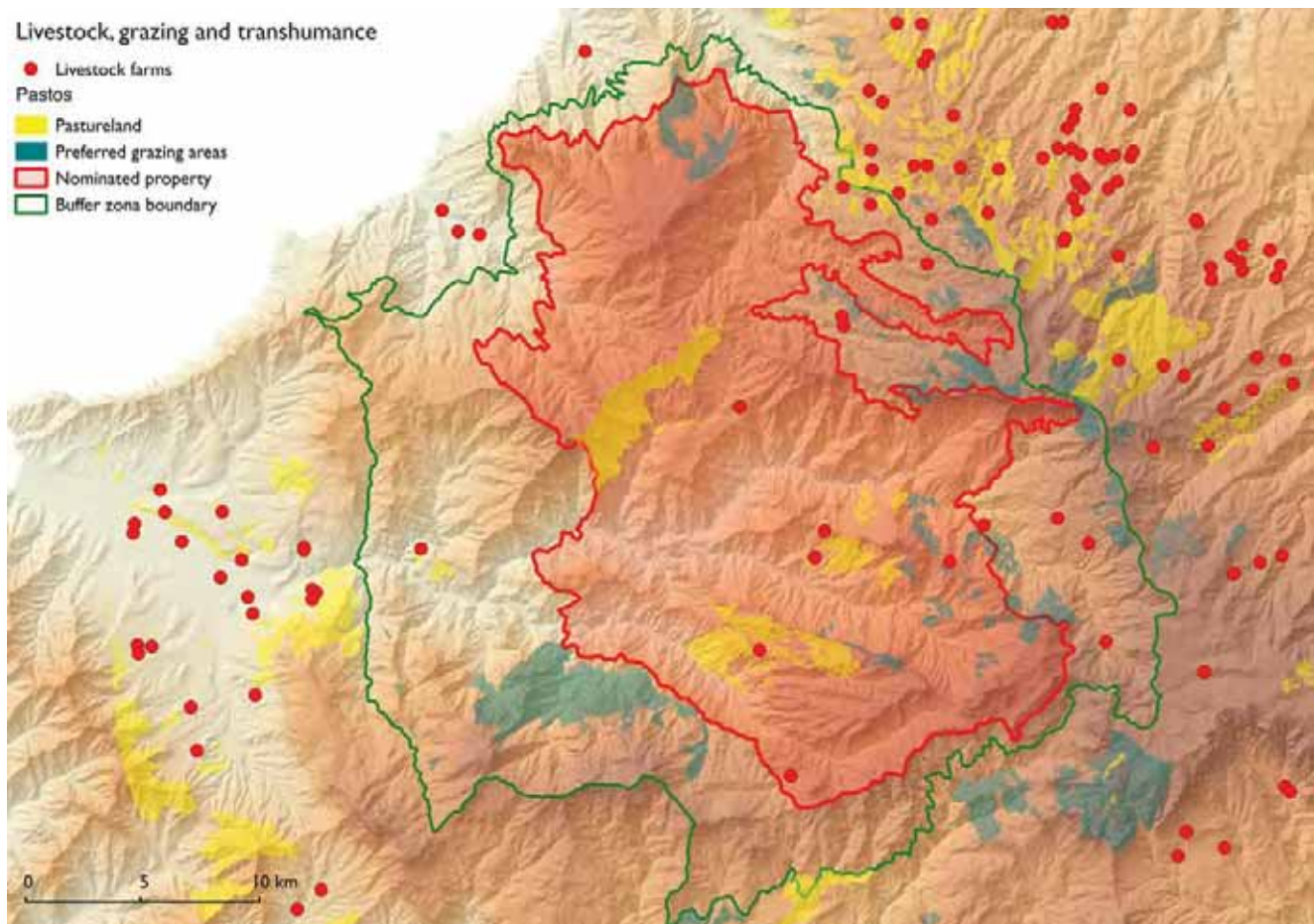
The Canary Island cow is a very rudimentary animal. It feeds on products with little nutritional value, nonetheless, it yields acceptable levels of meat and milk. This forage is found throughout Gran Canaria, including *Opuntia ficus-indica* prickly pears, agave, waste from banana plantations, endemic forage plants etc. Cattle are kept in very rudimentary structures, most of which are ancient



Figure 2.a.185.. Goats of the Canaria majorera breed with bells in the mountains of Artenara. © Javier Gil León

and bedding consists of pine needles, dry banana plant leaves, broom and ferns, depending on the area and the time of the year.

This animal is mainly kept for milk production to supply the family and to make cheese, produce manure and work in the countryside. The working capacity of these animals is worthy of special mention and they are still



Map 2.a.15. Pasturelands and transhumant grazing considering the influence area to be within a radius of 5 km of the center of the nominated property. The existing livestock breeding operations in the area are indicated. Source; Javier Gil and Gobierno de Canarias.



Figure 2.a.186.. Canarian wool sheep. © Javier Gil León

used to this day to plough fields. Livestock breeders and farmers in the area prefer land ploughed by a pair of oxen to land ploughed by tractors.

With regard to preserving this genetic heritage, it is important to remember that, historically, it has been production systems linked to local food resources that have led to the emergence of breeds specifically adapted to each territory. These breeds have now disappeared in many places because livestock breeding has become removed from the environment in terms of feeding and, in a stabling system, it makes no sense to use breeds whose main adaptive advantage is their capacity to use local pastures and fodder.

Thus, the traditional livestock system that is still maintained in this and the surrounding areas is the “ecological” niche of the autochthonous breeds. It is true that the growing interest in native livestock breeds has led to the creation of associations and initiatives specifically dedicated to their defence (breeders’ associations,



Figure 2.a.187.. Yokes of Canarian oxen ploughing a cultivated plot. Altos de Fontanales. © Javier Gil León

council-owned farms, rural sports such as ox-pulling or ram fighting). But aside from the fact that these initiatives are always rooted in businesses and people in the world of traditional livestock breeding, in themselves, they are also unable to guarantee the survival of endangered breeds as this requires a minimum number of individuals in order to avoid the genetic drift inherent to repeated crossbreeding of family members.

The end of production is followed by zoological extinction. Thus, conditions need to be maintained to preserve breeds in order to ensure that traditional holdings continue to be economically viable. This is, therefore, one of the major challenges associated with the conservation of this environment.

Grazing

Grazing smaller livestock (sheep and goats) in the nominated property and in its surrounding summits is worthy of special attention as it is an ancestral activity, with a long and deep-rooted cultural tradition. Proof of this are the numerous enclosures and shelter caves that can be found along the different grazing routes that are still used to this day, along with infrastructures of stone and caves that have been used as pens, many of which are of pre-Hispanic origin.

The predominately arid climate of the island means that the productivity of the pasturelands is very low, particularly in the south, which means that a large area of land is needed to keep a flock of goats. Under these conditions, moving the animals is extremely important and takes up a significant amount of time and energy. It makes sense then to have more than one pen for the animals near the pastureland and to change from one another pen to another when the flock moves to different pastures. Furthermore, in the south and west of the island, the structure of land, with ravines radiating out from the centre of the island, allows each shepherd to settle and live in one ravine, whereby the grazing land of the same flocks includes very different zones in terms of climate, from coast to mountain top, with pastures flourishing at different times, which in turn, reinforces the tendency to have seasonal pens to rotate the goats in the grazing lands throughout the year to make better use of the resource. This “transterminance” of the ravine was already practised by the indigenous shepherds.

In the areas of the centre, north and east of the island, the climate is more favourable for pasture production

and there is less of a tendency to substitute pasture with feed. There are still many herds that fill a substantial part of their food requirements on the pastures. The relatively low productivity of the pasturelands, their size, generally limited, and the significant difference between zones in terms of when grass is available, means that in many cases, shepherds move their flocks to different pastures in the course of the year, particularly those who are more dependent on annual pastures coming into season.

Herdsmen use a wide range of strategies to handle their livestock properly, including the following that are worthy of special note: the use of the frenulum on newly-weaned kids and lambs to stop them from suckling both because the mother rejects them and also because it is impossible to suckle; or the use of a pack on males so they cannot mount the females, meaning that all of the livestock can be let out to graze at the same time.

Each flock has a unique brand that identifies its owner. These brands are passed on from fathers to sons such that other marks are gradually added to the main brand, hence identifying the next generations.

The use of bells is another strategy used to control livestock. Each herdsman has his own preference when it comes to selecting the sound of these: some like loud sounds, "like the olden days", others prefer clear sounds that are "in tune" with the rest of the flock. This is achieved using different types of metal, different sized bells and different sizes and types of wood for the clappers. The length of the leather used to fix the clappers to the bell also has an effect.

The bigger the bell, the louder the sound. These are generally used in pasturelands, while smaller ones are used on rocky crags to avoid wear from chafing. The character of the animal will also determine which is used. Thus, those that travel furthest away will have the loudest bell. This type of bell is also used when there is thick fog. Watching the flock pass in silence as a sign of mourning for a family member or neighbour is a breath-taking experience.

Another vital tool of the herdsman is the *garrote*, a long wooden crook with a metal pointed end known as a "*regatón*", which allows him to guide his flocks across the island's difficult terrain, making it easier to climb up and down hills, slopes and cliffs and to reach significant heights, using a form of pole-vaulting technique devel-

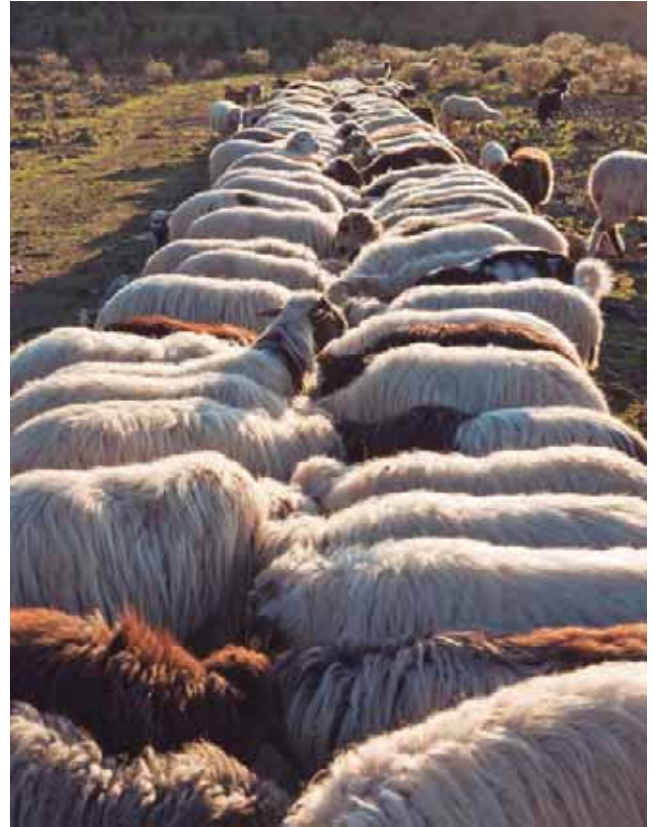


Figure 2.a.188.. Transhumant wool sheep on the mountaintops of the island. Tejeda. © Javier Gil León

oped by the indigenous people, known as the shepherd's leap (*salto del pastor*).

Grazing really helps to control the forest fires that our mountains fall victim to, year after year, in the summer season. On the one hand, livestock considerably reduces the fuel load as the amount of plant biomass on the mountains is reduced; and on the other hand and equally important, the herdsman indirectly acts as a watchman, reinforcing the activity of the forest rangers, as well



Figure 2.a.189.. Bells of José de la Cruz Mendoza. Transhumant herdsman. © Javier Gil León



Figure 2.a.190. Maximiano Moreno transhumant herdsman upon arrival at a shared seasonal pasture (*vueltas*) in Tejeda.
© Javier Gil León

as having a major deterrent effect.

Continued practice of transhumance

By moving their flocks from one place to another, essentially the herdsmen are trying to offset the seasonally changing environmental conditions and the problems brought about by excessive fragmentation of the territory. The small size of the island and the enormous advance of urban and tourist spaces have resulted in agricultural areas and pasturelands being broken up and widely separated. There are no areas on the island that can sustain a continued grazing of livestock, making it necessary to move from one area to the other in search of food.

Most of the year, the herdsmen stay at home, where they have their main pastures. There are basically two types of movement depending on the duration and the distance to be travelled: up to 15 days to go to pastures within a radius of 3 to 5 kilometres and others with a

duration of no less than 2-3 months to places like the sacred mountain area, where there is sufficient grazing between July and October (see map 2.a.16.).

The livestock tracks have an average width of 7 to 8 metres on the main routes and 4 to 5 metres on the secondary tracks. Although almost every herdsman has a different transhumant strategy, some models are repeated.

The different kinds of movements of transhumant flocks

The term transhumance is used when animals are moved to shared seasonal pastures with different pens, which normally also involves some family members moving from home (normally to a cave near to the pen), although, sometimes, the entire family moves. The most commonly-used transhumant strategies are as follows:

Transhumance from ravine or coast to the highlands

This was the most popular practice amongst the indigenous people and it is still practised to an extent in the south of the island. Each flock of goats is kept in a ravine that runs from the central summit of the island, including the proposed cultural landscape, for 25 kilometres or more down to the sea. There is normally a pen on the coast and another in the highlands for winter and summer use respectively.

High mountain transhumance

Probably also dating back to indigenous times. These flocks are not brought down from the highlands in the winter; instead, they graze the south and west-facing slopes in winter and the north and east-facing slopes in summer. Although the distances are relatively small (10 to 20 kilometres), there are quite a few involving the use of two different pens, a winter one and a summer one. This type of transhumance involves both goats and sheep.

Winter transhumance from the foot hills to the highlands.

These are normally flocks of sheep that are usually kept on the foothill slopes of the north of the island (the most humid zone) but in December and January, they move up to the south-facing mountain slopes where the grass has started to appear at this time, which it still has not done in the flock's usual grazing pastures, where it is colder.

Winter transhumance from the foothills to the coast

Flocks of sheep in the north, and goats and sheep in the east, that usually graze the foothills are brought down to the coast for a few months at the beginning of winter to graze the early grass shoots that appear earlier down there.

Spring transhumance from the foothill slopes to the highlands

This is only done with certain flocks of sheep that are taken up to the highlands once they have finished with the first leguminous fodder (especially clover) in their usual pasture, to catch the early shoots up in the highlands, which appear later.

Spring transhumance from the foothills to the coast

Goats and sheep from all over the island move down to the coast at this time of year to enjoy the stubble over left from the tomato crop.

Summer transhumance from the foothills to the highlands

This is the most common and logically has the greatest economic, cultural and social impact. It involves taking the flocks from the sheep zone of the hillsides to the north of the island, as pastures are heavily grazed in the sheep area in summer. Almost all of the herdsmen from Montaña Alta, Caideros, Fagajesto and other areas of the foothills of Guía and Gáldar move up to the highlands for two or three months (July, August, September and even October).

The shepherds generally organise themselves into groups of three or four, bringing together flocks of up to three hundred or more sheep, and they take turns to watch over the animals in the highlands for fifteen days at a time, where they live in caves in the “vueltas” or shared seasonal pasture that they have leased. The rest of the family always stayed at home taking care of the cows, as these smallholdings usually have seventy or eighty sheep and three or four cows that they use to make a unique mixed cheese known as “queso de flor” (flower cheese). This cheese gets its name from the fact that they use a flower (the thistle flower) to curdle the milk. Indeed, they used their time during the summer up in the sacred mountains to collect thistles for use the following year. These cheeses have earned a fine reputation in recent decades in the Canary Islands and abroad, generating quality economies based on sustainable production.

This transhumance involves moving some three thousand sheep each year. Some flocks make an intermedi-



Figure 2.a.191. Different phases in the making of *queso de flor* (flower cheese) cheese, starting with collecting thistle flowers.
© Javier Gil León

ate stopover in the highlands of the northern slopes of Gáldar to enjoy the abundant forage shrubs, "tagasaste" (*Chamaecytisus proliferus*) and black broom, in the area of Juncalillo.

The intricate network of tracks runs along a north-west-southwest ridge, "el camino de la Plata" (the silver route), from Pico de Viento in Gáldar to Degollada de la Plata in San Bartolomé de Tirajana, which is joined by several other routes at different points along the way that connect the various family holdings with the shared summer highland pastures (see map 2.a.16).

The variety of transhumance practices reflects a deep-rooted pastoral culture in an environment that is ecologically difficult for pastures to grow. Surprisingly, all these transhumance practices have survived but there is only a small number of shepherds involved and interestingly, it is the older family members that usually take on the task of going to live in a cave in seasonal pastures and spending some time with the animals to save the family a few hundred of euros in feed.

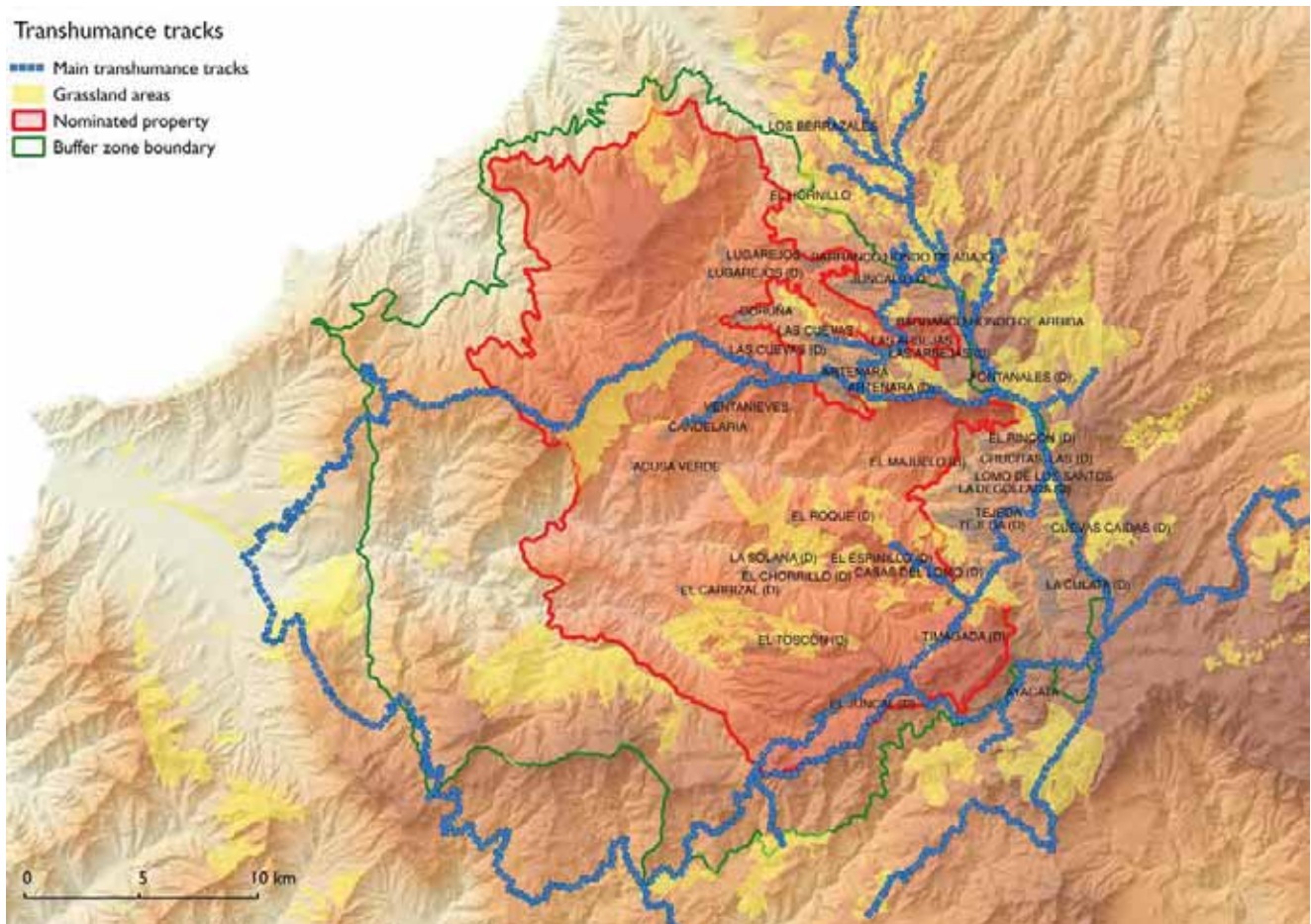
In summary, we can say that transhumance is more than

a tradition. It is a cultural system, in the broadest sense of the term. On the one hand it includes a sound ecological base, of alternating the use of the diverse pastures of the island to graze when the pastures are at their best and a group of selected breeds especially selected for this type of life, whose traits have been preserved over time. On the other hand, this is a system for managing natural resources and cultural, social, economic and biological relations that has modelled part of the landscape and contributed to its cohesion. And, last but not least, transhumance generates environmental services that ensure a quality of life for the citizens, both those living in the countryside and otherwise. The environmental value of traditional transhumance, in other words, transhumance "on foot", should be specifically highlighted, along with its contribution to conserving the great public legacy represented by the livestock trails. A unique heritage in Europe that, in spite of the serious deterioration it has suffered, remains a network that can be classed as strategic as well as fulfilling functions such as ecological corridors and spaces for enjoying outdoor activities.

Extensive livestock keeping in general, and transhumance



Figure 2.a.192. Resting on the route to Artenara from Majada Alta. © Javier Gil León



Map 2.a.16. Main transhumant routes in the area of the proposed property and pasturelands. The transhumant area for 4 months of the year covers 1,009.4 ha and the total used for extensive grazing is 17,158 hectares. Source: Javier Gil.

in particular, is closely linked to native breeds and to pasture grazing as a main source of feed, as opposed to intensive livestock operations that depend on consuming energy and imported raw materials. The social and environmental return from the former is considered far greater, with the added benefit that there is a positive relationship between the traditional stock farming systems and the conservation of landscapes of particular interest. Transhumance has also made a secular contribution to the genetic enhancement of breeds, which are fully adapted to the environment and produce high quality products.



Figure 2.a.193. José Mayor, from Vega de San Mateo to Lomo La Palma en route to Ayacata © Javier Gil León



Figure 2. a.194. "La Cañada de La Plata" or "Camino de La Plata" ("La Plata Trail") is one of the attributes of the property associated with transhumance. Created as a road for livestock, the herdsmen used it to move their flocks from the northern to the southern pastures. It was also used as a pilgrimage trail. © Orlando Torres



Figure 2. a.195. *Corral* in a cave in Las Casas de Cho Flores. This is one of the many grazing infrastructures associated with El Camino de la Plata, one of the best known and most important grazing routes on the island. Part of the trail runs through the area of the proposed property. © FEDAC

3. Landscapes and heritage associated with life in the countryside of the sacred mountains

It is no coincidence that most of what remains of the spiritual culture of the indigenous people is found in these highlands. It is true that they climbed "*las cumbres*" in search of pasture, but just as they brought pine branches down to the sea to invoke fertility it is conceivable that they climbed to these heights to contemplate the horizon below and to feel more connected with the universe.

Undoubtedly, the European conquest radically changed the way that this mountain area was viewed and used. It is likely that much greater use was made of its primary resources, trees and grazing. Not only was wood a basic fuel and the source of another essential fuel, charcoal; but pine trunks were also very important and an essential material for the construction of houses and boats along the coast. These trees also provided the raw material for the local tar manufacturing industry at a time when pine tar was used to preserve boats.

Yet subsistence farming had been practised in this grazing and forestry region since time immemorial. Settlements of cave dwellings grew in size along the spines and ravines of the mountains to the east and terraces were literally suspended from their precipices. This landscape was also a liminal space – spirituality – and a place where isolation and harsh living conditions coexisted alongside a sense of geographical centrality. To a certain extent, it was a treasure chest of the essence of the traditional culture.

Some of the characteristic features of the world of the highland farming community are contradictory and opposite: centrality/isolation, desert/oasis, cold/hot, spine/ravine, sky/cave. Perhaps this duality is an essential cultural element of this region that is simultaneously the heart and the crown of the island.

Isolation is undeniably a fundamental characteristic of this type of rough terrain where making the treacherous journey to the other side of a ravine can involve huge effort. The near ecological impossibility, due to scarcity of soil and water, of consolidating population centres in a certain area, resulted in people living in tiny hamlets which were often literally suspended from rocky platforms. Nevertheless, the highlands were also a communication hub between north and south, between east



Figura 2.a.196. Figure 2.a.164. Shed in Hoya de Piedra Grande (El Carrizal, Tejeda). Caves were an important part of the livestock infrastructure over the centuries. Most of these were used up until very recent times and some of them are still in use today. © FEDAC

and west. It is here that the paths and the glens used by the transhumant shepherds and the *caminos reales* (royal roads) began and ended and it is in this place that such emblematic routes as *Ruta de la Plata* are found.

As one might expect then, the use of pack animals (the trucks of yesteryear) and mule driving was part of the culture of the highlands. In certain areas like Carrizal using pack mules to link La Aldea de San Nicolás with the rest of the island was an important economic activity. Even in modern times mules are still kept in the highlands. Indeed, the indigenous donkey conservation project takes the original donkey fair in la Collate as its point of departure.

The contrast between the rain-fed and irrigated areas is most evident in the settlements along the ravines where small but permanent water courses are sometimes found. This is the case for example of the El Hornillo neighbourhood, most of which is located below a small waterfall.

Although perhaps not as figurative as water, temperature is another climatic characteristic that is the product of a dynamic interaction between opposing forces in the highlands. The altitude and relative distance from the ocean mean that the climate here is somewhat continental. There can be unimaginable extreme heat in summer while in winter snowfall is not rare and, indeed, at times it is abundant. The contrast is most distinct in the west-facing ravines where subtropical fruit is grown and the area around Pozo de las Nieves where ice was kept until summer, particularly for uses such as attending to the ill.



Figure 2.a.197. Bread oven of the Forest House of Pajonales. This type of domestic infrastructures were introduced after the Conquest and worthy of special mention are certain ovens in a row on overhangs and caves in the troglodyte tradition © FEDAC

Taking a closer look at agricultural activities great contrast can also be seen between large operations like grazing on the one hand that require the use of extensive spaces and family farming on the other, where land is divided into terraces whereby the activity becomes almost a form of gardening.

The original ecosystem, basically pine with an interwoven undergrowth of shrubs - particularly leguminous shrubs - is completed in the more precipitous areas by a wealth of endemic rock flora. After the conquest the main activities in this forested area included making hardwood posts using the heart of old pine trees known as *tea*, charcoal making and extracting pitch for use in waterproofing boats. All of this took place alongside the age-old use of medicinal herbs, as herbalists have always frequented the highlands to collect medicinal plants.



Figure 2.a.198. Mosaic of agricultural terraces (*cadenas*) in Tejada © Javier Gil León

Its inhabitants have created, throughout the centuries, an “edible forest” which has partly replaced the native pine but that is located for the most part in the scrubland. Almond trees possibly brought by adventurers and seamen before the Conquest, have occupied the slopes and sides of mountains creating a true “wild crop” that has become the trademark of the area. Not only is the almond a vital component of traditional pastries but there is a whole host of activities and products based around the almond tree from almond oil to charcoal, honey and paste that together form the basis of the gastronomy and economy of these highlands. In modern times, tourism, the main economic activity on the island also has an ally in the almond flower that creates an amazing winter landscape and is a great attraction for visitors.

Under the pine, amongst the almond trees, but particularly on the slopes and flanks of the treeless mountains there is a very significant area of pasturelands. Grazing which, as has already been said was the main activity in the area before the conquest, was and still is the true hallmark of highland identity. Making use of the plant growth in such a rugged terrain, requires the use of small ruminants, goats and sheep that graze on this diverse and inaccessible vegetation but also transform inedible plants into high quality dietary products, meat and milk. By-products produced include manure, which is essential for agriculture, and wool or animal hide, which are used in craft activities that are now in decline but that once were and could again be integral to the economy and culture of the sacred mountains.

The flatter areas, both on the flanks and less steep slopes, are where rain-fed cereals are grown. These include wheat, oats, barley but also fodder legumes, “lagume”, peas, vetch, black lentils, broad beans. These are generally ecotypes specially adapted to the ecological conditions of the highlands and they are therefore of great genetic interest. The highlands are home to an extraordinary agricultural biodiversity much of which has been inherited from the indigenous people and should be preserved. Unique varieties grown here include prehistoric barley. Indeed, this is one of the few places on the planet where primitive barley is still cultivated.

On less steep mountainsides, land is terraced into plots of a certain size where potatoes and corn are grown. Sometimes these crops are rain-fed but wherever possible irrigation is considered an invaluable support. These chains of crops feed more than just people. The

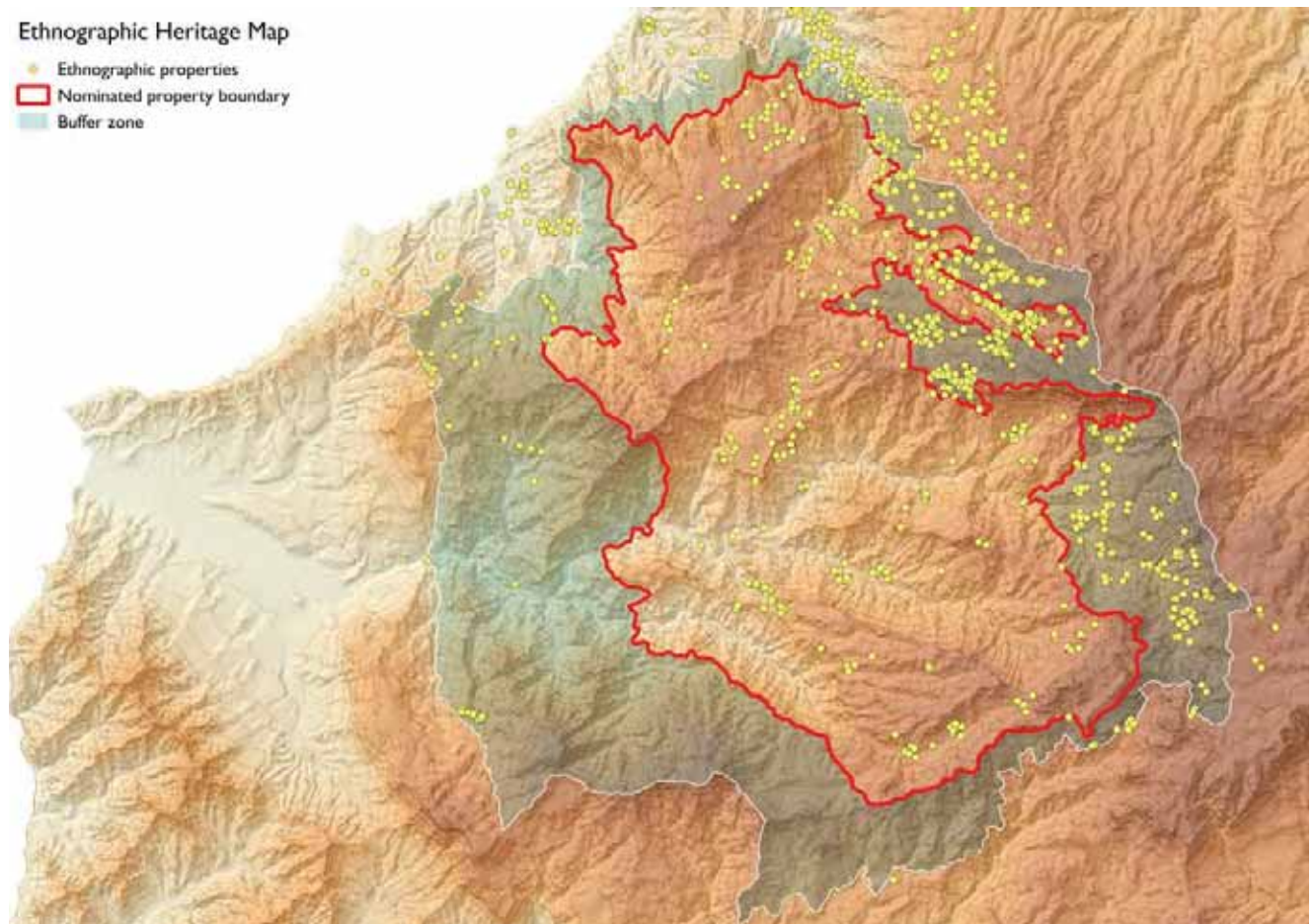
people living in the countryside needed animals to work the land and farming allowed sufficient resources to be obtained to feed oxen. Not only were they the main pulling power, but they also made better use of straw and other fodder, yielding milk all year round, without a break in summer as is the case with small ruminants. They also produced large amounts of top quality manure for use as fertiliser. The highland farmer always bred livestock, both goats and oxen.

Of course cattle breeding in an arid climate is no small feat, but it was achieved with a specialised and original fodder production system. This system made the most of agricultural products, cultivated fodder and the by-products of crops grown for human consumption, but it also made good use of wild vegetation. And thus, with sickle in hand, each day these people cut bundles or "manes" of cane, Arabian pea, agave, *colegia*, prickly pear, reed, tree lucernes and broom. The list of plants used as fodder is spectacular and each has its own harvesting time and technique. Cattle were even moved to the highlands under the transhumant system, as many farm-



Figure 2.a.199. Corral cave on Nublo mountain. Livestock pen connected with the archaeological sites of Cueva Piletas and the burial mounds of the Montaña del Aserrador mountain, livestock shelter; shepherds, hunters and mountaineers from the indigenous era to the present day. © FEDAC

ers in the mid-altitude regions leased mountain pastures in the highlands where they scattered leguminous fodder, particularly black lentils, to improve the summer grazing for their livestock.



Map 2.a.17. Ethnographic heritage in the area according to municipal ethnographic maps. The extensive inventory includes the great diversity of manifestations related to the rural world that, in many cases, are expressions or reusable elements of the ancient indigenous culture. Sources: Municipal Ethnographic Maps - FEDAC



Figure 2.a.200. Mosaico de terrazas agrícolas en Tejeda
© Javier Gil León

The people living in this part of the countryside coordinate their work with the rhythms of the earth and of the sun mainly, but also the moon, the winds and the clouds or, more succinctly said, with the skyscape. They plough, sow, water and harvest at certain times of the year in accordance with their position in space and time in the universe. All of this is done under circumstances where considerable amounts of physical space, materials, time and work are required to produce a relatively small quantity of grain.

The nearer and more familiar production area should also be mentioned. The fruit and vegetable garden is located around the house and also in shaded spots of the

ravine, as opposed to in the harsh open rocky ground where wrenching food from nature is at times a super-human task. In the small orchards where fruit and vegetables are grown work is more leisurely. Here one can enjoy the shade, the babbling waters of the irrigation channel and the birds and, indeed, a more varied and colourful produce is grown here. Beans, tomatoes, onions, peppers, courgettes, famous highland garlic, pears, medlars, plums that are famous in the rest of the island, figs and peaches, provide a symphony of flavours, aromas, and colours with the different shades each day offering a luxurious counterpoint to the frugality of country life.

All of these activities and traditions have chiselled out the cultural landscape of these sacred mountains and, in turn, generated tangible expressions, at times unique, of a vast and diverse cultural heritage that is expressed through pens in caves, troglodyte outhouses, overhangs, shelters, crop terraces, threshing floors, ovens or the unique cave ponds. Ethnographic maps drafted by the four municipalities involved in this area, show the wealth of relics in this area. Map 2.a.17 indicates the sites on the inventory of ethnographic properties included in the nominated property and in its buffer zone.

The survival of rural heritage, a significant part of which has indigenous roots, alongside the surviving practices



Figure 2.a.201. Pajonales threshing floor. The threshing floors have always been community work places, carefully selected in the areas, in locations known as mareas. © Orlando Torres

and uses of local resources, communicates how harmoniously humans and nature have coexisted through the centuries. We thus have a human landscape and a territory that in the 21st Century can provide experiences and solutions for what we now refer to as sustainable development, opening windows to a new alliance between the past and the future.

The threshing floors

The agricultural landscape of this region has the extension and surface area needed to grow cereals. Rye, wheat, lentils, oats and barley are a local resource used as fodder and food, both by the indigenous communities of the past and modern day farmers.

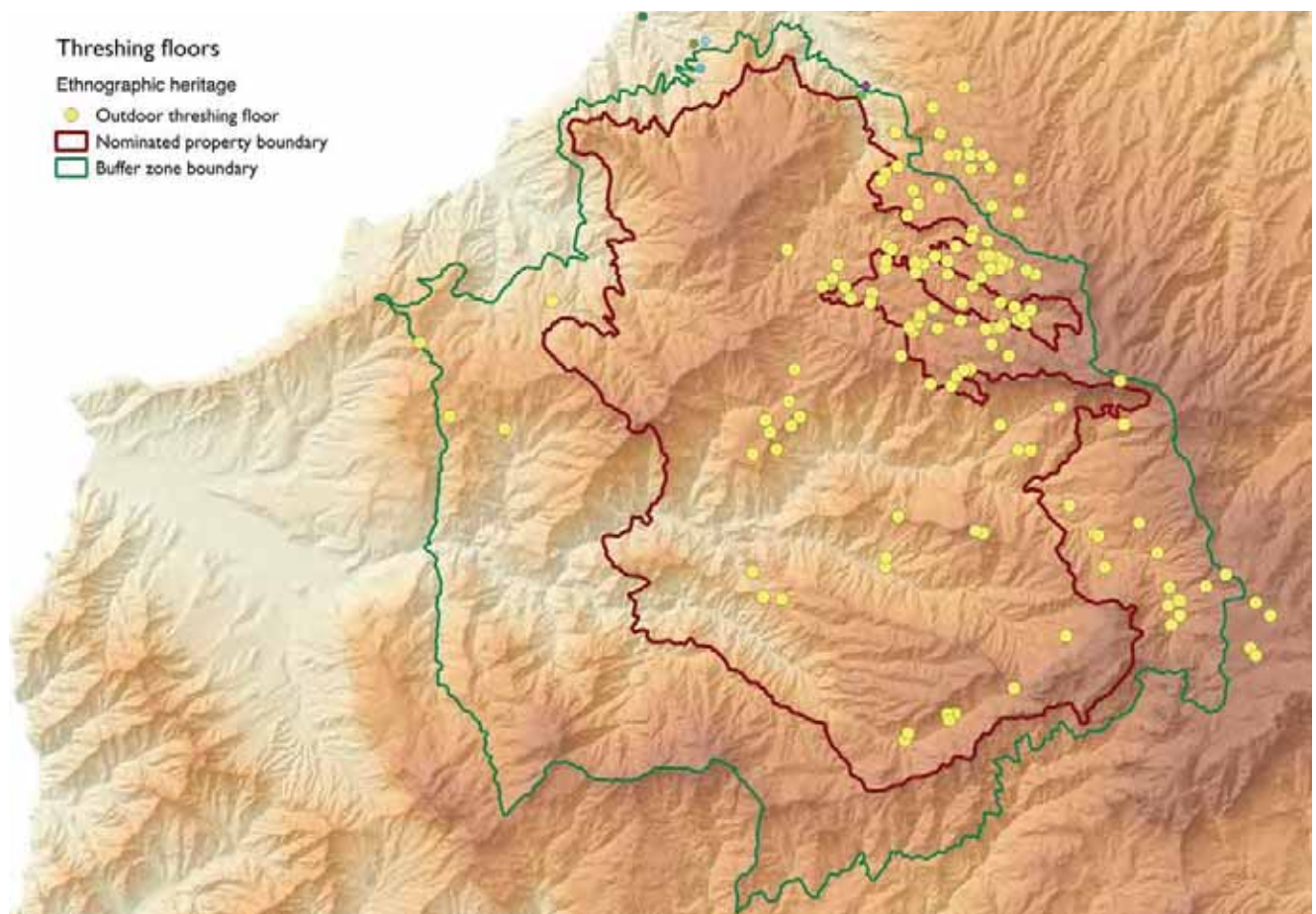
The growing season comes to an end with the harvest in the early weeks of the summer, towards the month of June, when the crop is left out in the sun to finish drying the seeds. In the local language this practice is referred to as "sementera". It is then brought to the threshing floors for threshing and to separate the grain from the



Figure 2.a.202. Harvesting barley in Guayadeque, an area that borders the nominated property. In these mountains the ancient technique of harvesting by hand is still done without the use of tools. © Juan Antonio González Navarro

chaff. It is remarkable that this ancient technique is still in use, with crops grown in soft soil, harvested by hand and at the early stages of plant growth.

The threshing floors are located in high spaces, on high ground, picturesque, where there is adequate airflow



Map 2.a.18. The threshing floors constitute a rural heritage of great value to Cultural Heritage, and possibly house the greatest concentration of these expressions in the Canary Islands, representing landscape landmarks that reinforce the identity of these places. Sources: Municipal Ethnographic Maps - FEDAC

(referred to by the farmers in the areas as *mareas*). This is necessary for winnowing (blowing a current of air through to separate the grain from the chaff). These are generally circular structures with diameters that range from between three and eighteen metres in circumference. The floors are paved with flat stones (*lajas*) to make it easier to sweep away the grain residue and at the edge there is a row of stones set in the ground to avoid the grain escaping as the animals turn.

For small crop harvests, the grain can be separated from the chaff manually using a stick to thrash the bundles of grain. For medium-sized harvests animals are used to thresh either with their hooves or by pulling a threshing machine (heavy slab with volcanic stones embedded in the base to chop the straw) - these grind the *sementera*. Where harvests are big various neighbours come together bringing several horses to work together on the threshing floor.

In terms of ownership, the remarkable fact is that while threshing floors are located on individually owned land, they are and always have been community work spaces and strengthen group cohesion. Access to and use of the infrastructure is shared by various families of farmers in the area that agree with the owner and with the

other neighbours to take turns using the same threshing floor. Threshing floors are thus for communal use. They are a meeting place where the harvest - that will feed the families and provide grain for the next sowing season - is worked and celebrated..

→ Figure 2.a.204. View of the agro-cultural landscape of La Mesa de Acusa, overlooked by Roque Bentauga, with Roque Nublo in the background © Javier Gil León



Figure 2.a.203. The rural ecosystem of the Cultural Landscape is extremely diverse, showing a unique mosaic in which pastures, arable land, fruit trees like the almond in the image and native plants coexist forming a unique mosaic © Javier Gil León



4. The forest, “piqueros” and pottery

From the times of the ancient Canarians to the modern day, other manifestations associated with land-management techniques and the use of the land and its resources have been developed in the area of the nominated property that represent a major tangible and intangible cultural legacy, and an important impact on the layout of the cultural landscape. We are referring to how the forest was used and the trades inherent to it, the continuity of the art of hollowing out mountains after the Conquest, general troglodyte know-how and the survival of the unique pottery culture of the area.

Uses, heritage and function of the forest

Archaeological evidence and the chronicles of the Conquest show us the importance of forestry resources in how the ancient Canarians used the forest, particularly in the area of the nominated property. The fact that these people had no knowledge of metals was a trait that affected the techniques used and the kind of hunting-gathering they practiced. The cutting tools available to them were made solely from stone.

Sources dealing with this aboriginal world tell us of a wide variety of wood resources that were used for domestic use, for their livestock and farming, holy places, as well as for defensive and funereal uses, especially tea (the heart wood of the Canary Island pine) as their preferred material. The marks left clearly show that they had a good command of woodworking, using fire to harden pointed contact edges and stones for the tasks of cutting, scraping and polishing. Woodwork includes a variety of articles from small bowls and containers,



Figure 2.a.205. Pine forests in the area of the nominated property. Montaña de Altavista in the background. © Javier Gil León

wooden staffs, to beams and doors for the caves of the ancient Canarians (González Navarro, 2005).

As wood is perishable, the materials used for building, such as hinges and doors of caves, have practically all disappeared. But the Canary Island Museum does house a fair few examples of the woodwork of the ancient Canarians, including a sarcophagus. The utensils used for farming and livestock rearing made from pine heart wood include the lids of the silos of several granaries and sticks with the end sharpened for planting. Furthermore, samples of tar found at sites and human remains show that these were used by these people.

The location of the aboriginal settlements, both the stable ones and the seasonal ones, along with a knowledge of the kind and distribution of the forestry masses at that time, highlight the close relations that the ancient Canarians highlanders had with the forest, fundamentally the pine forest.

Threats to and defence of the mountain forests after the Conquest

After the Conquest, and especially after the introduction of sugar cane, which required abundant wood to drive the sugar mills, the increasing demand for pine heart wood and wood for construction placed unprecedented pressure on the forests, including Tamadaba forest, in the area of the nominated property. The concern of the Government of the time is striking; less than a century after the Conquest, they were considering the need to repopulate the forests (Cullen, 1995). Right back in the first half of the 16th century, they introduced provisions aimed at regulating the collection of firewood and pine trees in different forests, including the Tamadaba pine forest (Herrera, 1977). The most transcendental measure of all was the ban placed on governors who owned sugar mills from attending the sessions of the Cabildo (Island government) dealing with any issue concerning the forest or forestry (Santana, Lobo & Rodríguez, 2007).

Pressure remained on the forests throughout history since the Conquest and up-risings, such as the up-risings of Aldea de San Nicolás in 1777, a settlement bordering on the nominated property, are a clear symptom of the litigation surrounding the forest conservation. There are even records of complaints, such as a 1798 complaint when “the governing mayor of Tejeda started proceedings against the residents of the town, accusing them of

opening up royal lands bordering on the Venegueras y Humbría pine forest" (Suárez, 1987). In 1868, Martínez de Escobar was commissioned to write a report that describes the consequences of this process, in which he states that "*Destroying the forests destroys the springs, the humidity and the fertility*" (Ojeda, 1977). It is surprising that they had such an advanced vision of the services provided by forest ecosystems and the need to conserve them so long ago.

These tensions did not subside until well into the 20th century. The concentration of forestry activities even increased at the beginning of the 20th century in the pine forests due to the drastic reduction in the laurel forest in the rest of the island, which was reduced to relict patches. The shortage of fuel during the two world wars and the Spanish civil war encouraged the owners of pine forests, who did not hesitate to exploit the forests in light of the rising market prices.

The pressure was offset however, by the growing awareness of the need to conserve the island's forest masses. Grass-roots and institutional initiatives helped to provide incentives for forestry repopulation, which date back to the 16th century. Hence, 1949 was a turning point in recent times, when work started on the Forestry Plan promoted by the Cabildo (Island Government) of Gran Canaria. This Plan considered repopulation as a top-priority and strategic strand, with the collaboration of the Directorate General of Forests. Manifestations of the time, such as the "Fiesta del Árbol" (Tree Festival), speak to us of a concern for defending the forests among ample sections of island society. Finally, in 1974, the Natural Spaces of the Canary Islands Act was enacted to finally consolidate the protection of the forests. This reaches the maximum level of protection in the area of the nominated property, as Tamadaba has been declared a Nature Park and the forest masses of Inagua, an integral Nature Reserve.

Traditional forestry: uses and resources

The use of the forest in the nominated property over the course of history has been diverse and continuous, generating unique techniques and trades - some of which have disappeared - and a unique ethnographic heritage.

"Carboneo", or making charcoal

The trade of making charcoal was introduced to the island after the conquest, acting as a source of income



Figure 2.a.206. The "serrote", one of the traditional tools used for cutting and clearing wood. © Julio Cuenca

for some of the population of this district who made their living from making and distributing charcoal. It is curious to see that the use of pine trees for making charcoal in Tamadaba Pine Forest, the main forest mass in the nominated property, was never significant, given that priority was given to using the undergrowth, which reduced pressure on it (González Navarro, 2005). This ancestral practise is still conserved in the highlands, albeit in a controlled manner, with some 10 "carboneros" (charcoal makers) remaining in business. The charcoal makers have organised themselves into the "Asociación Charamusco" and they market their output under the registered trade mark of "Carbón de la Cumbre" (Highland Charcoal).

Extracting resin

Resin was another complementary resource harnessed by the local population until the 19th century, constituting a strategic part of the multi-purpose use of the forest. An important example of this activity could be found in the area of Tamadaba, where the residents of Lugarejos would make the most of their trips into the pine forest for wood for charcoal, to collect resin. In Tamadaba pine forest, the resin was sought after by the



Figure 2.a.207. Canary Island pines in Tamadaba forest
© Javier Gil León

“*yerberos*” (specialists in collecting traditional medicinal plants). Apart from resin, the plants of the pine forest also offered outstanding resources for medicinal plants, an activity that continues to survive in the area today, which also has its own Medicinal Plant Centre in Tejeda. In this case, it is a sustainable complementary activity that is based on the management strategy of the nominated property.

Uses of “pinocha” (pine needles)

The dry needles of the Canary Island pine fall to the ground forming a layer of “pinocha” or “*tamao*”. Up until the beginning of the 20th century, the *tamao* formed part of a thick layer throughout all the pine forests, making it easier to collect. There were two parts to the use of this resource: the traditional uses, which date back to the first settlers, and on the other hand, the commercial harvesting of the *tamao*, which started in the 1920s, as packaging material for crops grown on the coast for export like bananas, an activity that has now been abandoned. Regarding the traditional uses, the “pinocha” or pine needles have had a wide variety of uses, as an additive to farmlands, providing structure, nutrients and aeration, as a material to mix with clay for the roofs of sheds or as fuel for cooking pottery. Nowadays, clearing the pine needles from the edge of tracks and trails is a highly effective measure to prevent fires from spreading.

Wood

Chronicles of the Conquest suggest that the socio-labour organisation of pre-Hispanic society included specialists in working with wood: “*They had officials that cut their clothes for them, and potters who made the kitchenware and carpenters that worked with stone axes and they sold it*” (Abreu and Galindo, 1977:297). Historic sources also mention the appearance of trades like sawyers and “*fragileros*” (lumberjacks) from the early days of colonisation.

Apart from aboriginal uses, wood also became a strategic raw material on the island during the times of what was known as the Old Regime (16th, 17th and 18th centuries), supported by the excellent properties of the Canary Island pine, particularly the heart wood. In this period, wood from the forests of the island was used for a variety of purposes, albeit to a lesser extent in the area of the nominated property because of the distance involved, such as: feeding the boilers of the sugar mills used to burn off the cane juice to make sugar; to manufacture the spindles and wheels of the mills, as supports in the vineyards, building wine presses, burning cane spirits, making farm tools and equipment, as firewood in homes, building and repairing ships, as fuel for the boilers that were taken to the Berber fishing grounds, beams and joists for buildings, for building irrigation channels and canals, building houses, setting up scaffolding, making altars, figures and other works of art, for making the tar used to caulk ships, making furniture, looms, as fuel for lime kilns and as tiles, it was used in the gears of mills, for making crates and other containers and for making wagons and other forms of transport. This is why some authors consider that the society that was organised in Gran Canaria at the end of the 15th century, and by extension, throughout the Canary Islands, has to be understood as a “wood-age” civilisation (Santana, Lobo & Rodríguez, 2007).

After the major changes that have taken place over the last two centuries, the forest has gradually lost its importance in the island economy, basically as a provider of wood. It is however surprising that these traditional uses of wood have survived, when they have disappeared from other latitudes. In this area, up until recently, they still made tillers for traditional ploughs, and the people of the hamlet of Cuasquías in Tejeda were famous for this. They still make staffs and crooks from pine wood, which are used widely among the shepherds of the highlands in a tradition that dates back to the aboriginal past. This tool is used because of the steep and rugged

nature of the terrain, it acts as a support or pole (as in pole vaulting) for crossing gullies. They still make fighting staffs too, of the same kind as those used by the ancient Canarians, except for the fact that in this case, the wood used is wild olive.

The significance of the wood from the pine forest in island culture also goes far beyond the economic aspect, entering into the terrain of the sacred, as can be seen from the following quote: ... *venerated woods from the "immortal tree", for the indigenous people, "that would never ever be put on top of or under the ground, nor in water"* (Rodríguez, 1946:75).

Tar

The ancient Canarians got tar by burning the heart wood over the place where the tar was to be used or in natural shelters (caves or overhangs). This method continued to be used after the Conquest. Archaeological evidence associates the use of tar with the interesting aboriginal funereal world. After the Conquest, high-quality tar from the highlands was in great demand for caulking ships. This business managed to create major local tensions, as shown by the minutes of the Real Sociedad Económica de Amigos del País (Royal Economic Society of Friends of the Country) in the last quarter of the 18th century, because of the impact that it had on the forests. The importance of the trade is reflected in local place names in areas like Llanos de la Pez and La Presa de los Hornos, both of which fall in the buffer zone of the nominated property. The extraction of tar fell into decline and disappeared in the 19th century.

Tree worship

The chronicles of the Conquest talk of the practise of tree worship among the ancient Canarians. This was a practise that was assimilated by the new settlers by transforming it into the worship of the Virgin Mary, as in the case of worshipping La Virgen del Pino (Our Lady of the Pine Tree), the patron saint of the island, which comes originally from worshipping a sacred pine tree in the vicinity of what is now the cathedral (González Navarro, 2005). This is also reflected in law, when the Royal Decree of the 23rd of February 1917 asked the engineers of the Ministry of Agriculture for "a list of the most notable trees due to their dimensions, age, rarity or tradition that have been consecrated by the vows of the people" (De Vicente, 1995). One of the outstanding trees of this kind in the area of the nominated property is El Pino de Casandra (Casandra Pine Tree), a beautiful specimen associated with a stories of witchcraft.

The "piquero" and the art of excavating mountains

Since the Spanish conquest, and with the exception of the major troglodyte settlements hanging from the inaccessible crags or certain *almogarens*, many dwelling caves were re-used by the new population coming to join the aborigines, without them making any major changes to their morphology. This way, the aboriginal villages, settlements that could be classed as proto-urban, largely became the Hispanic settlements that grew from them. These works have reached our days in an acceptable state of conservation, as a relict of the troglodyte culture from before the conquest of the island, which is practically unique in the context of Gran Canaria and the Canary Islands in general.

The occupations triggered by the "hunger for land" that occurred throughout the 17th and 18th centuries generated new, progressive settlements at the initial settlements of the nominated property, preferentially in Artenara and Artevirgo, with the excavation of new dwelling caves. This is the time when the villages of Las Cuevas, Coruña, Las Hoyas, Lugarejos, Fagajesto and Juncalillo were built and consolidated in close relationship to the farming sector in the vicinity. This is where the new evolved cave morphology was created, whereby both the dwelling caves and the farming needs are functionally united to the farmlands. Hence, we see the appearance of the cave associated with a range of different agricultural uses, such as the cave-stable, the cave-pen, the cave-chicken coop, the cave for the oven, the potato cave, the cheese cave; the woodstore cave, the garlic cave, the cave-school, the cave-church, the cave-mill, the cave-carpenter's shop or the cave-bakery (Luján Henríquez, 1994).



Figure 2.a.208. Tar oven in La Montaña de los Hornos in the Inagua Nature Reserve, where the largest concentration of ovens of this kind are to be found. © FEDAC



Figure 2.a.209. Tools of the cave digger's trade in the Ethnographic Museum of Artenara © Artenara Council

The uniqueness of this unusual version of a town is described by Viera y Clavijo in the late 18th century in the following terms: "*The floorplan of the place is very strange. In the middles of a large mountain, one can see some holes like birds' nests. These turn out to be a large number of caves in a row, some concave like domes, others with ceilings, but all in community*" (Viera y Clavijo, 1950).

From this time onwards, armed with new tools and resources, the cave culture managed to create a new trade in the figure of the "piquero", the workman who excavated the cave. This was a tough and sometimes dangerous trade that required a good knowledge of the substrate to be excavated and the choice of site.

All the work of digging out the dwelling cave was always done by hand, and it was not until 1970 that new tools like pneumatic drills and compressors were used, which were being used at the time to dig tunnels and water galleries. The "piquero" has a whole range of tools and utensils for his work, some of which were exclusively for that job, such as: the pick axe, the matlock, the two-

pointed pick axe or the "mocheta", a kind of pick axe used for "trimming the mountain and leaving it smooth".

This was a recognised trade that was part of the local culture. Suffice it to say that the collective memory still conserves the names of the "piqueros" from the second half of the 20th century, especially in the case of José Díaz González, known as Pepe Díaz "el del Lavadero", as the most knowledgeable in the trade. Apart from an endless list of "piqueros" like brothers Juan and Bernardo Díaz González (Las Moradas), Olegario Suárez (Barranco Grande); Hilario and Nelito Suárez (La Charca) and Juan, Donato and Manuel Ramos (Lugarejos), Vidal Godoy (La Degollada); José and Agustín Díaz (Las Cuevas) and Antonio Medina (Cuevas de Arriba); brothers Félix and Facio (Barranco Hondo) and other teams of cave diggers that settled in Risco Caído and Barranco Hondo, one unique feature must be added to this. Not only have there been and are well-known "piqueros", there is actually a company specialising in work of this kind that continues to operate today (Luján Henríquez, 1994).

One of the features of the caves excavated over the last few centuries is that their location adapts to the terrain, giving rise to an uneven layout that follows the rule of adapting to the environment, rather than any kind of specific planning rules. They use the slopes of the mountains in digging caves, along with areas of impermeable rock, which isolates the cave from damp and is softer to excavate, known locally as "*buena tosca*", or "good tuff". Another feature of the cave houses of this era, especially in Artenara, lies in the fact that they face south or south-west, protected from the northerly winds. Another unusual fact is that most of these caves are whitewashed or painted, a custom promoted after 1851 to kill the carriers of the cholera epidemic that devastated the island.

Beyond the dwelling or specialist caves, one of the symbols of this trade over the course of time is embodied in the sanctuary of "La Virgen de la Cueva" (Our Lady of the Little Cave), in Artenara. Although the original cave was probably very old, as can be deduced from its perfect alignment with Roque Bentayga, the first record of its use as a church only dates back to the 18th century. The oldest reference to a church known as Nuestra Señora de la Cueva is to be found in the notice of masses made in 1794 by Presbyter Gaspar Montesdeoca. From that time, we know that the church was extended in 1858, and an altar was added next to the old one, along with a baptismal fount and a throne for the minister in

1890, the work of local worker Ramón Díaz. So, this is an expression that involves the work of several generations of “piqueros”, and thus, more than just a religious monument, as it extolls the acknowledgement of the rock carvers of the Sacred Mountains.

The survival of the pottery tradition

One of the most significant examples of cultural survival in the nominated property is the survival of aboriginal pottery. This pottery is made by hand, without a wheel or furnace and its roots go back to the pre-Hispanic past of the island. The three major pottery production centres that followed the ancestral methods passed down from the aboriginal Canarians were in La Atalaya, Hoya de Pineda and Lugarejos. Despite its fame and recognition, this tradition practically disappeared in the 1970s, with the exception of Lugarejos, the only pottery centre to be found within the nominated property.

This traditional style of pottery was saved from extinction in extremis by urgent action taken by the Cabildo (Island Government) of Gran Canaria to come to the rescue of this heritage legacy. In 1994, only two remaining women with knowledge of this trade and the ancient pottery techniques lived in the village of Lugarejos. This is when the Cabildo of Gran Canaria bought a set of caves that had been a pottery and organised a pottery course with these last two potters (Manuela Santana and Teresa Lugo). They also reformed the caves to turn them into what is now the “Centro Locero de Lugarejos” (Lugarejos Pottery Centre).

At its height, the Lugarejo pottery centre met the demands of all the settlements of the highlands of Gran Canaria, along with the southern and south-western



Figure 2.a.210. “Guisadero” for pottery in Lugarejos, using the same aboriginal technique © FEDAC



Figure 2.a.211. “Guisadero” adjacent to a dwelling cave in the highlands of Artenara © FEDAC

slopes of the island, including the coastal settlements between the mouths of the La Aldea and Arguineguín ravines. The output of this pottery centre was so important that, when they were saturated by the demand, the potters had to move their potteries to other settlements to make their clay pots in situ.

The clay pottery of Lugarejos is the traditional aborigine pottery, worked by hand. The characteristic technique, “*urdido*”, or “weaving” consists of moulding the clay totally by hand into order to create useful objects. The pieces are made without using a wheel. But in the case of Lugarejos clay, the technique also includes a difference that makes it original and genuine: the pieces of raw clay are cooked in the open air. The fuel used is what the pine forest offers: pine needles, pine cones or wood from the forest. In this case, instead of a kiln, they use a “*guisadero*” (in other words, the place where the clay is cooked – “*guisar*” is to cook in Spanish).

Another remarkable fact is that all the materials and instruments needed to make Lugarejos kitchenware can be found in the vicinity: the clay, the sand, the red ochre, the handles, the burnishers and even the wood. The potters collected the clay, digging it out from among the roots of the pine trees in the Tamadaba Pine Forest, which was just opposite the village. They collected the sand from the beds of nearby ravines and the red ochre dye was to be found in the veins under the nearby basaltic lava flows.

The process of making the pottery with this technique requires several days, of even weeks, and the pots had to be “cured” for a long time before they were baked, the key moment and the most delicate moment of the whole process of making the pottery.

The conquistadors obviously tried to introduce pottery using a wheel with its new techniques, but the plasticity and behaviour of the island clays made this more complicated. This attempt failed and finally, the old technique was kept, the technique that had produced such magnificent expressions of pottery in the pre-Hispanic period and whose unique legacy has been recovered from the different archaeological dig sites.

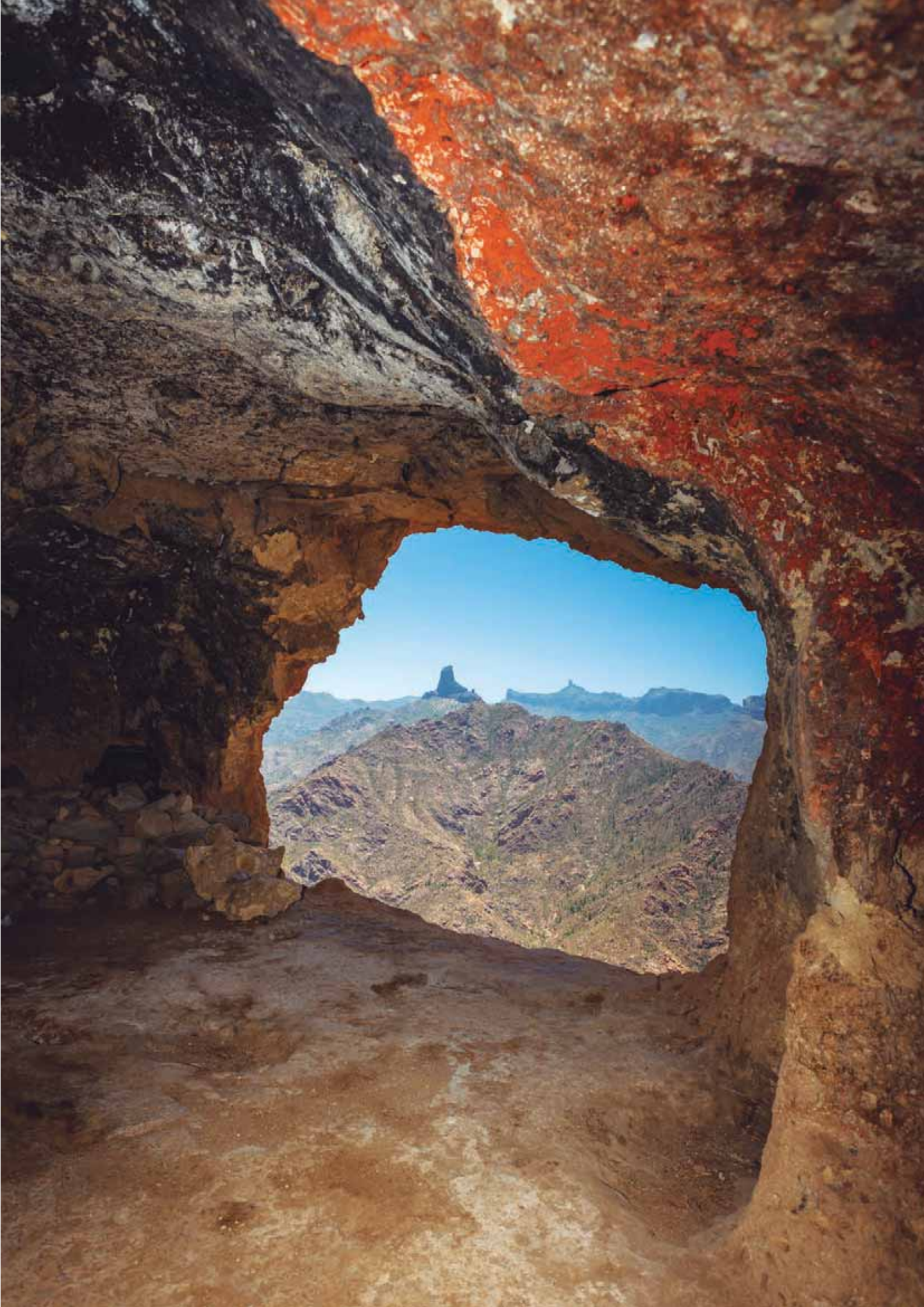
→ Figure 2.a.214. View of Roques Bentayga and Nublo from inside one of the Acusa caves © Javier Gil León



Figure 2.a.212. In the photograph, Mari León, one of the local potters who keep this ancestral trade alive © Gran Canaria Biosphere Reserve



Figure 2.a.213. Potters of the Gran Canaria highlands in the late 19th century © FEDAC (Luis Ojeda Rodríguez) © FEDAC





2.a.ix

Demarcation of nominated property and zoning

Map 2.a.19 shows the demarcation of the Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape and its buffer zone. The area proposed can be sub-divided into three different, albeit interconnected zones: the Tejeda basin, the Tamadaba Highlands and Barranco Hondo, the former Artevirgo that includes the area of Barranco Hondo-Lugarejos.





← Figure 2.a.215. Aerial view of the Tamadaba Highlands, taken from the populated northern area of the island, outside of the area, with the sacred mountains unfolding in the background.
© Javier Gil León

The Tejeda Basin is the epicentre and backdrop of the sacred landscape of the ancient Canary Islanders, where their relations with the skyscape and the cosmological and symbolic landmarks can be most clearly seen. The boundaries define the visual area of reference of the landscape, encompassing the most pristine and unaltered elements and all the scenery visible from within the basin. As Map 2.a.18 shows, it contains a large proportion of the properties related to the aboriginal and historic troglodyte settlement, the outstanding caves with their rock art, symbolic elements and sanctuaries, which definitively impregnate the sacred mountain land-



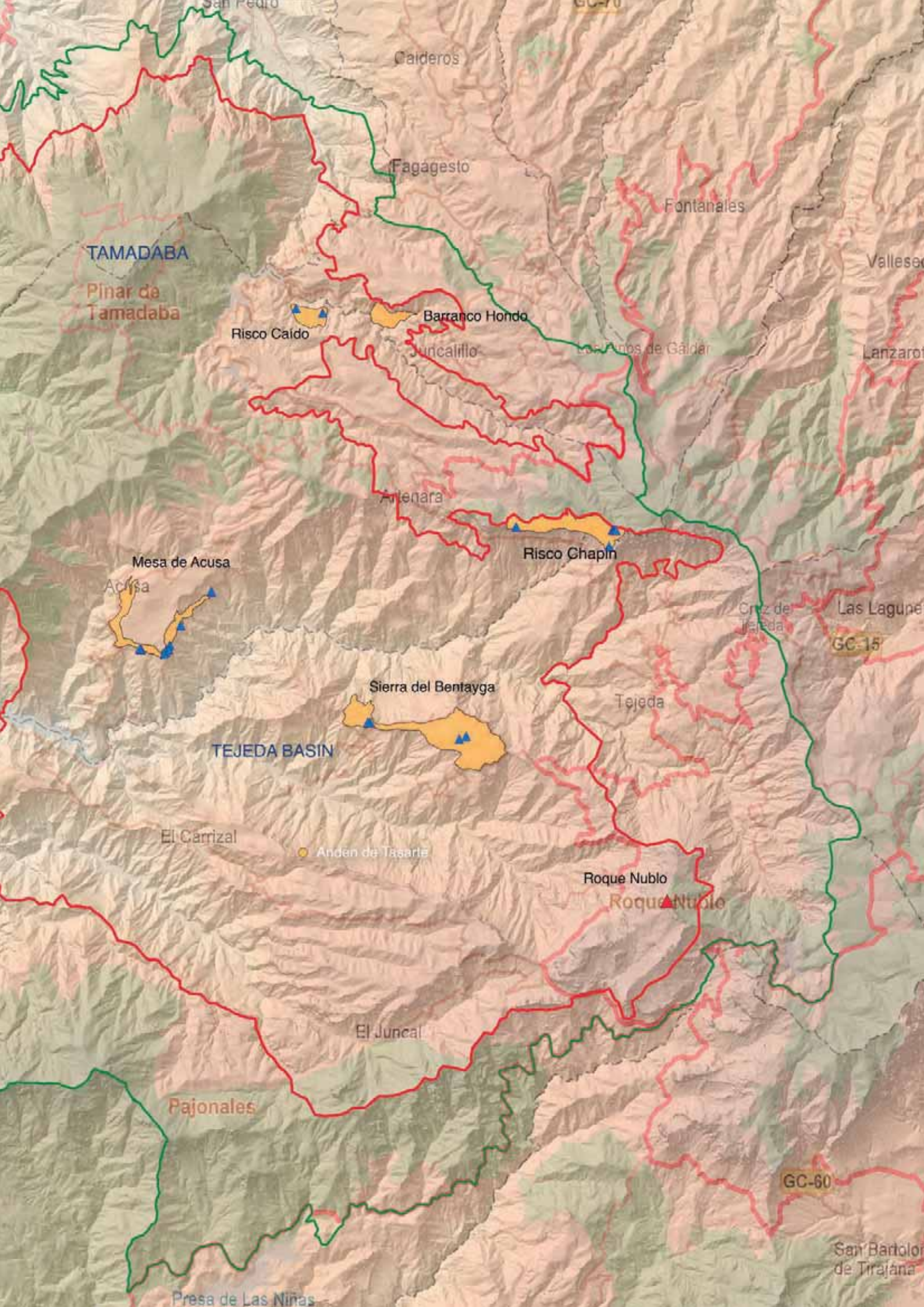
Figure 2.a.216. View from the south of the nominated property and the boundary of the buffer zone, superimposed on the Google Earth viewer.

Delimitation of the nominated property and zoning

-  Nominated property boundaries
-  Buffer zone boundaries
-  Important artificial caves (rock art and engravings)
-  Main aboriginal troglodyte settlements and sanctuaries

Map 2.a.19.





Calderos

Fagagesto

Fontanales

Valleses

TAMADABA

Pinar de Tamadaba

Risco Caído

Barranco Hondo

Juncalillo

Los Hornos de Gáldar

Lanzarote

Artenara

Risco Chapín

Mesa de Acusa

Acusa

Cruz de Tejeda

Las Lagunas

GC-15

Sierra del Bentayga

Tejeda

TEJEDA BASIN

El Carrizal

Andén de Tasarte

Roque Nublo

Roque Nublo

El Juncal

Pajonales

GC-60

San Bartolomé de Tirajana

Presas de Las Niñas

scape. It also includes many of the best ethnographic manifestations of the area, which are an expression of an outstanding territorial and scenic adaptation to the environment, such as the farming terraces or “bocados”, the ancient aboriginal trails or the small rural settlements. Furthermore, it is a living space full of ancestral expressions and systems of nomadic herding and water management.

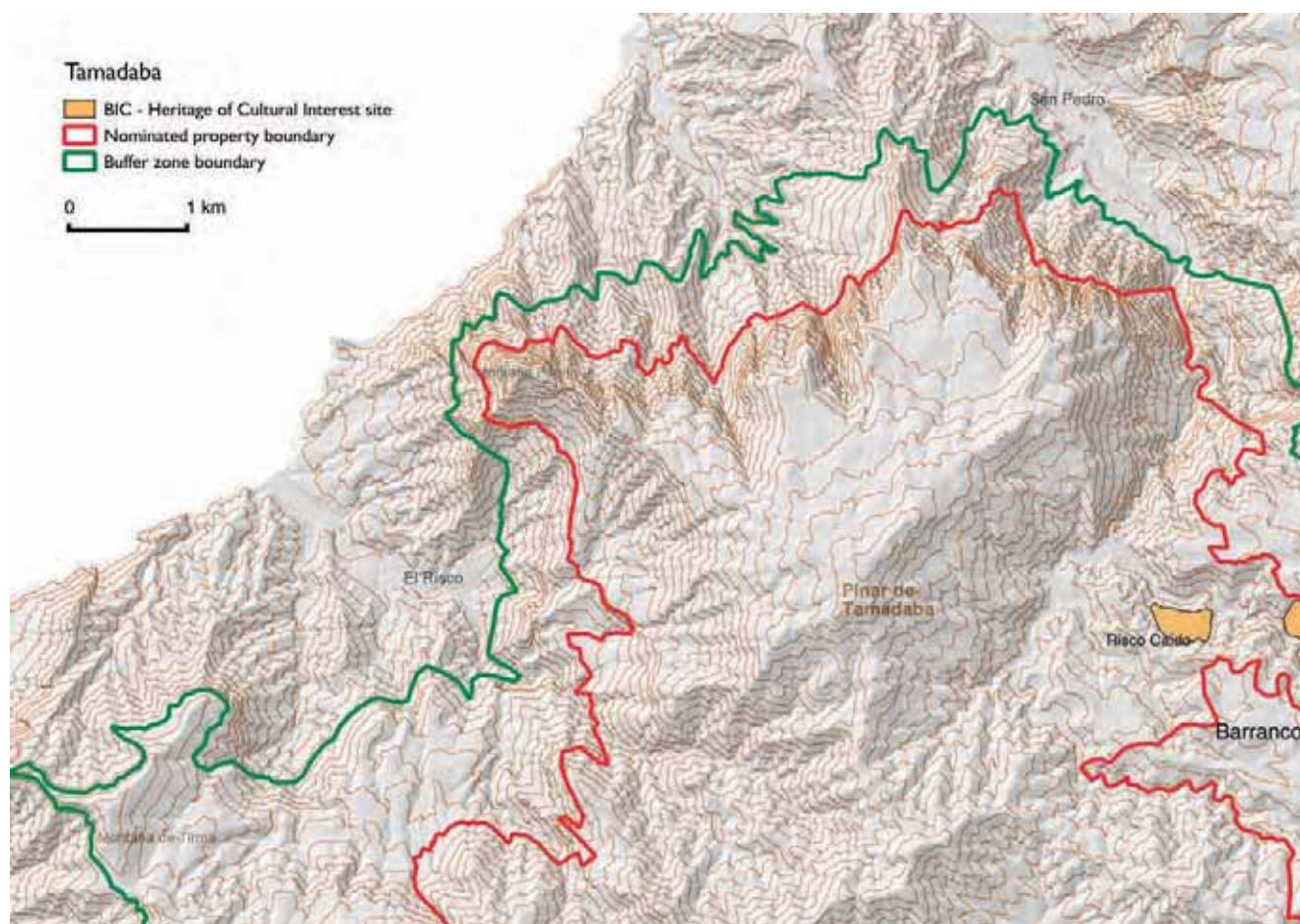
The Tamadaba area contains the mythical, original Canary Island pine forests, which continue to offer practically the same view as the ancient Canary Islanders would have had. Throughout history, these forests have always provided the settlers of the sacred mountains with materials, resources and tools.

The different thematic maps show how the zoning established strikes a coherent compromise, especially along the boundaries, between the need to include the landscape of the Tejeda Basin and its foothills, the Tamadaba highlands and the manifestations along Barranco Hondo. It is also consistent with the cartographic information provided by the leading geological elements,

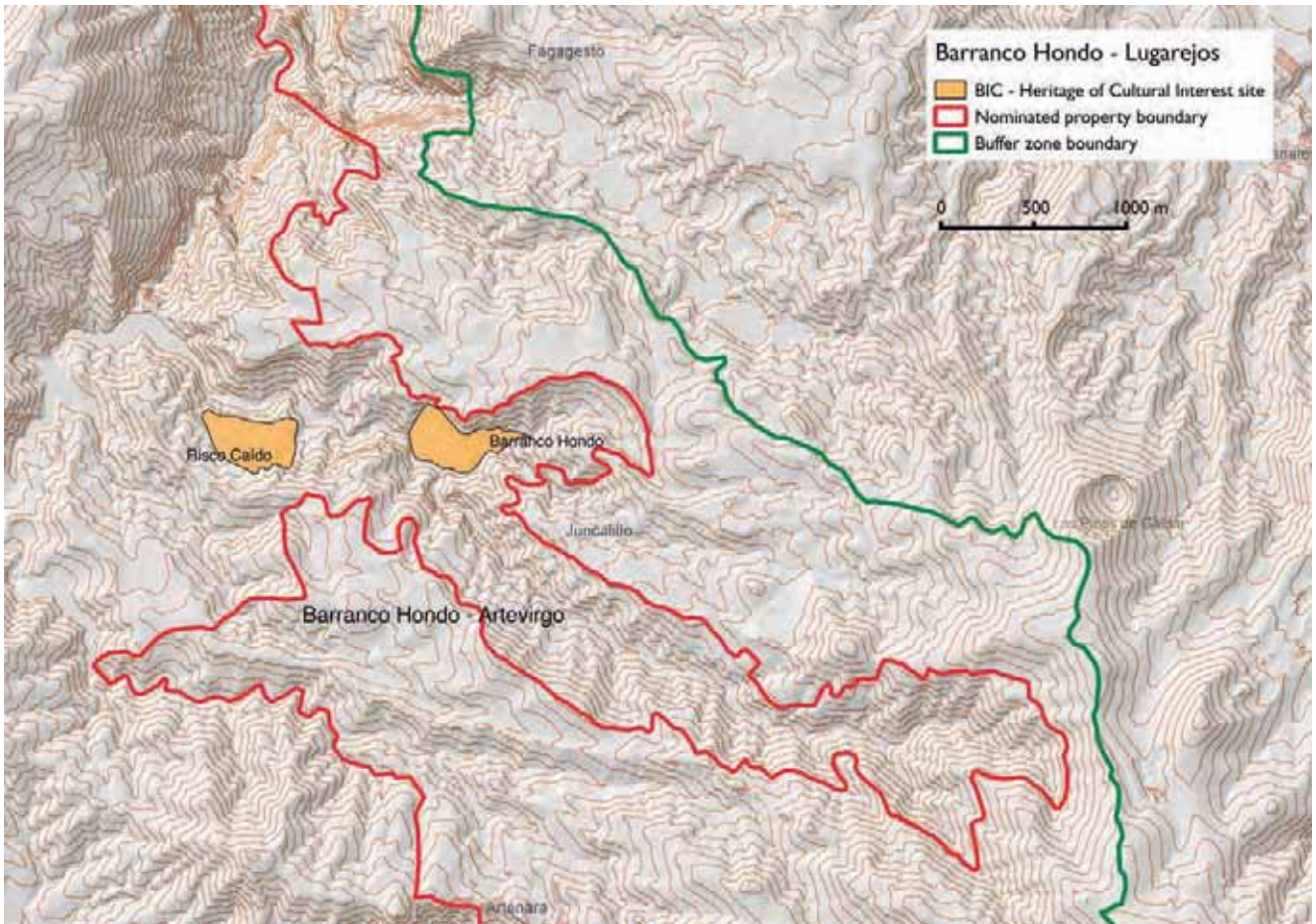
ecosystems, the environmental and cultural protection classification, the visible basins and landscape units, the urbanistic constraints and the land occupation and use system.

All the terrestrial elements related to the astronomical and calendar culture of the ancient Canary Islanders are included in the area of the proposed property, thus guaranteeing the perception and integrity of the sky-scape as an essential component of the Cultural Landscape. This includes geological landmarks such as Roque Nublo, Montaña de Altavista and Roque Palmero. This proposed Cultural Landscape also includes the main “almogarenes” and sanctuaries of astronomic significance, such as El Bentayga, the ritual sites of Risco Caído and other important manifestations like La Cueva de las Estrellas (Cave of the Stars) and La Cueva del Guayre (The Guayre’s Cave).

With the help of detailed plans on different scales, there now follows an explanation of the different areas of the Cultural Landscape and its buffer zone, with special attention paid to the boundaries.



Map 2.a.20. Details of the zoning and the boundaries of the property in the area of Tamadaba and its forests and Tirma, another sacred site.



Map 2.a.21. Details of the zoning and the boundaries of the property in the area of Barranco Hondo. For the ancient Canary Islanders, this was the mythical sacred mountain settlement of Artevirgo.

Tamadaba - Tirma

Map 2.a.19 covers the north-west of the area that includes the Tamadaba and Tirma Highlands.

To the north of the proposed property, the designated space of Tamadaba includes the forests of native Canary Island pine that remains almost entirely pristine, just as it was when it was an emblematic forest for the aboriginal settlers. The Canary Island pine survives here in almost the same splendour as it did in ancient times. It also includes the troglodyte settlement of Visvique on the northern edge, which looks down from the peaks over the sacred route of the sea towards the mountains. The ribbon of the buffer zone runs along the escarpments and crags of great scenic and ecological importance that protect the highlands to guarantee the scenic integrity of this sector:

The Tirma Sacred Landscape stands out in the western sector, so named when it was declared a Site of Cultural

Interest. Although it does not contain any attributes or components considered to be of outstanding universal value, its archaeological manifestations and its symbolic and historic value have persuaded us to include this whole space in the buffer zone. The main attribute of the eastern zone is the presence of the El Hornillo settlement that presents a set of caves set on terraces, at different levels.

Artevirgo (Barranco Hondo - Lugarejos)

Map 2.a.20 shows this area of the Cultural Landscape in detail, covering a large part of the slopes and the bed of Barranco Hondo gorge, which used to be the legendary Artevirgo, the most populated troglodyte settlement of the ancient Canary Islanders. This section of the proposed Cultural Landscape unfolds in a peculiar manner as an appendix to the main body of the area, and the rationale for its peculiar shape is the need to include several of the most important features of the proposed property: the Risco Caído area and the troglodyte settlement of Barranco Hondo de Abajo - both

of which have been declared Sites of Cultural Interest - and also the area marked on the Archaeological Map of Gáldar that contains a large scattering of aboriginal caves, re-used caves and historic, improved troglodyte manifestations from different periods. This area includes a good representation of the traditional farming systems associated with the caves that include terraces and platforms. It is also the site of the Logarejos pottery centre where pottery is still made using the same aboriginal techniques.

The buffer zone, which includes elements that have been altered by man and several more recent settlements, is designed to encompass the outstanding nature of the surrounding area, and it contains rural landscapes of terraced hillsides and many expressions of ethnographic interest that are shown on the archaeological map in map 5.b.14.

Artenara – Risco Chapín

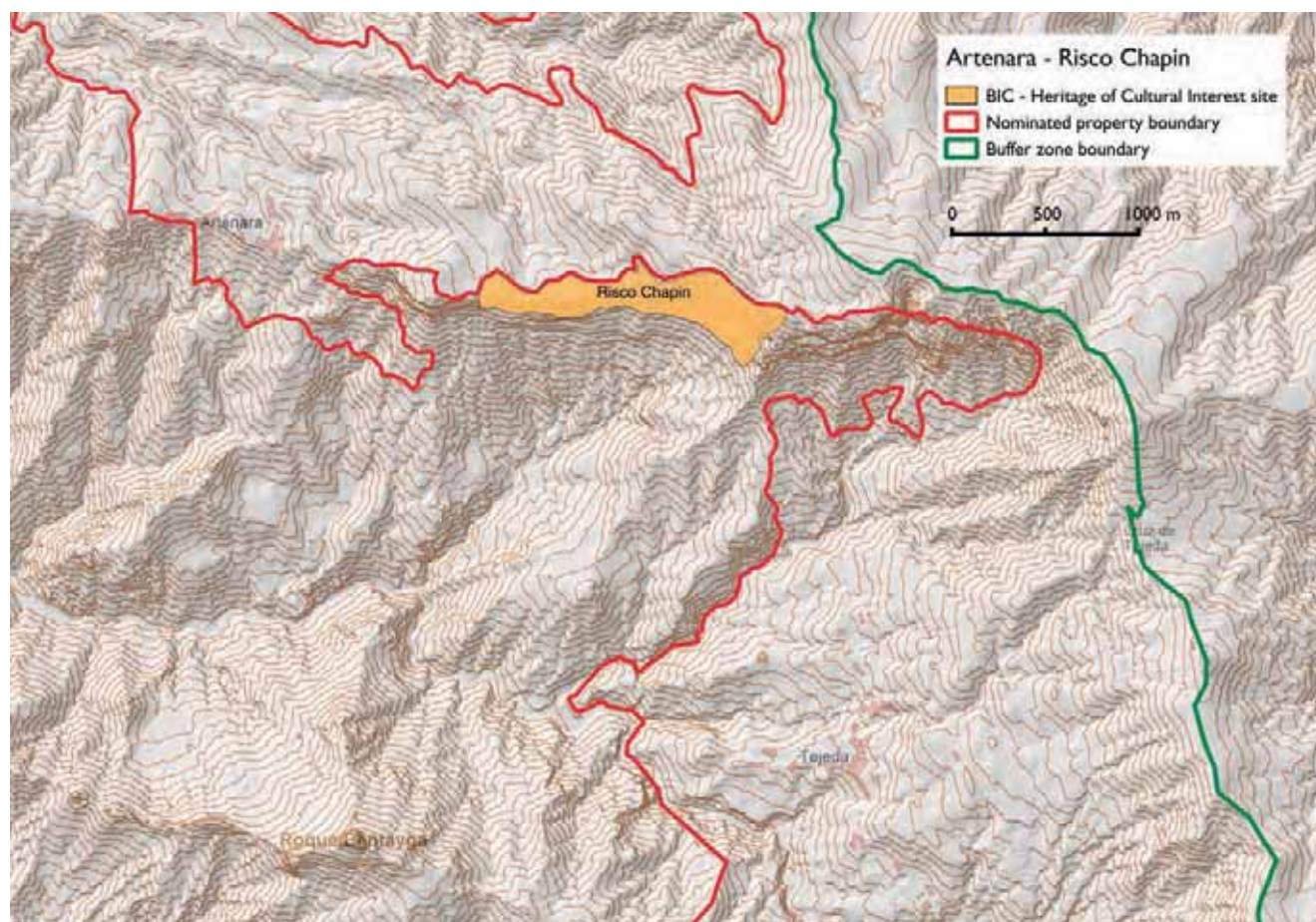
The north-west zone of the proposed property, Map 2.a.21, basically includes the cliffs that are the site of

significant attributes such as the sanctuaries of Risco Chapín and the spectacular escarpments that give scenic meaning to this part of the Cultural Landscape. The area proposed also encompasses a significant part of the town of Artenara, the part around the troglodyte sanctuary of Our Lady of the Cave (*La Virgen de la Cueva*), in an outstanding neighbourhood of cave houses that are still inhabited today.

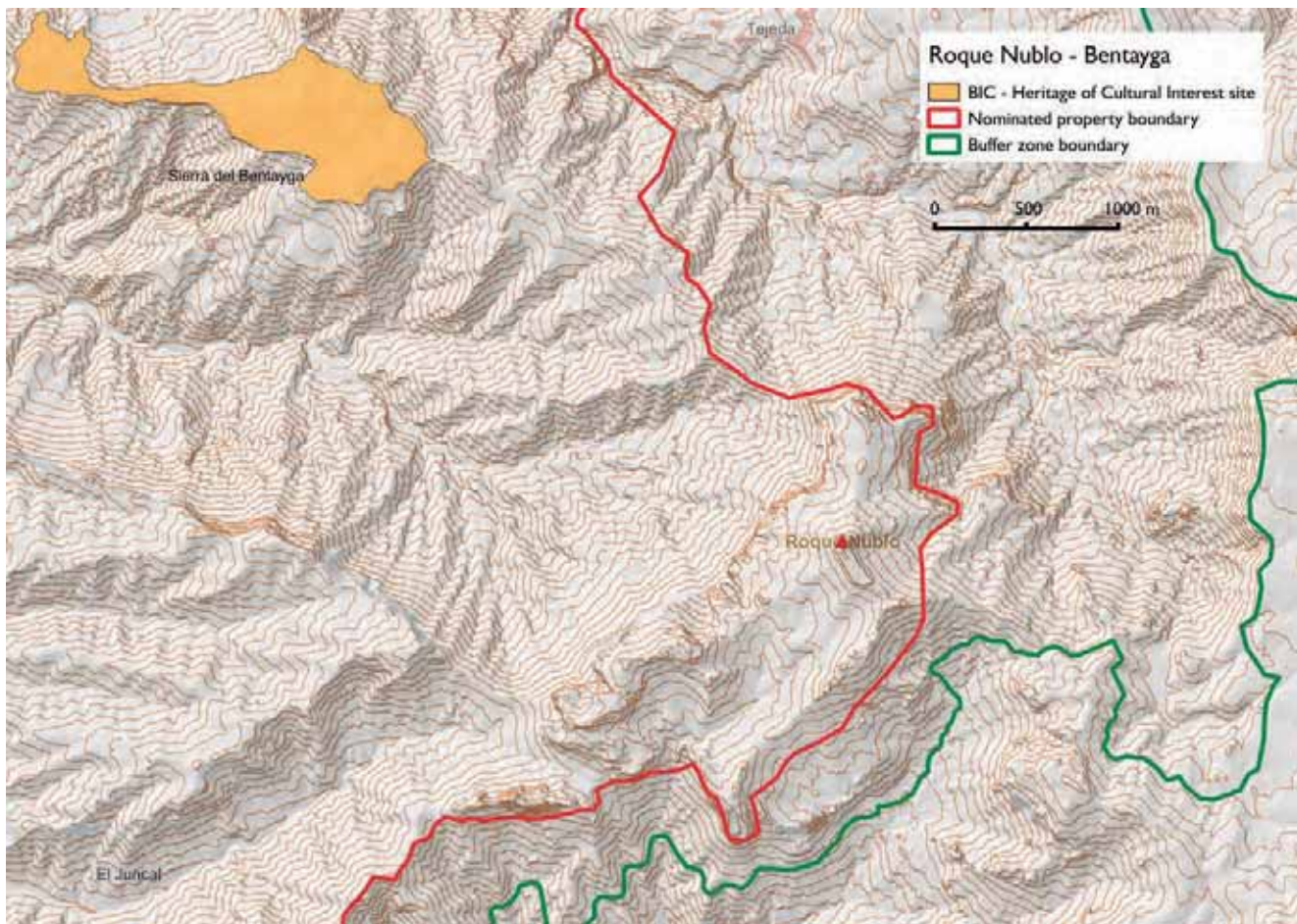
The buffer zone, including the area to the north of Risco Chapín, is made up of well-conserved natural areas. It also includes the town of Artenara and the area of the best conserved outstanding rural landscapes. On the western slopes, it includes the rural settlements of Tejeda that cling to the mountain sides up to the rim of the Tejeda basin.

Roque Nublo – Tejeda

Map 2.a.22 shows the zoning in detail, including the south-western boundaries of the proposed property. In the area of the Roque Nublo Natural Monument, it includes the entire core zone or the special landscape



Map 2.a.22. Details of the zoning and boundaries of the property in the area of Artenara and Tirma, including the Risco Chapín cliffs.



Map 2.a.23. Details of the zoning and boundaries of the property in the area of Roque Nublo, Tejeda and Barranco de Las Rosas. The boundaries of the El Nublo Natural Monument protected area are marked.

protection zone of the protected area (See Chapter 5.b.) that contains the symbolic elements and attributes related to the proposed Cultural Landscape. One outstanding feature is El Roque Nublo as a fundamental landmark of a cultural astronomy site and as a symbolic piece and reference point of the landscape.

The Bentayga Highlands stand tall in the very centre of the Tejeda basin, containing some of the leading attributes of the proposed property, including the Bentayga almogaren, with obvious astronomical relations and the Cuevas del Rey, or King's Caves.

The buffer zone includes the settlements of Tejeda, its traditional farming landscapes and the entire bed of the Barranco de las Rosas gorge, with the boundaries set on the escarpments of the Caldera de Tejeda.

El Juncal – Inagua

Map 2.a.23 offers a detailed picture of the zoning in the southern part of the Cultural Landscape bid. The

southern border is marked by the mountainous ridges that surround the Tejeda basin, the scenic rim that is full of symbolic references and landmarks that surrounds the area on that side. This zone includes small traditional rural settlements like El Toscón, Timagada or El Carrizal and outstanding aboriginal troglodyte settlements like El Chimirique, Montaña del Humo, Solana del Pinillo and Cueva de la Mesa. This landscape is criss-crossed by deep gorges and awe-inspiring landmarks like Roque Palmés.

To the south, the buffer zone draws the limits of the final ridges of the Tejeda Caldera and includes the landscape of the original Canary Island pine forests of Inagua and Pajonales.

Acusa – Mesa del Junquillo

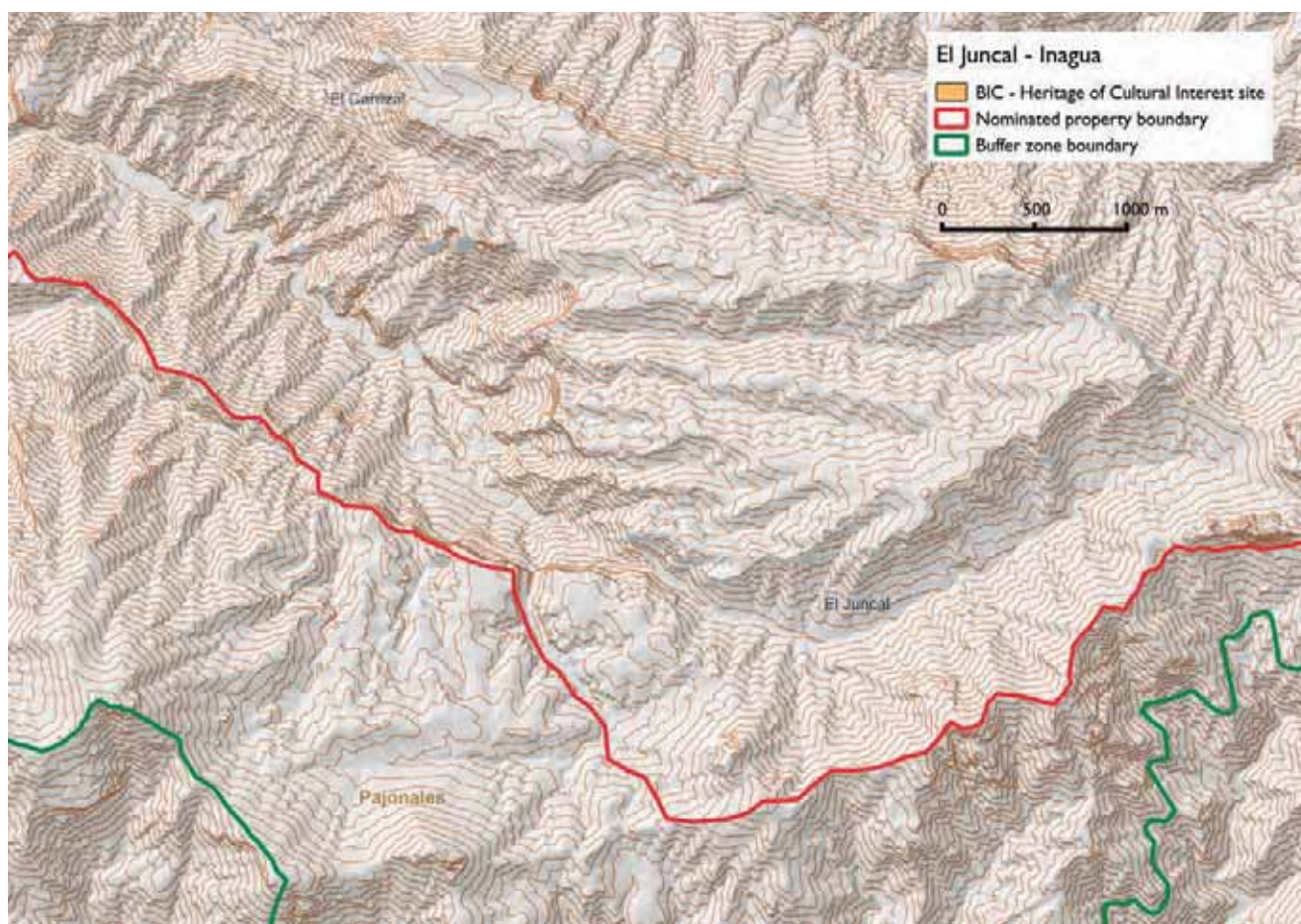
Map 2.a.24 shows the boundaries of the proposed property on the Eastern slopes. It runs along the ridges that are visible from the interior of the Tejeda basin in that direction, encompassing important symbolic and

cosmological landmarks and other impressive manifestations of the landscape, such as La Mesa de Acusa (Acusa Plateau) and La Mesa del Junquillo (El Junquillo Plateau), which also possess amazing troglodyte settlements clinging to impressive crags. There is an area of great historic interest between La Montaña de Altavista and La Mesa del Junquillo, in the proximity of El Parralillo damn. It is especially significant as here, along the Tejada Gorge, is where the Castilian troops penetrated to conquer the last of the aboriginal rebels in the sacred mountains. It was here that the troops from Biscay, under the command of Miguel de Muxica, suffered their first major setback, before this area was finally conquered.

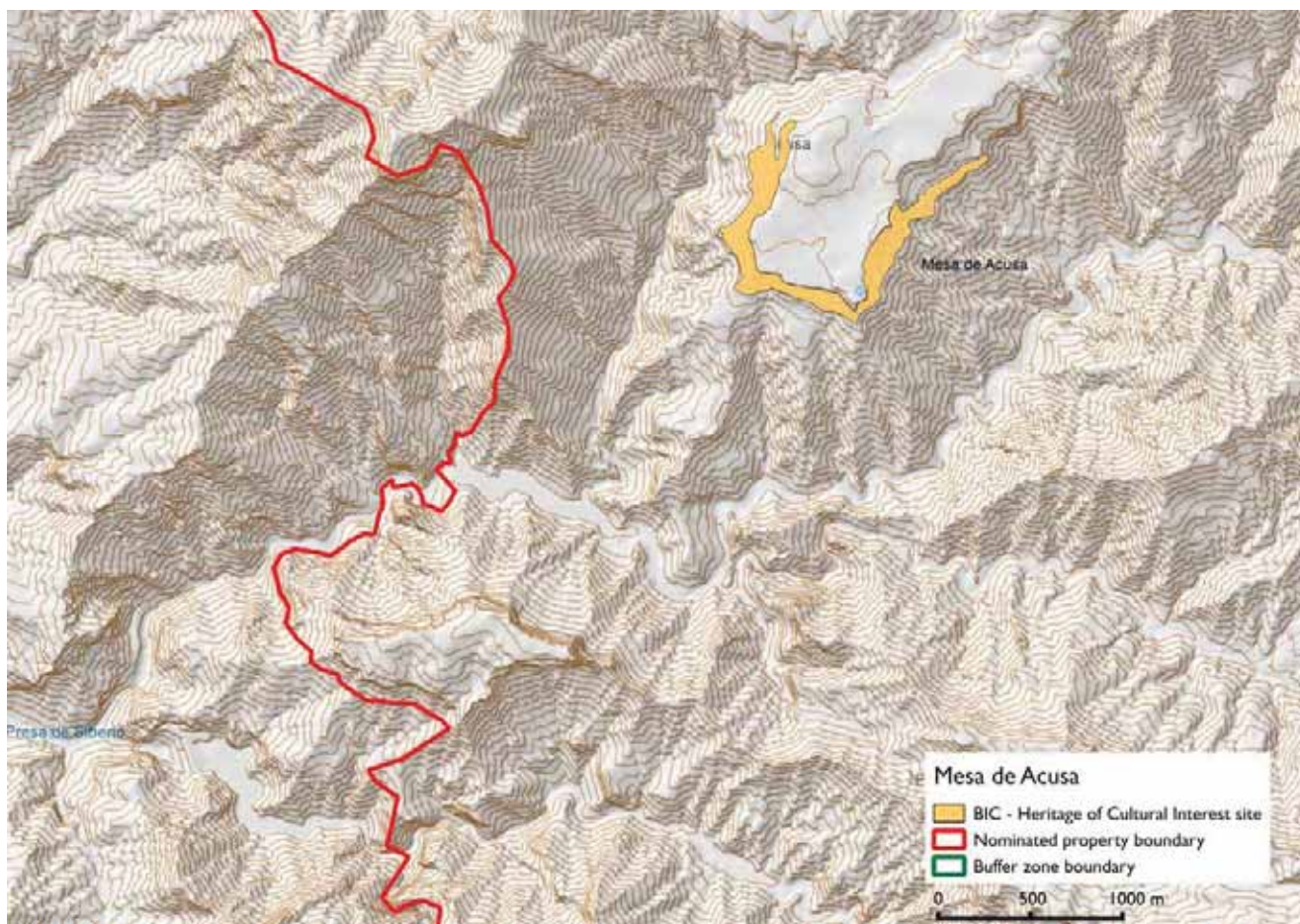
In this part of the area, the border of the buffer zone is defined by the mountainous line of the rim of the Tejada Caldera. The area also includes archaeological manifestations on the crags close to the Siberio and Caidero de las Niñas damns.



Figure 2.a.217. Roque Palmés, scenic landmark in the heart of Tejada
© Javier Gil León



Map 2.a.24. Details of the zoning and boundaries of the southern part of the nominated property, bordering on the Inagua-Pajonales forests.



Map 2.a.25. View of the zoning details and the boundaries of the western part of the proposed property.



Figure 2.a.218. Altavista Mountain and Mesa de Acusa. (Acusa plateau) © Javier Gil León



2.a.x

Glossary

Frequently used terms in the texts about the cultural expressions of the nominated property:

Almogaren. Ceremonial space where the ancient Canarians celebrated their religious practises. They varied in kind, they have been reported in the open air and in closed spaces, generally artificial caves.

Amazighe (Imazighen *plural*). Term used to define North African Berber communities and the pre-Hispanic settlers of the Canary Islands, who also had their origin in North Africa.

Andén. Longitudinal strip produced by differential erosion of lava flows, layers of pyroclasts and red ochre, on mountain escarpments and cliffs, usually converted into tracks and trails.

Baifo. Weaned baby goat.

Baladero (Bleating Ground): Flat place situated in a high area, where indigenous herdsmen used to take their livestock in years of drought, in order to use the bleating of the animals, from separating the babies from their mothers, to encourage the rains.

Bocado (Bite). Small piece of farmland, almost always linked up with others in terraces.

Cadena “de cultivo” (“farming” chain). Piece of land prepared for growing, laid out horizontally on a slope, retained with a stone wall and arranged in the form of a step.

Caidero (Chute). Place in a ravine or a crag, usually narrow, over which rain waters flow in the form of a waterfall.

Canarian or ancient Canarians. Term used to refer to the aboriginal population that lived in Gran Canaria before the Spanish conquest, and by extension, to the inhabitants of the island.

Esequenes; efequenes. Circular buildings with stone walls, located in Fuerteventura, where the “majos” held ceremonies.

Faycan. Person who occupied the very top rung of indigenous religious power before the Spanish conquest.

Gofio. Flour made from wheat, maize, barley or other toasted cereal grains. The wheat and barley varieties formed part of the diet of the ancient Canarians.

Guanarteme. Supreme chief among the aborigines of Gran Canaria, maximum political and military authority.

Guanche. Inhabitant of the island of Tenerife at the time of the conquest.

Harimaguadas; maguadas. Religious women in the pre-Hispanic society of Gran Canaria, who lived a life of meditation off whatever sustenance they were given by the nobles.

Majo. One of the peoples that inhabited the islands of Lanzarote and Fuerteventura at the time of the conquest of the Canary Islands.

Mesa. Large, high, flat plateau surrounded by valleys or ravines.

Mina “de agua” (“water” mine). Artificial water spring, commonly associated with subterranean galleries.

Pintadera. Small clay stamp, made up of a vertical, cylindrical appendage, joined to a flat, diamond-shaped, triangular, double-triangular, square or circular base, decorated with geometric motifs.

Piquero. Person whose trade is to hew out cave dwellings, wells, cave ponds, water galleries or channels, hay barns, sheds, animal pens, chapels or refuges underground.

Solapón. Overhang or protrusion that sticks out from the walls of some crags. It is comprised of geological layers that are more resistant to erosion, forming a grotto or hollow.

Tamezgha. This is a neologism that refers to the North African territory in which a range of different Amazigh cultures settled and developed. It encompasses the area between the Canary Islands and the Siwa Oasis in Egypt as its westernmost and easternmost points respectively, and from the Mediterranean to the Sahel.

Tehuete. Bag or sack made from hide or rushes, used by the aborigines.

Tibicena. Term used by the pre-Hispanic people for demonic apparitions in animal form, frequently dogs.

Vueltas “de ganado” (“livestock” lands). Land that nomadic herdsman would lease, where they would take their flocks to graze.

Glossary of astronomical terms

The following are the principal astronomical terms and concepts referred to in the text.

Acronychal rise. A star's first appearance in the darkening evening sky already risen (N.B. non-circumpolar stars rise around four minutes earlier each day/night). This culturally significant event is technically the “apparent acronychal rise”, as the “true” acronychal rise (when the star rises just as the sun sets) occurs when the star is not visible. Cf. *Heliacal rise*.

Archaeoastronomy The study of beliefs and practices concerning the sky in the past and the uses to which people's knowledge of the skies was put.

Astronomical alignment A linear arrangement of features oriented upon an astronomical phenomenon (such as the rising or setting of a celestial body). The mere existence of such an alignment does not prove its intentionality or cultural significance.

Astronomy In its broadest sense, a way of understanding the sky, operating within a specific social context, not necessarily as objective “science” in the modern sense. The use of this term begs the question of how, or whether, astronomical (in the Western sense) phenomena are culturally separated from meteorological ones. Autumn (autumnal) equinox. See *Equinox*.

Azimuth. The azimuth of an object is used to define its position on the celestial sphere in the horizontal coordinate system. Specifically, it is a measure of the angular distance of an object measured east from north and parallel to the horizon.

Calendar A system for managing intervals of time, often, but not necessarily, using recurrent astronomical phenomena as temporal markers. Alignments or hierophanies that mark certain dates do not in themselves constitute evidence for a calendar, merely of seasonally-related/timed observances. See *Lunar calendar*, *Lunisolar calendar*.

Cultural astronomy A term encompassing both archaeoastronomy and ethnoastronomy, between which there is no clearly delineated boundary.

December solstice The day each year (December 21 in the Gregorian calendar) when the sun traces its most southerly path across the sky. The *declination* of the sun at this time is $-23\frac{1}{2}^\circ$.

Declination Latitude on the rotating celestial sphere, varying from $+90^\circ$ at the celestial north pole (directly overhead at the terrestrial north pole) to 0° at the celestial equator to -90° at the celestial south pole. Over the diurnal period, each fixed heavenly body traces out a line of constant declination.

Equinox Strictly, one of the two points in the year when the sun crosses the celestial equator (and has *declination* 0°). Generally used more loosely in a cultural context to describe the halfway points (usually in time) between the solstices. The *autumn* (or *autumnal*) *equinox* occurs around Sep 22 in the Gregorian calendar and the *spring* (or *vernal*) *equinox* around Mar 21.

Ethnoastronomy The study of beliefs and practices concerning the sky among modern or historically recorded indigenous communities.

Heliacal rise. A star's first appearance in the pre-dawn

sky (N.B. non-circumpolar stars rise around four minutes earlier each day/night). Cf. *Acronychal rise*.

Hierophany An impressive display of light, for example from the sun and moon in an enclosed space, known or supposed to be of sacred significance.

June solstice The day each year (June 21 in the Gregorian calendar) when the sun traces its most northerly path across the sky. The *declination* of the sun at this time is $+23\frac{1}{2}^\circ$.

Lunar calendar A calendar based on the lunar phase cycle (synodic month) of approximately $29\frac{1}{2}$ days, which proceeds independently of the seasonal (solar) year. Cf. *Lunisolar calendar*.

Lunar hierophany See *Hierophany*.

Lunisolar calendar A calendar based on the lunar phase cycle (synodic month) of approximately $29\frac{1}{2}$ days but with the intermittent inclusion of an additional (intercalary) month, or omission of a month, in order to keep it in step with the seasonal year. Adjustments are typically triggered by observations of the rising or setting position of the sun or the heliacal or acronychal rising of stars. Cf. *Lunar calendar*.

Major lunar standstill limit. The highest (northerly) or lowest (southerly) declination that the moon can reach, or equivalently the furthest north or south that it can ever rise or set.

Northern major lunar standstill limit See *Major lunar standstill limit*.

Sirius. The brightest star in the sky.

Skyscape A term, analogous to “landscape”, intended to convey that (along with the visible landscape) the sky forms an integral part of the total environment perceived by human communities.

Solar hierophany See *Hierophany*.

Solstice One of two points in the year the year when the sun’s path across the sky reaches its northerly or southerly limit and the length of daylight is longest or shortest. See *December solstice*, *June solstice*, *Summer solstice*, *Winter solstice*.

Solstice marker A natural or manmade feature, usually viewed on the horizon, which marks the rising or setting position of the sun at one of the solstices.

Southern major lunar standstill limit See *Major lunar standstill limit*.

Spring (vernal) equinox. See *Equinox*.

Summer solstice In the northern hemisphere, the June solstice; in the southern hemisphere, the December solstice. This event occurs at the time of year when the length of daylight is longest.

Winter solstice In the northern hemisphere, the December solstice; in the southern hemisphere, the June solstice. This event occurs at the time of year when the length of daylight is shortest.

Venus A planet, the brightest object in the sky apart from the sun and the moon.

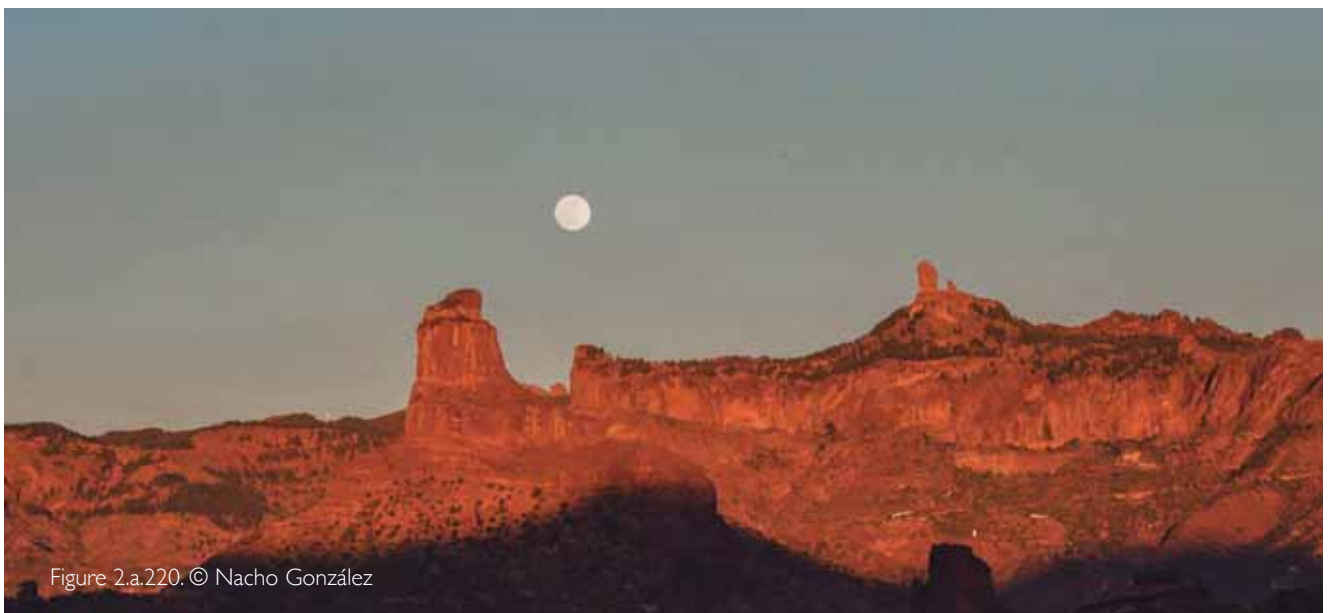
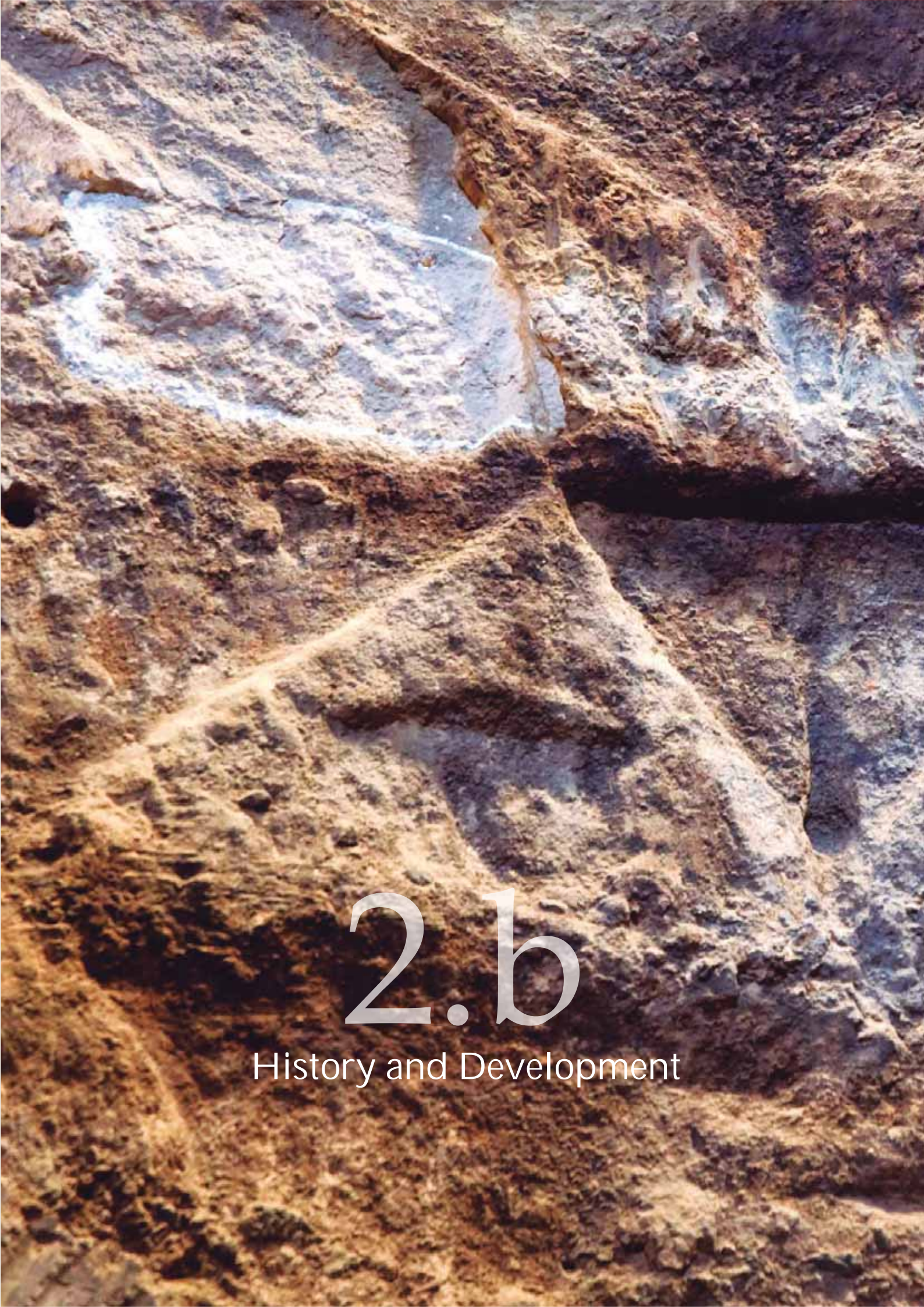


Figure 2.a.220. © Nacho González



- 2.b.i Island cultures that emerged from the Berber Maghreb
- 2.b.ii History and evolution of an isolated indigenous culture
- 2.b.iii Sacred mountains as refuge
- 2.b.iv The calendar of the ancient Canarian people
- 2.b.v The survival of the skies of the ancient Canarians
- 2.b.vi Expressions of cultural astronomy in the context of the Berber Maghreb
- 2.b.vii The gender dimension
- 2.b.viii Spirituality and popular beliefs
- 2.b.ix Funeral traditions in pre-Hispanic Gran Canaria and in nominated property
- 2.b.x The forests of the sacred mountains: rites and celebrations over the course of history
- 2.b.xi The historical evolution and knowledge of the property from sources and research
- 2.b.xii Cultural imaginary: symbology and iconography



2.b

History and Development



2.b.i

Island cultures that emerged from the Berber Maghreb

Much is still unknown about the emergence in the north of Africa of the most ancestral forms of current Imazighen (Berber) languages and of the first inhabitants. The most popular hypothesis today based on historical linguistics, population genetics, bioanthropology and archaeology appears to associate these earlier groups of “Berber speakers” with small groups of hunter gatherers documented in modern day Maghreb some 20,000 years ago (Chaker, 2013; Onrubia-Pintado, 2013). From this moment in time, thanks to the mobility of these groups, which increased in the Neolithic era with the emergence of livestock breeding, at the dawn of local protohistory paleo-amazigh populations were found throughout the Maghreb and the occupied Sahara, an immense area that runs from the western oasis of Egypt to the Atlantic African coast and from the Mediterranean coast to the very border of the Sahel. While in the areas adjacent to the Nile valley this motley conglomerate of communities was in contact with Pharaonic Egypt along the entire Mediterranean coast it was connected from ancient times initially with the Phoenicians, Punic and Greeks and subsequently with the Romans. This coexistence brought about an entire series of cultural contagion dynamics, of acculturation and resistance, that operated in both directions as is always the case in such colonial situations: from colonists to colonised, but also from “indigenous” to colonisers. Despite this colonial presence and indeed some vocabulary loans which indicates the intensity of these relations, the languages of these ancient Amazigh societies, often referred to as Lybico-Berber, were preserved and, with them, an entire cultural universe that is expressed through them.

Although we are still very far from fully understanding the colonisation and human settlement process on each of the Canary Islands, details available today concur that these people hailed from some of these Lybico-Berber

groups. Indeed all linguistic, genetic, bioanthropological and archaeological evidence that we now have coincide in indicating, beyond doubt that all the native populations of the archipelago come from the continental Amazighs of ancient times.

Without ruling out the possibility of some earlier exploration, the arrival of the first Amazighs from the continent to the islands would appear to have occurred on horseback at the beginning of the Christian era, that is, around 2000 years ago, more or less. It is clear that they came with the desire to settle here permanently, as both men and women came bringing both plants and domestic animals with them. We do not know exactly how the colonisation occurred: What or who drove them to cross the narrow channel that separates the islands from the continent? Did this happen in one wave or did it take various trips? How did they get here?, Where did they arrive to first and how did they move from island to island? Was settlement interrupted in some of the islands with people leaving followed by recolonisation? The only thing that we know for sure is that a time came when the continental Amazighs became islanders giving rise to a series of unique insular cultures. Thus, with the exception of the Berbers that populated the island of Yerba (Djerba, as written in French), which is



Figure 2.b.2. Amazigh writing in the Fom Chenna Zagora archaeological site, Morocco. © IRCAM

← Figure 2.b.1. Sample of indigenous fabric from Gran Canaria. © Museo Canario

so close to the coast of Tunisia that, at times of low tide, it can be considered part of the continent to which it is actually joined, there is no other known examples in history of Amazigh societies living on islands.

Thus, in the process of adapting to an environment hitherto unknown to them - to their new island location - the Amazighs from the continent made use of the knowledge and skills they brought with them and of the ideas and ancestral emotions inherent in them. Thus it happened that this group of people survived, bearing their offspring and continuing to grow over centuries in this cosmos now reduced to what was the land, sea and sky of the islands where they settled with their own unique ways of feeling, thinking, behaving, living in society and understanding their world. The isolation in which these people lived until the Canary Islands were “discovered” by the European seafarers in the 14th Century would seem to indicate that those first explorers arriving from Europe found in the islands a miraculously preserved relict of the protohistoric Amazighs living here without any contact with Islam. Even though it was by no means outlandish to believe that some remnant of the islands’ ancient culture may have still survived, the view that they were the unsullied repository of a pre-Islamic autochthonous culture disregarded the evolution that might have occurred within said culture. We can

be almost certain that there was no on-going contact between the different islands - the reason for which is unknown or not fully understood. These thus explain the accentuated differences between the Amazighs of each of the seven islands.

The Amazigh cultures that settled on the Canary Islands are basically the result of colonisation, voluntary or induced, that was led by people that gradually became insular and oceanic without entirely losing their continental African roots. Therein lies the exceptional historical and cultural nature of these Canarian-Amazigh people, and their islands off the coasts of Atlantic Africa.

Despite the conquest and the colonisation of the archipelago by Europeans, the distant echo of these people that constituted one of the formative elements of the multicultural and mixed culture society from which the modern history of the Canary Islands hails, can still be heard in each Amazigh expression (“guanchismo”) still found in the Spanish spoken in the Canary Islands. You can still hear whispers of these pre-hispanic place names, of ancient place names that they represent, thanks to the power of words to name and bring into existence the deep substrate of this material sedimentation of what is remembered and forgotten, of time and space from a distant yet recognisable time that is landscape.



Figure 2.b.3. View of Mesa de Acusa, one of the main settlements of the indigenous descendants of the continental Amazighs or Berbers.
© Javier Gil León

2.b.ii

History and evolution of an isolated indigenous culture

We do not know the precise time the Amazigh North-Africans arrived at the shores of Gran Canaria for the first time or where they arrived to. Perhaps they came from one of the easternmost islands of the archipelago and, consequently were perhaps already islanders. Although we have some carbon 14 dating associated with human presence on the island from sometime around the beginning of the new Era, the oldest reliable dating we have for this comes from the Bentayga range, in the heart of the proposed Cultural Landscape (Velasco Vázquez, 2014). This corresponds to a burial cave, integrated into an ensemble of artificial and natural caves like those known as Cuevas del Rey, in the interior of which a fragment of wood was collected that has been dated back to the 3rd and 4th Centuries. The dates from other sites situated in Acusa and also in the area of Arucas and Telde are somewhat later. It is logical to think that, if there may already have been people settled in the mountain regions of the island from the 3rd Century, the arrival of the first contingents of colonisers must have occurred somewhat earlier than this. But when? How long did this first phase of exploration and adaptation last? We still do not have this information.

From the 8th Century dated sites are more prevalent on the island. And their density increases considerably for the 12th and 13th Centuries. Everything points to this moment being a phase of marked demographic growth that led to occupation of all the most favoured areas for human settlement. Significantly, analysis of myths about the island leadership collected in the written sources and the archaeological work carried out in Cueva Pintada de Gáldar, suggest that it is at this time that the emergence of the aristocratic lineage of the Guanar-temes occurred (Onrubia Pintado, 2003). Divided into two family lines that were based in Gáldar and Telde, these Canarian-Amazigh nobles monopolised the political and religious power of the entire island until the time

of the conquest.

Written sources and archaeological data come together to depict a map of the island inhabited at the end of the 15th Century, just before the start of the conquest, showing some thirty places and villages in which settlements were concentrated. It is thought that tens of thousands of people may have lived in these towns and unknown number of small villages that made up the indigenous settlements. In the high mountain areas the areas most densely populated at that time were Acusa, Bentayga and Artevirgo, an indigenous place name that no longer exists that most likely corresponds to the pagos of Barranco Hondo and Lugarejos.

During this millennium and a half of continued presence on the island, the Canarian Amazighs developed a culture that was markedly singular, unique. And, with-

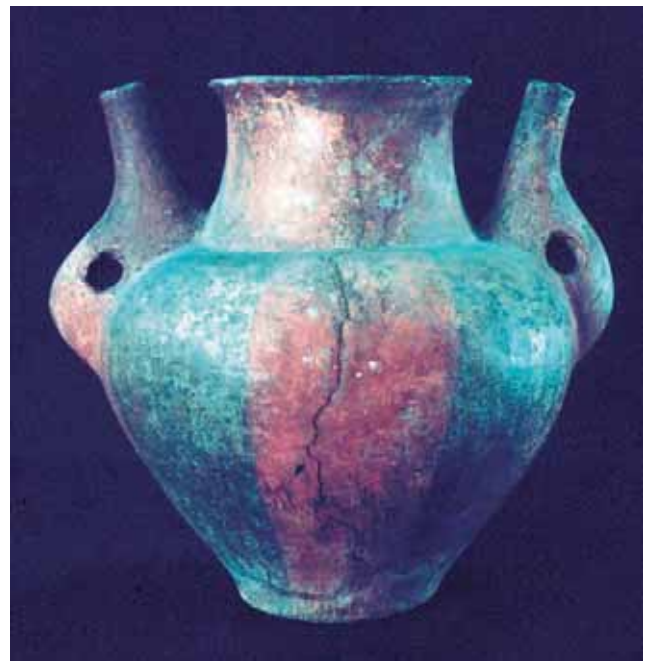


Figure 2.b.4. Sample of indigenous pottery from Agüimes © Museo Canario



Figure 2.b.5. With particular symbols of domination, the sacred mountain sites were one of the deepest expressions of the Canarian Imazighen.
© Julio Cuenca

out minimising the cultural characteristics that the native population of Gran Canaria share with those that settled on other islands in the Archipelago, such as the tradition of mummifying the corpses of their dead, knowledge of the Lybico-Berber script or use of hand-operated rotary mills, what is most noteworthy are the material elements and symbols that are unique to them. Compared with the rest of the islands but also with Berber Maghreb, its particular architecture is exceptional be it rock hewn or built using worked stone, found in clusters of villages made up of dwellings with unusual floor plans in dramatic cliff-top granaries or in burial mounds. And, to mention just one other case, this time related to domestic goods, also unique are productions arising from a careful clay craftsmanship aimed at modelling high-quality ceramic receptacles, often decorated with paintings, small statues or decorative stamps, pieces of unknown use though they are in the form of a stamp.

In their bid to dominate nature socially, humanising it, writing their own story into its history, the Amazighs of Gran Canaria endeavoured to make their island an inhabited and habitable place. Beyond the residential and domestic areas that made up the quintessential humanised areas, from what we know at this point social dominance of the area started along the same coast, the configuration of which as an oceanic landscape was conditioned by its use for fishing and shellfish gathering that surprisingly excluded navigation. However, the island landscapes were mainly marked by the activities of this agrosylopastoral society. A considerable area was occupied by pinewoods and monteverde (sub-humid montane layer) forests which may have been the expression of an untamed nature populated by unsettling creatures and spirits. Most of the agricultural land of the indigenous people was concentrated in the coast and lowlands of the north and east, with the thermo sclerophyll strip being the most heavily used. The agricultural landscapes included parcels of irrigated land, furnished with the corresponding hydraulic systems, situated in the large plains and in the areas around the ravine riverbeds where water flow was sufficient. On the other hand, the dry land regions that supplied the staples of indigenous cereal production were distributed across the high lands, from the minimum annual rainfall threshold that made growing these crops viable. There where the land and rain allowed them to grow, fig trees proliferate, the only fruit tree cultivated by the natives. For its part, the livestock landscapes were made up of regions where flocks of sheep and goats grazed, along the trails and ropes that gave access to them, and along the shelters and pens where they found refuge on their seasonal trips to the mountain pastures, men and livestock.

The nominated sacred mountains constitutes one of the most eloquent expressions of the landscapes constructed, thought and felt by the Amazighs of the Canary Islands. Here where especially sophisticated forms of symbolic domination are found, the humanised space joins hands with an idolised nature to relate perception and action, the ideal and the material, the sacred and the profane. Written sources from the time of the conquest and from the first phases of its repopulation are unanimous in highlighting, amidst these landscapes of indigenous sacredness, the supremacy of the sanctuary

at Tirma. Despite the fact that this place name now has a very local character, there is plenty of data to suggest that the recurring reference in the texts refers, through the deforming colonial filter that characterise them, that this is not so much an isolated place of worship but instead more of a territorial boundary, marking out a vast sacred area that coincides with the Caldera de Tejeda crater. The Tirma sanctuary would thus include a good part of the highlands of the island, and particularly the Bentayga massif, the topography of which would appear to perfectly adapt itself to the setting of the ritual cliff falls that, according to some of these sources, happened here when a new “señor” of the island was appointed.

Undoubtedly because of its sacred nature, but also because of its rugged terrain and because this area was so difficult to penetrate and access by the Spanish troops, Bentayga and the neighbouring regions of the centre

of the island were the last place of refuge for the indigenous people of the island before the Canarian resistance moved in an act of desperation to the “fortresses” of the southern slopes of the island. Although it has been documented that until 1485 some islanders remained in the highlands, the last organised strongholds of resistance were definitively subjugated in 1483.

However, the native islanders did not abandon the island highlands after the Canarian war came to an end. Indeed, from the documentation that remains we know that some of the natives were authorised by the Castilian crown to remain in Gran Canaria, while others could return there from exile in mainland Spain and that they had houses and lands in the regions of Lugarejos, Artenara, Acusa, Bentayga or Timagada well into the 16th Century (Betancor Quintana, 2003).



Figure 2.b.6. Recreation of the battle of Bentayga, one of the last strongholds of resistance of the indigenous people during the conquest of the island by the Spanish troops. © Martín Robayna



2.b.iii

Sacred mountains as refuge

As we have said, the Amazigh communities that arrived in Gran Canaria evolved in isolation for at least one thousand five hundred years, creating very close symbolic relations with the landscape and the sky-scape that caused them to hold certain mountain sites sacred. Many of these geographic landmarks, especially in the Tejeda Caldera, were chosen to establish sites of worship or as places to hold rituals, some closely associated with astronomic events. Chapter 2.a described and highlighted the sacred nature of certain archaeological sites in the mountains, such as Risco Caído, Roque Bentayga or Risco Chapín, all of which are important attributes of the nominated property.

But the fact that they were sacred did not come into conflict or contradiction with the other essential role played by these sacred mountains. As they are rugged, steep and inaccessible, they were also chosen as a refuge by the people who inhabited the island until they were conquered and colonised in the last quarter of the 15th century. This physical and symbolic property of the mountains as a refuge was not only attributed to them during the siege and the fight against the European forces, when the rugged terrain of the Tejeda Caldera provided shelter for the Canary Island resistance, they were also considered a refuge during much of the aboriginal phase. Thus, some of the tors, highlands, crags and mountains not only played the role of a fortress against invaders, they were also offered asylum to those who broke the laws or rules established before colonialism, and as shelter and protection for their food against predators, shortages or plagues at that time. That is why we can talk about the mountains, not only as sacred places, but also as a refuge in the broad sense of the term.

And it is precisely their sacred nature that gave much of this zone, more specifically Tirma, an area that was

← Figure 2.b.7. Bentayga Highlands, one of the fortified spaces and refuge of the aboriginal people.
© Javier Gil López

revered by the aboriginal communities of Gran Canaria, their status as a place where outlaws or run-aways could hide without fear of capture. This is recorded in the chronicles of the conquest, when they describe that *“that miscreant that had committed a crime was free and safe sheltered in those hills and he could not be brought out from there, keeping them and worshipping them as churches and holy things”* (Morales Padrón, 1993). Thus, and according to some chroniclers, those who broke the rules or laws among the ancient Canary Island population, may have had the right to refuge or asylum in the sacred places, which in this case were the remote mountain spaces like Tirma, Amagro or Humiaga. The place name “Tirma” remains today as a district in the Tamadaba Highlands, set in the buffer zone of the proposed property. Based on the different sources and tales of the chronicles of the conquest, some authors, however, claim that Tirma was a larger, more general area, which largely coincides with the nominated property.

This refuge aspect can also be seen in some of the features of some of the troglodyte settlements, located on mountainous cliffs and in inaccessible areas, and in some of the elements that form part of them. Such is the case



Figure 2.b.8. Fortified granary of Roque de las Cuevas del Rey. Storehouse, asylum and protected place because of its difficult access. © Julio Cuenca



Figure 2.b.9. The steep, rugged nature of this area was what led the people who inhabited the island until it was conquered and colonised in the last quarter of the 15th century to choose it as a refuge. View of Roque Nublo amid the mist.
© Cabildo of Gran Canaria

of the fortified grain stores, where this isolated island population stored part of their cereal harvest, based fundamentally on growing barley, but also figs, wheat, lentils, beans and peas, as has been documented in the collective grain store of El Álamo in Acusa, which provides chronological data that show that this site was used at least from the 11th century, up until the early 15th century (Morales, 2014).

Inaccessibility as protection and defence of the surplus harvest, was also protection and defence and a guarantee of continuity for a social formation that depended entirely on its own resource to survive, in an island-wide and local context with no contact with the outside world. In fact, the output must have been low in times of drought or poor harvests, which could well have caused tensions, as happened in the conflicts stemming from the control of grazing for their livestock (Abreu Galindo,



Figura 2.b.10. Caves of Majada Alta, aboriginal settlement in the mountain escarpments located on the edge of the nominated property, in the area of Inagua-Pajonales. © Orlando Torres

2009: 109) and as can be deduced from the reference to the existence of “hombres de pelea” – or “fighting men” (Torriani, 1978: 97). These disputes could also have spread to farming produce. Protection, control and management of the produce could have been the motive for building structures like the fortified grain stores, and for siting them in highly inaccessible and easily defensible places offered by the vertical walls of certain mountains.

By the same token, these storage spaces, even though they were an economic fortress, were not exempt of a religious or sacred varnish, given that there is a link between the rituals relating to the agricultural cycles and handing over the farming surplus to store it in these storehouses or granaries (Martín de Guzmán, 2004: 641). In fact, it appears that both functions fell to the *Faycan*, who was responsible for organising these religious ceremonies and rituals so closely related to controlling time or farming cycles and the prayers and rituals to propitiate the necessary rains (Abreu Galindo, 2009: 98).

But perhaps the most significant aspect, or at least the one that has struck the deepest chord in the collective memory, as a symbolic reference point of the resistance of the communities of Gran Canaria to the conquest and colonisation by the Crown of Castile, was the role played by the complex terrain of the central part of the island, the sacred mountains that sustain the proposed property, as a fortress and refuge against the military penetration and siege by the troops of the Catholic Monarchs.

Well into the war of conquest, which had started in 1478, its effects were plain to see: death, deportations, epidemics and famine, which led part of the island population to surrender to the will of the invading troops. But another large part of the population decided to escape to the most rugged places of the island, where the deep gorges, the steep mountains and their inhabitants acted as fortresses to reorganise the final resistance to the enemy. Families with their livestock took refuge in the area of the Tejeda basin, sheltered by powerful crags like Bentayga, in their attempts to resist the Castilian military siege.

Nowadays, the most outstanding archaeological reference in the area of the bid, to its character as a fortified refuge for resistance is Roque Bentayga. We have already described the archaeological evidence about

its religious and cultural aspects. This geological formation rising from the centre of the Tejeda Caldera was one of the last refuges of the Canary Island resistance before they were conquered in 1483, as pointed out by the ethno-historical tales. Here is where they dug in and resisted the pounding of Pedro de Vera's troops. The characteristics of this natural bulwark, with vertical walls around much of its perimeter, along with the construction of a defensive wall several metres high in the most vulnerable area, made Bentayga a difficult fortress to conquer. In the same way, the many dwelling caves to be found here and some that acted as granaries or silos, provided asylum to the people during these final episodes of the war of conquest.

But the two-week siege that Roque Bentayga suffered at the hands of the invading troops caused the island population to leave and flee towards another natural fortress nearby, known as Ajodar, whose location is unknown today (Morales Padrón, 1993:157). The shortage of water and food to feed families and livestock, despite the fact that they had granaries and a spring here, was

perhaps what triggered the flight towards even more rugged places within this complex terrain, where they could not keep up their resistance to the Castilian military machine, which finally conquered the island in 1483. But the mountainous area of the interior of the island kept its character as a refuge for customs to a certain extent, even after the conquest by the Catholic Monarchs, a refuge for a form of relating with the environment, of an identity that is reflected today in a cultural landscape where both material and non-material elements with roots that go back to the aboriginal peoples of the island, still survive, customs and traditions that were kept away from any outside contact for over a thousand years.

N.B.

The quotes from the chroniclers of the Conquest are translated and adapted from old Castilian Spanish into English.



Figure 2.b.11. View of the defensive wall or demarcation of the grounds that hold the *almogaren* (sanctuary) of Roque Bentayga. Families took refuge in the shelter of powerful crags like Bentayga with their livestock in their attempts to resist the Castilian military siege.
© Cabildo of Gran Canaria



2.b.iv

The calendar of the ancient Canarian people

The intangible heritage associated with the nominated property includes its close relations with the unique calendar that the ancient Canarians developed. The archaeoastronomical attributes of the Cultural Landscape, such as the sanctuaries and markers that show astronomical connections, described in Section 2.a.vii, are manifestations that are underpinned by this ancient know-how and time-keeping system.

One of the fundamental elements of a society is how its people were able to control and structure time, notably by creating a calendar. The aboriginal society of Gran Canaria was not exempt from this process, where the high mountain sanctuaries of the island played a significant role, as explained in other sections of this dossier. However, to better understand how this process was developed we must expand our analysis to a broader generic framework that encompasses the entire Canary Island archipelago.

Around the time of the of the Common Era, paleo-Berber people from Northwest Africa colonised the Canary Island Archipelago in a process that we still do not fully understand. In fact, we still do not know for certain whether they arrived on their own or they were brought to the islands, although the latter seems more credible. In the latter case, another problem would be when the settlers were taken there and by whom: by the Carthaginians, before the destruction of Carthage in 146 BC, or by the Romans and their allies some time later. Neither do we know whether the settlers all arrived together, or in several waves, or even whether each island was populated by a different tribe, which could be inferred from certain cultural aspects, or if the process was a progressive one, starting from the easternmost islands and moving west.

A planned and perhaps forced colonisation process would support the idea of an arrival in a single wave

with a series of different tribes – whose names can be tracked without problem in North Africa – becoming established on different Islands: Canarians on Gran Canaria, Gomera (gomereros) on La Gomera, Chineches (or Guanches) on Tenerife, Benahoarans on La Palma, and Maxos on Fuerteventura and Lanzarote. (The case of the Bimbaches of El Hierro is more complicated.) Each had slightly different cultural characteristics, albeit with a certain collective varnish stemming from their common place of origin.

What does seem certain, however, is that the new settlers brought with them many of the customs and traditions of their land of origin. These traditions would, in all likelihood, include their traditions of worship, which, like their fellow Libyans of North Africa, focused mostly on worshipping the Sun, the Moon and the planets, as Antonio Tejera Gaspar (1992; 2001) showed by analysing the chronicles written in the centuries immediately before and after the conquest and colonisation of the archipelago by the Crown of Castile in the course of the 15th century.

This importance of the Sun and the Moon is also evident in their use as markers of time, another factor included in the chronicles and the first ethnohistorical sources. The sun and moon are the natural sources for the basic calculation of time. In its diurnal and annual movement, the Sun generates two basic cycles, a daily cycle and a yearly cycle. The latter can be structured by observing the annual offset of sunrise or sunset on the horizon, or by the shadow projected at the time of its meridian transit. It is characterised by the two solstices, the summer and the winter ones, and in some cases, the equinoxes. The solstices, as the name suggests, are moments when the Sun stands still and changes direction on its annual voyage along the horizon. It is necessary to clarify the concept of “equinox” as this can have three different definitions, which can lead to distinct dates within the annual cycle. These would be:

1. The true astronomical Equinox, or the moment at which the Sun has 0° declination when crossing the

celestial equator. This is a relatively abstract mathematical definition and it requires a special conception of the cosmos and a certain level of scientific knowledge, although it is not difficult to determine by relatively simple astronomical procedures, such as the fact that the shadow of the Sun on this day describes a straight line.

2. The half-way point between the two solstices, also called the “megalithic” equinox, because it is seemingly characteristic of this cultural phenomenon. This is due to the unequal length of the seasons, such that the usual date of the current vernal equinox, March 21, does not match the temporal mid-point between 21st of December and June 21st the usual dates of the two solstices. Determining this equinox requires counting a precise number of days and does not require elaborate astronomical observations.
3. The time at which the sun rises at the point of the horizon located halfway between the sunrise at the two solstices. This varies, depending upon the local topography, but is often confused with one of the previous two.

The Moon, thanks to its changing phases, generates another time cycle: the (synodic) month. In addition to the solar and lunar cycles, there can often be a strong stellar component in how time is measured and structured. Many societies, even today (Belmonte and Sanz de Lara, 2001), use the rising and setting of important stars or asterisms to organise time. Key times of year are marked by heliacal risings and settings, that is, moments at which the star in question enters into, or comes out of, conjunction with the Sun.

In the case of the Canarians, we know from the chronicles that they were aware of all these forms of structuring time: they used the sun during the day and the stars at night:

...They were governed by the Sun during the day, and at night, by some of the stars, of which they had experience of when some came out, and others set, either at sunset, or at midnight, or dawn... (José de Sosa, 1678).

The fact that they observe the stars at key moments of the night (sunset, midnight or dawn) tells us that could also have used them as major milestones to structure time throughout the year. This is suggested by the use of Sirius, the brightest star of the sky—which was traditionally called “Canicula” or “estrella de los caniculares” (Star

of the Caniculae) (Dog Star)—as a milestone marking the beginning of the year for the natives of Gran Canaria. The text reads:

...it appears that they worshipped fire, the sun, the moon and the Dog Star, where they started the year with grand festivities... (Marín de Cubas, 1687).

The moon, with its phases, was the governor of the months, as referred to in the information collected on the island of Gran Canaria by more than one chronicler:

...they counted the year by 12 months, and the month by moons, and the day by suns, and the week by 7 suns. They called the year Achano. They ended their year at the end of the fourth month: that is, their year started at the spring equinox, and by the fourth month, which was when they had finished the harvest, which was in late June, they had grand festivities lasting nine days on end, ... (Atributed to Sedeño, h. 1505).

...they counted their year called Acano by the lunations of 29 suns from the day that the new moon appeared, they started in the summer, when the Sun entered Cancer from the 21st of June, the first conjunction, and for nine days on end, they arranged grand dances and feasting and weddings, having collected their harvests, they made lines on tablets, wall or stones; they called that memory of what it meant “tara” and “tarja”... (Marín de Cubas, 1694).

But also in Tenerife:

*...during the year, which they counted by lunations, they had many gatherings... (Espinosa, 1590),
...They counted the time of the moon with different names and the month of August was known as Begnesmet... (Torriani, 1594).*

and in La Palma:

...They counted the days, by the moons, which they held in reverence, and with the Sun... (Abreu Galindo, 1592);

...They counted the days by the moons and the year by the Sun... (Marín de Cubas, 1694),

The texts suggest that the emergence of the first crescent would be the signal for the start of the lunation and the month, at least on the island of Gran Canaria. The data also suggest that some key moments of the lunar cycle were special for performing certain festivals, as

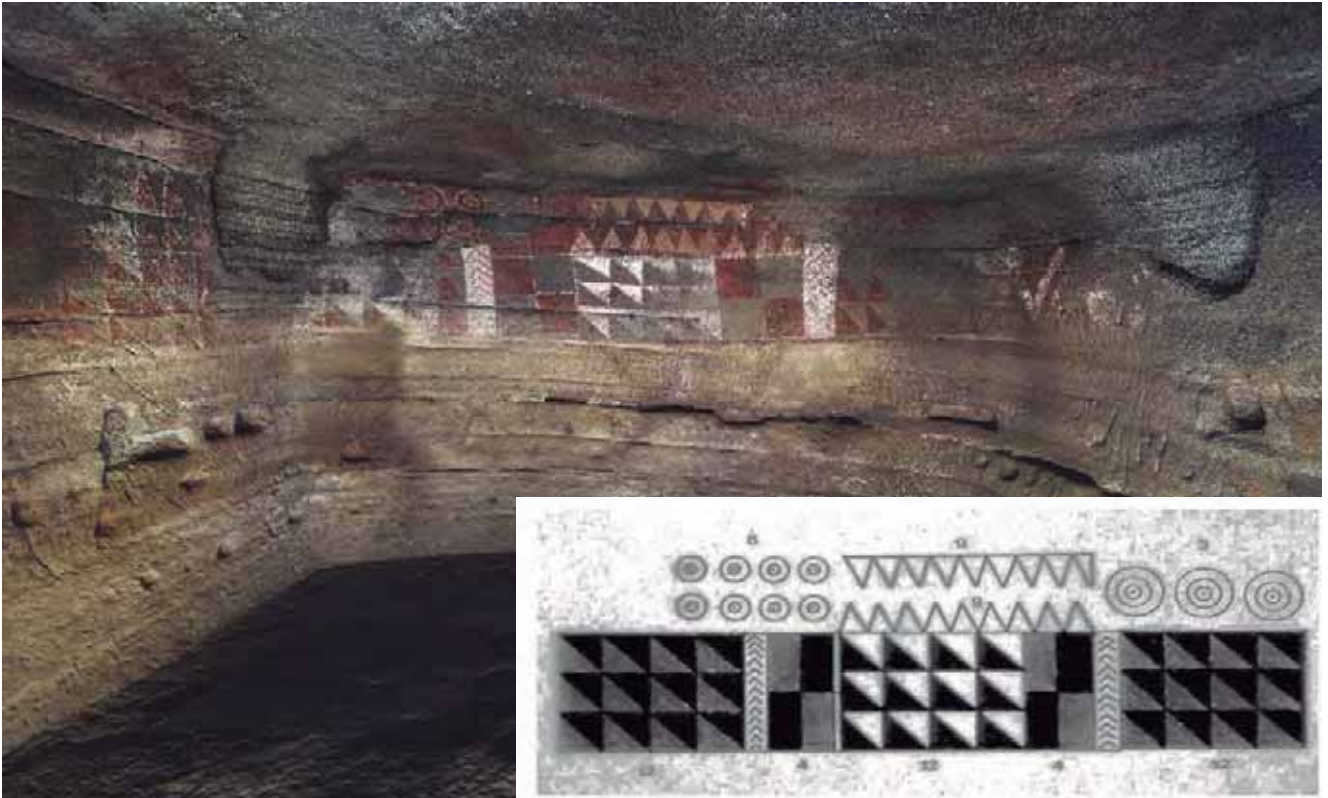


Figure 2.b.13. Picture of the main panel of Cueva Pintada, Gáldar, and highlighted schematic representation of the decoration of its central panel, which probably symbolically shows the three-year structure of the lunisolar calendar of the ancient Canary Islanders. Picture of the back of Cueva Pintada © Tarek Ode & Juan Antonio Belmonte

can be inferred from the construction of cairns, mistakenly called “pyramids”, where rituals would take place on certain special days of the lunar cycle:

...in each of the areas mentioned there was a cairn of single stones, and on certain stipulated days of the Moon, all the residents of the district would come to it... (Marín de Cubas, 1694).

The Sun, on the other hand, was used for the basic unit: the day; but they also noted its annual movement in order to control the cycle of lunations. Chroniclers relate the importance of the equinoxes, and in particular the spring equinox, together with the solstices (mentioned implicitly by the Sun entering the sign of Cancer) as key moments of the annual cycle, both on Gran Canaria and perhaps on Fuerteventura:

... and they say that they called the Majos, which were the spirits of their forefathers that roamed the seas , and they say that they saw them in the form of small nuts on the sea shore, on the longest days of the year, when they organised grand festivities..., and they saw them at dawn on the day the sun was furthest away during the sign of Cancer... (Gomes Escudero, h. 1520).

Indeed, abundant evidence of probable observations of the equinoxes and solstices has been found in archaeological remains on several islands of the archipelago (Belmonte and Hoskin, 2002). These include the remarkable equinoctial markers found on the island of Gran Canaria (Esteban et al., 1996; 1997). Evidence has also been found of observations of the moon, and possibly also of significant stars, such as the Pleiades and Sirius—presumably markers of time. One indisputable fact is that this measurement of time was carried out not only for profane, and practical, purposes such as harvesting the crops:

... and by the fourth month, which was when they had finished the harvest, which was in late June, they made grand festivities for nine days on end, ... (Attributed to Sedeño, c. 1505), in reference to Gran Canaria, and:

but also for the holding of general gatherings:

..When they made their august and collected the bread, held gatherings and festivities in each kingdom... (Espinosa 1590), referring to Tenerife;

and also to indicate key moments of sacred time associ-

ated with religion, moments that served both to hold great feasts:

...they had their festivities like the Canarians either at the end of the era, or year starting in the moon of August named Beñasmer... (Marín de Cubas, 1694),

and to remember and worship their ancestors, as explained in the case of Fuerteventura.

The sources are most explicit in the society of the ancient Canarians and the Guanches, from Gran Canaria and Tenerife respectively, and this is where we can best interpret the archaeological and archaeoastronomical evidence.

In the case of Tenerife, the sources, albeit limited, indicate the existence of a lunar calendar – or more probably of a vague lunisolar calendar – beginning with the August Moon, called “Beñasmer” or “Begnesmet” (a name with many different scholarly interpretations). This calendar was used for performing the most important civil and religious festivals, which is apparently reflected in the importance that it is currently given to the festivities of the Virgin of Candelaria, held in mid-August.

However, how the cycle of 12 lunations of 354 days could be adjusted to the solar cycle remains completely unknown. On the one hand, the archaeoastronomical evidence points to the observation of the solstices, in particular the summer one, so that Begnesmet could be the “second” lunation, as some authors have suggested. On the other hand, anthropologist José Barrios (1997) has proposed that the observation of the heliacal rising of Canopus on dates around August 15th as the ideal reference point to start counting the moons. The little evidence we have does not allow us to be more precise.

Gran Canaria on the other hand, is paradigmatic for the greater amount of information that has been collected, not only from an ethnohistorical perspective but also from an archaeological one. Several key moments in the annual cycle can be inferred from the chronicles - which have sometimes been interpreted as contradictory when they are not - and archaeological evidence:

- The Spring Equinox, key moment to start counting the lunations.
- The fourth month or lunation, counting from the Equinox, when the harvest festivals were performed. If the equinox is at the end of March, this would be

the lunation whose first crescent would be visible between late June and late July.

- Summer solstice itself. This is after the next conjunction when the harvest festivities were held, in full agreement with the previous point. In reality, these are two different ways to express exactly the same idea.
- A key moment of the annual cycle of Sirius, the Dog star. (It makes sense that this should refer to the heliacal rising of the star, which occurred in mid-July at the time of the island’s colonisation, practically coinciding with the fourth month after the Equinox or the first month after the Solstice, possibly the sacred month of Aboriginal society.

Based on these premises and considering the archaeological evidence, it is possible that the aboriginal society of Gran Canaria was governed by a simple cycle of three lunar years of 354 days ($29\frac{1}{2} \times 12$ lunar months). This cycle would be in line with the seasons with the addition of one extra month every three years. This intercalation would be calibrated by observing the vernal equinox, the summer solstice and, perhaps, the heliacal rising of the “Dog Star” (i.e. Sirius), the three key milestones mentioned in the Chronicles. It has been suggested that the central panel of the Cueva Pintada (“painted cave”) of Gáldar, one of the emblematic sites of this culture, was a schematic representation of this three-year cycle (see Figure 2.b.13; Belmonte and Hoskin, 2002). A similar luni-solar (or possibly luni-stellar) cycle could have been used on other islands of the archipelago, notably on the islands of Lanzarote and La Palma.

An interesting question is how a proto-state society with unsophisticated technology knew about an abstract astronomical concept like the equinox. There are two possible answers to this. First, the chroniclers might have used the term “equinox” for a less precise aboriginal concept so that it would make sense to a European ear. However, the presence of equinoctial markers suggests otherwise. Alternatively, and perhaps more plausibly, the ancient Canarians might have brought that knowledge with them from their African homeland, where they could have obtained it from their contact with the Romans, who indeed knew about the equinox and used it in their time-keeping system (especially the spring equinox, established on March 25th in the Julian reform of the calendar). Another possibility is that they obtained this knowledge from the Carthaginians, although this is more controversial because there is no guarantee that the Punic knew, or in any way used, this key date.

This is an important point because if the ancient Canarians came to Gran Canaria with a calendar that was influenced by their contact with Rome, this could not have occurred before Carthage was taken by Scipio Emilianus in 146 BC, and this influence would suggest a late colonisation of the archipelago, around the year 0 A.D., when the Romans were well established in Africa Minor. This is also suggested by other clues such as, for example, the use of the Lybic-Berber script in the islands, as well as what is known as Lybic-Canary script, which clearly took its inspiration from Latin, albeit only in Lanzarote and Fuerteventura.

There are, however, suggestions that the ancient Canarians might have followed a cycle of 8 or even 19 years, similar to the Octaeteris or to the Metonic cycle, respectively. It has been suggested that modest indications of both can be found in the decoration of Cueva Pintada, but this is controversial.

An important discovery, made almost by accident in 1998, seems to support the idea that a three-year lunisolar cycle was in use in the archipelago. A so-called washing-stone, found on the island of Lanzarote in 1998, was decorated with a series of stripes and other decorative motifs. The stone is now lost (possibly sold), but a series of photographs show clearly that this was an elaborate stele rather than a simple "washing-stone". Judging from how it was made and its location, it was handmade and likely of Pre-Hispanic aboriginal origin. The decoration shows numerical patterns suggesting that this was a calendrical stele of some kind. On one side (the worst preserved because it had been used for centuries to scrub clothes), there are six lines of 7 (plus 7 or 8 additional ones that have disappeared), 7 (plus 7 or 8 more), 15, 14, 15, and 15 lines, respectively. These numbers could be astronomical and associated with the lunar count, which can be divided into two 14 or 15-day "fortnights", depending on whether the lunation was 29 or 30 days.

On the other side, originally hidden and hence much better preserved, there are eight lines of decoration, six with lines and two (the sixth and eighth) with small circles. The first three lines have 12 stripes each, which could represent a cycle of 3 years of 12 lunar months. The fourth and the fifth lines have 17 and 16, respectively; $17 + 16 = 33$, which is the number of days that need to be added to three pure lunar years to obtain 3 solar years of 365 days [$(354 \times 3) + 33 = 365 \times 3$]. Line 7 has 36 stripes (12×3 again). Finally, the sixth and eighth

lines have 14 small circles each, totalling 28, the number of days in a sidereal month or the average number of days in which the moon is visible in each synodic month of 29 or 30 days. Therefore, on this second side of the stele, each figure seems to be related to counting the days of a 3-year lunisolar cycle.

While not conclusive, this evidence suggests that the stele functioned as a lunarsolar calendar covering one 3-year lunar cycle. In every third year the calendar would have been reset by observing some astronomical



Figure 2.b.14. Bowl of ceramic Phase II of the island of La Palma studied by Espinel and by an interdisciplinary team of astronomers and archaeologists where a very schematic lunisolar calendar structured in cycles of three years of 12, 12 and 13 lunar months, respectively, could have been represented. Image of Juan Antonio Belmonte, by courtesy of the 'Benahoarita' Archaeological Museum (MAB).

event in a similar fashion as appears to have happened on the island of Gran Canaria.

A pottery bowl, from chronological Phase II of the island of La Palma, may also represent a solar and lunar calendar. It is extraordinarily-well preserved, and an analysis of its decorations by a multidisciplinary team of archaeologists and astronomers suggests that these may have represented, albeit in a highly schematic and imprecise manner, a lunisolar calendar structured in cycles of three years, of 12, 12 and 13 lunations.

Finally, we should mention two texts concerning the island of Tenerife which have given rise to an error in interpreting the calendars of this island and how time was structured. According to information provided by local poet Antonio de Viana, in 1604, the Guanches celebrated festivals on the last nine days of April, which would have finished on the first of May:

...but, by ancient custom, they kept the last nine days of the month of April as holidays, so that god would give them a prosperous harvest... (Viana, 1604).

...It was that night, the last in April, solemn eve of delightful May and the end of the annual festivities and pleasures that the kings of the island held... (Viana, 1604).

However, earlier chroniclers agreed that the August Moon was important. We believe that Viana could have had access to the text attributed to Sedeño, and, just as it has misled some modern researchers, he incorrectly interpreted the allusion to the fourth month as a reference to the fourth month of the Gregorian calendar – i.e. the month of April – when obviously, the crops could not have been harvested. Viana applied information concerning the fourth lunation after the spring equinox on the island of Gran Canaria to the fourth month of his own calendar and hence to the ancient inhabitants of his island, the Guanches. Once again, this shows just how cautious one should be when trying to interpret both archaeological and ethno-historical sources in a modern light.

In summary, there is compelling, if not conclusive, evidence that the society that developed the nominated cultural landscape and skyscape of the highlands of Gran Canaria, also had an elaborate (although not especially sophisticated) lunisolar calendar that compelled ancient Canarians to constantly observe the sky from locations such as Risco Caído and Roque Bentayga.

N.B.

The quotes from the chroniclers of the Conquest are translated and adapted from old Castilian Spanish into English.

→ Figure 2.b.15. South-west face of Risco Chimirique
© Javier Gil León





2.b.v

The survival of the skies of the ancient Canarians

An intrinsic part of the whole Cultural Landscape is its relationship with the skyscape that ties together both the astronomical and the meteorological celestial phenomena with popular uses and customs. The landscape, people and skyscape of the Gran Canaria highlands offers an absolutely outstanding geographic setting and still exhibits an unquestionable intangible heritage underpinned by popular know-how and beliefs. These beliefs usually relate celestial phenomena to landmarks of the cultural landscape.

I. Ethno-astronomy Survival of the knowledge of the sky in the nominated property

In the past, celestial wisdom was turned into an essential instrument for performing the different tasks of the countryside and everyday life. Observing indications or signs from the sky, as the people normally know them, and the behaviour of the stars associated with the area triggered a set of prognoses that determined the cycle of work. "The practises of predicting and divining that they engage in are intended to optimise the farming and livestock management of their resources" (Belmonte, 1998:156). Farming and livestock in our Archipelago were the main subsistence resources of the people until the tourist boom arrived in the 1970s, which is why the custom of predicting the weather by observing the different phenomena that occur in nature was so deep-rooted in our Islands, particularly in the area of the nominated property, as we can see from the archaeoastronomical and ethnoastronomical research conducted to date. Moreover, the importance that the islanders put on these practises is evident from the meaning that some terms take on in the Canary Islands and the number of sayings and proverbs relating to the weather and the climate. Words like "cabañuela" (weather forecast based on certain signs that appear on certain days of the year), take on a broader meaning in the Canary Islands than they do in Spanish in general, whereas other words like "cabañuelero" (a person who understands this practise) or "aberrunto" (for a hunch) is only used on some islands of the Archipelago.

Weather forecasts

Lack of technological means and a prolonged observation of different astronomical and climatic phenomena over time enabled the local inhabitants to make a set of short, medium and long-term forecasts. A year was good or bad, as they call it to indicate that it is going to be a year of drought, depending on the rains that fell. The astral indicator that was mainly used to know when it was going to rain was the planet Venus. According to the studies conducted (Belmonte and Sanz de Lara, 2001), Venus is the star that indicates rain, where 70% of the informants used in the study acknowledge that it brings rain. By the same token, all the participants in the study conducted in the nominated property refer to Venus as the star that guided them in knowing whether or not it was going to rain. Normally it is the first celestial body that they name when asked if they use the sky to forecast the weather. If we compare the data obtained by Belmonte and Sanz de Lara (2001) in relation to Venus on other islands of the Archipelago with the data from our study however, we can see a significant difference. Informants from Tenerife, Fuerteventura and La Gomera interviewed by these scholars described the path of Venus based on the points of the compass. But in the area of the cultural landscape, interviewees observe the path of the star using the mountains, deviations from the horizon and the territory as geographical markers of the skyscape. Thus, a local from Coruña claimed that "*when Venus set over La Degollada de la Laja, it meant rain, you could feel rain on its way [...] and when the star was lost on La Degollada de la Laja, when you couldn't see it, winter was coming to an end*". They also said that "*when it moved from La Degollada la Laja to Bocabarranco, summer is on its way, but when it moved from Bocabarranco to La Degollada de la Laja, winter is coming*". In this case, the path of Venus does not just mark the rainy season, it also indicates the beginning and the end of summer and winter. This path is the best known by local informants. However, some provide other territorial references. A local resident of Chajunco points out that when Venus reached Tres Cruces "*it meant rain would fall*". On the other hand, an informant from Las Cuevas told us that

when Venus was situated in Pico del Rayo, it rained.

Apart from precisely observing the places where the star was situated, there is a very striking explanation of Venus's path offered by an informant from Lugarejos. In his description, he refers to the cross-roads and when we asked him why it stops where there is a cross-roads, he answered: "*because of the witches*". This explanation reveals the connection highlighted in this area with aspects relating to the supernatural, with magic and the extraordinary, as we will see in the next section.

Using territorial markers in relation to the sky is also perceptible in the path of other stars, such as the sun for instance. An informant from Coruña told us that "*the sun in winter rises over there by La Degollada de Artenara, where Artenara mountain is, and it sets by La Cruz de María. And later on, in summer, as the days get longer, it starts coming this way, because the sun heads north for 6 months and 6 months to the south. In summer, it is around here and it sets over La Bandera mountain*".

The moon too, can act as a weather forecaster (Belmonte and Sanz de Lara, 2001). Relations between rain and the moon are a manifestation of many cultures (Krupp, 1991). Informants also observe the moon to know if it is going to rain.

An informant from Coruña states that: "*If, for example, the moon started out with rain, then maybe it would not clear up until after the new moon has gone. If it doesn't rain in the new moon phase, then it rains after the opening of the moon "opening" of the moon is what we call the moment when the moon is full, when it is round*".

The resident of Chajunco also said "*when it rains in the October moon, the old people used to say that... it rained for eight moons in a row*".

Another characteristic of the moon they observed is the position of the moon's "horns". According to Belmonte and Sanz de Lara (2001), the position of the horns determines whether or not it is going to rain in most of the Islands. If the horns are at the base of the moon, in relation to the horizon, it indicated drought, whereas, if they are at one side, it is an indication of rain.

Several of the informants commonly believed that the moon had an influence on animals on heat and their gestation, and on women's menstruation. However, in the interviews conducted to date, no relationship has

been documented between the moon and the harvest.

Forecasting rain in this district is also determined by the visibility of other islands of the Archipelago on the horizon. The geographic situation of this area offers adequate visibility of the western islands, above all, the island of Tenerife. Thus, the informant from Coruña tells us that "*when you could see three islands from La Degollada del Sargento [...] then it rained three days later*". The informant from Chajunco states that "*when you go up to the highlands and you can see the islands, these are signs of water [...] and if you can clearly see Lanzarote and Fuerteventura, it is also a sign of rain*".

In other cases, weather forecasts are determined by the direction of the wind and the clouds. This is how the different weather situations and their names were explained to us, depending on where the wind came from. Once again, we can see that territorial markers are also used in these cases. Thus north-south weather, as the informant from Coruña tells us, "*good weather here, that brings good rains and without any wind or anything, is weather between north and south, that comes from over there from Agaete up. This is rain weather, it isn't cold, because you are going to harvest and the barley is hot...".* The time of intense heat in the summer is what they call the "*caniculares*" or dog star winds (related to the position of Sirius) and their appearance forecasts the rainy season. So, we were told that "*in summer, when the "dog star weather" comes, it almost always rains five months later. [...]* The sun and wind "dog stars" or "*caniculares*".

We must also highlight the use of "*cabañuelas*" in this district to forecast the weather based on what happens on certain days of the year:

"*When the 21st of September comes around, autumn starts... and, for example, we would look at the "cabañuela of San Mateo, it starts on the 21st and finishes on the 28th, which is the day of San Miguel, and depending on where the weather came from during these days, it would determine the six-month reign of the winter cabañuela... after spring, starts [...] the cabañuela of the Encarnación, from the 21st of March to the 28th of March*" (informant from Chajunco).

The 21st of September cabañuela, which coincides with the autumn equinox, is the most important one for the country folk of the Canary Islands, Along with the 24th of June cabañuela, San Juna. But what is significant is that the cabañuela mentioned by our informant, the

cabañuela of La Encarnación, the 21st of March, which in this case coincides with the spring equinox, is not documented in the research work done on other islands. The reference to this cabañuela only in the area of the nominated property is highly interesting, as it could be connected to the importance of the spring equinox, which is well reflected, at Risco Caído and Bentayga, in the ancestral culture, in fact, it could be a residual manifestation of it.

Another system for forecasting the weather that most informants remember is the tradition of using twelve onion skins to tell which months of the year will bring rain. The informant from Chajunco told us that they *“peeled off the onion skins and... sprinkled a few grains of salt on them and the month that was dry, you couldn't read the salt and the month that was wet, that it rained... there was the damp of the salt with the juice of the onion”*.

The custom of forecasting the weather from observing the skies is still deep-rooted among the inhabitants of the area, even among those who no longer live in the district.

Time-keeping

The stars were also used to determine the time of day or night. The Plough and the Morning Star were used to determine the time before dawn. The informant from Coruña said that when the Plough could be seen at the height of El Barranco de Coruña, it was around three-thirty in the morning. The informant from Lugarejos told us that when it was situated *“between El Tescón and La Degollada de la Laja, as it slipped ever such a little below El Tescón, just a tiny bit, that was four o'clock in the morning”*. Once again, we see the importance of territorial markers in the area (González Navarro, 2015). Regarding the Morning Star, the informants tell us that it comes out at half-past five or six o'clock in the morning.

Time is told during the day based on the projection of a shadow on a crag or in a cave. The time this would mark was usually twelve o'clock midday. According to what the informant from Coruña told us: *“There opposite Coruña that they call La Hoya de los Pinos is the Midday Crag as they call it. When the sun hits it in full, it is twelve o'clock”*. In Lugajeros, we were told that they knew when it was midday by the shape of the shadow projected by some crags. At other times, simply the shadow cast by a plant could indicate midday.

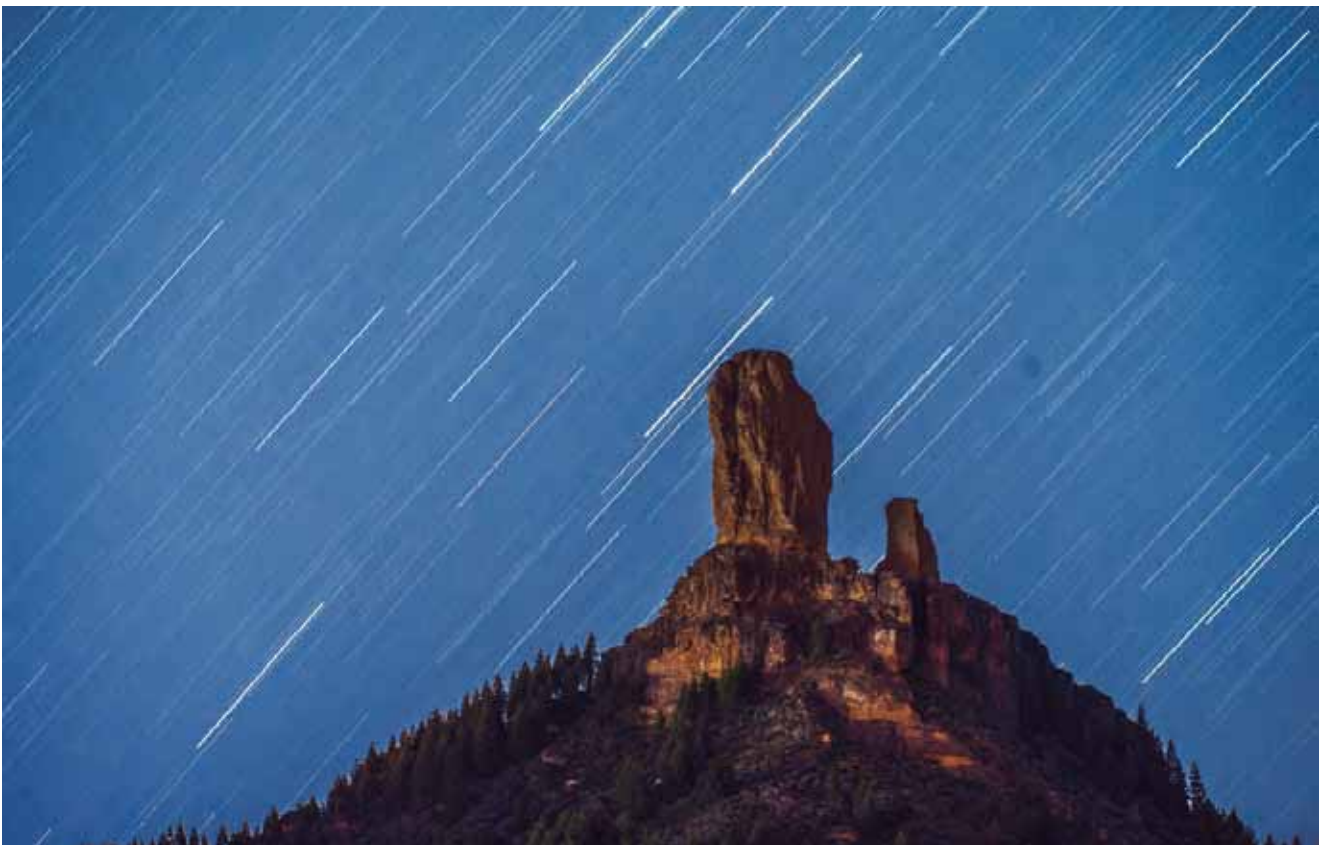


Figure 2.b.16. Stars on the sky of Roque Nublo © Nacho Gozalez



2. The Sky of the Canarian Peasants (Magos)

*Here, before, we had no television, nor clocks,
then we guided ourselves by the heavenly bodies*

Luis Mendoza (aged 71)

La Dehesa de Chipude, May 30 1996

An inherent part of all cultural landscape is its relationship with the heavenly landscape, the skyscape that relates the celestial phenomena, both astronomical and meteorological and popular knowledge. The landscape, the skyscape and the people-scape of the peaks of Gran Canaria offer an absolutely exceptional geographical framework in this regard. This section presents the core of a study about the use of the natural phenomena, of celestial nature (astronomical and meteorological), and farming practices of the islander peasantry and its relationship with the feasts and other traditional and religious customs.

This study is based on fieldwork consisting of personalized and group interviews carried out with old shepherds and peasants in different parts of the islands of Gran Canaria, Tenerife, Fuerteventura and Lanzarote, especially in those areas where folk traditions have remained little altered since they were isolated until relatively recent times, such as Fataga, Teno Alto or Jandia, contrasting these interviews with others conducted in isolated places from other islands of the archipelago as El Hierro and La Gomera.

Several important questions arise from this study. What is the astronomical basis of these traditions? Was this knowledge useful?, what is the origin of this tradition? and, perhaps most important, what would its future be? Throughout this section we hope to find an answer to some of these questions that may be useful to understand the relevance of the skyscape in the Canary Island lands in general, and in Gran Canaria in particular.

In other sections ethnohistorical and archaeological evidences are covered. Here we will study other most recent types of sky information on the Canary Islands, but indeed not least interesting. This is the information collected in the last decades of ethnoastronomical research (Belmonte and Sanz de Lara, 2001). In discus-

sions more or less informal (see Figure 2.b.19), with old peasants of all the Islands, it has been proven that the use, or at least the memory, of some kind of secular understanding of the phenomena that occur in the celestial vault – both purely of an astronomical character as well as a meteorological background – applied to the agricultural tasks (sowing, harvest, transhumance, loose cattle herding, etc) is still preserved by some farmers in remote and isolated areas of the archipelago.

The Star of the Water (Estrella del Agua) and the Venus-Rain-Cattle complex

In the book “El Hierro, séptima isla” (Padrón, 1989) it can be read: “If the so-called Star of Water is to the West, this is positive proof of rain on many winter days”. On the contrary, it is a bad signal if it “leans to the North”. This curious appointment clearly identified a star from the sky as a water carrier star, but which was that star? This is why we were impressed when we asked a group of farmers in Teno Alto, Tenerife, why they had requested aid against the drought in the month of October 1994 (just at the start of the rainy season), and they responded as follows: “because the star that has been commented was not where it had to be”.

Therefore, there was a star in the sky, important enough so that its own behavior would be enough to cause a reaction as serious as an aid application to avoid drought. Later on, we would discover which star was this:

Q: Do you know any kind of stars in the sky?

A: Venus

Q: What did you use it for?

A: For the sign, they say for when it rains. They say that



Figure 2.a.18.. An image of the cluster of the Pleiades in the constellation of Taurus. This unique group of stars is the best-known asterism of the celestial vault. It was known and used as a seasonal milestone by virtually every culture on the planet. Its use is confirmed in the traditional Canarian culture and it was likely also used during by the aboriginals of the island. © IAC



Figure 2.b.19..Victoriano Pérez, next to archaeologist María Antonia Perera and anthropologist Margarita Sanz de Lara: farmer, goat-keeper and fisherman from Fuerteventura, sit on a bank of the beach of Pozo Negro. His deep and varied knowledge of the "things of the sky" (the skyscape) convinced us of the enormous ethnoastronomical potential of the traditional culture of the Canarian peasants. © Juan Antonio Belmonte.

when it moves south and when it turns to the north, it usually rains

Manolo (around 65 years old), father of Siona. Alares (Fuerteventura).

It was therefore Venus, but not whatever Venus, but Venus when it appears as an evening star:

Q: Where do you see Venus?

A: To the west

Q: A very bright star that we have been seeing there for many days

A: That one, that is Venus

Q: And did that mean anything to you?

A: Yes, that used to tell us because sometimes, when it rose somewhere, it was a good sign and when it rose somewhere else, it was a bad sign, for the countryside, for the matter of the crops, or whether it rained or if it was a dry year

Q: And when was it good? When it brought rain?

A: When it brought rain, it was over there (towards El Hierro) and then seeking north. If it went south, it was no longer a good sign

Luis Mendoza (71 year old), Chipude.

In addition, the more interviews we were doing the more we were realizing of its tremendous importance, since 73% of our informants recognized its character as rain-bearing star. Venus as star of water was a sign of global character in all the islands. In this sense, it is curious to discover until what point our informants were familiar with the movements of the star; thus, in Tenerife, we have:

Q: Why do you call it the "Estrella del Ganado" (Livestock Star)?

A: Because when it is down here, it is a year of livestock, that is the old saying. The livestock is good and when it is overhead, it is not.

Q: In other words, the years that you can see it in the west, it is a good sign

A: Yes. In the years that it is down here, it rains, if not, it is a dry year.

He then goes on:

Q: What is this about the Livestock Star that the higher it rose, the more water it brought, does anything like that sound familiar to you?

A: Yes, that is what we have there. Yes, because it rises higher and higher, it has risen, it is really high and the higher it is, the more water it pours on us

Q: Is it always in the same place?

A: No, she rises in the west and then gradually rises higher and higher, she follows the track of the sun and she sets in there, half-way across Gomera and when she is at her height (she stops) and then turns back (changes the direction of movement) and comes back as far as over La Palma (to the north-west) there, when she goes in, she disappears at the same place where she appeared. That is the track she follows.

Q: And how long does it take her to do that?

A: Almost the entire year

Q: Is the track always the same?

A: No, not always the same

Q: Does it change much?

A: At times, it seems that she first appears in October and sometimes she first appears this month (January) onwards

Q: When does she bring rain?

A: When she first appears in October. Because if she first appears in June or July, she doesn't bring rain, but it is mere coincidence that she first appears in those months, because she disappears down here (towards the sea) in October and I think that she disappears in June or July and then, 15 or 20 days later, you can see her up there (East, the mountains) and when she disappears up there, it takes 3 months for her to reappear down there. It is not that she disappears, rather that she goes with the sun. She moves in synchrony with the sun and we do not see her.

Mateo Martín González (72 year old), Teno Alto.

In Gran Canaria, it is even associated to its position with respect to a singular mountain, a fact which has also been reflected in the aboriginal cosmography:

Q: And did any of the stars have anything to do with the rain?

A: Venus. Venus, for example, is here, over there in front of us, and that star moves down and when it gets down there,

to a hill that is down there those of the signs of before, when it reached down there and turned back up, then yes, we did, we had rain up here.

Q: Which hill was that?

A: It was El Garito, because this one here is El Morro de las Vacas (Cow Hill). And that is Venus. This one is big. You can see it in daylight. If anyone is going on the same track as him, in the same direction as him, and the day is clear, you can see him.

Q: And that was the one that you used for the rains? The one that brought water?

A: Yes, the one that brought water. He acted as the signs of before. Because there aren't any signs now, are there!

Q: And did the signs work before?

A: Yes, before, it rained different.

Miguel Pérez (82 year old) Cercado de Fataga (Gran Canaria),

and in some cases, they even arrive to use “instruments” in order to observe the star movement and discover whether these were suitable or not:

M: My father had a sign, I remember seeing it with two sticks on top of a wall, down where I lived, in Tiscamanita, and around there he knew where Venus set, and he used to say: “Ah, this year, we will have a lousy year”. He saw where it crossed the two sticks

Q: And what happened if it turned out good?

M: It rained

Q: Venus, when it was good, when it moved towards the Great Mountain?

M: Yes, when it moved towards the Great Mountain, but when it was below the sun, to the left of the sun and towards the Great Mountain

Magdalena García Gutiérrez (77 year old), Tiscamanita.

Therefore, it is found that the visibility of the “Star” or “Lucero” Venus, the “Star of Cattle” or the “Star of the Shepherds”, at the western horizon in the “winter” months (in fact autumn) was a good omen as the Star “would bring” rain when it first “were to the south” and then “will move to the north”.

On the other hand, in our second visit to Teno Alto, Mateo Martín told us, while we were talking about the “Cabañuelas” (epoch of the year with a predictive character), that: ... *Y luego tenemos el Cambio de Planeta el 21 a la Pascua que cambia el planeta.* We had hence a connection between the “21 a la Pascua” (winter solstice, probably) and something that happened called the “planet” by Mateo, name of apparent astronomic con-

notations. For this reason, we were very surprised when a week later, in the north of Fuerteventura, Maximino Melián told us the following in relation to the goats: ... *when the goats are not right, it is because it has “mal planeta”* (bad planet – or bad alignment of the planets)..., which with slight nuances (planeto, planeta, planete,...) we kept on listening on our trip to the south of the island, although it was at one of our latest interviews when the celestial “connection” became clear:

H: ...in the flocks, we realised that they started dying and they had “mal planeta” (planet sickness) and then they changed and they escaped.

Q: Are there any strange stars in the sky when they suffer from planet sickness?

H: Man, right now, the one that is down here, Venus, when Venus is down here, they are ill and when it is above (them), they get better.

Higinio Mederos (67 year old), Agua de Bueyes.

Therefore, our informants appeared to recognize an apparent connection between the position of Venus in the sky and the state of health, or anxiety, of the cattle. This already we had heard, in different words, by Mateo in Teno Alto (Tenerife), who even called Venus the “Star of the Cattle”.

As a result, there appears to be a relationship between Venus, as Evening Star, the rain and, on the other hand, with livestock, especially goats. The next step seems logical, relate the abundance or scarcity of rainfall, with the



Figure 2.b.20. The setting of Las Cabrillas (or The Seven, i.e. The Pleiades) at dawn between the days of Saint Catherine (November 25th, top panel) and Saint Andrew (November 30th, bottom panel), marking the time of sowing in the Canarian Archipelago. Before the Gregorian Calendar reform, this phenomenon occurred on November 18th.



Figure 2.b.21.. El Arado (The Plough, i.e. the Belt and Dagger of Orion) as seen from the peaks of Gran Canaria (Roque Bentayga in the foreground), shortly before setting on the island of Tenerife. Celestial clock and seasonal milestone for the peasants of the island, this asterism is only second in importance to Las Cabrillas © AAGC

abundance and quality of the pasture and, therefore, not only with the livestock state of health, but also with its abundance since, if there is enough food, there are more deliveries coming to fruition, so more births and, in addition, more “baifos” (kids) will have possibilities of getting ahead.

Thus, in traditional Canarian peasant mentality seems to have been created a tripartite relationship that we have suggested to call, the “Venus-rain- cattle” complex, inspired by a similar relationship discovered, concerning the cultivation of maize in ancient Mesoamerica, which has been called the “Venus-rain- corn” complex (Sprajc 1993).

What is the scientific basis behind this ‘complex’? The connection between the rain and the livestock seems clear, but and the connection Venus to rain? does it has

any basis?, the answer is Yes. Let us see how. The first thing that must be taken into account is the synodic period of Venus of 584 days, approximately. This means that in 8 tropic years almost exactly 5 cycles of Venus fit. In these the planet will behave, alternatively, as morning and evening stars, with two periods of disappearance between both, the first of 60 days (from morning to evening star) and the second of some 8 days (from evening to morning star).

Of the five possible forms of behavior of Venus as an evening star throughout its eight years, for a place of similar latitude to the Canary Islands, there are three occasions when the star “appears in the west”, first “steps for the south”, and then “lays to the north”. In this regard, it suffices to recall the description on the movement of the Estrella del Ganado, as collected from Mateo in Teno Alto, or the behavior of the Lucero Venus as gathered in Fataga from Miguel Pérez (for only a couple of significant examples) to realize that when Venus does this “race” is “when it brings water”.

Why, to explain it we have to resort to the cycle of precipitation for different localities of the archipelago and it is easy to count that, after having begun to rain throughout the month of October, the maximum precipitation occurs in November; in many cases, or at the latest in December or January. Thus, for example, the behavior of the Lucero Venus in two of its cycles of 8 years, the 81-88 and 89-96, when in detail analyzed, allows to realize that in the agricultural years 89-90, 92-93 and 95-96, the “Star” first turned towards the South for, soon, standstill at one point towards the end of November, and then turn to the north. As a result, it is not surprising – and one must be put in the mentality of our peasants – the association of this star turn towards the north, produced at the end of November in all cases, with the arrival of the maximum of rainfall just in that period (Marzol Jaén, 1988).

In 1996, year in which the process was analyzed for the first time the Lucero Venus remained in the west until the end of May when it “changed” to the nascent and that winter rained in abundance. Coincidentally, 1996 was of “the best”. How can we question that to our farmers and shepherds when they call Venus as the “Star of Water” par excellence.

The “Farmers” stars

The wide variety of information collected during the

ethnoastronomical fieldwork showed the fact that there are a certain number of stars, whose function still exists in the memory of our partners, who have served as a secular form in the agricultural tasks as markers of the times when certain activities must have been undertaken (Table 2.b.1). This result was especially evocative. Although there are many celestial objects, the most curious is that they are virtually the same as those used in many other parts of our cultural area (the Mediterranean region). Here we will focus on the most important and best known.

We will begin by the Pleiades, called El Siete (the Seven) in Tenerife or Las Cabrillas (the Little Goats) in most of the archipelago (Figure 2.b.20). Once it was clear which group of stars we were dealing with, was our surprise and admiration was amazing when in November 1995, in an informal conversation with Agustín, a retired shepherd from Teno Alto who was on the verge of selling all their goats in order to leave to the coast to live with his children, he told us the following: "Con la salida de El 7 empieza la siega y con su puesta la siembra" [When the Seven exits, harvest starts, and sowing when it sets]. This conversation would be the one that in fact convinced us that we were facing a mine of ethnographic material which had to be collected, studied and above all preserved.

The traditional planting date was San Andrés (Saint Andrew, November 30th), coincident with the cosmic setting of the Pleiades, so it seemed to be that the morning disappearance of this asterism was used as marker for sowing and its reappearance (possibly refer to its heliacal rising, close to June 13th) to start the harvest.

On the other hand, in the second visit to Teno Alto, we heard from Mateo's lips, whom his neighbors identified as a "wise" man, the following:

Q: Why do you call it the Plough? Why do you call it that? Does it tell you something about the harvest?

A: No, I only know that they used to say, behind the 7, comes the Plough

P: When the 7 rises, do you have to sow?

A: Yes, the 7 is the time for planting, but when it sets. When we got up and it was at the back, one used to go and lie down and if it was lying down, then we would go and feed the cows

Therefore just confirming the information provided by Agustín two months before, so the use of El Siete as a

time-marker for sowing (we never again returned to hear about the harvest) was firmly established. For this reason, the surprise huge when shortly after we heard the following from the lips of Luis de León, born in Tetir, on the island of Fuerteventura, the following:

Q: For the work in the fields, where you guided at any time by the stars?

A: Yes, look, the stars are coming out, Las Cabrillas (Goats – Pleiades or the 7 Sisters) are coming, Don't you know Las Cabrillas? They are a flock of goats, and then, behind them, comes El Pastor (the shepherd).

Q: Are there any others?

A: Yes, the Plough. That is a plough that rises in the morning because it is in the morning when all the hard work is. It rises earlier than in the morning, because in the morning it sets and later, the gentleman likes to plough the land and that is why it sets in the morning.

Q: Was the time that you see Las Cabrillas, setting or rising, the time to do something special with the goats or on the farm?

A: On the farm, you sowed.

Q: When?

A: When they set, it is daylight,

so the use of the Pleiades, more commonly known as Las Cabrillas in the Canarian Archipelago, as an agricultural marker was not restricted to Tenerife but that, possibly, its use was very common throughout the Islands, although the younger people had already forgotten it:

Q: Did you look for Las Cabrillas, when they rose, to sow ...?

MR: No, we looked for the Plough and the Morning Star

P: So when did the Morning Star rise?

MR: It is already broad daylight. That thing about Las Cabrillas, my mother was heard to say it a lot

Maria Rosa Medina Batista, born in Toto (Pajara).

María Rosa, on the other hand, recalled the use of another celestial "object": El Arado (the Plough) in relationship to the agricultural works. Later we will come back to this "constellation".

How can we relate the time of sowing with the setting of Las Cabrillas? Later on we will see how this is a common reference to other cultures. However, we are now going to attempt to justify its use in the Canary Islands. The person who better referred this custom was Luis de León, born in Tetir. The maximum of rainfall in this town of Fuerteventura occurs in the month of December, just after the cosmic setting of the Pleiades that cur-

Star name	Translation	In the Sky	Islands	%
(El) Lucero	Lightstar (of the day)	Venus, Sirius, Mercury,	Global	72
Lucero Venus	Venus Lightstar	Venus at West	C	11
Estrella que trae llluvias	Rain-bringer star	Venus at West	Global	75
Estrella Venus o El Venus	Venus star or The Venus	Venus at West (or East)	FGL	61
Estrella del Agua			H	6
Estrella del Ganado	Cattle star	Venus at West	TFL	17
Estrella de los Pastores	Star of the Shepherds	Venus at West	F	3
La Labradora	The Peasant	Venus at East or West	TG	8
Lucero de los Boyeros	Boyers' Lightstar	Venus at East (or Sirius ?)	C	3
Lucerito (del día)	The Small Lightstar	Mercury	FL	6
★ Marte	Mars star	Mars	L	6
La ★ de la Medianoche	Midnight star	Mars	G	3
El Júpito o Úpito	Upito	Jupiter	GL	8
La Compañera de Venus	Venus Companion	Mercury, Jupiter,?	TF	19
La Gañanera	The Ploughboy like	Sirius, Canopus ?, Spica ?, ...	F	17
El Gañán	The Ploughboy	Sirius	GL	30
La Guardia del Arado	Plough's guardian	Sirius	L	3
Las Cabrillas	The Little Goats	Pleiades	Global	78
El 7	The Seven	Pleiades	T	11
El 7 Estrellas (Tenerife)	The Seven Stars	Pleiades	T	14
El 7 Estrellas (Adeje)	The Seven Stars	Hyades ?	T	3
El Pastor	The Shepherd	Aldebaran	F	3
El Arado (Teno)	The Plough	Hyades	T	8
El Arado (por excelencia)	The Plough (per excellence)	Orion's Sword and Belt	Global	83
Las Estrellitas	The Little Stars	Orion's Belt	C	3
La Higada o Ajigada	The Goad	Orion's Belt	T	11
La Macera	The Handset	Nebulosa M42 (★ q Ori) o Saiph	F	8
La Telera	?	★ σ Orionis	F	3
La Chaveta	The Handset	★ σ Orionis	F	3
El Timón	The Helm	Cinturón de Orión	C	11
El Yugo	The Yoke	¿Híades?	C	3
La Yunta	Farmer's couple	Betelgeuse y Rigel	L	6
Las Dos (Tres) Hermanas	The Two (Three) Sisters	Cástor y Póllux ¿(+ Marte)?	L	6
Estrella del Sur	South Star	Canopo	L	3
La Estrella Resplandeciente	The Brighth star	Sirio	F	6
Huevillos del Gato	Cat's Little Testicles	Mizar y Alcor	F	3
Ojitos de Santa Lucía	The Eyes of Santa Lucía	Mizar y Alcor	FP	3
El Rosario de la Aurora	The Dawn Rosary	Corona Boreal	C	3
La Estrella del Norte	The North Star	Estrella Polar	FL	14
Osa Mayor	Big Bear	Osa Mayor	FCL	8
Osa Menor	Little Bear	Osa Menor	FC	6
El Carro	The Charriot	Osa Mayor	FCL	14
El Camino de Santiago	The Road of Sant James	Vía Lactea	Global	70
La Vere(d)a	The Path	Vía Lactea	F	6
Baile de estrellas	Star Dance	Lluvia de estrellas fugaces	TFC	11

Table 2.b.1. Names of stars (and asterisms) in the firmament of the Canarian farmers, along with their most probable identification in the sky, the islands where it was known and the percentage of informants who named it.

rently occurs at November 30th (San Andrés, Saint Andrew), and 400 years ago occurred towards the 25th of this month (Santa Catalina, Saint Catherine). In fact, one of the “cabañuelas” or ‘signs’ that we hear from most of our partners on several islands is the one which reads:

*Si no mea Santa Catalina,
meará San Andrés,
y si no, mala seña es.*
[If Santa Catalina does not piss,
San Andrés, will piss
and if not, bad sign it will be].

It is therefore likely that, in the minds of the island peasants, the setting of the Pleiades (Figure 2.b.21) would have been taken as an omen or sign of the incoming rains, pointing logically to the best moment to start the planting time. In this same aspect, the Cabañuela de las Dueñas, typical of Fuerteventura, and which took place on the morning of November 19th (Belmonte and Sanz de Lara 2001). This date is the equivalent to November 30th before the Gregorian reform of the calendar and would therefore account for the setting of Las Cabrillas before 1582, so the omen could represent an ancient tradition, perhaps of aboriginal roots, although it should have been applied to other sort of animals, perhaps goats, since there were no camels in the islands at that time.

Let us now discuss El Arado (the Plough). To an interpellation of his daughter, Luis de León continued telling:

*R: When they set, day has already broken.
R (daughter): But the Plough does not always come out.
R: The Plough rises in December in the east.
P: What do you do when it rises in the east?
R: It is a guide for the farm labourers. Not anymore, because there are clocks nowadays and we almost all use watches to tell the time, but not in those times.*

It seems to be that if Las Cabrillas had to do with planting, a new asterism, the Plough served as an omen for the time of tillage, although many of our partners, young and not so young, do not remember exactly how it was “used”:

*Q: Were you guided by them (the stars) for anything?
R: We were guided by the Plough at the time of tilling*
Miguel Díaz Francés, born in Gran Valle.

P: Did you rely on Las Cabrillas for farm work?

H: I don't know

P: Or on the Plough?

H: We did on the Plough. Because the Plough is high up ... we would look at the Plough, La Gañanera (The Ploughman), Venus.

Higinio Mederos, de Agua de Bueyes.

Q: Did the Plough mean anything for farming?

T: I do not remember clearly. The Plough was associated with tilling, the same as the Morning Star and La Gañanera. I can't remember any more. My father knew a lot about that. Things are different today

Tomás Acosta Cabrera, born at La Rosa de los James.

Indeed, as it has been shown, in all the islands a Plough was recognized in the sky that was associated with the epoch of tillage and that was watched in order to know the hour of the night. In addition, in almost all of the Canary Islands, the constellation of the Plough is identified with the asterism composed by the Belt and the Dagger of Orion (Figure 2.b.21), with the exception of Teno Alto (Tenerife) where Orion's belt is called the Higada, assigning the name of Plough to the cluster of the Hyades, with its bright star Aldebaran (this was identified in a “Planetarium” by local peasants).

In fact, in the latitude of the Canary Islands, the Hyades have had during the last centuries its heliacal rising at the

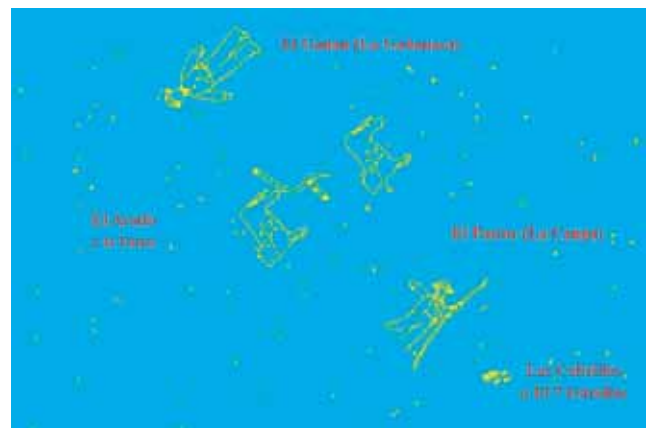


Figure 2.b.22. The “Cielo de los Magos” (the Sky of the Local Peasants). The plot shows the only region in the firmament recognized by its utility as a marker of “time”, by practically all of the Canarian farmers, including those of Gran Canaria. It consists of the cluster of the Pleiades, the Hyades, with the bright star Aldebaran, the Belt and Dagger of Orion and the blazing star Sirius. These are called Las Cabrillas (Little Goats, The Seven in Tenerife), El Pastor (the Shepherd), El Arado (the Plough) and El Gañán – or Gañanera in Fuerteventura – (the Ploughman), respectively. © Miriam Cruz and Juan Antonio Belmonte, Museo de la Ciencia y el Cosmos

end of June or early July and the Plough par excellence (in Orion) in the middle of this latter month. Therefore, during the months associated with tillage (from end of August to November), both the Hyades and the plough dominate the night sky shortly before dawn.

However, for the inhabitants of Lanzarote, el Hierro, la Gomera, and, most likely, Fuerteventura and Gran Canaria, the Plough “did not work” alone, but it had a Gañán to direct it, the bright star Sirius that follows Orion’s Belt in the sky. This star is possibly the best identification of the one which the inhabitant of Fuerteventura called the Gañanera which, as we have seen above, was also associated with the time of tillage. Therefore, the Canarian farmers had a whole star set to help them in their agricultural tasks as markers of times (Figure 2.b.22). One of the most important questions we could ask is what would be the origin of these traditions.

What time the Pleiades, daughters of Atlas, rise, begin thy harvest, thy plowing when they set. With so simple this phrase and at the same time so significant begins the “Farmer’s Proem” of Hesiod’s “Works and days” (h. 800 BC). As we have seen, we can only be admired when remembering what was heard from Agustín, in Teno Alto, almost 3000 years later and more than 5000 kilometres from Greece (see above).

This fact, fascinating though it may be, should not be surprising as the Canary Islands were the “non plus ultra” of Mediterranean cultures for millennia until the discovery of America by the end of the 15th century. In this sense, regardless of whether the tradition comes from an epoch before the conquest (i.e. aboriginal, so North African and, therefore, Mediterranean) or subsequent to it (Castilian, perhaps Andalusian, and, therefore, of Roman, Arab or Berber, also Mediterranean, origin), we should not wonder that the parallels do not end there:

Thus, Hesiod writes: *But if at the turning of the sun (the solstice) thou dost plow the goodly earth, sitting shalt thou reap, grasping a little in thy hand, binding it contrariwise, covered with dust, no way rejoicing. Or also: But when the Pleiades and the Hyades and the might of Orion set, then be mindful of seasonable plowing, and let the seed be duly bestowed under earth.* Do we remember the association of the Plough (Orion’s belt) with tillage, and de Las Ca-brillas (the Pleiades) with sowing?

Gran Canaria, and the Canary Islands in general, have received over the past 2500 years a flow of people

from different traditions, but with a reference common cultural milieu, the Mediterranean.

The native pre-Hispanic one, belonging to the peoples who lived in all the islands, before the 15th century. From an origin of North Africa (Libyan or proto-Berber), fifteen centuries of isolation caused many singularities, so its influence may be slightly different from one island to another.

- The Norman one, restricted to the conquest and colonization during the 15th century, held on the islands of Lanzarote, Fuerteventura, and Hierro.
- The Castilian one, associated with the annexation of the islands to the Crown of Castile. It was the most important colonization from the point of view of population. It occupied the whole archipelago. Composed mainly from Andalusians, we cannot ignore the possible influence of Arabic and Berber traditions.
- The Portuguese, especially throughout the 16th century, in the islands of Tenerife and La Palma.
- The Moorish, associated with the African people brought as slaves to Lanzarote and Fuerteventura. Of similar roots to the aboriginal and the Berber tradition, it can be very difficult to differentiate from these.

If we analyze the groups of individual stars known in various regions of the Iberian Peninsula and North Africa (Belmonte and Sanz de Lara, 2001), it is curious to observe how, with rare exceptions, the groups are repeated (but not necessarily the names). Most curious is still the fact that some of these stars have, or better, had similar attributes to the ones established for them in the Islands.

Thus, for example, Sirius is called the Lucero Miguero in the south of the Peninsula (Comellas, 1994), associating it with agricultural tasks, and probably the Gañán on the Upper Castilian Plateau (Blanco, 1987), while in Catalonia Les Cabrelles are associated with rain in some places (Amades, 1993).

These facts lead us to perform one last question: can a part of these traditions have their origin in the island population prior to the conquest and Spanish colonization of the archipelago throughout the 15th century?, having survived the cultural change as it has occurred in some areas of Latin America (Urton, 1981)

We believe that the answer would be yes for some of them. An example of this would be the importance of Sirius as a time marker both for the ancient Canarians who began their year by the rising of the *Estrella de los Caniculares*, in the month of July, to the peasantry who wore the rising of *El Gañán*, together with the Plough, as a signal to begin the time of tillage. We also believe that other groups of stars, such as the Pleiades, might be one of those groups that the aborigines of Gran Canaria had *experience when they go out and when they set* (de Sosa, 1678), while farmers used its cycles to mark the agricultural year:

Therefore, the ethnoastronomical traditions found on the Islands, including Gran Canaria, certainly have a true reflection in the cultural landscape that we are considering now. This can be detected either in the persistence of traditions and customs of astronomical origin in the popular tradition or in the fact that this knowledge could be traced to original inhabitants of the island. Both would make of the island summits as ideal places to get closer to the understanding of the sacred, including the observation of the sky or skyscape (Belmonte and Hoskin, 2002).



Figure 2.b.23. The Milky Way over Bentayga. Known as the Santiago Trail in the Canary Island countryside; its position in the sky marked the times of rain in the different ecological settings (coast, foothills, highlands) and thus, the farming calendar in each of these areas.

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2.b.vi

Expressions of cultural astronomy in the context of the Berber Maghreb

As highlighted in the chapter “Description of the property” (2.a) and particularly in the preceding sections, the pre-European settlers of the Canary Islands, including Gran Canaria, arrived from the northwest of Africa, a region that broadly relates to what is nowadays known as the Maghreb, also known as Tamezgha or land of the Amazigh, the common term used by the Berbers to refer to themselves.

Given the nature of some of the basic attributes of the property related to cultural astronomy and the possible original Amazigh influence, these expressions must be put into context with other manifestations in the Berber Maghreb. Although not very extensive, ethnographic sources are of exceptional interest. Archaeoastronomical sources are quite detailed and give more accurate information. However, it is important to note that both provide us with hugely significant information and a clear outline of how the indigenous people on Gran Canaria conceived all these premises within their new island homeland, adapting them to their own needs and capacities.

The Berber Calendars

Berber settlements still exist in the north of Africa and, despite Islamisation, the Berber people have managed to retain many of their ancestral traditions, including their calendars. There are two of particular interest that are based in Algeria. Although the communities are very different to each other, both have a strong Amazigh influence. One of these settlements is purely agricultural and is located on irrigated land in the interior of the Mزاب Oasis and the other is a pastoral community like the Tuareg of Hoggar. Both have been analysed in the context of the ethnoastronomical traditions of the settlers on the Canary Islands (Belmonte and Sanz de Lara, 2001).

← Figure 2.b.24. Laser scanner survey of the astronomical sanctuary of Risco Caído © Cabildo de Gran Canaria.

The Mزابita calendar of the Ibadí community in the Algerian pre-desert consists of four well-defined seasons, that is:

- The Date Season (N-tegri), which lasts between 40 and 50 days and commences with the new moon after the Autumn Equinox.
- The Winter Season (Tazrest), some 140 days that starts in mid-November and ends with the Spring Equinox.
- The Wheat Season (Elweqt n-temzin), consisting of six ‘decades’ (60 days approx.), which commences with the Spring Festival, the first Wednesday after the Equinox.
- The Irrigation Season (N-targiwin), lasting some 110 to 120 days (11 decades) and commencing just before the Summer Solstice, in the third decade, which is called “Tafaska n Ainsla”, which is equivalent to the Spanish San Juan (Festival of St. John).

The start of the seasons and the division of the year is somewhat similar to that encountered in some Canary Island communities. From what we know of the indigenous calendar, the Spring equinox and the Summer solstice are used to mark the seasons. The most important festivities are held on dates that more or less concur with those of the important festivals that the pre-Hispanic settlers on the Canary Islands celebrated at the beginning of Summer. However, as these are two very different ecosystems, although very interesting, the parallels found are more or less limited to this.

On the other hand, the Tuareg culture is fundamentally pastoral and was established in the mountains of the central Sahara by Paleoberber tribes, after a long migration from the foothills of the Atlas mountains at some point in the Early Middle Ages, although some believe it to have descended from the ancient Kingdom of the Garamantes, discussed below. The traditional calendar is as follows:

The first 'season' is *Ameuan* (28/8 to 27/11) which runs from 15 aot to 14 uamber in the Julian calendar, which is still used by these people. The second is *Tagrest* (28/11 to 27/2) from 15 uamber to 14 forar. This is divided, in turn, into "Little winter" from 28/11 to 22/12, "Black nights" from 23/12 to 13/1, a time at which the survival of the goat herd is at risk, and "White nights" from 14/1 to 2/2, which commences with the acronychal rising of Sirius (the Dog Star), hence "the dog at dusk whitens the wintertime". It is the time during which benevolent rains fall. These are then followed by the "White winter" from 3/2 to 27/2. Sometimes the two occur together. The next season is *Tafsit* (28/2 to 27/5) from 15 forar to 14 maiu in the Julian calendar, which includes "*Sabaa*" (the Seven), from 9 to 16 March, a nefarious time of the year. The calendar ends with *Eulien* (28/5 to 27/8) from 15 maiu to 14 aot which includes "*Tfsk n Ainsla*" on 13 yunium, which practically coincides with the Summer solstice.

As this is a purely pastoralist culture, it is difficult to establish parallels with the farming cultures of Gran Canaria and that which prevailed in the Cultural Landscape. However, some interesting similarities exist. One is the use, by the Tuareg, of the acronychal rising of Sirius as a seasonal marker. However, as it is an entirely different ecosystem, instead of marking the crop harvest with its heliacal rising as occurs in Gran Canaria, this star marks a different period (White Nights) in which the benevolent rains commence. Another is the significance of the period immediately following the Summer solstice, chosen as the time to hold the most important festival.

In summary, a series of parallels have been drawn between some of the calendar systems of the north of Africa that date back to ancient times and those designed for the Canary Islands. If not merely coincidental, these similarities could date back to the time the first settlers arrived on the islands, meaning that the indigenous calendar formed part of the cultural background brought to the islands, where it evolved to suit the different climatic cycles and the different environmental needs.

Archaeoastronomical Evidence

The Atlas Mountains extend over 1000 Km from the coasts of the Atlantic Ocean to the shores of the Mediterranean Sea, dividing the Maghreb into two clear and totally different halves: Windward, to the west and north, where large cities are found and, leeward to the

east and south on the fringes of the Sahara Desert. The mountains have always acted as a climate barrier, not as a cultural barrier, although mountain tribes that inhabited them did not always follow the dictates of the lords of the coastal plains. The High Atlas, the highest and most southerly section of the mountain range is fundamentally inhabited by tribes that speak Berber dialects. These are believed to be Islamised descendants of the original inhabitants of the region from prehistory to the present day, who were called Libyans by the Greeks. One of the most characteristic cultural features is the presence of thousands of rock art carvings - including dozens of Libyc-Berber inscriptions - from the various different phases ranging from the Bovidian part of the Saharan Neolithic period to the Camelin period. However, one of the most interesting periods is that associated with the Bronze Age, in the middle of the second millennium BC, long before the Canary Islands were colonised, at a time in which numerous scenes of wagons and weapons (spears, halberds and shields) and even battles were carved.

One of the characteristic elements is what is known as disc shields. Although, they are often identified as shields in the context in which they appear, at other times their decorative significance would appear to signify an association with the belief system of these people. According to Herodotus, the sun and the moon were the only divinities that were worshipped by all Libyans, and, thus, it is not unreasonable to assume that some of these discs could have a dual purpose, as both arms and as representations of the astral divinities of these ancient people (Achilles's shield, mentioned in Homer's Iliad is a prime example). One of the most famous disc shields is located in the rock art station of Talat n'lisk, on the Yagour plateau, south of Marrakesh (Belmonte and Hoskin, 2002). This is the largest of all those known (one metre in diameter) and is unique in terms of its elaborate adornment (see Figure 2.b.25) and its location. Most specialists that identify the carving with an astral representation affirm that it is an image of the sun, the supreme divinity of the Libyans. However, what we are presented with here is a typical example of ethnocentric vision as in our culture discs with rays generally represent the sun, while the moon tends to be represented by a crescent. A fact that is often forgotten is that the full moon can also resemble a disc and that this constitutes one of the most spectacular views from our planet.

Another curious fact in the particular case in hand is that the inside of the disc shield is elaborately adorned, un-



Figure 2.b.25. Rock art and astronomy. Talat n'lisk disc shield in the High Atlas (left), which dates back to the Bronze Age (c. 1500 BC). The adornment on the interior of the shield suggests that this is perhaps the oldest known representation of the full moon together with some of the most important selenographic elements, such as the craters Aristarchus, Copernicus and Euclid. Other elements of the adornment inside the shield could also be associated with lunar topography and the cycles of the moon. The Camel constellation (right), represented by a group of carved cup-marks in the rocky bed of a ravine in the Sahara Desert. These images show the deep understanding that the original inhabitants of the northwest of Africa had of astronomy. © Juan Antonio Belmonte

like the solar disc which is generally shown as flat. However, the moon is clearly not a flat disc. A quick glimpse at the Firmament clearly reveals its shining and darker parts. A closer look, particularly in the quarter periods in which the contrasts are more accentuated, reveals the presence of bright dots (craters), extensive dark regions (maria) or zones of marked contrast (mountains). For these reasons, it has been proposed that the Talat n'lisk disc shield is in reality one of the oldest (if not the oldest) known representations of the full moon.

The moon's disc (see Fig. 2.b.25) is full of contrasts - notably between the dark coloured maria and the rest of the surface of the moon. However, if you look carefully, it is perfectly possible to see the presence of bright dots on the surface of the moon that are associated with craters. The petroglyph shows the presence of two clearly distinguishable cup-marks, plus a third traversed by a fine line, the geometric configuration of which is substantially reminiscent of the location of prominent

craters on the moon, with the larger cup-mark corresponding to the moon's brightest crater, Copernicus. Although not very evident, other elements of the interior adornment of the disc shield could correspond to other elements of the lunar topography, such as, for example, the central mountain range that practically divides the lunar disc into two. The carving itself is actually positioned in such a way that it forms part of the surrounding landscape and skyscape. Yagour plateau is surrounded by the highest peaks of the Atlas mountains. Djebel Tubkal, the highest mountain in Mediterranean Africa is a particularly important reference point, as the moon would have set over it during the southern major lunar standstill limit. This would explain why a full moon was carved in this place and is indeed reminiscent of the relationship between observation backsite and the reference foresight also found in the relationship between the Bentayga sanctuary and Roque Nublo.

Another unique element of Amazigh rock art is the

cup-mark and channel ensembles that are also very frequently found in the area of the Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape. In this regard, thanks to the Tuaregs, we know that a group of seven cup-marks carved into the rocky bed of a ravine in the Sahara Desert (see Figure 2.b.25) represents the Camel constellation, which is equivalent to our *Ursa Minor*, and is one of the most relevant constellations of the celestial sphere of the Tuareg people. Indeed this constellation was very important in the caravan routes across the Sahara as it marked the north direction in the starry desert nights. Thus, one can assume that at least some ensembles of cup-marks in the Cultural Landscape area and even cup-mark and channel ensembles, may represent plastic images of certain parts of the

sky or of the constellations associated with the arrival of rain and other unique events and, consequently, that the culture in question related these with their propitiatory rituals. These may have been carried out where these rock art ensembles are found, such as in the *almogarenas* or cave sanctuaries of the sacred mountains of Gran Canaria. However, these parallels should be treated with due caution as, in the case described, but not in Gran Canaria, there is ethnographic information that confirms the idea (Belmonte and Hoskin, 2002).

In the Maghreb, an interest in the heavens has been manifested through architecture as well as rock art since ancient times. The oldest known evidence dates back to the Neolithic Era, between the 5th and 2nd mil-

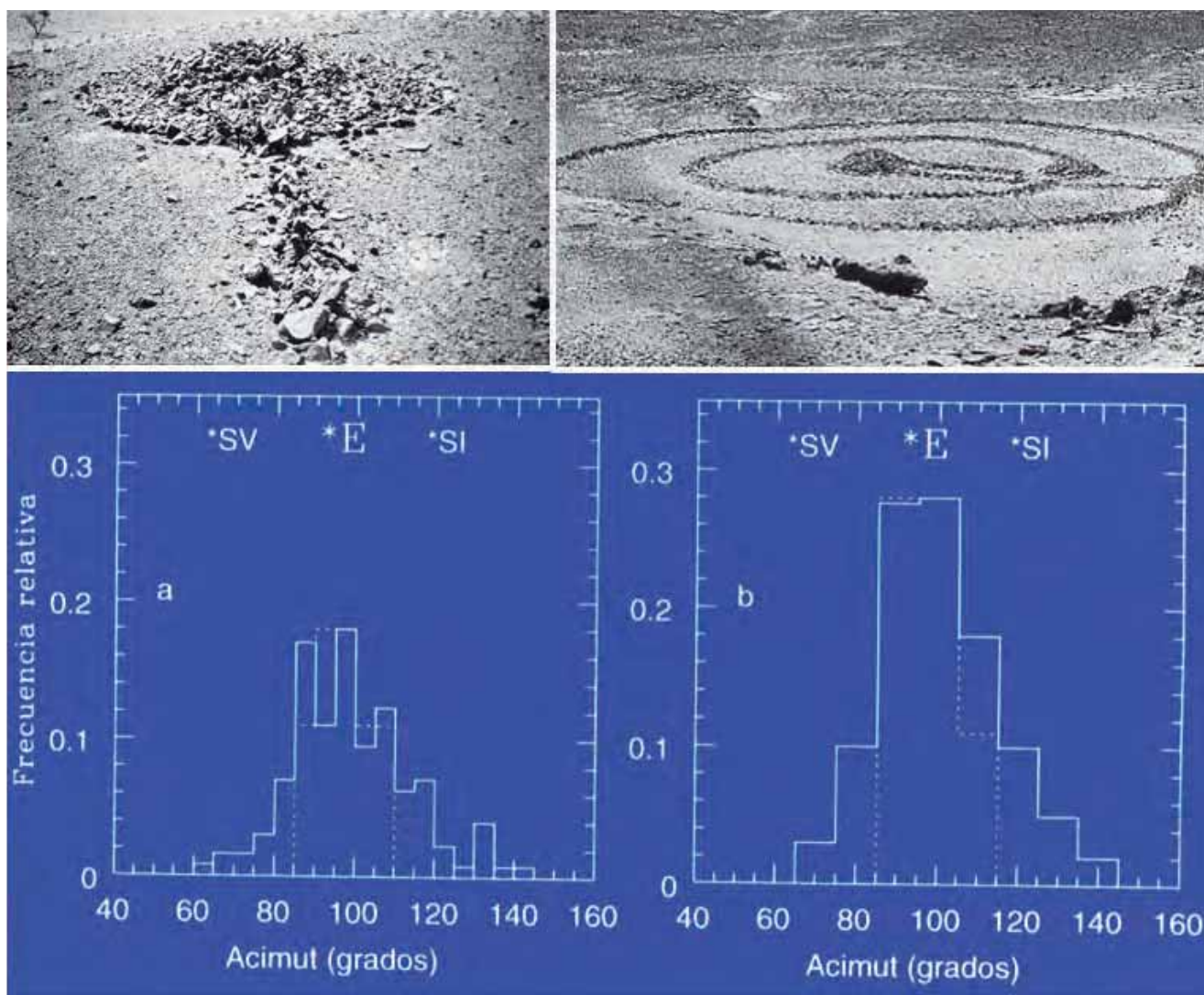


Figure 2.b.26. Histogram of the orientation of the 'pendant' shaped tombs of Messak Saffatet (Libya, left) and of the 'keyhole' shape at Fadnun (Algeria, right), showing a clear preference for East orientations of a potentially lunar-solar nature. The dashed lines correspond to the histogram of the rising of the full moon at Easter, an important celestial event for the current Tuareg inhabitants of the region. The upper panels show images of some unique examples of these monuments, by courtesy of Yves Gauthier. © Juan Antonio Belmonte

lennium BC and extends to the Bronze Age in the 1st millennium BC. The impressive “idebni” of the central Sahara date back to the Neolithic Age. Local people constructed these burial monuments using dry stone and it is on these buildings that the earliest evidence of orientations with clear astronomical patterns are found (Figure 2.b.26). These constitute the earliest evidence of Neolithic interest in the celestial sphere and it is from these Neolithic people that the modern day Berbers and, by extension, the early settlers on the Canary Islands descend.

Another later, but no less relevant, example is the Fom al Rajm necropolis, where the preference for an eastward orientation is associated with a possible interest in the extreme positions of the moon. This splendid necropolis is situated 80 km to the south of Zagora (south of Morocco), on both sides of the mountain pass known as “The Mouth of the Burial Mounds”, Fom al Rajm in Arabic, which crosses the rocky escarpments that line the horseshoe bend of the Draa river to the northeast. It is here in this fantastic and majestic landscape that the pre-Islamic people erected one of the biggest necropolises of the Maghreb which dates back to at least the 8th Century BC. (Figure 2.b.27)

There are several hundred burial mounds (tumuli), with the total number possibly exceeding one thousand, distributed across two main areas on the east and west sides of the mountain pass. Most of the structures are simple tumuli that are located both on the crest and on the edges of the ravines. However, in the highest areas that have a clearer skyline (and thus a better skyscape) there is a special type of burial mound with very interesting characteristics as these have a small window or skylight on one of their sides, which was often covered by a large stone that could be removed if needed. This small window is too small for a person to climb through and thus, these types of monuments are known as “skylight tumuli”. In addition, opposite the skylight there tends to be a stone altar where ash remains of possible burnt offerings have been found. Although this type of monument only represents 10% of those in the necropolis they are by far the most interesting, not only from an archaeological and architectural perspective but also from an archaeoastronomical point of view (Belmonte *et al.* 1999).

Skylights indicate that there is a definite orientation, which confirms the existence of an astronomical orientation custom at the time these monuments were



Figure 2.b.27. Panoramic view of Fom al Rajm necropolis (Morocco) and a typical example of a skylight tumulus. The orientation pattern of these skylight tumuli generally have a double peak structure centred eastwards and on the southern major lunar standstill limit. This type of pattern is repeated centuries later in Gran Canaria. © Juan Antonio Belmonte

constructed. The astronomical theory is also supported by the fact that almost all of the skylight tumuli are located in elevated areas with a clear view of the horizon. The evidence found suggests a lunar orientation with one of the peaks centred on the southern major lunar standstill limit as well as an alignment with the equinox sun, with an eastward-oriented peak. Curiously, a similar orientation is quite common in various groups of funerary monuments in the western Mediterranean and this double orientation, in particular, is found in other places such as the island of Gran Canaria or the Punic necropolis of Menzel Temine which will be later discussed.

These astronomical traditions associated with the architecture of the region continued into the historic period. They are reflected in each of the cultures that occupied the Maghreb area before the arrival of Christianity and particularly Islam, which led to the obliteration of most of these traces (Belmonte *et al.* 1998, 2006). It is appropriate for us to analyse four cultural groups that in

one way or another may have influenced or may reflect aspects of the cultural background that the indigenous inhabitants of the Canary Islands brought with them to the archipelago. We will focus in particular on: the Garamantes Kingdom, the only Amazigh state that was never conquered until the arrival of Islam; the funerary world of the Punic civilisation with its apparent local north African character; the kingdom of Numidia, the most powerful Paleoerberber state, and some of its monuments; and finally, on how the Romanisation process incorporated earlier elements of particular interest into its urban planimetry.

The Garamantes: sanctuaries, pyramids and astronomy

In the middle of the Sahara, surrounded by hundreds of kilometres of stony desert and totally embraced on its northern part by the Ubari Erg, one of the Sahara's largest sea of dunes, and to the south by the great stone plateau of Messak, is one of the most fascinating oases on the planet, until recently known as Wadi el Agjal (River of the Dead) and renamed Wadi el Haya (River of Life) by the Libyan authorities when the important underground aquifers of the region were exploited. It was precisely because of these aquifers that this was the only Libyan state to survive the Roman pressure. The Garamantes kingdom controlled Saharan trade from the middle of the second millennium BC up to the time of the Islamic conquest of the region in the 7th Century. The name Garamantes comes from Garama (now Germa), the name given to its capital city from the 2nd Century BC until it finally fell to the enemy. The city was surrounded by the Wadi el Haya in what was and continues to be a particularly rich agricultural area and where there was also a large lake that has been dry for the last few centuries. However, the first capital of the Garamantes was the fortress city of Zinjecra, located on top of a rocky outcrop that towers over the valley and which was protected by a triple line of walls (Figure 2.b.28). The earliest remains appear to date back to the 9th Century BC, to the time the valley is said to have been occupied by the Libyan tribes from the north that overran the original dark-skinned people. The city was not totally abandoned in the 2nd Century BC when the people moved to Garama, instead it continued to exist as an important religious and burial centre.

Bearing witness to the particularly sacred nature of Zinjecra are the large number of alphabet inscriptions in no less than five different alphabets and the sheer vol-

ume of rock carvings and paintings in the area. Worthy of particular note however, is the presence of what may be a sanctuary accompanied by an ensemble of seven large cup-marks carved into the rock at the edge of the precipice. This sanctuary is the most noteworthy element of the area (Belmonte et al. 2002). The majestic panorama it offered was significant, dominated to the north by the sea of dunes and to the south by the plateau buttresses of Messak. Only a small section of the western horizon was occupied by prominent elements, including the rocky outcrop that protected the access to the city from the south. Of particular note was the eastern horizon that offered an extensive view of the Garama oasis, closed off to the northeast by the distant dunes and the Messak, with the only prominent element worthy of mention being the place where both met, which could be seen through a small step on the horizon known by the local people as Djebel Tush. It is on this point of the horizon that the sun emerges on the morning of the Summer solstice (base of the step at a declination of $23\frac{1}{2}^{\circ}$ and upper part at a declination of 24°), while the rest of the sun rises occurring over the Messak itself in totally flat areas.

Two questions come to mind: Was this an event known to the inhabitants of Zinjecra? Does this mean that the site selected for the sanctuary or indeed the outcrop selected for the location of the city were deliberately chosen as sacred places due to this phenomenon? The answer to the first question is most likely yes, given that it is a really impressive event. The answer to the second however is more complicated as nature is evidently not astronomically aligned. It would seem more than likely that the precise location of the cup-marks was considered sacred as it was a privileged place for observing the solstice phenomenon. However, the choice of where to locate Zinjecra had to obey strategic rules, although there are a large number of rocky outcrops along the Wadi el Haya that could have been selected as the location for other citadels and in some cases they were. Indeed it is more than probable that the sacred nature of Zinjecra maintained for centuries after it was abandoned as a dwelling place, may be associated to a large degree with the solstice phenomenology observed from that place.

This type of astronomical marker, with an observation backsight imbued with a sacred quality by a sanctuary or a temple and a conspicuous reference foresight on the distant horizon, also sacralised on many occasions, is quite common in the regions inhabited by the an-

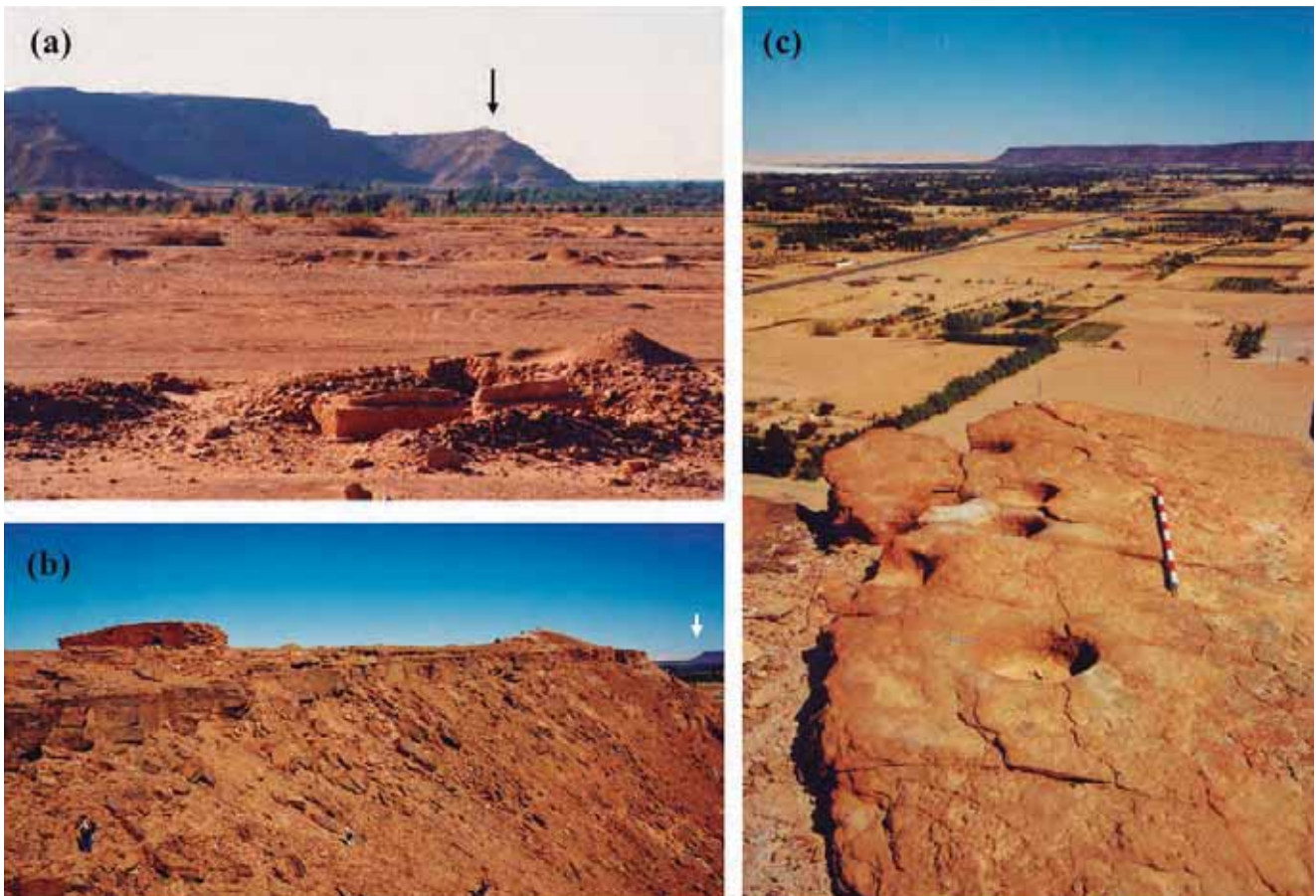


Figura 2.b.28. (a) The rocky outcrop of the fortified city of Zinjecra, as seen from the royal necropolis, dominates the landscape over Wadi el Agial and the Garama Oasis. (b) In the foreground are the last of the three lines of walls that defended the region and the sacred area. In the distance you can make out the edge of the Messak plateau, the solstice marker of Zinjecra, marked with an arrow (c): in the foreground is the rock sanctuary with the seven large cup-marks carved out of the rock. On the horizon, a mark indicates the position of Djebel Tush, where the rising sun emerges on the morning of the Summer solstice. © Juan Antonio Belmonte

cient Libyans. This assertion is based on the discovery of other solstice and equinox markers both in the Canary Islands, including those in the proposed Cultural Landscape and in the Maghreb. There are clear parallels with Roque Bentayga. In the specific case of Djebel Tush, this sacred nature, not only of the observation place but also of the reference point on the horizon, is supported by the fact that the great temple of the new capital, Garama, was precisely aligned with this foresight, although in this case because the new position was located to the northeast of the above, for obvious reasons there was no longer an alignment with the solstice.

The Garamantes also erected pyramids and mastabas to bury their dead. These are generally made of adobe and their pointed shape is reminiscent of the pyramids erected, almost in the same era, by the kings of Napatá and Meroe, 4000 km away to the southeast. The chronology of these pyramids is unclear although most specialists situate the date of their construction around

the first millennium BC, although some may have been built somewhat later. There are two large ensembles of pyramids in El Hatiya and in Jarajj (Figure 2.b.29), where these are mixed with simple circular tumuli that, in some cases, are even superimposed on the pyramid structures (which would support them being older). The pyramid was not the only burial method used by the Garamantes and, in reality, in the royal necropolises in the vicinity of Garama (what is now Germa) it is not even the prevailing type of construction. Both in the necropolis of Saniat Ben Howedi and in what is known as the "Royal Necropolis" of Germa (see Fig. 2.b.28), the dominant structure type is the rectangular-shaped mastaba with access on one of its sides. They tend to be set out in rows reminiscent of the tomb fields in the Ancient Kingdom of Egypt. Alongside the mastabas, also documented are circular bacias and the omnipresent circular tumuli, 60,000 of which have been counted in Fezzan alone.

Of course, one of the fundamental problems faced when

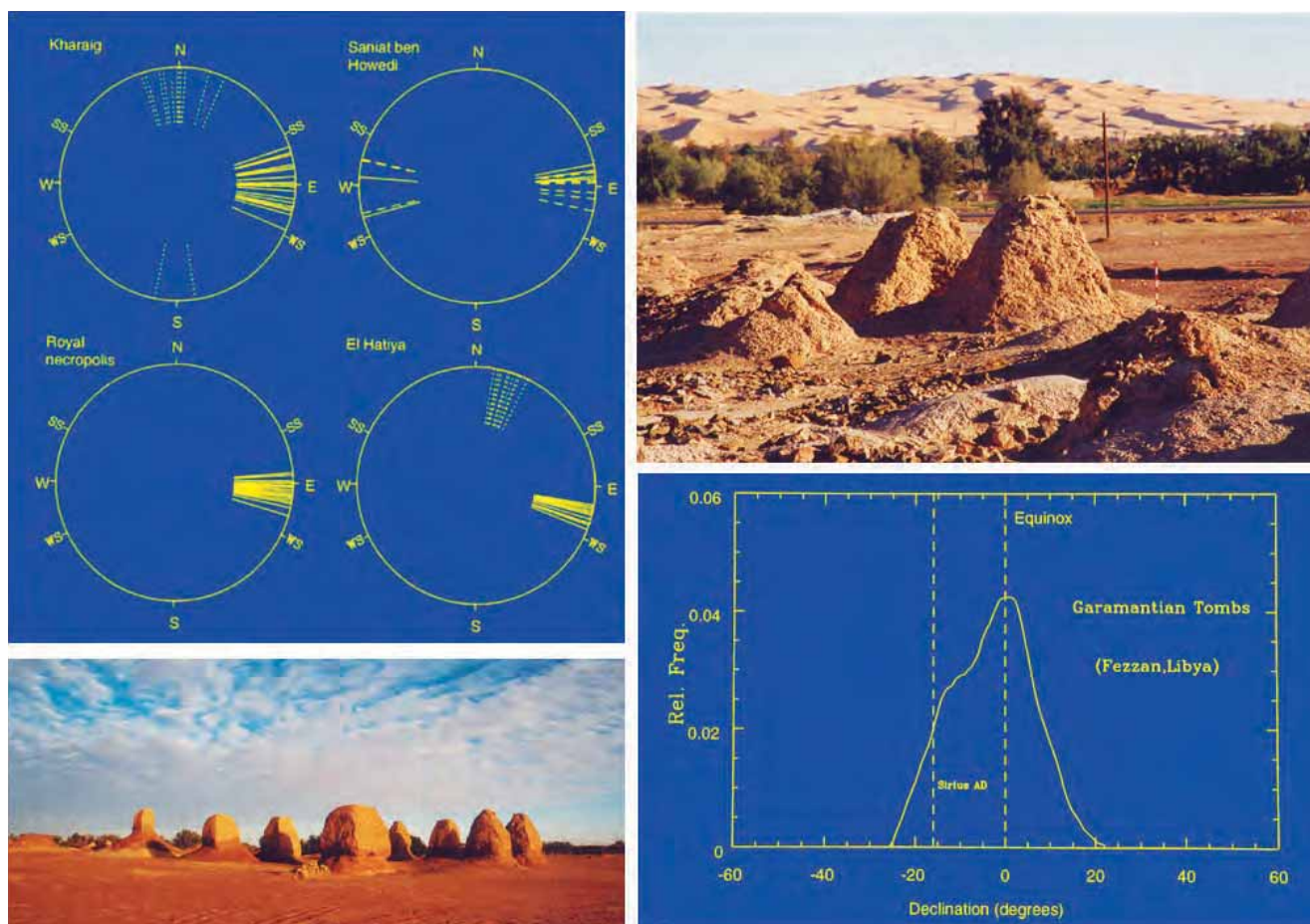


Figure 2.b.29. Garamante pyramids in Jarajj (supra) and El Hatiya (infra) at the foot of the Messak cliffs. In the first of these necropolises there are some 25 adobe pyramids oriented to the cardinal points. In the background a small part of the Wadi el Agial oasis can be seen, embraced by the impressive dunes of Ubari Erg. The orientation diagrams of four Garamantes' necropolises are shown. Hatiya has not been scientifically excavated and, thus, it is hard to determine which of the two possible axes is that which defines the orientation. The last panel presents the declination histogram that corresponds to all the funerary monuments in the region of Garama, showing a clear tendency towards a zero declination i.e. that of the sun at the equinoxes. © Juan Antonio Belmonte

conducting an archaeoastronomical study is determining what the preferred direction is which, although clearer in the case of the better preserved mastabas, it is not evident at all in those that have lost their superstructure, in the circular tumuli and in the pyramids. Fortunately, worshipping the dead must have been a fundamental component of the religious world of the Garamantes (as with many of their neighbours) and, opposite the tombs, they erected hundreds of different types of stelae and altars with cup-marks on which to place offerings, that quite clearly define a preferred direction for us. This is true wherever the stela, altar or both are still in situ, which unfortunately is not very common as most were removed from their original positions and put into the Archaeological Museum of Germa to avoid pillage (they can be admired there; Figure 2.b.30).

There are three basic types of stelae: in the form of a

baetylus, in a V shape and in the form of an open palm hand. V-shaped stelae are perhaps the most peculiar because they are reminiscent of similar structures of the Minoan civilisation in Crete or the ancient Hebrew altars. They are also known as crescent-shaped stelae. The three stela shapes can be easily reproduced by hand, so that the betyls are like a raised hand with the index and middle fingers raised up, V-shaped stelae are formed with the palm open, closing the thumb and separating the middle and ring fingers (i.e. the 'Vulcan' salute), and stelae with the palm open reproduce an ancient symbol of protection well known right across north Africa since antiquity (these are found on numerous Punic stelae) up to the present day in which it is known by the popular and erroneous name of "Fatima's hand", the daughter of the Prophet, thus Islamising a much older sacred tradition. In addition, these forms are associated with the three astral divinities par excellence that the

Libyans worshipped: the baetylus associated with the sun, the V with the moon and the open palm with the goddess of fertility and of the dead, called Athena by Herodotus, and that possibly should be associated with the Punic Tanit and the Roman Caelestis, with the planet Venus as one of its most important manifestations. Various forms of these three divinities must also have been worshipped in the Canarian Archipelago.

Thus, if the worshipping carried out at the funerary monuments of the Garamantes was of a strong astral nature, it would be expected that the monuments, through their orientation, would reflect this circumstance, a fact that can be verified. The orientation diagrams of the different necropolises studied show a certain preference for the sectors of the horizon around the cardinal points East and West (see Fig. 2.b.29). But it is the declination histogram (of 85 tombs, those in which an orientation can be defined without ambiguity, Belmonte et al. 2002) that shows without doubt, that the Garamantes astronomically oriented their funerary monuments and, also, with a very clear tendency towards the declination of the sun at the equinoxes, confirming what is established for earlier eras that indicate a certain predilection for the equinox, in a more general lunar-solar framework of patterns.

In conducting the comparative analysis of the proposed property, this equinoctial tendency of the Amazigh peoples of north Africa may explain one of the most emblematic events: the presence of equinoctial markers on the island of Gran Canaria and, in particular, in the area of the Cultural Landscape. As has already been mentioned, this interest in the equinoxes is just one of the many cultural hallmarks that the first settlers brought with them from the continent to the islands at the time of the colonisation. The origin of this custom in Africa is worth taking into consideration. On the eastern borders of the Sahara, we have the Pharaonic civilisation with the funerary temples of the pyramid ensembles with their clear eastward orientation. Thus, this phenomenon can be found right across the north of Africa and it is difficult to pinpoint its origin, although the Egyptian pyramids are ancient and their elaborated temples are perhaps the oldest monuments with a precise alignment with the equinoxes (3rd millennium BC). There are idebnis in Fadnun that are oriented eastward that may date back to the 5th millennium BC. On the other hand, the ancient Canaanites, the forefathers of the Phoenicians, and the Romans themselves revered the equinox as an



Figura 2.b.30. Stelae, with their corresponding tables for libations, which were situated opposite the funerary monuments of the Garamantes marking a preferred direction. There are some in the form of a betyl, others in a V-shape and others in the form of an open palm hand (the wrongly named "Fátima's hand"), like those on display in the Archaeological Museum of Germa.
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important seasonal milestone, with the Spring equinox certainly being the marker of the start of the year in ancient Rome. As it is almost always the case, the answer is not unequivocal and we should perhaps search for a complex solution associated with the desertification of the Sahara, which lead to the dispersion of a series of customs, which must have shared a similar origin, both in terms of space and time that cannot yet be fully understood.

The Punic Tradition

According to classical sources, at the end of the 11th Century BC, seafarers from Phoenician coasts founded the first colonies – their new homeland in the West – on the coasts of the Maghreb and the south of the Iberian Peninsula. In this way Utica, Gades and Lixus entered history. However, all of these cities were eclipsed by the power of their younger sister, Carthage, founded according to the sources in 814 BC. The Phoenician city was Africanised over time becoming an undisputable military and commercial power. It kept the emerging Roman Empire in check until its total destruction in 146 BC and had a lasting influence on its neighbouring Amazighs. The civilisation created by Carthage, quite different from its original homeland, is often given the name Punic to distinguish it from its parent culture, the Phoenician one. The main Punic divinities, the god Baal Hammon and the goddess Tanit, despite having equivalents in Phoenicia, had some unique attributes associated with their African land of adoption, so that in the Roman period, Saturn and the Dea Caelestis, their successors, are considered the most important deities of western Africa, independently of the Punic, Mauretanian, Numidian or even Roman origin of its inhabitants.

On many occasions Baal Hammon has been associated with the Egyptian divinity revered in the Siwa Oasis that may be of Libyan origin or at least borrows attributes from a Libyan divinity, of an apparent solar nature. This may be the sun god that all the Libyans worshipped. Tanit-Caelestis is sometimes associated with the moon but it is more likely that it was associated with the planet Venus, as a manifestation of the goddess Astarte, with which it was frequently associated. In reality, it is likely that in the northwest of Africa the moon was a masculine divinity as was the case in the neighbouring Egypt and would also be the case in the Canarian Archipelago. In any case, given the astral nature of the Punic divinities, it is likely that this fact would manifest in some way in the religious structures.

Despite the centuries of Punic rule in the region, there are relatively few remains that have been preserved, as most of the cities were later converted into Roman cities and villages or some, like Carthage, were razed to the ground. Thus, there are very few public buildings that remain from the first millennium before the Common Era. Fortunately, in the western Mediterranean, the Phoenicians chose a method of burial that has stood the test of time. The custom of carving hypogea in the rock may have been imported from the East or may have imitated the local customs encountered in the countries colonised by the Punic (like Sardinia, Sicily or Africa itself), where this type of funerary structure had been in use since the Neolithic Era, and indeed continued in use in the case of the Canary Islands until the archipelago was colonised by Europe in the Middle Ages.

As an example of the Punic necropolises with tombs dug out of the rock, one of the most interesting examples has been chosen, with no less than fifty perfectly preserved hypogea, that of Menzel Temine. This is located in a rocky promontory on the outskirts of this settlement in the region of Cap Bon, one of the richest from an agricultural point of view during the golden age of the Punic civilisation (Figure 2.b.31). It is not known which human settlement was associated with the necropolis and it is highly possible that this is located below the current village. In any case, the place has retained its religious significance as the marabout of an important Muslim saint rises up alongside the necropolis. Some of the hypogea are adorned with paintings and carvings, and “signs of Tanit” are common, as on the funerary stelae. Both Tanit and Baal Hammon were psychopomp divinities that were associated with worshipping the dead. If the funerary divinities were astral divinities, one would expect the Punic hypogea to present astronomical patterns.

The astronomical declination histogram obtained from the combined data on orientation and inclination of the access steps is very informative (see Figure 2.b.31). The distribution shows two significant peaks both of which have strong astronomical connotations. One is centred on the equinoxes and the other on the declination of the sun at the winter solstice (Belmonte et al. 1998). Curiously, this pattern shows similarities with various patterns found in the Maghreb and the analysis of it could have important implications for intercultural relationships.

In Sardinia, for example, it has been found that the ori-

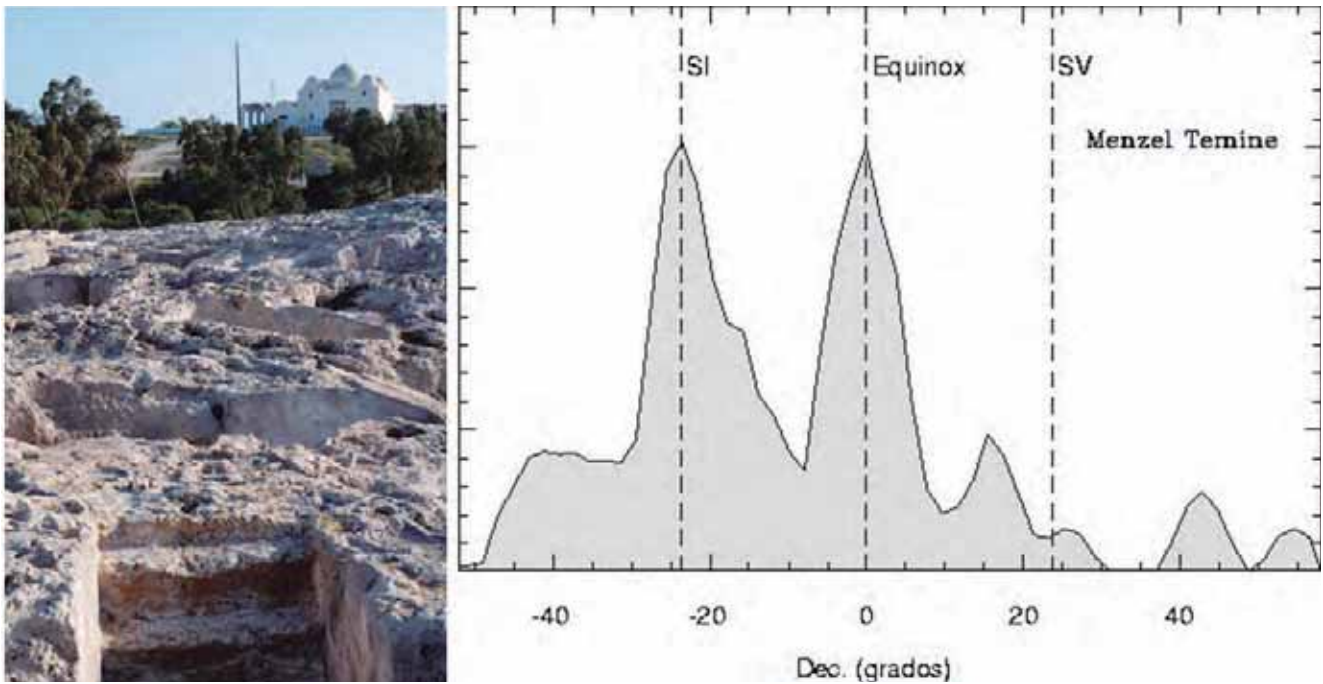


Figure 2.b.31. Left: General view of the Punic necropolis of Menzel Temine, in Cap Bon (Tunisia). The access to various hypogea can be seen in the foreground and in the distance there is a Muslim marabout, a sign of the religious significance of this place through the centuries. Right: Declination histogram of the Punic tombs of the necropolis of Menzel Temine. The distribution shows a clear astronomical pattern with two peaks centred on the declinations of the equinoctial sun and the sun at the winter solstice, respectively. This double pattern is typical of numerous cultures of the Mediterranean region. © Juan Antonio Belmonte

entation of the tombs in the Punic necropolises of the island also appear to follow certain patterns, again with the equinox and the winter solstice being the two most important reference points. However, this distribution is also found in other parts of North Africa but not in a Punic context. Besides, the importance of equinoctial orientations in the region is already apparent. Evidence is lacking to affirm whether the pattern found is typically Punic, coming from customs originating in the East and imported by the colonizers, or whether an apparent African influence can be detected thanks to the mixing of settlers with the original inhabitants in the country of Amazigh origin. The answer is often found in the middle ground. It is possible that similar customs combined, given the astral nature of the main divinities of both people, whereby the Phoenicians would have brought with them a certain inclination towards lunar-solar orientation and this would have mixed in the Maghreb with the predilection of the Libyan people for certain key moments in the seasonal cycle, such as the solstices and the equinoxes (or the associated moons). This fruitful combination would have resulted in one of the most genuine astronomical orientation customs that has been detected on the western Mediterranean.

Sacred geography and astronomy of the Numidians

In northwest Tunisia, on the borders between the ancient Africa Proconsularis and Numidia, there is an enormous concentration of cities in ruins that is unequalled in any other region of the Roman Empire, except perhaps in Rome itself. Within a radius of 100 kilometres we find large cities like Dugga, former colonies of veterans, like Mustis or Thuburnica, ancient capitals of the Kingdom of Numidia, like Mactar or Bulla Regia and its pretty subterranean houses, famous fortified cities in the history of the region, like Sicca Venerea (now Le Kef) or cities that rose up thanks to peculiar economic activities. This is precisely the case of the city of Shimitu (now Chemtou) that owed its existence to the presence of an impressive mountain that had one of the richest red marble deposits in the Empire and where quarries were already in use since the Numidian era, exporting the prized material to the most remote corners of the Mediterranean (Figure 2.b.32).

The place must have been sufficiently important for one of the Kings of Numidia, possibly Micipsa, to erect

a formidable edifice on the summit of the mountain to commemorate his predecessor Massinisa and which may also have been his funerary monument. Built on the meridian axis, this consisted of a large rectangular platform crowned with four rows of columns, one on each of its faces (see Figure 2.b.32). The building was profusely adorned with the most diverse motifs including some of astral typology. In particular, on the lintel of the door, open on the eastern facade of the building, a frieze showed the typical Egyptian representation of the winged sun, flanked by two cobras. In the Roman era, the mausoleum was dedicated to worshipping Saturn, as the numerous rock carvings on the sides of the mountain bears witness to. A curious aspect of the building is its orientation, facing eastwards towards a spot on the horizon where a depression between two mountains marked the sunrise on the equinoxes. Thus, we find another example of a pattern that is repeated on the funerary monuments of the Maghreb - a tradition that would persist through the golden age of the Kingdom of Numidia. Indeed other mausoleums of its kings like Kbor Klib, near Mactar, or Medracen at the foot of the Aures mountains in Algeria, show similar orientations.

The mountain of marble, alongside its practical use as a quarry may have been imbued with a special religious quality since the first settlers arrived in the area. Proof of this is the three archaeological levels that have been found in the forum of the Roman era. The upper level, that of the forum itself, was fully rebuilt in the Roman era to construct the large square in the enclosure. However, excavations have shown at least two archaeological levels below this (see Figure 2.b.32). The lower level shows the presence of at least two megalithic monuments with an eastward orientation that are difficult to date but which probably predate the Numidian period. Above these, in the intermediate level, there is a large circular tomb, a stone cylindrical shape, known as bazinas in the Amazigh world, which was possibly a mausoleum of the local elites. What appear to be the remains of a temple have been found on the northern side, presumably of a funerary nature as it is associated with what is clearly a necropolis.

Curiously, this temple is oriented to the summit of the mountain on which the large mausoleum was built; a place where the sun rises at the summer solstice. Thus, it would seem that the place where the necropolis was built may have been deliberately chosen so that on the solstice the sun could be observed as it rose over the summit of the mountain on which the great royal mau-

soleum would later be erected. We thus find a unique case of sacred geography with a sacralised observation backsight and a reference foresight, where a relevant astronomical event occurs, which was also deemed sacred. In this case, we also have a building aligned with the equinoxes. The case, although exceptional, is not unique (Esteban et al. 2001).

Another unique example has been found in the city of Mactar, an important urban centre in the Kingdom of Numidia, with a spectacular megalithic necropolis, and later a thriving city in the Roman era. In this case, the equinox marker was comprised of a step in the mountains on the eastern horizon, whereby the sun rose over this geographical feature, one day after the spring equinox or one day before the autumn equinox. This allowed the corresponding dates to be determined with relative precision. The notch is visible from most of the ruins of the city, but it is particularly conspicuous at the ancient site of the temple of Apollo, the foundations of which still remain, showing that its main axis is clearly aligned to the rising sun on the equinoxes close to the step on the mountain (see Figure 2.b.31). This temple was reconstructed in the 2nd Century on the foundations of an early temple erected in honour of Baal Hammón by one of the kings of Numidia that had founded the city in the 2nd Century BC.

Mactar occupied a prominent place in the history of Numidia as it was the city that controlled the southern border of the kingdom and in it Jugurtha sought refuge on various occasions during its long wars against Rome. The city was annexed, together with all of eastern Numidia, by Julius Caesar, and it would experience a golden age under the Empire, preserving many of its earlier traditions so that in the 3rd Century the Punic script and the Libyan script were still used for inscriptions on monuments and on funerary stelae. The alignment of the sun god temple with the equinox (Apollo, and Baal Hammón before that) has been repeated in numerous temples in ancient Roman Africa and, in particular, in another two temples of Saturn, that of Simithus, already discussed, and that of Volubilis, in Mauretania Tingitana. In reality, all the temples of Saturn have an eastward orientation and, if we allow a certain margin, all have a lunar-solar orientation (Esteban *et al.* 2001; Belmonte *et al.* 2006). This is an indication, on the one hand, of the clear astral nature of this divinity, and on the other, that this pattern, dominant in the Maghreb, is regularly repeated in the temples where the pre-Roman influence is more evident. Thus, we can consider the astronomical

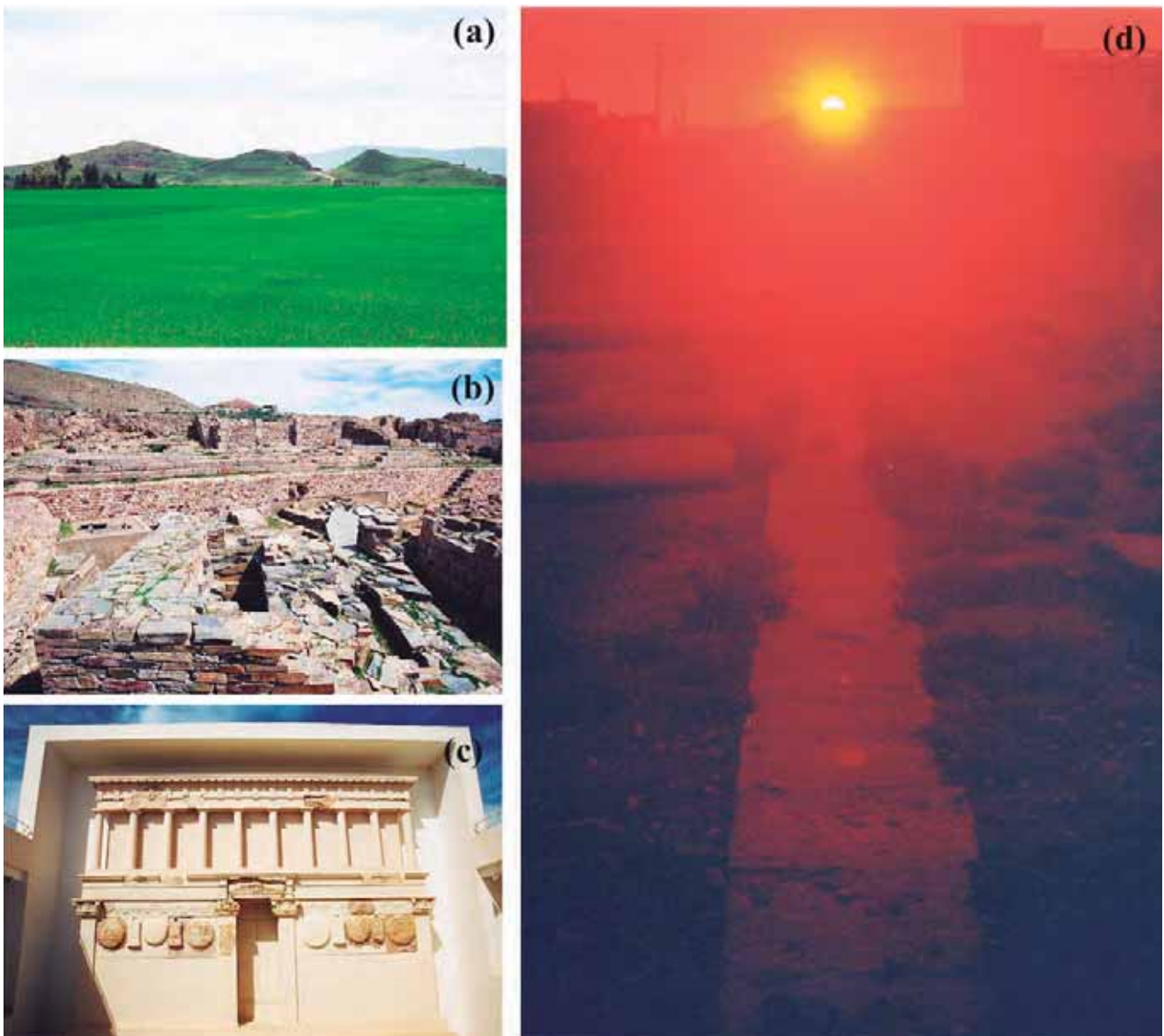


Figura 2.b.32. The “mountain of marble” in the archaeological site of Simithu (a). The mausoleum of one of the kings of Numidia was built at its summit. It has an almost perfect alignment with the sunrise at the equinoxes. Three archaeological levels in the Roman forum of Simithu (b). Underneath the plaza, which was razed to the ground in the Roman era, excavations have shown the presence of a megalithic necropolis and on it, a Numidian funerary monument with its associated temple, aligned with the sun’s rising position at the summer solstice over the royal mausoleum at the summit of the “mountain of marble” (c). The figure is completed with the image of the rising sun at the equinox, following the line of symmetry of the Temple of Sun at Mactar (d). The phenomenon can be observed near a notch on the horizon that could have been used as an equinox marker. Parallels with Gran Canaria are clear.

orientation of the temples as the last exponent of a tradition that was born in the Neolithic era in the vast extensions of the Sahara and which continued in the Canary Islands until the 15th Century. Interestingly, this tradition was deliberately avoided in the entire Maghreb region during the Islamic period.

Persistence through the Roman Era

When the Romans conquered the North of Africa from the Gulf of Sirte to Tingitana there was a thriving

civilisation there with Amazigh roots and with strong Punic footprint with a highly developed urban nature. One of these examples of urbanism was the city of Sabratha in Tripolitania. Founded as a Phoenician colony, it was first under Punic rule and then under the control of Numidia. It was later annexed by Rome, conquered by the Vandals, reconquered by the Byzantines and then abandoned after the arrival of Islam. There are remains here of a splendid mausoleum from the Punic era (or perhaps the Numidian one) and the tophet of the city has offered an infinity of very interesting stelae with the

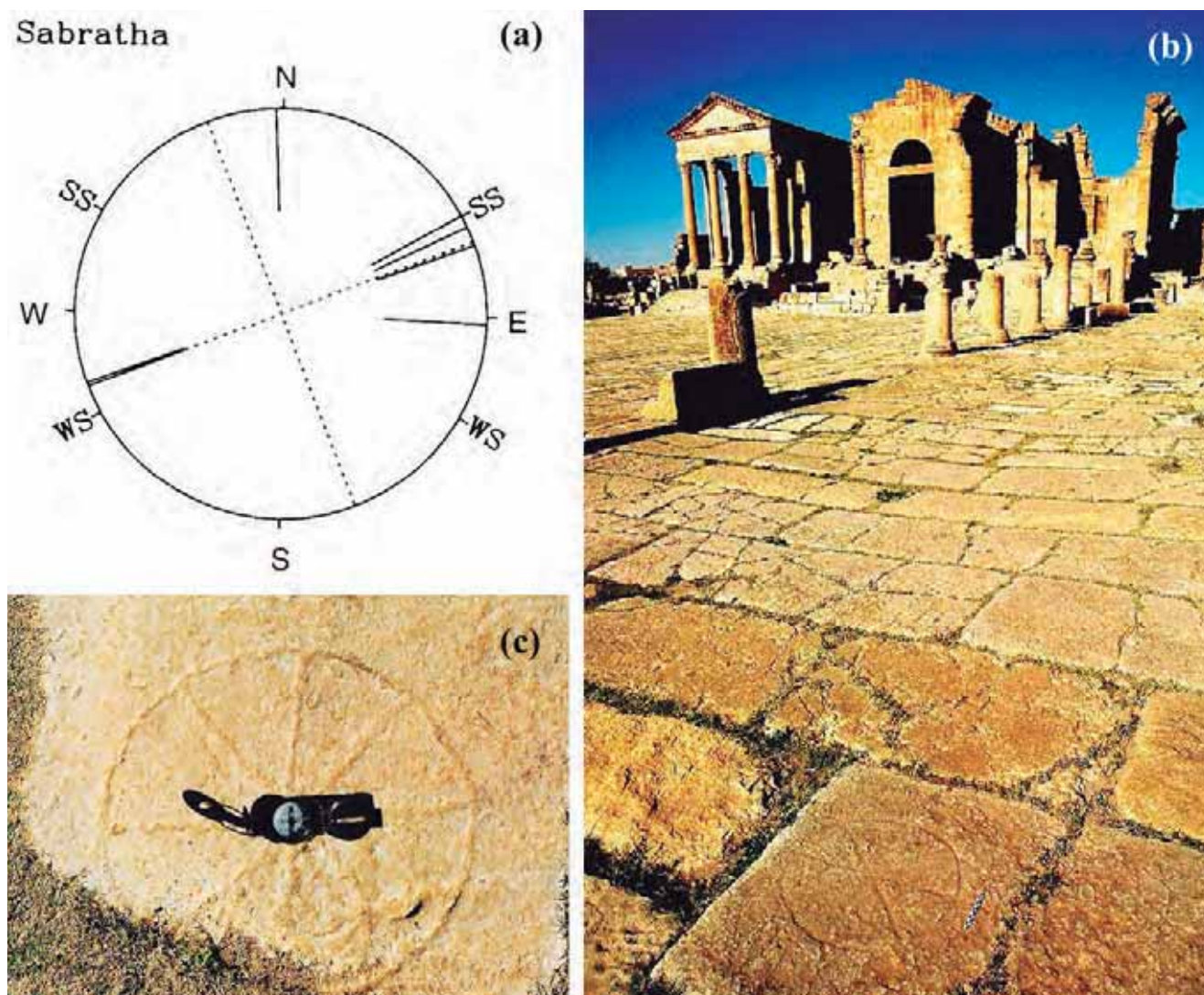


Figure 2.b.33. (a) Orientation diagram of the temples of Sabratha, showing their astronomical connections. The dotted lines show the axes of the forum, corresponding to the grid of the western sector of the city, perhaps oriented with the setting of the star Sirius, the brightest in the sky. Other temples practically face North, East or have other significant astronomical orientations such as an alignment with the sun's rising position at the summer solstice. (b) Mundus carved into the floor of the Roman forum of the splendid ruins of Sbeitla (formerly Sufetula). This diagram is perfectly adapted to the axes (cardo and decumanus) of the city that may have been oriented to the rising of Sirius when it was built. Another diagram (c), inscribed in the same forum clearly shows the cardinal points. The local capitol, very well preserved, can be seen in the background.

typical Punic paraphernalia, including the signs of Tanit and the open palm hand. However, most of what can be visited today hails from the Roman and Byzantine era, the authentic swan song of the city in which Justinian ordered that various churches and a basilica were erected.

The town planning was typically Roman with space organised like a chessboard with one notable exception. The urban planning of Sabratha appears to have taken place in two different stages: an earlier stage which includes the zone of the forum and the western sector of the city and a later one in the theatre district, which covers the eastern district. The theatre district is more or less aligned with the cardinal points, an orientation

that is determined astronomically (Figure 2.b.33). The forum district is less clear as one of its axes is aligned so that most of the temples in the centre of the city are oriented with a declination around $\pm 17^\circ$, depending on whether they face east or west. A very interesting possibility is that this axis is marked by the star Sirius (the Dog Star again), which in the last centuries BC when Sabratha became a city, had a declination within this range. A curious fact about this sector of the city is the presence of two large temples that do not respect the urban grid, something which is particularly evident when looking at the map of the city.

One of these, situated to the south of the forum, was

erected on a large platform and it is still not known which divinity it was dedicated to, as excavation of it offered little evidence in this respect. However, its orientation towards the rising sun at the summer solstice would lead us to believe that the host of the temple must have been a sun god (perhaps Baal Hammón, the great Carthaginian divinity). There must have been a very good reason for this temple breaking entirely with the urban plan. It is most likely that its outstanding astronomical orientation was the reason for this.

More intriguing still is the fact that Sabratha is not the only case of an orientation involving Sirius. Another case is the spectacular city of Sbeitla in the south of Tunisia, the ancient Sufetula, beautifully preserved as it was practically abandoned after playing an important role as an imperial seat of power at the crucial time of the Muslim invasion of Byzantine Africa. Sufetula has a grid planimetry that is typical of the Roman era (Belmonte *et al.* 2006). However, here, the map has a different focus. In the forum of the city there is a pair of identical carvings in the stony floor of the enclosure (see Figure 2.b.33). Both take the form of circles divided into eight sections that are thought to represent the ancient 'mundus' of the city that would mark out how this was structured. However, both of them have completely different orientation patterns. One is oriented with the cardinal points, which indicates that the topographers knew the precise position of these directions that were so important for many purposes. The second, however, precisely follows the directions of the city grid, which is dictated by the north-south oriented *cardus*, which crosses the forum in a WNW-ESE direction, and the *decumanus* perpendicular to this. Thus, it can be inferred from these carvings that this planimetry was deliberately selected. According to this pattern, the *cardus*, either by chance or by design, is oriented to the rising of the brightest star in the sky, again Sirius. Thus, there are at least two examples of orientations with this celestial object of

crucial significance in the ancient Mediterranean and in the Maghreb and which, in ancient Egypt, played a vital role in the structuring of the calendar and in the orientation of the temples (Belmonte, 2012).

It is also curious that certain temples of Sabratha, and the urban planning of this city and of the nearby Sufetula, are astronomically oriented with the rising sun at the summer solstice and with the luminary Sirius, respectively. These orientations were also significant in the case of Gran Canaria as markers of the New Year. As it has been mentioned in another section of this memory, a close link has been found between the alphabets used in ancient south-eastern Numidia and its southern borders with the Garamantes' territory and the alphabet used in the Canary Islands. This has allowed the hypothesis to be put forward that the Amazigh people that colonised the Archipelago came from the regions of the south of Tunisia or the northwest of Libya, on the borders of the Roman Tripolitania. The astronomical orientations found in this region and other neighbouring areas up to the edges of the Sahara, suggested something that was already conceived, that the astronomical knowledge shown by the indigenous Canary Islanders in general, and by those of Gran Canaria in particular, was born in their African homeland and was imported to the Archipelago when people came and settled here at the turn of the era. However, it is nonetheless the case that once brought to the islands this phenomenology was adapted to local environmental factors. In the case of Gran Canaria and in the area of the sacred mountains, this meant adaptation to an outstanding landscape that the ancient people of the Canary Islands adopted as their own and sculpted, hollowed and adapted to their needs, creating a true Cultural Landscape in which the skyscape played a vital role. Risco Caído and Roque Bentayga are paradigmatic examples of this accomplishment, but they are not the only ones.

2.b.vii

The gender dimension

The important role that women played in the different echelons of society is one of the most unique elements of the culture of the indigenous people of Gran Canaria identified in the archaeology of the area to which the proposed property belongs. Although research into this area is not abundant, some studies on the position that women held in indigenous society are worthy of special mention. These include studies carried out by Álvarez Delgado, Celso Martín and Pérez Saavedra in particular. Following the discovery of a hermaphrodite sculpture in La Aldea, and the new findings



Figure 2.b.34. Female idol from La Fortaleza (Santa Lucía de Tirajana) exhibited in the private collection of Vicente Sánchez Araña. © José Guillen Medina

of pubic carvings within the Cultural Landscape of Risco Caído and the sacred mountain sites of Gran Canaria, researchers Julio Cuenca and José de León published an article exploring the role of women in fertility rites and the relationship between women and the agricultural economy of the indigenous people (Cuenca, Hernández, 1983).

Specific studies have been carried out on certain archaeological elements associated with indigenous women, such as idols, anthropomorphic carvings and representations of pubic triangles in caves or on movable objects (Julio Cuenca or Jorge Onrubia), however it is only in much more recent times that a methodological change has been considered when looking at the role of women in indigenous society: *Gender archaeology should be an objective for all of us, in that it shifts the main focus of archaeologists from material objects to persons and it focuses on continuities, on the dialectics of life and on interpersonal aspects of social events linked to economic and social structures* (Rodríguez, 2006: 117).

Ethnohistorical sources offer valuable information on gender-specific division of labour, women specialising in worship, productive and reproductive activities and on the existence of relevant female figures. The role of women in indigenous Gran Canaria may be an important point of focus in the study of past societies with regard to aspects such as matrilineality in the transfer of power: "... whose name came from Guanarteme and shortly after the death of the Father and at the will of the female cousin an uncle of the mother's brother called Guanarteme Semidán was appointed high-priest of Gáldar" (Morales, 1993: 198)

In work based on the gender perspective in the study of indigenous history, worthy of special mention is the legend of Atidamana, a woman who united her people shortly before the conquest: "In the municipality of Gáldar, in the best part of the island, there was a damsel named Atidamana, who was fair and respected by all and whose words were so powerful that she moved all that

heard her. And when met with opposition she was composed and brought about peace” (Abreu, 1978: 171).

Many of the testimonies from the chronicles can be viewed in the archaeological records at the sites within the Cultural Landscape. These include testimonies on rituals, burials, manufacturing, agricultural practices, safe-keeping and distribution of surplus produce, the transmission of knowledge or important powers relative to political order. The information given in said chronicles, reinterpreted from the perspective of gender, gives us an important insight into the meaning of archaeological manifestations such as pubic carvings, found in this area and of the caves that contained them, as well as some of the areas where they are found, which are clearly sacred in nature, as is the case of the *almogaren* at Risco Caído and, particularly, the sanctuary at Risco Chapín. These are indeed sacred sites where women played a huge and leading role, as was the case of the *harimaguadas* or *maguadas*, who specialised amongst other things in religious affairs: *“Canarian women included many religious women, who lived in seclusion and who lived off what they received from the nobles, with their prominent houses and dwellings...” (Abreu page 156).*

The groups of people that settled on the Canarian Archipelago before the Conquest are a paradigm in the study of gender, in that they represented a specific case in the development of societies in isolated contexts. The organisation of these societies and their social production relations are worthy of analysis. It is still early to say whether any of the characteristics associated with women relate to the prehistoric culture or “epigonal stage”, whether they are an endogenous product of that society or contain continuities of the places of origin of these people (African Amazigh societies). In any case, women played a central role in power, as can be seen in one of the texts referring to the surrender of that people: *“... and the Canarians left Tirajana with their matriarch. They brought her in procession, seated on the shoulders of four fair-haired nobles. . . behind the entourage came the two high-priest uncles.” (Morales, 1993: (363-364).*

The gender perspective also helps understand the process of acculturation and dismantling of the indigenous society and the emergence of the new interbred society in the territory in question. This is evident in the last will and testament of María Téllez, who was a descendent of the indigenous people, in which certain assets considered of a sacred nature in the past (*almogarenas*) are

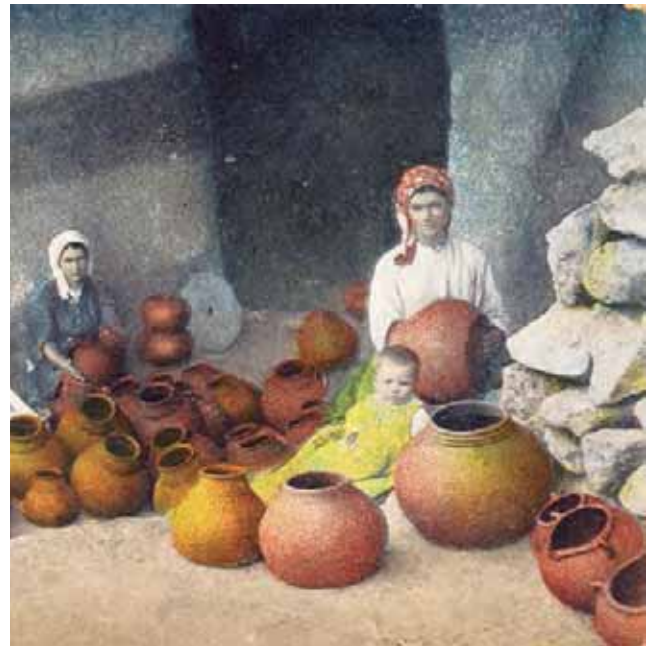


Figure 2.b.35. Many of the remnants of the indigenous society have been maintained and passed on by women. This is the case of the ceramics produced using indigenous techniques. Image showing cave potters in the high mountains of Gran Canaria at the end of the 19th Century © FEDAC - Ojeda Pérez, 1890.

transferred. The persecution of women in the Inquisition also evidences this. In the same manner, worthy of special mention are certain threads of indigenous society that still exist in traditional culture. These are essentially women’s work, such as handcrafts using plant fibres, herbal lore (medicinal herbs) and, above all, in the area in question, economic activities related to grazing livestock and ceramic production using indigenous techniques, which still continues to the present day in Lugarejo, in the core zone of the nominated property.

A re-reading of the past is required in these areas from the perspective of what is at least half of the population. This should be done within the historical context adjusting the androcentric parameters on which traditional research has been based, not only in relation to creating interpretative hypotheses, but also in relation to creating strategies in the actual acquisition of data. It is this part of research strategies that has capacity for change in the future in the manner in which historical discourse on the Risco Caido and sacred mountain sites project is presented and interpreted. It is essential to identify the women in this area, recognising their leading role in many of the manifestations and activities that gave rise to the material and intangible heritage that make up much of the attributes of the proposed property.



2.b.viii

Spirituality and popular beliefs

The Canary Islands are home to a series of beliefs and customs of a magical nature that define a large part of our cultural heritage. These beliefs are of particular interest concerning the nominated property, in which the abundance of tales related to the supernatural confirm how deeply rooted they are in the collective imagination. Since pre-conquest times, the sacred nature of the area, along with the associated rituals, has had a deep influence on beliefs over the centuries. The use of the sacred as a tool against evil is the common denominator of these beliefs.

Symbolism plays a fundamental role in the awareness of the underworld and the supernatural. The strong presence of crosses at the nominated property reveals the beliefs that traditional society held regarding Christian values. According to the documentary evidence provided by Luján Henríquez and Ortega Ojeda in *La toponimia de Artenara* (2008), in this municipality alone, there are 25 place names containing the word 'cross'. Many of these crosses represented the place of rest on the complicated route taken by the funeral processions, a route on which tradition had it that a stop should be made in order to pray, as a sign of respect. Some of these crosses represented the honour of the soul of the deceased, while, at the same time, marking the spot where there had been a sudden death, in which case there was no opportunity for confession or repentance. This is the case of the *Cruz de Cazadores*, in the municipality of Artenara, where, according to oral tradition, two hunters met their death following a dispute. When the cross was destroyed, the souls of the deceased were released and were manifested in the form of a light, terrifying those who wandered through such lonely places at night. The oral tradition of the Islands has numerous tales of tormented souls following the profanation of crosses, such as the legend of the *Luz de Osorio* (Light of Osorio), in the *medianías* of Gran Canaria, or that of the *Luz de Mafasca* (Light of Mafasca), in Fuerteventura. Likewise, tales

of the appearance of lights related to tormented souls are very common throughout the territory of the nominated property. Juan Cubas Montesdeoca, who lived in Barranco Hondo de Abajo, recounts:

“Up there [...] in the place they call Montaña Cabrera, is where the Rama de Santo Domingo appears, they called it Las Crucitas (Little Crosses), and when there was a fire, all the crosses on the mountain burned down. Then a priest [...] erected just one cross. They have to put up others because in those mountains I saw lights flying from one place to another, people who died in that area and whose souls were tormented. That’s why they put up the crosses, so their souls could rest”.



Figure 2.b.37. Risco del Mediodía in La Culata, also known as Marco del Mediodía. The shadow it cast was used by local inhabitants as a sun dial.

© Sarai Cruz

← Figure 2.b.36. Zaragocita Cabrera, from Lugarejo (Artenara), famous soothsayer from Gran Canaria, died in 1984, who talked to the spirits. © FEDAC



Figure 2.b.38. Cross at El Descansadero de los Muertos in Pilacones. © Orlando Torres

Among the tales we have recorded, of particular interest are those related to the Cruz de María, located on the side of the *Camino Real* linking Artenara with the Aldea de San Nicolás. The existence of this cross was already known at the end of the 17th century. Luján Henríquez has pointed out that “according to the muleteers and walkers, this place was where witches danced and this cross was probably placed in the area to drive away the phantoms and covens, or because some wayfarer had died there” (‘Programa de La Cueva’, 1996). According to several informants in the area, the Cruz de María was a place where lights belonging to tormented souls were seen. This is what Heraclio González Rodríguez, a resident of Coruña, pointed out:

“They said a priest had died at the Cruz de María... and... there was even money buried there. [...] Because he was in torment there, a light appeared [...] a little light and he said that everyone saw that light, because it was on the same path”.

The supernatural importance of the site is also related to ethnoastronomic aspects. Antonio Hernandez, an informant from Lugarejos, stated that when the star Venus reached the height of the Cruz de María, the star stopped, just as it stopped wherever there was a crossroads because, he says, of the witches. In addition to the sighting of night lights, the tales of

tormented souls are related to the nominated property through someone who was well known in the area, namely Zaragoza Cabrera Cabrera, better known as Zaragocita. This woman, who came from Lugarejos in Artenara, had the ability to speak to the deceased who were unable to find eternal peace for their souls. There are numerous accounts pointing out that she was well known and respected in the region due to this gift she possessed. The informants described her as a humble, simple woman whom souls sought when they had left something unresolved before they died. Francisca Díaz Rodríguez, who lived in Artenara, described her in the following way:

“There was a lady down in Lugarejos, who talked to the ... dead, and so many things that she said were true, that if a litre of oil were owed to the Holy Church, the relatives would pay for it [...], she would hear this from the deceased”.

Zaragoza, the intermediary between the earthly world and the supernatural, also interceded for those souls who needed masses to be said in the name of Saint Vincent, in order to find eternal peace. It was she who warned the relatives of the deceased that they should celebrate this ritual, which consisted of offering or attending the religious liturgy during thirty consecutive days, in order to pray for their soul. Once this period was over, the spirit could go forth and leave the world

of the living.

Other recurring tales in the area of the nominated property are witches' tales. The practice of witchcraft was very frequent in the Canary Islands as was recorded in numerous files at the Archives of the Holy Inquisition of the Canary Islands. According to Fajado Spinola (1992:493), one of the leading scholars of witchcraft and sorcery in the Canary Islands, complaints related to these practices account for 44% of those received by the Holy Office of the Inquisition in the 16th and 17th centuries. The hundreds of complaints and dozens of cases that appear in the Books of Testimonies, reveal how strongly rooted this belief was in the Canary Islands. Jiménez Sánchez (1955:3) pointed out that "much of Canarian superstition is reminiscent of the idolatrous and demonic practices of the natives". These practices were to gain strength with the arrival of the Moors, Berbers, Galicians, Basques, Maltese and Flemish in the Canary Islands. It is not surprising, therefore, that the abundance and conservation of witches' tales still remaining in the collective memory of our informants, have encouraged this popular belief. The characters in these tales are the women who performed all kinds of hexes and enchantments. On occasions they took on the shape of an animal to carry out their misdeeds. They usually turned into she-donkeys, goats or cats that went back to their human form when they reached the crossroads. Their victims were usually men who, unable to defend themselves from the wile of women, were represented as being subject to their charms, devoid of will and easy to master. Normally, these men were lured at night through beautiful songs that guided them to places they never actually managed to reach. In addition to the survival of these tales through the oral tradition of the nominated area, there are numerous place names referring to witches, such as the "Degollada de las Brujas" (the witches' mountain saddle), between Artenara and Tejeda. The presence of these women is also associated with certain places in the nominated area, some of which are inaccessible, as Heraclio González Rodríguez, who lived in Coruña commented: "The witches, you see, are in places where no spider would go, [...] in a cave of the Risco de El Hornillo". Likewise, a resident of the Vega de Acusa, Amor Medina Díaz, related the following:

"They say they flew before, they say they threw a ball to one another: here comes the ball, if you want it, you want it, and if not, you throw it away." They came here between the Vega and the Mesa, throwing the ball to each other. [...] They flew, turned into goats, cows, whatever they wanted.

[...] In El Toscón neighbourhood the practice was rife. There, there really was witchcraft".

In these tales, Christian symbols frequently became the main means to drive the witches away or expose them. A bolt or a pair of scissors in the shape of a cross placed under the pillow served as an amulet for protection against the misdeeds of these women.

Anything sacred was also used to combat or prevent other evils. Since ancient times, in the Canary Islands, the reciting of prayers has been used in popular healing practices, sometimes accompanied by certain rituals. The people who perform these healings are generally known as *santiguadoras*, *curanderas* or *rezanderas*, and the prayers that are recited to cure the 'patients', are known as *rezados* or *santiguados*. In the area of the nominated property, some prayers to cure the evil eye or erysipelas have been recorded, and can still be found in other parts of the Archipelago. Among the amulets which, according to popular belief, enable these evils to be avoided or, at least, diminished, is a cross drawn on the back, the wearing of something red, or verses of the gospels kept in a small embroidered bag.

As has been shown, familiarity with the religious beliefs and popular spirituality existing in the area of the nominated property provides another example of the cultural wealth of the property, characterised by a view of the world which is strongly linked to land, sky and symbolism.



Figure 2.b.39. Antonio Quintana Guerra (informant), otherwise known as Cleto, born in El Juncal and working as a muleteer: © Sarai Cruz



2.b.ix

Funeral traditions in pre-Hispanic Gran Canaria and in nominated property

Death played an important role in the cultural traditions and in the everyday life of the ancient Canarians. As in all societies, this great event was bound by strict rules that were accepted and perpetuated by the community. The dead were the ancestors who gave rise to the present and who left a legacy of history, identity and land.

The archaeological landscape of the Sacred Mountains of Gran Canaria cannot be fully understood without giving due consideration to the places where these secluded inhabitants were laid to rest. This part of the island is distinctive in that it is home to several burial grounds where the mass deaths and individual losses of this people were internalised as a norm of society through the practice of funeral rites. These places were enclosed and designed to endure the passage of time. They were also directly linked to the settlements where the activities of everyday life took place. They were, and continue to be, landmarks in the lived space that were explained and understood through tradition and history, thus becoming essential generators and references of the collective memory.

These burial sites are found near living spaces or adjacent to domestic structures. Archaeological evidence shows that the dead played an important role in the areas of everyday life - perhaps to normalise death. It was possibly also an expression of their cosmogony, which apparently remained unchanged throughout its entire history (Alberto et al., 2013-2014). From this perspective, the social landscape of the ancient inhabitants of the Canary Islands is perceived as a continuum that includes all members of the community, both living and dead and where everyday life unfolded in a specific area where each had his place and purpose.

These burial grounds are highly complex and vary considerably in terms of size, types of funeral structures used, how corpses were treated and the internal organisation that articulated relations between the different sepulchres, and their continued use over time (Alberto *et al.*, 2013-2014; Alberto, 2014). For this reason, several burial sites of different types have been preserved, some of which contain hundreds of tombs and most of which contain a number of sepulchres. Archaeological findings confirm that the large necropolises were associated with the important settlements located along the island's most important ravines, while the smaller burial grounds formed part of the smaller settlements. The smaller burial grounds also have all of the funeral structures and these are found right across the island from the highlands to the coastal areas.

Types of funeral structures include burial mounds, cists, graves and caves. In most cases, these structures house one main individual sepulchre where corpses were laid out in the supine position. However, recent archaeological findings have revealed exceptions to this practice. Some individuals were placed in the prone position and there were also some collective sepulchres most of which had individual internment structures (Alberto and Velasco, 2008; Alberto, 2014). Some large burial grounds contain burial mounds only, while others are comprised exclusively of graves dug out of the ground. One difference, aside from the architectural aspects of the tombs, is whether or not the dead were interred. In the case of burial mounds, cists and caves, corpses were not covered with earth and sepulchres were sealed off with stones. On the other hand, individuals consigned to graves, and cists in some cases, were interred.

The amount of work invested in the different sepulchres varies. The same is true of the quality of the funeral shroud and the types of physical activity carried out by the people buried in these places. This would suggest that, beyond kinship, the social status of the individuals also influenced how the burial grounds were arranged

← Figure 2.b.40. View of the Tejeda Basin, a space containing numerous burial caves of the ancient Canarians.
© Javier Gil León



Figure 2.b.41. Mummy n° 5 of the Museo Canario from Acusa, a woman over 50, wrapped in a bundle made of a fabric of rashes and pig skin.

© José Juan Guillén Medina

(Santana et al., 2011-2012; Alberto et al., 2013-2014; Delgado *et al.*, *en prensa*).

Another of the great advances in researching the funeral practices of the ancient Canarians was the discovery of a standard process for preparing corpses before depositing them in the burial chamber (Alberto and Velasco, 2009; Alberto *et al.*, 2013-2014). This procedure consisted of shrouding the bodies, a process that, as evidenced by recent work, appears to have been indiscriminate and which can be observed in the mummies housed in the Museo Canario museum. The standard manner in which corpses were wrapped would lead us to assume that specialists were trained to perform this task, as indicated in ethnohistorical sources that mention the existence of men and women whose job it was to prepare corpses (Morales Padrón, 2008; Abreu Galindo, 1977). However, this did not mean that no differentiation was made between individuals. Indeed, a clear distinction can



Figure 2.b.42. Mummy n° 20 of the Museo Canario from the Acusa necropolis, a child of between 2 and 3 years old, wrapped in rashes and hide.

© José Juan Guillén Medina

be seen in the variable quality of the shrouds (Alberto and Velasco, 2009; Santana et al., 2011-2012; Alberto *et al.*, 2013-2014; Velasco et al., 2016).

According to radiocarbon dating available at this time, these indigenous funeral practices date back to between the 6th and 15th centuries A.D. (Alberto, 2014; Delgado *et al.*, *en prensa*), which is in keeping with findings from settlements and collective granaries that place the main indigenous occupation of the island between the 5th and 15th centuries A.D. During these 900 years of history the island landscape housed all of the typological categories that are characteristic of burial sites on islands (burial mounds, caves, cists and graves).

Interestingly, the oldest cave radiocarbon dating emanates from burial sites located within the nominated property, specifically from the burial grounds in the archaeological ensembles of Cuevas del Rey-Andén de Tabacalete (Tejeda) and Acusa (Artenera). The dates corresponding to these sites range from between the 3rd and 8th centuries A.D. and were obtained from the skins of shrouds on a mummified body and also from wood, indicating that the caves were one of the first structures to house the remains of the dead. This tradition continued for a considerable period of time - in Risco Chimirique (Tejeda) radiocarbon dating suggests the 13th century.

En el paisaje arqueológico de los Espacios Sagrados de The archaeological landscape of the Sacred Mountain of Gran Canaria includes numerous burial sites with representations of all the site types found in the rest of the island. However, the difficult terrain and badlands or malpais lacking large flat areas arrested the development of large tumular necropolises like that at Maipés de Agaete or Arteara in San Bartolomé de Tirajana. Although we have important tumular necropolises such as Lomo de la Pimienta or Túmulos de la Portada in Tirma, the area features a multitude of tumuli that are inaccessible, to a greater or lesser extent, such as those at Aserrador, Los Marrubios, Degollada de la Ruda or Degollada del Gigante, amongst others. However the large cave necropolises associated with inhabited areas such as those at Roque Bentayga, Cuevas del Rey, Acusa or Montaña del Humo are the most common in the area. Unfortunately, osteoarchaeological research in this part of the island is anecdotal and cases are rarely published. The most recent excavation was at the Risco Chimirique overhang, where a deposit containing three individuals has been documented (1 adult and 2 infants).

This site had been repurposed as a burial place after it had been used as a living space (Martín *et al.*, 2003).

In addition to the important troglodyte settlement and collective granaries at Mesa de Acusa, there is also an important funeral area. Indeed some of the mummies that are kept at Museo Canario come from here. These include no. 5, which belongs to a woman over 50 years of age, who was wrapped in a shroud made of reed and pigskin and no. 20, belonging to a child of between 2 to 3 years of age also wrapped in reed and skin. The excellent environmental conditions in these caves favoured the natural mummification of the human remains. Roque Bentayga and the adjacent rocks, including Cuevas del Rey and Andén del Tabacalete, also constitute an important troglodyte archaeological ensemble with dwelling caves, granaries and burial areas. Some mummies and partially mummified human remains come from this site.

Indeed, mummies are one of the outstanding features of Gran Canaria's archaeology and particularly of the archaeological landscape of the Sacred Mountain Sites. Of the 23 that are housed in Museo Canario, an important percentage comes from the burial sites of Acusa and Cuevas del Rey-Andén de Tabacalete. Most of these were recovered during archaeological explorations sponsored by the museum between the end of the 19th century and the beginning of the 20th century.

Despite the fact that Gran Canaria's mummies have been associated with Egyptian mummification, archaeological and anthropological evidence rule out the use of an embalming technique to intentionally preserve bodies. The indigenous people used a consistent method which involved shrouding their corpses. Furthermore, the mummies from Gran Canaria are shrouded bodies that were partially reduced to skeletal form while the skins and plant fibres used in making the burial shroud remain in good condition. That is, in most cases the mummy is the shroud and not the individual inside it. Notwithstanding the above, in certain cases, such as infant mummy no. 20 from Museo Canario, a good part of the soft tissue has been preserved as a result of natural mummification (Delgado *et al.*, en prensa). Firstly, this suggests that the islanders knew that the treatment they applied to the corpses would not ensure preservation (Delgado *et al.*, en prensa). Secondly, it is evident that these mummifications were the result of the environmental conditions of the sepulchral sites and the quality of the wrappings. Indeed, all the preserved mummies were found in caves where conditions were ideal

for preserving organic matter. This does not mean that the ancient inhabitants of the Canary Islands did not use plant, animal or mineral ointments when preparing corpses for interment (as mentioned in ethnohistorical sources), rather that these actions may have been to purify the body or may have formed part of symbolic rituals, as occurs in many cultures (Alberto *et al.*, 2013-2014; Delgado *et al.*, *in press*).

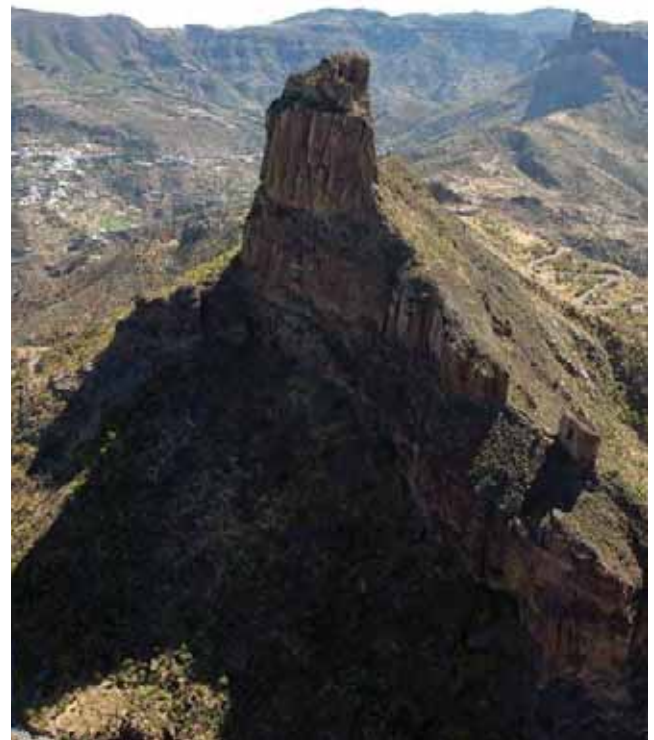


Figure 2.b.43. View of the necropolis in a cave in Andén del Tabacalete in the Bentayga Highlands (Tejeda).
© José Juan Guillén Medina

2.b.x

The forests of the sacred mountains: rites and celebrations over the course of history

The population of the island has always had, and continues to have a relationship with the forests that goes beyond the purely economic and subsistence aspects. Hence, apart from being suitable ecosystems for obtaining building materials, forage for the livestock, food, medicinal herbs or fuel for heating, cooking or light, some of the forests around the nominated property, basically pine trees, attained, and continue to attain a symbolic significance; either from a magical, religious spiritual point of view, or even as sources of collective identity, that have gone beyond the boundaries of time and have been kept irrespective of the cultural changes that have occurred throughout the historical evolution of the island.

It has already been said that Tirma was described by the chroniclers as one of the sacred places of pre-colonial Gran Canaria (Morales Padrón, 1978), and as a place name, it is currently associated with the Tabadaba Pine Forest, and more specifically with the western slopes of this mountain range, where Canary Island pines abound, together with other endemic species that have driven its declaration as a Nature Park. It was not only the physical

space of these sites that were considered sacred and places of worship, the plant species that formed part of these forest masses also represented, and indeed, continue to represent key pieces in the celebration of rituals and festivities.

We are left with testimonies of this immaterial aspect of the forests of Risco Caído and the Sacred Mountains in the form of historic tales and documentation that highlight the close symbolic ties and the close bonds of the ancient island societies with the forests and the vegetation that comprised them. And how, in turn, the trees and forests were related to the rain and fertility. In fact, we have references to certain rites performed by the aboriginal communities of the island to bring the rains, in which they say that *“with all of them carrying staffs in their hands, they went down to the sea shore, and they also carried tree branches, and along the way, they looked up at the sky and cried out, raising both arms with their hands stretched out, they asked for rain for their crops”* (Morales Padrón, 1978).

We do not know whether these rituals were taken over or included in some fashion in the Catholic teachings imposed on them after the European conquest of Gran Canaria. Whether they were diluted to a certain extent, into processes of religious syncretism, with the seeds sewn years before the conquest by Evangelist missions undertaken by both clerics and laymen from Majorca in the late 14th century, aimed at converting what was seen as a “pagan and animist” population to Christianity. One example of these early missions to spread the gospel was the arrival of a group of these Majorcans on the island, who married and had children with Canarian women, and were even granted land and livestock (Aznar and Tejera, 1994).



Figure 2.b.44. A moment from the celebration of the “Rama de San Pedro” © José Juan Guillén Medina

These proselyting ministries appeared to have been successful in their purpose, at least with regard to part

of the population, as Torriani points out “they indoctrinated the Canarians in all things, in government and in the rites and ceremonies they performed to God” (Torriani, 1978). Another part of the community was hostile to this indoctrination process, as can be deduced from the murder of thirteen Majorcan friars in the late 14th century (Aznar and Tejera, 1994), although, with the victory of the Castilian troops in the war waged between 1478 and 1483, anyone who had not embraced Christianity, had to convert as another of the impositions of the process of conquest.

These mechanisms of cultural assimilation implemented for over a century, may be reflected in myths such as the appearance of Our Lady of the Pine Tree (La Virgen del Pino), who was to become the patron saint of the Catholic population of the island until the present day. She is said to have appeared in a massive pine tree, along with a stone tablet adorned with petroglyphs in the form of feet and a spring (Morales Padrón, 1978). Another possible reflection of this, which took root after the conquest, could be the custom of decorating churches and religious figures with branches of trees and aromatic plants during Christian festivities, which sometimes acted as offerings. This practise appears to have been accepted in the new colonial society by the aborigines and their descendants, such as María Telles, descendent of aboriginal Canarian Sánchez de Bentidagua, who was the Mayor of Agaete. In his will, he bequeathed some land to Juan Manuel, resident of Acusa, and his heirs on the condition that he had to provide the necessary branch for the festivities of Our Lord of Acusa “for ever and ever” (Luján Enríquez, 2004).

We do not have firm data that enables us to directly link the “enramadas” (carrying branches) with the indigenous traditions assimilated into Catholicism, but it is striking that these “enramadas” are also celebrated in the fiestas of Socorro del Güimar (Tenerife), where people carried pine or basil branches as part of the ritual, or in the festivities of La Cruz in Los Realejos, where the streets were decorated with pine branches brought down from the forest the night before (Galván Tudela, 1987). Curiously, in Güimar, where a large contingent of the Guanche population was kept because of the distance, the distribution of land among the Canarians who took part in the conquest was particularly generous. It would appear that some of these natives held important social positions in this area during the 16th century (Betancor, 2002). We also know that the presence of the indigenous population of Gran Canaria was

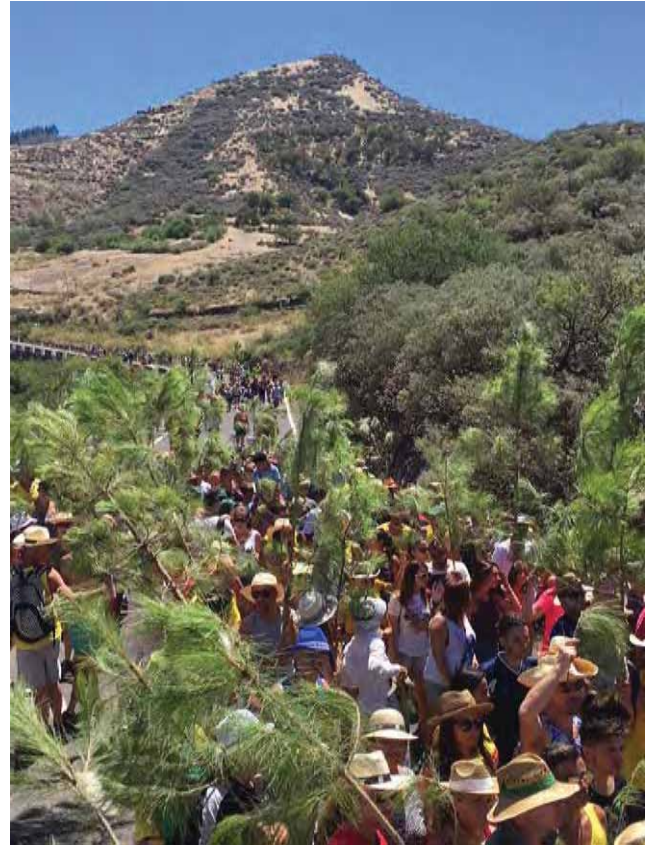


Figure 2.b.45. Celebration of the “Fiesta de La Rama” in Juncalillo.
© José Juan Guillén Medina

essential in building Christian churches in Los Realejos. For instance, María Doramas, daughter of aboriginal Canarian conqueror Juan Doramas, donated the sites and paid for the building works for the Church of Santiago there, or the presence of Canary Island native Rodrigo el Cojo as the steward of the brotherhood of San Sebastián in El Realejo (Betancor, 2002).

At this point, we should ask whether the role of these Canary Island native conquerors, who even held institutional posts, some, such as Juan Delgado, perhaps the Faycan (chief or lord) of Gáldar and the first mayor of the Cabildo (Island Council) of Tenerife (Betancor, 2002), may have had some kind of influence on certain aspects of religious rituals, such as decorating with tree branches.

For all these reasons, it would not appear to be beyond the realms of possibility to think about these processes of symbiosis and in adopting aboriginal customs in the rituals performed under the new religious blanket of Catholicism, to facilitate maintaining control over the natives and their acceptance of the new ideology, especially if we consider some information that points in



Figure 2.b.46. "Rama de San Pedro". Coming down from the forest to the fiesta after collecting the branches
© José Juan Guillén Medina

this direction, but referring to the sub-Saharan population used as slave labour in the sugar mills from the late 15th century and during the 16th century. This information bears witness to the use of borrowing "pagan" cultural customs for Christian rituals. Thus, according to the book of the Brotherhood of San Juan de Telde, in their processions "black slave dances were performed and danced that rang the bells that they tied to their legs and they struck the skin of the tambourine in time to the music" (Hernández Benítez, 1958).

But this symbolic, religious, sentimental or festive bond is not only evident in historical records, they can also be seen today in popular expressions, rituals and festivities associated with certain anniversaries, where the vegetation component, branches, and by extension, the forest, is an essential part of the ceremony and the celebration. This is the celebration known as the *Rama (Branch)* or *Bajada de La Rama (Bringing Down the Branch)*. We can name three "ramas", as the most deep-rooted, that are held in two of the municipal districts that form part of

the nominated property, and which have close ties with the Tamadaba pine forests: the "Ramas" of Juncalillo, El Valle and Agaete, the latter is now both an island-wide festivity and also a regional holiday, as a symbol of ethnic identity as it has ties with the aboriginal past.

Apart from the fact that it is the most popular and famous (it is traditionally attended by large crowds), according to the historical information available, La Rama de Agaete, held on the 4th of August, on the eve of Our Lady of the Snows, is the oldest. The worship of this figure dates back to 1481 at least, when Alonso Fernández de Lugo, conqueror and governor of the Fortress of Agaete, set up a hermitage at that time next to the tower, devoted to Our Lady. The celebration may have been held since that time. Although we know nothing about its oldest features or components, we do know that the Hermitage has been adorned with branches during these festivities since the 1530s.

For now, we do not know how the church and the streets were adorned; whether the branches were proffered as offerings, as is the custom now, whether this tradition of adorning with branches-offering is a custom borrowed from the aboriginal population, or whether other ethnic components of other origins formed part of the origins of this tradition, as happened in Telde with the Brotherhood of San Juan, in an area in which the indigenous and sub-Saharan population was large after the conquest. We do have information for the end of the 18th century and the beginning of the 19th century on the spending made on the Church of Las Nieves for the "branch brought from the pine forest for the show of *Our Lady*", for the drummer and "palms for the festivity" (Cruz and Cruz, 2012). This reference to the drummer boy tells us that music already formed an important part of the celebration. In fact, in 1867, it was an essential part of the festivities and the Branch was carried into the church accompanied by the band, after being carried in procession through the town streets.

Nowadays, all the aforementioned celebrations with branches, with some variations and nuances, have a similar ritual and symbolic component and they are associated with a Christian festivity: in the case of Juncalillo, Santo Domingo de Guzmán; San Pedro in the Agaete Valley and Our Lady of the Snows in the case of Agaete. By the same token, the essential element in all these festivities is the branch, either a pine branch or from another species found in the pine forest, such as mint or heather. Modern participants in La Rama de

San Pedro go up to the Tamadaba Pine Forest the night before and come down the following morning, the time of the celebration, with large branches that they offer to San Pedro after a day of dancing to the music of bands, which start playing at ten o'clock in the morning. In La Rama de Agaete, there are still people who follow the tradition of going up to the pine forest in search of the branch, as they do in El Valle for San Pedro, these are usually now available, having been cut the day before, where the dancing takes place. This is also the case for La Rama de Juncalillo.

Another essential component of these celebrations is the music played by wind and percussion bands, accompanied by "papahuevos" (giants and figures with gigantic heads), who play for hours while the crowds dance through the streets of the town hosting the celebration, with the branches held high, to the traditional beat and rhythm that is an inseparable part of the tradition.

The other element that we can highlight in the "Bajadas de la Rama" (Bringing down the Branch) we have mentioned is their role as a religious offering. After hours of frenzied dancing, participants in the ritual lay out their branches at the feet of the saint or virgin as a promise. This religious component or character is not incompatible, in the case of La Rama de Agaete, with the change

in purpose allocated to the festival in the second half of the 19th century, when it became associated with the indigenous ritual of praying for rain that was described at the beginning. It is now the living expression of an ethnic identity bond with the original communities of the island and a reference point.



Figure 2.b.47. "La Rama de Agaete". This is currently the largest of the "enramadas".
© Javier Diepa



Figure 2.b.48. "Fiesta de la Rama" in Juncalillo de Gáldar with giants and big heads in 1954 © FEDAC.



2.b.xi

The historical evolution and knowledge of the property through sources and research

The island of Gran Canaria was inhabited by a culture that we now recognise generically as the culture of the ancient Canarians for at least one thousand, five hundred years, as we have shown. That was what those people were called, as they are today. It was their title. One of the outstanding aspects of those people, in the context of the cultures of the past, is that they were the island expression of that Amazigh world which developed in isolation up until the 14th century, when sporadic contacts were made with European sailors, priests and merchants, and above all, the 15th century, when the islands were finally conquered.

The oldest reference to the islands is from King of Mauretania Juba II, born in the heart of the Numidian imperial family and an ally of Rome, who in the beginning of our era sent a political-scientific expedition to the Canary Islands, or the Fortunatae Insulae, as he called them, the results of which were consigned to the treaty on Libya (6 AD). This information was collected decades later by the Roman naturalist Pliny the Elder and thus became the only transmitted source of this fundamental text on the early history of the islands (García, 2015). After Pliny, silence hung over the islands.

In the 14th Century, Nicolo da Recco, the first documented European navigator to arrive on the Canary Islands, broke the silence with his account of his voyage. The value of this document lies in the fact that it is a direct testimony and not a transcription. Without doubt, the most interesting part of the document is a small linguistic survey carried out on four men that were taken prisoner in Canaria (Gran Canaria). With the help of gestures, the seafarers asked them to count in their language and transcribe the result into Latin characters. The result was surprising: The canarios counted from 1 to 16 in Berber! Of the 16 numbers mentioned, 13

were identical to their current counterparts in the dialects that have maintained the ancient numbering system (the Tachelhit in Morocco and above all the Tuareg dialects of central Sahara): *yan, sin, kraD, kkuZ, smmus, sDis, sa, ttam, tZa, mraw, yan de mraw, sin de mraw, kraD d mraw*. For the historians, this linguistic annexe is proof of an irrefutable fact: the inhabitants of the Canary Islands spoke Berber in the 14th Century. Many centuries after the first text from Juba/Pliny, it has been recorded that these territories were populated by people whose origins we can identify through their language: the north-west of Africa, where a large number of Berber dialects are still in use. We are talking about a vast territory that is referred to generically as Tamazgha (the Berber World) to distinguish it from Egypt and the sub-Saharan world (Boukouss, 2015).

However, if we take into consideration the long time during which the island was occupied by the insular Amazighs, their isolation from the outside world, even the other islands - Nicolo da Recco's document mentions the absence of ships - and the extreme adaptations to unique ecosystems, it is no surprise that we find a unique and distinguished culture that evolved from its



Figure 2.b.50. Carvings with Lybic-Berber characters at the Visbique site © Julio Cuenca

← Figure 2.b.49. Partial view of the cave houses in the troglodyte settlement of Acusa. © Javier Gil León



Figure 2.b.51. Discovery of the cave at Risco Caído has allowed the scope of the culture of the settlers in these sacred mountains to be reassessed © Julio Cuenca

Berber roots. In the case of the island of Gran Canaria, this culture reached a surprising level of development: *“The people that live there are a great people, thought to include 6,000 noblemen alongside those of other status”* (Bontier, Leverrier, 1980: (67-68).

The discovery of a small cave just two decades ago, led to many aspects of the scope and level of development

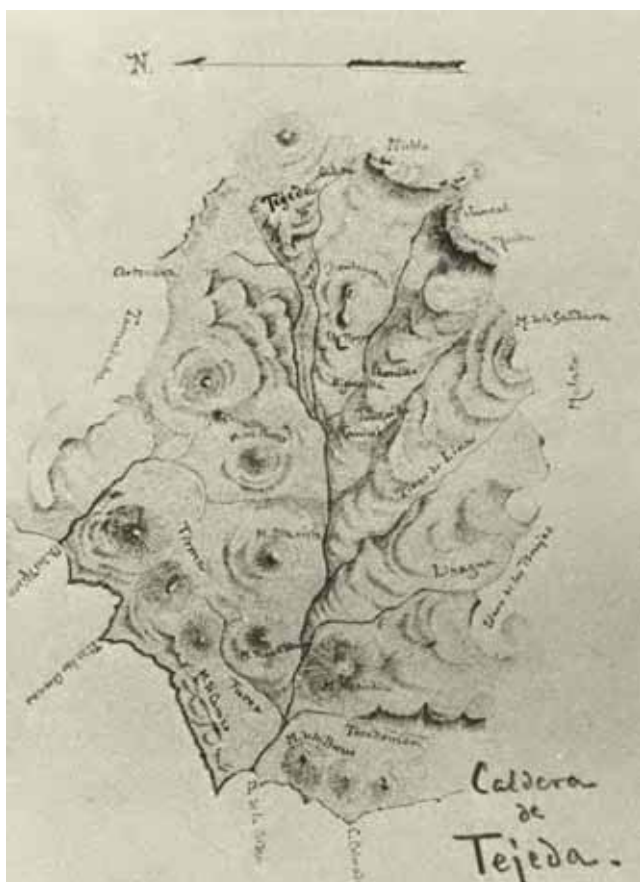


Figure 2.b.52. Map of Caldera de Tejeda, the heart of the sacred mountains, depicted by Grau Bassas at the end of the 19th Century. © Museo Canario

of that culture being reconsidered. And this is what has occurred, amongst other things, in attempts to understand the constructive precision of this cave and the unparalleled light phenomenon that occurs in it. The light of the sun and moon enter the cave at certain times of the year, intentionally creating an astronomical marker. This light phenomenon also produces a succession of images of great symbolic significance, particularly in part of the cave that is covered in rock art in the form of inverted triangles that are thought to represent pubic triangles. Although some of these elements are present in other places and in other elements of the culture of the ancient inhabitants of the islands, nowhere else do they combine so perfectly and beautifully as in the site at Risco Caído.

This discovery not only paved the way for a new area of research but also contributed to a better understanding and deeper appreciation of the importance of other sites on the island that are already known. This is what occurred in certain enclaves in the island highlands, where very important elements related to astronomical and symbolic practices and, in general, to the religion of those people are identified. These are unique elements that were sacralised, either through the intervention of humans who constructed temples in caves or outdoors or through the symbolic recognition of certain geographical landmarks that stood out on the landscape.

References to the sacred nature of the mountains

As occurred in Berber Maghreb, a substantial part of the sacralised elements are located in the mountain areas, and these are evident in the many attributes of the proposed Cultural Landscape in Gran Canaria. The most elevated and unique sites were selected so that, in keeping with Berber thinking, the mountain benefited from their presence, becoming a sacred source and at the same time an object and place of worship.

The highlands are replete with sacred forces and these superior heights are integrated with the transcendent, the superhuman. The symbolic and religious values of the mountains are very diverse. They are considered the meeting point of sky and land and thus, as the *axis mundi*, whereby the celestial vault was held up by a pillar supporting the two physical realities - the sky and the land- and, by extension, the two worlds, the higher and the underworld, in which good spirits but also evil beings were found.

The view of the mountains being sacred is also supported by several references in ethnohistorical sources that suggest that certain mountains and indeed certain large areas in the highlands were sacred for the ancient people: "... and these Canarians had sanctuaries on two cliffs called *Tirma* and *Cimarso*, each of which were two leagues in circumference, bordering the sea. They were safeguarded and revered like churches, meaning that any wrongdoer that took refuge in these mountains was free and safe and could not be removed from there if he did not want to be". (Ovetense 1993 (1478), XXII, 161). The sacred nature of these places also meant that vows were also taken here: "And as we here safeguard the holy house of Jerusalem they vowed allegiance to *Tirma* and to *Margo*' (*asitis Tirma* and *asitis Margo*) (Ovetense 1993 (1478), XXII, 161).

In these places, "The houses of religious women were sacred for delinquents, they called them *Tamogante en Acorán*, which means the house of God. They had another house on a high cliff called *Almogaren*, which is a sacred house; there they invoked and made sacrifices, sprinkling milk each day, which their God above looked down upon and they kept livestock for this purpose. They also went to two very high

cliffs: *Tirmah* in the area of *Gáldar*, and another in *Tirahana* called *humiaia* and *white cliffs*. With utmost solemnity they uttered their vows amidst these twin crags to which they came in procession with palm branches and the *Maguas* or virgins with their pitchers of milk to sprinkle; they called out and raised their hands and faces to the heavens and circled the rocky ridge and descended from here to the sea to thrash it with their branches". (Gómez Escudero, P. 1993 (1682), XIX, 440).

It is important to highlight that these sanctuaries and sacred mountain areas are associated with funerary areas, as these cultural sites are often found with burial sites, as has also been noted in the case of the Berbers of North Africa, which would lead one to believe that in societies where worship of the ancestors forms an essential part of the religious ceremony, the ancestors are considered responsible for regulating the course of the clouds and rainfall. And it is likewise very probable, although we only have some indicators of it, that in these places pacts were made between the different fractions or groups of kinship of the island, according to the model of organisation in which they were structured politically.



Figure 2.b.53. General view of the Tejeda basin, privileged area of sacred manifestations in the mountains of Gran Canaria.
© Javier Gil León



Figure 2.b.54. Indigenous cave house in Gran Canaria, according to Leonardo Torriani. Source: Biblioteca Geral da Universidade de Coimbra, symbol Ms. 314, folio 34r.

Archaeology has also increasingly recognised how relevant this territory was to the belief system of the ancient Canarians, particularly in light of recent discoveries and the reinterpretation of certain elements that are already known. The existence of places of worship used collectively, in pre-eminent sites, lend the ritual a more extensive character; not only in the perception of a larger landscape and the identification of specific landmarks, but through the actual movement to these places that also formed part of the ritual, in the form of processions.



Figure 2.b.55. Ceramic piece with sun-like motifs found in Aguimes. © Julio Cuenca

Certain landmarks on the trails remind us that the territory had its own symbolic organisation. Also of interest are certain marks or scratches on the rocks, symbolising recollections of the past, that are cited by some of the chroniclers: "... and for nine days running they held big Dances and banquets and weddings, and having harvested their crops they carved lines into slabs, walls or rocks: they said that these referred to *tara* and *tarja*" (Marín [1694: (74) 1986: 254]). There is also mention of sacred routes and pilgrimages to these places: "All of the people followed these up to the highest cliff they could reach; and there, after praying and offering up the alms to God, abundant milk was sprinkled on the land as a first offering, after which the people were discharged and returned in procession to their abodes" (F. Morales Padrón-A. Sedeño, 1978: 373).

Finally, we have an interesting reference by the engineer Leonardo Torriani in the 16th Century to the way of life of this people, and in particular, to their religious practices that reaffirmed the value of the mountains and highlands for these practices: "on top of the highest cliff that they could climb..." Torriani goes on to reflect on how "The search for God on the mountain tops has also been seen amongst other gentiles, the name given by Aristotle to those that lived in Olympus; they climbed the highest peak of that mountain each year to make their sacrifices, likewise believing that Jupiter was found there, or wanting to get as close to it as they could..." (Torriani, 1978:103-104).

Story of the discovery and archaeological research

There is a surprising amount of material remnants of the ancient inhabitants of the Canary Islands that remain to this day - five centuries after the demise of that society - and this is particularly true of the Cultural Landscape area. Despite the intense occupation and transformation of much of the land in the rest of the island in the 20th century and the first decade of the 2st Century (particularly the flat land along the coast) and despite the exponential demographic growth in Gran Canaria in this period, much of that material culture has survived in privileged areas such as this.

Caldera de Tejada truly escaped the urban and population development experienced in the rest of the island as its distinctly rural character and most relevant natural landscapes have been preserved intact.

Archaeological research has devoted a considerable amount of study to this continuum of the culture, which has its own history too, combining and compensating in a difficult balancing act between what has been lost from that legacy on an island level, with what is being rediscovered using more accurate and systematic strategies and techniques alongside those findings that occur by happy coincidence. The discovery of the dome cave at Risco Caído is a clear example of this for Science.

We can track the cultural heritage of this people and the footprint on the landscape through varied sources of information, particularly through documents of different types that make reference, generally indirectly, to many tangible expressions of their culture. Examples of this are information from notarial records, wills, land registers etc. In many cases these documents make direct reference to material elements of the culture, as we can see from the following quote:

"...Gonzalo de Quintana resident of Gáldar... leases a plot of dry, unirrigated arable land in the area of Gáldar in Facaracas... which borders the High Cliff and the ravine that runs down from Rehoya and a Canarian house and yard ... with water discharging into the Agaete ravine..." (1546. Doc. 244. Page 369)..

We can find some references from before the 19th Century (when proper archaeological study commenced), where the authors of documents explicitly recognise the material remains of that people. This type of quote is found in many written accounts about life on the Gran Canaria based on the old chronicles from the conquest that directly observe some of the material remains of the first inhabitants of the islands and thus constitute the first historical accounts of their past. Marín de Cubas, describes remains of the ancient Canarians observed in the 17th Century, for zones near the area of influence of the nominated property: *"...some of the caves are very big and long and they are interconnected. They have doors or windows for lighting, some of which have small entrances, and inside there are long cavities replete with the bones of the dead, others are suspended from the steep cliffs and contain mirlados (embalmed bodies) and bones, and parts of which are so high that only birds can reach them, some are entered suspended by ropes; some things appear to be the work of the devil or to have been created in league with him; on steep cliffs they lived in huge caves inside of which large and strong timbers and beams are found, examples of this can be seen on the highest cliffs of Azuaga ravine where lumbars are fitted and slotted into each other below*

overhanging rocky projections that surround the cliff like the brim of a hat which prevented the lumbars from being lowered from above, and it is not known why they did this." (Marín de Cubas; 1986; 264-265).

These source documents are very important as they are saddled between the chronicles that were written from a clear position of being distanced from and opposing those people that either had not succumbed and formed part of the "other" to whom one must succumb or who, years later, already subdued, still spoke nostalgically about the memories they had of the descendants of the ancient inhabitants and an idealised view of the "good savage" as postulated largely by Viera y Clavijo.

The first chronicles include some quotes that directly mention the tangible evidences observed or places recognised in the area at the time by the chroniclers:

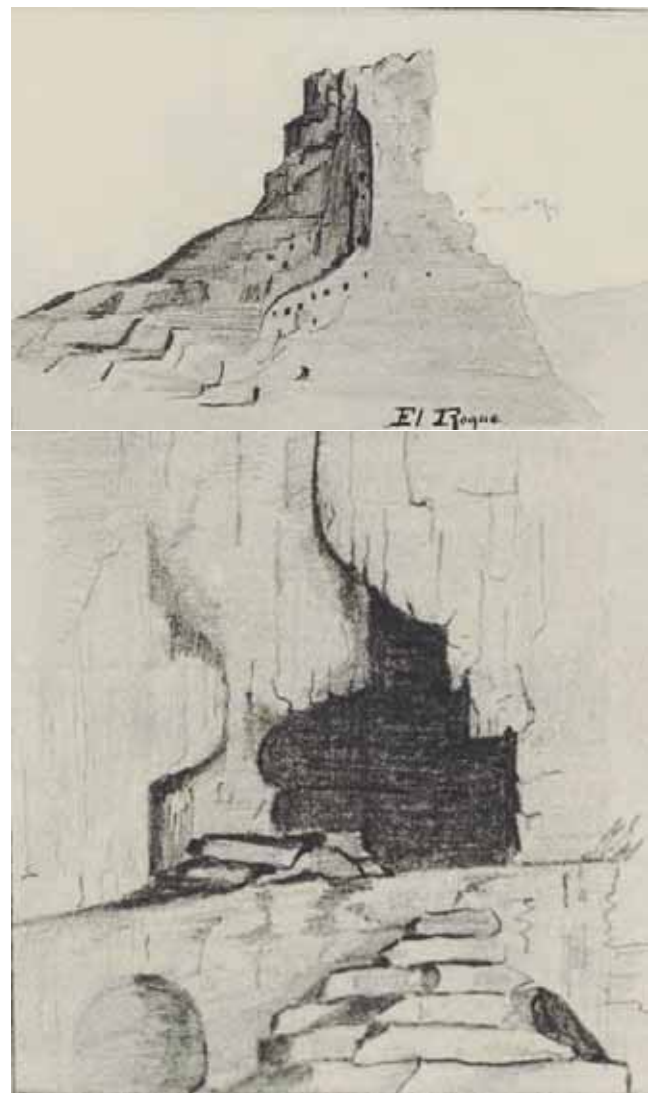


Figure 2.b.56. Grau Bassas drawings belonging to one of the laminates of Roque de las Cuevas del Rey and the entrance of the Cueva del Guayre cave. © Museo Canario



Figure 2.b.57. The population in these areas always lived with manifestations inherited from the ancient Canarians. Women and cave houses, photograph taken by James Anderson at the end of the 19th Century © FEDAC

“Opposite this cliff there is another called Tirma, from which two women jumped to their deaths to avoid being captured by the Spanish that had followed them to that place (known as) Women’s leap and this one is called the Knight’s leap. They were maidens (...) with long hair (illegible) searching for firewood” (Morales, 1993: 417-418- Account by Pedro Gómez Scudero)

Some of the references from this second period, which was at least two centuries after the conquest, are very detailed - such as that already cited from Marín y Cubas and from other authors such as Viera y Clavijo:

“This is a large number of caves in a row, some concave like domes, others with ceilings, some with an alcove for a

bed and some with an upstairs and downstairs, but all are on boulders, with no light other than that coming in the door, cool in summer, sheltered in winter, in which wind or rain cannot be heard. Most have been built by the ancient Canarians” (Viera, 1971:V. II. 395).

In addition to the classical historians, we also have other noteworthy pieces of information from indirect sources that often speak very eloquently about the meaning and possible interpretation of material elements that have survived intact and that are associated with the culture of the ancient Canarians. From notarial documents from the year 1667, Pedro Quintana compiles some interesting information about the Bentayga mountain range: “Finally, in Tejada, worthy of special mention is the Farallón del Bentaiga cliff, where various archaeological sites are found (El Chorrillo, Cueva del Guaire, Almogaren del Roque). El Roque was located in the farmstead of the same name, which was sold twice in the second third of the 17th Century. It was sold by the island council to Juan de Ávila and, subsequently, he transferred it to Cristóbal Pérez Segura, who mentioned that he owned a flat area inside where *there are quesetas* (cheese making area) *and a Canarian cave” (Quintana, 2016).*

But it was not until the middle of the 19th Century that archaeology started to become popular among the Illustrated, the scholars and the scientific institutions. It was only then that the first proper archaeological work commenced or, at least, studies based on intentionally scientific premises applied to prehistoric and anthropological themes. These studies were more concerned with material evidence than with replication and interpretation of inherited historical texts. There was an in-

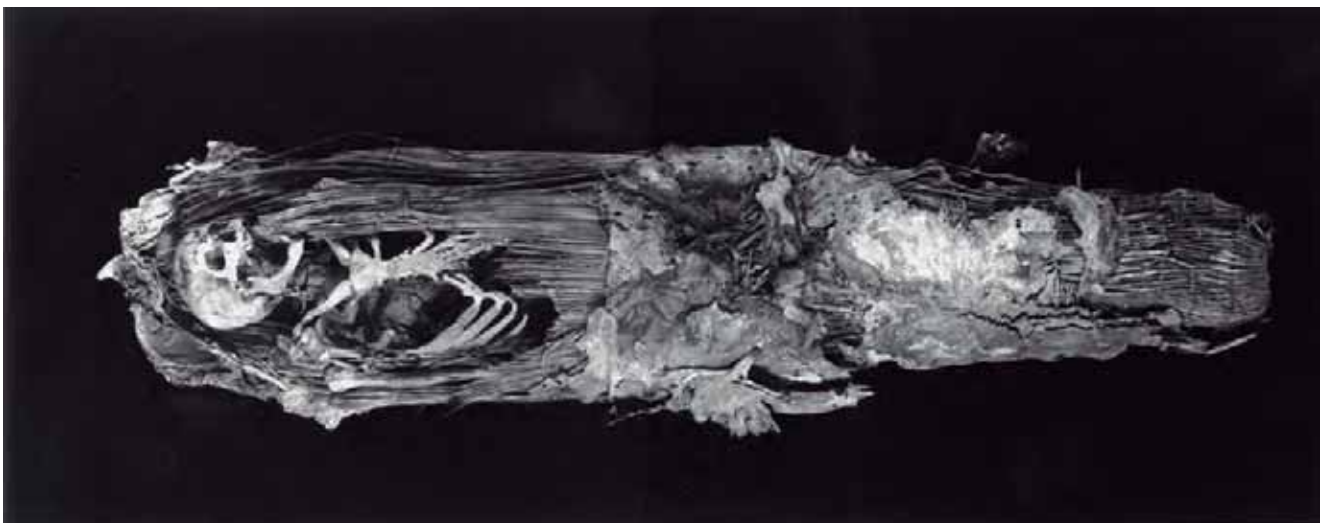


Figure 2.b.58. Image of one of the mummies found in the troglodyte settlement of Acusa, one of the first places to provide information on the burial practices of the indigenous people. © Museo Canario

crease in explorations and collecting and thus an aspect of the island was directly observed that had been largely unknown to the mainly urban elite.

At this time, the Canary Islands and Gran Canaria in particular, held a prominent position in natural and human sciences with the first scientific studies focussing on anthropology and linguistics. The discovery of Cro-Magnon man, the growing interest in racial anthropology, linguistic studies and the proximity of the Canary Islands to the European colonial expansion into continental Africa, led to many new studies on the islands' past and their first inhabitants - not just by local researchers like Gregorio Chil y Naranjo, Millares Torres and Sabino Berthelot, a French doctor based on the islands - but also by eminent European scientists such as René Verneau who stayed on the islands for a prolonged period of time.

In any case, the sacred mountain area in the interior of the island was still uncharted territory for historical studies at that time with the exception of the descriptions by Grau Bassas and some quotations from René Verneau about his trip through some of the island's interior:

Where reference is made to archaeological remains in the highlands of Gran Canaria, particularly part of the Caldera de Tejeda area, what are specifically mentioned are the architectural remains of the ancient inhabitants of the islands and particularly the survival of their cave settlements, some of which were considerably large and inaccessible. It is here that significant findings of skulls were made. Intangible culture is also given a mention, though more as an aside. This is a transfer of the subject described in the old texts and, at the same time, it shows a certain concern for the surviving vestiges of this culture and the rediscovery - for science - of the growing cultural heritage of the ancient Canarians.

We say that the culture of the ancient people was re-discovered for science, because, for the inhabitants of these places that live with and indeed use these vestiges on a daily basis, heritage includes what is seen as a continuum of their culture, as well as what breaks away from tradition. Said culture continues to exist in the area and in the territory and, as such, also forms part of the imaginary of the rural population, as we can see, for example, in the place names. However, the troglodyte world and, in particular, the settlements of artificial caves should above all else, be considered central elements of



Figure 2.b.59. René Verneau in his classification work during one of his stays in Museo Canario © Museo Canario

the aboriginal habitat and architecture.

It is important to highlight also that the significant depopulation processes suffered in the interior of the island, has meant that a good part of the important indigenous settlements and the hundreds of constructions associated with these have survived on the island up to the 20th Century. Thus, the survival of the population or the patterns followed by the new settlements does not obey merely environmental and adaptive factors. Thus, we know that nothing was known of the impressive survival of the surface architecture of the antiguos canarios because the territory in which it was found was simply not known, something which largely occurred in the interior part of Gran Canaria, where large cave settlements proliferated. Many of these were reused, which meant that they were not really observed from a strictly archaeological viewpoint.

It was not until the last third of the 19th Century that scientific studies commenced and the role of certain institutions like the Museo Canario started to mark an exponential growth in information about the culture of the ancient islanders. Local researchers such as Millares Torres or foreigners like René Verneau made huge contributions to our understanding of the material culture of the indigenous people. It was in this time that information on the architectonic remains of the primitive population of the island started to multiply, and the first references were made to the archaeological heritage of the highlands.

The work of the curator of Museo Canario, Víctor Grau Bassas, carried out under difficult personal circumstances deserves special mention. Without understating his

interest in studying the past and his scientific work, it has to be acknowledged that it was his years spent hidden away in the interior of Gran Canaria, many of which were spent in Caldera de Tejeda, that gave him the opportunity to get to know the true wonders of the built heritage of the indigenous people and incorporate it into historical and scientific knowledge (Grau Bassas, 1980). Worthy of special mention are his descriptions and drawings of emblematic troglodyte sites such as Sierra del Bentayga in the area in question. Although Berthelot, and later, René Verneau or Olivia Stone made sketches and even took photographs of sites, Grau did so systematically, taking details of these, such as measurements and orientation (see Figure 2.b.17 and 2.b.18).

In terms of other types of elements of the material culture of the ancient Canarians that have survived, the burial architecture is worthy of special mention, particularly due to the involvement of renowned anthropologists that have focussed part of their studies on the funeral rites of these people. Some important outdoor burial sites were known at the beginning of the 19th Century, such as the necropolis of La Isleta, which was

mentioned by some of the early chroniclers such as Sedeño. Later the indigenous cemetery of Arguineguín was unveiled by Verneau and the necropolis of Arteara was visited by the Museo Canario museum. But the cave world is still the main paradigm for the material culture of this ancient people, particularly due to the important role played by Guayadeque in the 19th Century. A large number of burial grounds and mummies were also found in Guayadeque. Again, the sacred mountain sites in the highlands of Gran Canaria were late entrants into the funerary world. But it was in fact the site at Acusa and the discovery of embalmed bodies, as well as other caves in the sacred mountains, that provided the first information on the burial practices of the people that inhabited the interior of the island.

Between the 19th and 20th Centuries, sites were uncovered that drew the attention of archaeological research to the island, particularly the discovery of the Painted Cave, which became an icon of what was to become the popular view of the island's past and paved the way for new lines of research, centred on the more symbolic and intangible aspects of that people. Archaeo-

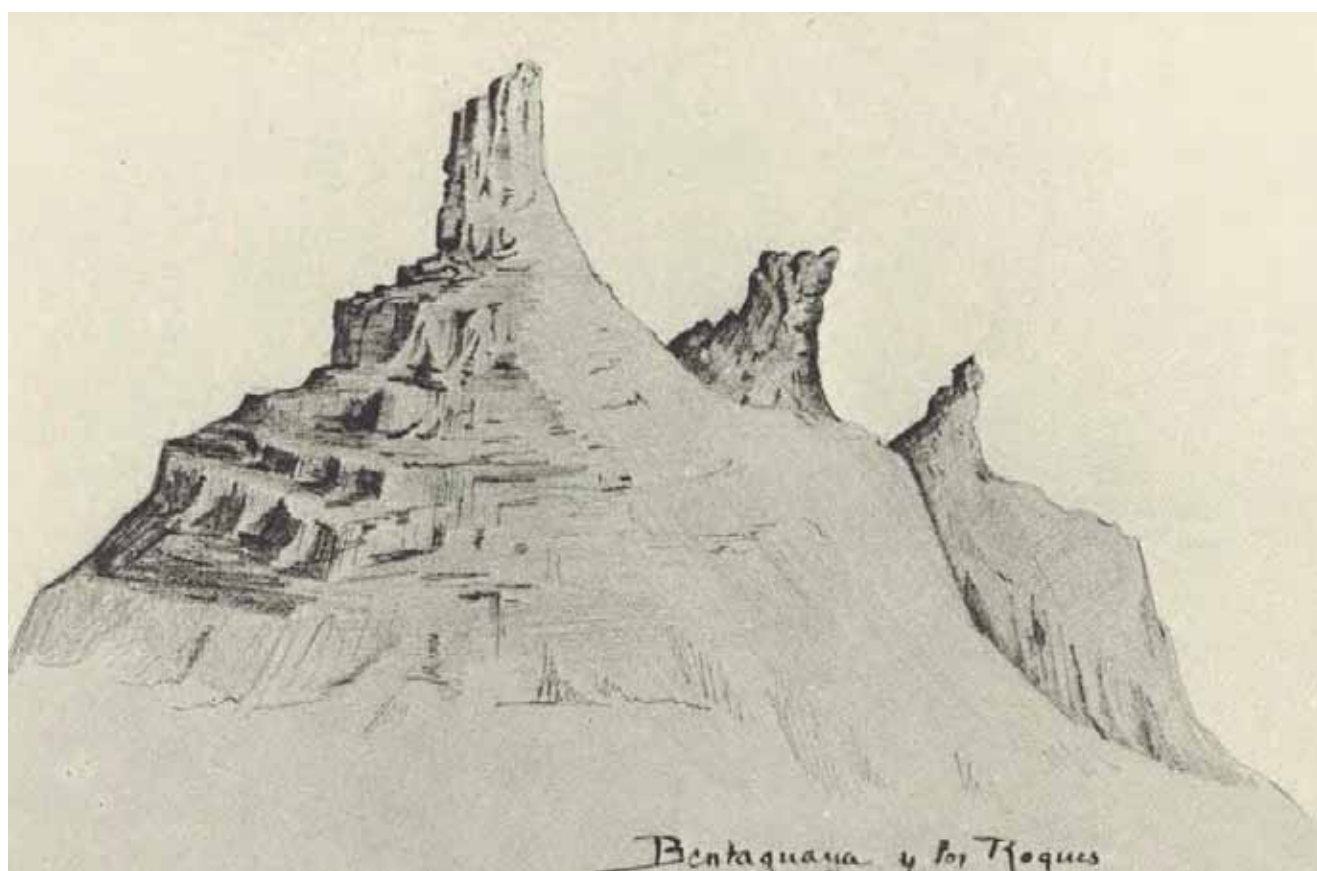


Figure 2.b.60. At the end of the 19th Century Grau Bassas drew accurate sketches of the archaeological attributes in the Cultural Landscape that were published in a facsimile in the work "Exploration trips to various sites and locations in Gran Canaria by Museo Canario. © Museo Canario

logical research that has been carried out around the Painted Cave in Gáldar, as well as in other highly complex archaeological sites, has become an important reference point for the research strategies implemented in the area of the nominated property.

We are dealing here with unique and relevant areas from the same culture as, at this moment in time, there are no notable differences that indicate the presence of different ethnic groups or different forms of social or political organisation, beyond ways of life inherent to different ecosystems and economic specialisation areas and or areas with a particular symbolic and religious significance, due to the presence of prominent geographical landmarks in the high mountain areas of Gran Canaria that were deemed sacred or were adapted as places of worship for most of the population.

Following the discovery of the tumuli at Agujero de La Guancha in Gáldar and particularly the establishment of the regional archaeological excavation department (Comisaría Provincial de Excavaciones Arqueológicas) as part of restructuring after the dictatorship and civil war a new phase emerged that would set the pace of archaeological research on Gran Canaria over several decades. Sebastián Jiménez Sánchez was at the forefront of this movement in the year 1941, at a time when archaeological excavations multiplied across the entire island. Findings since this time have exponentially increased the island's archaeological inventory. Proof of this are the continuous references Jiménez Sánchez makes to how unparalleled the discoveries are. On the other hand, the construction of certain infrastructures, such as the road through the centre of the island that connected the capital with Tejeda or Artenara, facilitated the discovery of parts of Gran Canaria that were hitherto unknown to researchers but also to the population in general. Over these years certain geographical areas and landmarks became popular, becoming icons and elements of inspiration for creators and movements of artists, particularly around the Escuela Luján Pérez school. This rediscovery focussed not only on areas of great beauty and significance but also on the surviving remnants of an ancestral culture that could still be observed in those living in the interior of the island and in the caves found there.

In the early years of the dictatorship, with its strong ideological bias, archaeology was based on the premise that the otherwise generally unquestioned Berber cultural base was rather more the product of ancestors

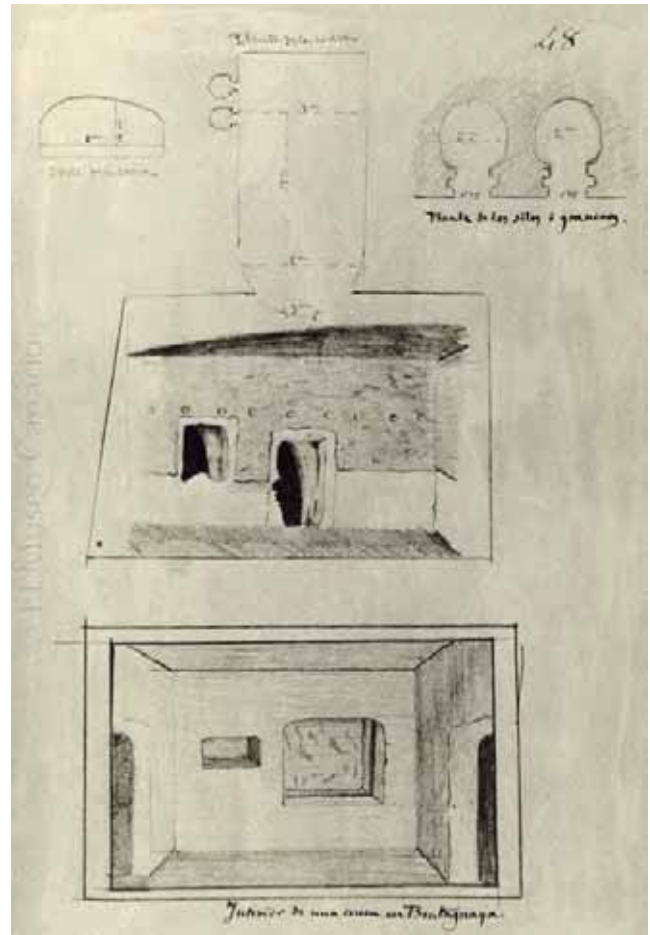


Figure 2.b.61. Map of one of the indigenous caves at Bentayga, as sketched by Grau Bassas at the end of the 19th Century.
© Museo Canario

inevitably linked to the Spanish substrate and the important megalithic cultures found in the strait of Gibraltar area than to any origins in the northwest of Africa. Of course, all of this should be understood in the context of the neo-colonial fervour around Spanish possessions in Africa. Nonetheless, this element is prevalent in various Spanish archaeological studies in the territory of the north of Morocco and the Western Sahara and contributes considerably to the interpretation of material elements, particularly architectural ones, seeking parallels between indigenous architecture and Saharan tumuli and certain types of dwellings on the coast near the islands.

In any case, the large volume of work carried out by the Comisaría is surprising. The profusion of expeditions and “discoveries” and the contribution of numerous publications that were donated to Museo Canario together with the personal file of Jiménez Sánchez, have become compulsory reading and have been used in drawing up modern Archaeological Maps of the Islands and heritage management policies.



Figure 2.b.62. The thorough work in research and successive campaigns carried out in recent years, after the Cabildo de Gran Canaria took over responsibility has unlocked new findings and interpretations of the complex world of the ancient inhabitants of the Canary Islands in the nominated property. © Julio Cuenca

It was not until the end of the 20th Century that what had been accepted up to this time was restudied in depth. Reinterpretation of the culture of the ancient inhabitants of the islands based, in particular, on new and important findings, such as Risco Caído and the new interpretations of other well-known archaeological sites such as La Fortaleza or Cueva Pintada itself, have meant that the history of the culture of the early settlers on the islands has had to be rewritten almost in its entirety.

The aim of work now carried out by the Island Council (Cabildo) at archaeological sites such as La Guancha, El Agujero and Bocabarranco, is to lay the groundwork for a general overhaul of many of the sites based on new scientific, methodological and heritage management criteria. It is in this context (alongside the discovery of Risco Caído and highland studies) that a strategy was embarked upon to research a unique area of great relevance to the culture of the early settlers on the islands that already represents a privileged area of study.

This was the panorama of the lengthy period during which work was conducted by the Comisaría de Excavaciones, until a new administrative organisation was set up for the protection and management of archaeological heritage with the creation of the Department of Fine Arts (Dirección General de Bellas Artes), still under the aegis of an administrative structure that reports to the central state, but with no powers of its own in matters of protection and research. And this is the case, to the extent that we can confirm that this is the reality of the situation for new archaeology, based on scientific

accounts from La Laguna University and from the first archaeologists emerging from the islands such as Celso Martín, J. Onrubia Pintado and J. Jiménez.

The huge impact of this lengthy stage in the archaeology of Gran Canaria, is what has kept the perception of the island of the ancient inhabitants alive not just amongst scientists but in public opinion. This commenced with the arrival of democracy and the first years of the transition until the double process of transfers occurred, first at the start of the eighties in the Autonomous Community of the Canary Islands (Comunidad Autónoma de Canarias) and subsequently, ten years later in the Island Councils (Cabildos).

In this context of evolving research and rediscovery of the area, two decades ago the sacred mountain area of Gran Canaria emerged as a dependable laboratory in which to learn about and understand the culture of the ancient inhabitants of the islands, its development and the exceptional manifestations of it.

N.B.

The quotes from the chroniclers of the Conquest are translated and adapted from old Castilian Spanish into English.

→ Figure 2.b.63. View of Tejeda basin from the troglodyte complex of Acusa. The difficult communication until very recently and the depopulation of the interior of the island since the middle of the 20th Century have allowed the landscape and its attributes to be preserved almost entirely intact.

© Tarek Ode





2.b.xii

Cultural imaginary: the symbology and iconography of the sacred mountains

The landscape that is home to the sacred mountain of Gran Canaria has evolved over the centuries due not only to the direct intervention of humankind in these environments, but also to the perception that the islanders and particularly the visitors that came here at different times throughout history had of this region.

This perception evolved from generation to generation until an entire cultural imaginary formed around various types of symbols and iconographies. Of those that formed or forged this imaginary, intellectuals and artists played a fundamental role, both as receivers and interpreters of this cultural landscape, popularly known on the island as “Cumbres de Gran Canaria” (highlands of Gran Canaria).

← Figure 2.b.64. The atlante by the sculptor Tony Gallardo
© G. Gallardo

Thus, the landscape’s spectators are as important as its participants (those who built their dwellings and places of worship and who transformed the land for tillage or grazing, the active creators and protagonists of this space).

The image of these areas has been created from a dual perspective: an internal one provided by the creators of the islands and the island of Gran Canaria in particular and another external one, embodied in the texts of the foreign authors that gave the areas significant exposure outside the islands. Because the identity of the former is linked to the area the view offered is a more genuine cultural one, whereas the latter have given the cultural landscape a more universal appeal.

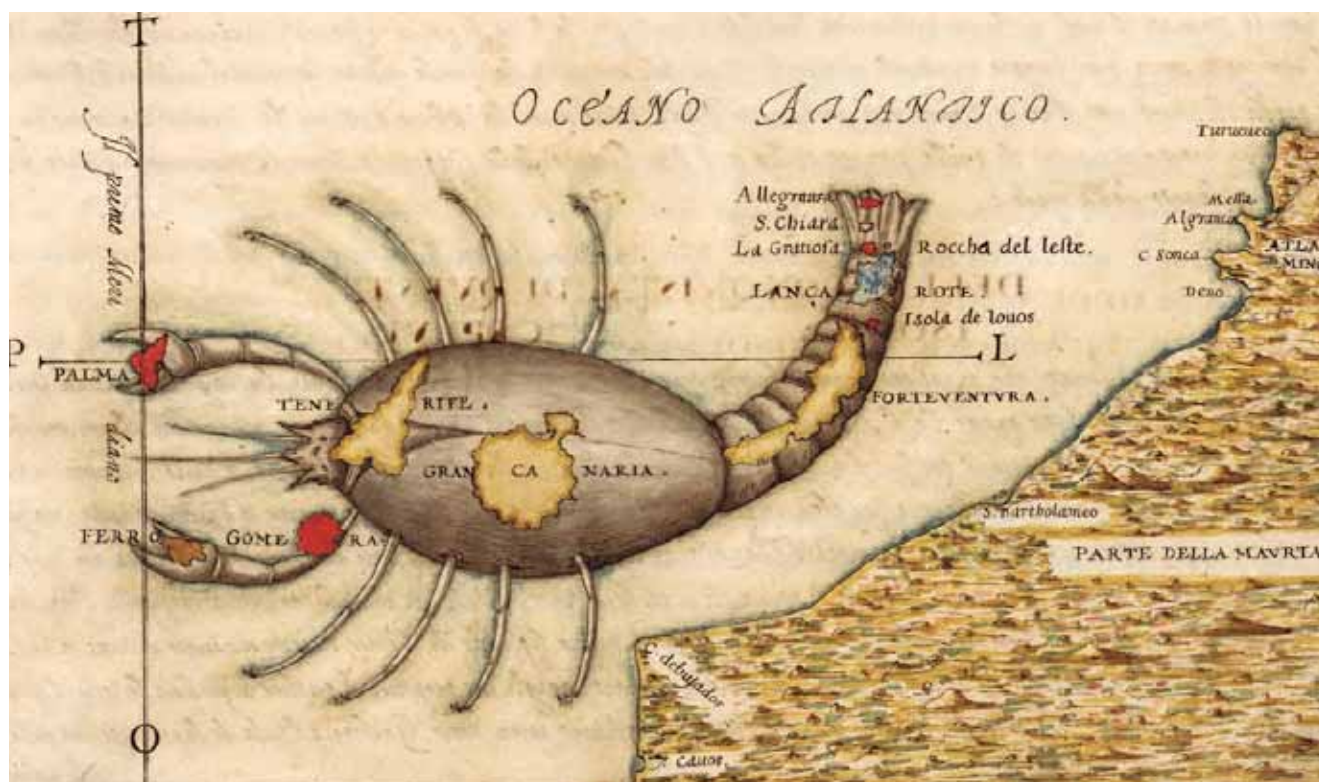


Figure 2.b.65. Map of the Canary Islands associated with the zodiac sign of Cancer; according to Leonardo Torriani at the end of the 16th Century. Source: Biblioteca Geral da Universidade de Coimbra, catalogue number Ms. 314, folio 8v.



Figure 2.b.66. Indigenous women from Gran Canaria, reproduction by Leonardo Torriani (16th Century). Source: Biblioteca Geral da Universidade de Coimbra, catalogue number Ms. 314, folio 36v.

The recent construction of a significant part of this imaginary, concerning written transmission mainly, commenced when the island area (and more specifically the mountain regions) was rediscovered by contemporary European culture, although there had already been a long tradition extending back to the classic authors (Martínez, 1992 and 1997). While the Greek and Latin mythological view of the archipelago is the cornerstone of the global imaginary of the Canary Islands, for the specific area of the sacred mountains it offers an overall framework of reference on the virtues of the ancient Fortunate Isles. However, the mythology around the early inhabitants of the Canary Islands has a unique value in defining the imaginary created around the highland landscape. Thus, any approach to the subject should refer not only to nature but also, very particularly, to the primeval inhabitants of “Las Cumbres”.

I. The internal vision: the ancient inhabitants of the Canary Islands and preserving identity

The landscape has been one of the prevailing subjects of Canarian literature consistently over the centuries to the point that it has become a central theme in the work produced by the islands’ intellectuals (Guerra Sánchez, 2006). But the human elements, anchored in the historical memory of every islander, are just as important as the natural elements. Thus, before discussing the Canarian intellectual Cairasco de Figueroa (1538-1610) who set the scene for how the island’s inhabitants would view its landscape, reference should be made to the oral tradition inherited from the ancient inhabitants of the Canary Islands and the country people that continued to live in the area and to how customs, rituals and legends survived to become integral to the culture of the people that now live in the sacred mountain land-

scapes of Gran Canaria.

Oral memory: survival of a legacy

Although no complete study is available yet that connects the numerous oral testimonies from the centre of the island with the ancestors that inhabited the region hundreds of years ago, we do have some important compilations of oral memory (such as those compiled by Maximiano Trapero (1982, 1990, 1993 and 2000) that cast some light on the interesting and vibrant legends of all types, some of which reminisce on rituals and customs of an indisputably magical and religious nature.

The place names in the area also inform us on ancestral uses and customs related not only to agricultural and hydrological uses of the land but also to cultural practices that were outlawed by dogmatic Christianity. Thus, in the region we have numerous such places: Degollada de las Brujas (witches’ pass), Llano de las Brujas (witches’ plain) or Montaña de las Brujas (witches’ mountain) in Tejeda; Degollada del Gigante (giant’s pass in Tejeda) and Sepultura del Gigante (giant’s tomb in Tirajana), Las Chibicenas between Agaete and la Aldea, or sacred places like Tirma (Artenara). Legends have been recorded about the ancient inhabitants of the Canary Islands that practised rituals identified with witchcraft, stories of giants, stories about the creation of the universe such as Mary from “Bentayga and the tree of creation”, tales such as the “Corral de garañón (stallion corral)”, about fertility and riches etc.

The legend of “Degollada del Gigante” (giant’s pass), for example, has its roots in the time the area was transitioning between its indigenous society and the subsequent mixed culture. It speaks of an enormous native man who lived in the area and who refused to accept the religious practices of the Spaniards. He lived with a black woman, probably a slave with whom he cohabited (hence the place name “Morro de la Negra” or black woman’s hill). Fearful of the size of this man who was an enemy of the new colonies, a colonial man convinced him to allow himself to be tied to a tree for the feast of the Holy Cross. Once tied, the other colonists stoned him to death and buried his body in a stone tomb which, according to legend, is still preserved. This crime occurred in what was known as Solapón de la Carnicería (slaughter stone). Some informants recorded by Trapero (2000) in the 1980s, explained that men of great size like the main character in the Degollada del Gigante story had to have been “guanches”.

Of the many cultural legacies of the indigenous people of the Canary Islands (handcraft, gastronomy, games and sports, language etc.), oral tradition has played a fundamental role in conveying this other side of the indigenous culture, the magical-religious aspect, the ritual, the festivities.

Cairasco (16th Century): the first definition of a cultural landscape in the Canary Islands

The first Canarian intellectual and founder of literature on the islands, Bartolomé Cairasco de Figueroa, master of Góngora (Micó, 1990) and admired by Cervantes and Lope de Vega, was also the first to extol the natural beauty of the archipelago. He was the first to write songs about the Canarian ocean and two natural areas of special symbolic relevance: Pico Teide, in the neighbouring island of Tenerife, symbolising highland and volcanic areas and La Selva de Doramas, the first cultural landscape described in the Canary Islands since the 16th Century (Guerra Sánchez, 2007 and 2013).

Given the relevance of this latter landscape in Gran Canaria, we should point out that Doramas was one of the best known indigenous men on the island, a historical warrior who Cairasco mythicized as a symbol of freedom. Cairasco gives a wonderful description of his natural habitat. The Renaissance scholar highlights two aspects: the natural aspect, represented by the wondrous laurel forests that flanked the north of Gran Canaria and extended to the foothills of this landscape in the highlands of Gran Canaria; and the human aspect, consisting of cave dwellings in which the leader of the resistance, Doramas, took refuge during clashes with the Spanish invaders. There has been much speculation on the exact location of this place (the place name "Montaña de Doramas" is currently used in Moya and Firgas to describe an area within the Rural Park of the same name). However, this type of landscape is the same as that found in Barranco Hondo (central zone of the nominated cultural landscape), the transition area where laurel and pine forests merge with the sacred highland areas, the last defensive strongholds of the native islanders.

The cultural tradition of the indigenous people and mystification of the area

Alongside Cairasco, the influence of historians and chroniclers on the islands' artists has contributed significantly to the aesthetic reception of these sacred moun-

tain landscapes. Authors like the cited Abreu y Galindo, Marín y Cubas, José de Viera y Clavijo or Agustín Millares Torres have placed the ancient people of the Canary Islands in the forefront of this cultural area throughout the centuries, amongst other reasons, because the last clashes to take place before the island was subjugated by the Spanish forces took place in the highlands. La Caldera de Tejada and its geographic icons (particularly Sierra de Bentayga and Tirma) have thus featured in numerous works, mainly between the 19th and 20th Centuries, and some of the leaders of the resistance, particularly Bentejuí and Doramas likewise feature in artistic/ literary creations.

The aesthetic movements of the 19th Century, particularly romanticism, regionalism and/or nationalism, costumbrism and modernism, helped by the budding tourism industry and the interest of foreign scholars and enthusiasts in the natural wonders of the Canary Islands, generated significant artistic productions aimed at depicting the centre of the island as the true essence, culturally speaking, of the identity of the island of Gran Canaria, and those that inhabited it, the indigenous islanders, as a root element that is not without controversy. According to one of the great thinkers on Canarian identity, Eugenio Padorno (1985), if Canarian is "not



Figure 2.b.67. Portrait of B. Cairasco de Figueroa, by Cirilo Suárez Moreno.



Figure 2.b.68. Ancient laurel grove in Gran Canaria. Los Tilos. Fedac Archive - Gran Canaria Island Council.

what existed before the conquest, then it is the result of a longing for that (or its invention) and its denial”.

Either way, a strong cultural tradition of glorifying the indigenous people emerged in the 19th Century particularly through the anthropological studies carried out at that time. This tradition has had a direct impact on literature (and later on art). Authors like Bento y Travieso or Graciliano Afonso, both of whose work centred



Figure 2.b.69. El último de los canarios, Benartemi, by Millares Torres, depicting an idealised view of the indigenous Canarian (1947).

on the latent degradation of the symbolic landscapes of Gran Canaria are part of the pleiad of writers committed to the island's indigenous past.

Here are three examples, all from within a period of almost one and a half centuries, evidencing the extent to which the indigenous people of Gran Canaria and their habitats have been mythified.

El último de los canarios. Benartemi
(The last of the Canarians) 1858

El último de los canarios (Benartemi), by Agustín Millares Torres, was first printed in 1858, and was circulated in the press in successive issues. This was the first modern Canarian novel. It was the first modern literary fiction to exalt the figure of the ancient canario and was the precursor of the long saga of novels that focus on the mythical world of the ancient people of the Canary Islands and the geographical enclaves they inhabited:

“If we were to get a bird’s eye view of the island, it would undoubtedly look like an enormous circular mountain that suddenly emerged from the depths of the ocean following a powerful volcanic eruption and that subsequently slowly rose to form the high mountain peaks of Bentaiga, Nublo Saucillo, topped with snow in the short cold season”. (Millares Torres, 2005: 9)

Tirma (1947)

Tirma is a contemporary romantic drama written by Juan del Río Ayala in 1947. Set in the closing stages of the Spanish conquest of Gran Canaria, it tells the tale of the first timid forays into romance of the trio Guarmina, Bentejuí and Hernán. The drama reflects well on the sacred sites of the island and particularly so on the different rituals and beliefs of the ancient inhabitants of the Canary Islands. Although Juan del Río was a distinguished researcher from El Museo Canario museum, his literary work shows a totally idealised view of the world it describes.

Some years later, the theatrical work served as a basis for the screen play of the same name starring Silvana Pampanini, Marcelo Mastroiani and Gustavo Rojo. This was a Spanish-Italian blockbuster and the motion picture first to be filmed on the island about its indigenous people.

Atacayte (1985)

La obra de Carlos Guillermo Domínguez, que forma de This novel by Carlos Guillermo Domínguez, which

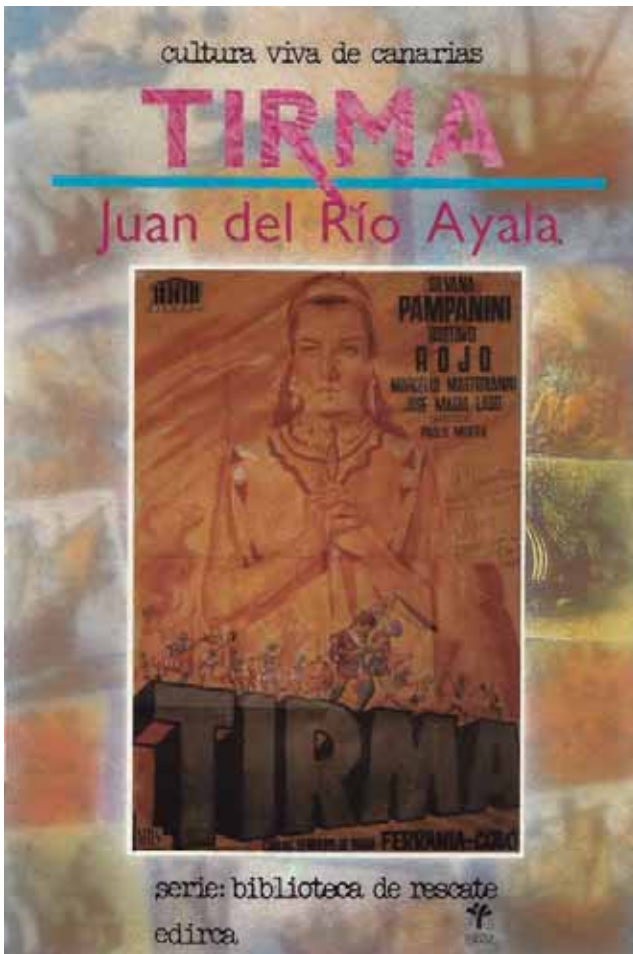
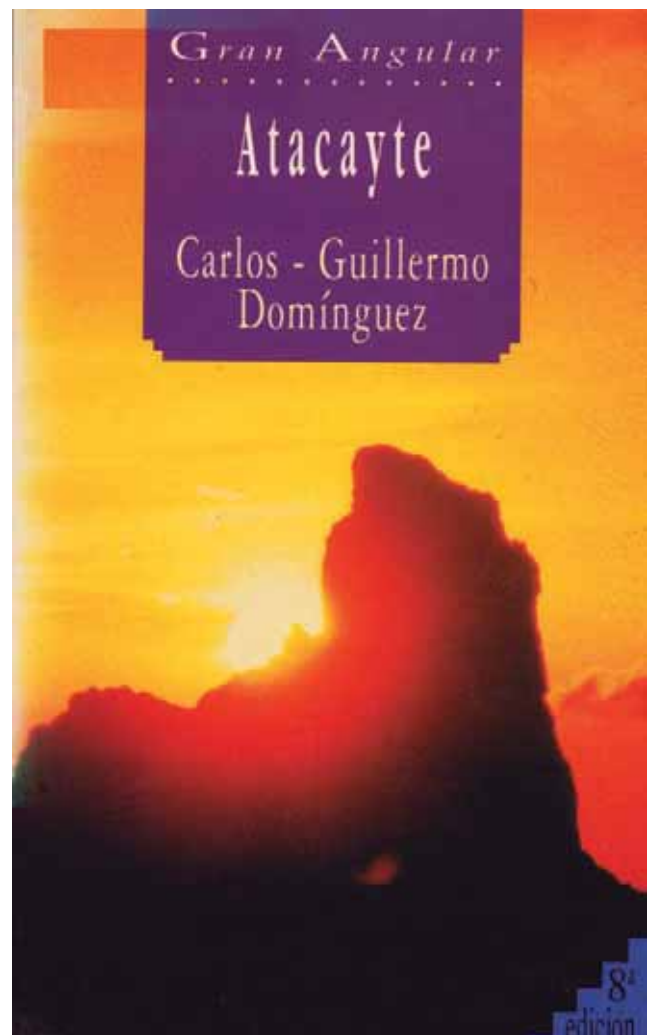


Figure 2.b.70. Frame of the filming of the Spanish Latin production *Tirma* in the highlands of Gran Canaria.

lighted the light and the light highlighted the shadows, until the waves of rock formed a calm black sea and the sand became covered in golden dots.

Feeling tired after his long climb he lay down on a rock and closed his eyes under a canopy of bright stars and fell into a deep peaceful sleep'. (Domínguez, 2007: 59)



is part of a trilogy about the indigenous people of the Canary Islands, is probably the most widely distributed of its genre. 11 editions were printed. The author, who at some stage acknowledged getting the idea for his novel during his visits to the Bentayga sanctuary, mapped out an initiation story in which the young lead character, Atacayte, has to face hostile foreign visitors around the 8th Century. The book is a genuinely revelatory work on the ancient cultures of the island (it also has a glossary of indigenous terms used in the text) and about the areas in which they developed, especially the highlands of Gran Canaria. The novel, however, is again not devoid of huge helpings of idealisation:

“At sunrise Atacayte continued the climb, up and up, with his eyes set on the highlands, until he discovered the silhouette of Bentayga standing out against the blue sky. He valiantly continued along his path and as Magec hid between the Great Waters, Atacayte leaned against the Sacred Mountain.

From above the youth contemplated the high mountains and the enormous rocks that mimicked the rise and fall of ocean waves driven by the mountain winds, a sea of blue sand which, at times, grew black, while the shadows high-



Figure 2.b.71. Oil painting by Nicolás Massieu y Matos (1876-1954) showing the landscape of the Tejeda basin with Roque Nublo presiding over it.

El Roque Nublo, a quintessential cultural symbol of the island

Between the end of the 19th century and the first decades of the 20th century, the geographical icons of these highland areas start to take the limelight and, of these, Roque Nublo and Bentayga are of particular interest. The artist's brush sweeps the countryside in search of the land's most genuine beauty and finds it in the breathtaking mountains, in the country homes, in the most authentic and genuine hidden gems. Among the most distinguished authors of this eminently impressionist artistic period that contemplate the aesthetic qualities of the highlands is Nicolás Massieu y Matos, often referred to as "Gran Canaria's painter". He was a true master in depicting the richness of rural Gran Canaria and he left behind him a host of followers. The work of the artist Néstor Martín Fernández de la Torre was also pivotal, as was that of his brother Miguel, the architect with whom he designed the Tejeda state-run hotel in 1937, a true vantage point from which to admire the landscape of La Caldera in all its splendour. Néstor the painter was, in fact, a true visionary who centred his efforts in the latter stage of his life on making the island an exemplary showcase for visitors from abroad.

Joining the visual artists, writers also started to extol

these genuine local elements in their literary work, to create a sugar-coated image of the place to match a traditional local character that could be exported. In the literary (and musical) field, Néstor Álamo, a multi-faceted intellectual continuing the work of the Martín Fernández de la Torre brothers, wrote what is now the anthem of Gran Canaria: In 1936, he wrote the lyrics and the music to "Sombra del Nublo", which clearly praises this quintessential symbol of Gran Canaria, now known as the Nublo Natural Monument. It was interpreted by the playwright Josefina de la Torre one year later in Pérez Galdós theatre in Las Palmas de Gran Canaria and, since at least 1959, by the world-famous tenor Alfredo Kraus:

*Shade of Nublo
those cliffs of Tejeda,
chain of my mountains
the mountains of my homeland..
The mountains of my homeland.
Kisses of a Canarian woman
fresh soft cheese,
warm wine from below
fragrant toasted maize meal.
What more could I ask for!
Running water in the ravine
and my sweetheart at the loom.
Running water in the ravine
and my sweetheart at the loom.
Shade of Nublo
altar of my beloved land,
there is snow and sun in the highlands
the highlands of my Gran Canaria..
Highlands of my Gran Canaria.
Roque Nublo, Roque Nublo
lyrical moonstone,
Born in your shade
I want to live in your shade
and love in your shade.
You are the soul of my homeland
fire and lava by the sea.
You are the soul of my homeland
fire and lava by the sea.*

As we can see, the most genuine ethnographic elements (cheese, a typical product of the region, and gofio, a toasted cereal food passed down from the indigenous tradition) are inextricably linked with this quintessential sacred symbol of Gran Canaria.

Nowadays, the monoliths of the centre of the island,

particularly Nublo and Bentayga, lend their names to countless events, brands, groups of all types, societies and clubs, awards etc., from the Agrupación Folclórica Roque Nublo, the oldest folk group on the island, to Bentley's new luxury car model, the Bentayga. Indeed the island's highest institution, the Island Council of Gran Canaria, also uses the distinctive Roque Nublo for one of its most prestigious annual awards.

Criticism of local tradition and the search for a genuine identity

During the 20th Century, particularly during the historical avant-garde movement, a great debate broke out among writers and visual artists concerning how the highland landscape was perceived. This perception had gradually taken root in symbolic elements of a decidedly traditionalist nature during the previous century and the rejoinder came from art theorists and writers, with Pedro García Cabrera (1930, 2005) prominent among them. For the official opening of an exhibition of artists in the Escuela Luján Pérez school, founded in Gran Canaria in 1918, he defined the general outlines of a new art. Visual artists and writers walked hand in hand in this aesthetic revolution seeking less of a stereotypical image and more an image of identity for Canarian culture, which was apparently more essentialist.

The founders of the Escuela Luján Pérez school devoted a programme in which outdoor painting, in rural settings, was to take the centre stage (Monzón Grau-Bassas, 1988). Participants included, among others, Jorge Oramas, Felo Monzón and Santiago Santana. While the human and landscape models of choice were the country folk of the south and the arid coastal landscapes, respectively, the reflection sparked an interest in the men and women that lived in the island's interior. Gradually the work began to centre on the social dimension of humankind, almost always located in an identity-linked landscape where native flora, traditional architecture of simple lines and the topography, merely hinted at, were the main characters. In this regard, the work of one of the most distinguished members of the Escuela Luján Pérez school, Santiago Santana, is worthy of special mention. In the early years of the Canary Islands' opening up to foreign visitors he made great efforts to defend traditional architectural values (Santana, 1991).

However, as time passed a new idealised view of the highlands of Gran Canaria emerged that was strongly influenced by the aforesaid Néstor Martín Fernández



Figure 2.b.72. Néstor Martín Fernández de la Torre, Albergue de la Cruz de Tejada, 1937. © Museo Néstor

de la Torre and his acolytes. Artistic watercolour productions of the highland landscape with the sacred rocks at their centre abounded in the 20th Century. There is not a home on the island without a painting that depicts the island's centre, which was sacred to the island's ancient inhabitants and continues to be sacred for the current inhabitants, because it holds symbolic value that is associated with all that is authentic, that can be preserved and that is majestic.



Figure 2.b.73. Néstor Álamo (1906-1994), author of "Sombra del Nublo", Gran Canaria anthem.



Figure 2.b.74. Santiago Santana, sketch of a typical Canarian house with Roque Nublo in the background. (approx. 1980)

2. The external vision: from the scientific prism to idealisation

The development of scientific knowledge in the West and the technology and the global transport revolutions drew the eyes of many European researchers to the Canary Islands (Oliver and Renancio, 2007). The Canary Islands were located on a transit route for these types of expeditions, which led to some of the most important scientists stopping off at the islands' coasts between the 17th and 20th Centuries. The natural and cultural curiosities of the islands were an attraction for eminent scientists such as Humboldt, Leopold von Buch, Sabin Berthelot, Bory de Saint Vincent or René Verneau, to name but a few, but also for travellers moved by other more artistic or cultural interests, such as the British woman Olivia Stone in the 19th Century or the writer Agatha Christie in the 20th Century (González Cruz, 2002; Ramos Pérez and Nolasco Cruz Leal, 2012).



Figure 2.b.75. Print of Bentayga, El Roque and El Roquito, in the work of R. Verneau.

Due to the wide-ranging influence these scientists and historians had on artistic/literary disciplines and the source of information they provided to writers from different periods, some examples of those responsible for pioneering a more or less idealised view of Gran Canaria and the sacred mountain sites in the cultural circuits of the West should also be mentioned.

Well-known scientists that travelled the world

The first famous traveller that we should mention in this exhaustive description of Gran Canaria was the Italian engineer Leonardo Torriani, who visited the islands in the 16th Century to study its fortifications, and who stayed in Gran Canaria for an extended period of time. A personal friend of Cairasco de Figueroa, with "Description et historia del regno de l'isole Canarie giadette le fortunate" (1590) Torriani left us the first literary work from the islands - lamentations in the native language. It referred to the interior of the island and to the already mythical constructs of the Canary Islanders which Plinius spoke about at the dawn of this Era.

Although external interest in Gran Canaria and its highlands increased considerably in the 18th Century, it is from the 19th Century onwards that we find important references in scientific literature to the island. Worthy of special mention is the geologist Leopold von Buch, with his work "Physicalische Beschreibung der Canarischen Inseln" (1825) and the scientists Webb and Berthelot who wrote the important classic "Histoire naturelle des Iles Canaries" (1836). A book replete with illustrations, for many years the latter was a visual reference book on the natural elements of the islands. Thanks undoubtedly to the work of Webb and Berthelot, tens of scientists from all areas of expertise (geology, astronomy, geography, botany, anthropology etc.) and inquisitive writers and artists visited the island excited by the showcase of images embodied in that work (as well as in *Antiquités Canariennes* (1879) by Berthelot). The best illustrators and the most prominent lithographers in Europe thus created beautiful prints of Gran Canaria and other islands that, for a long time, were a great attraction not only to the foreigners interested in the Canary Islands but also to the many locals.

Berthelot's pioneering work certainly inspired the anthropologist René Verneau, whose manuscript "Cinq années de séjour aux Îles Canaries" (1891) greatly influenced the decision to include the Canary Islands (and the centre of Gran Canaria in particular) in the work of the great visionary writer, Jules Verne, who we refer to



Figure 2.b.76. Print of a shepherd in Gran Canaria in the work of R. Verneau.

shortly. Verneau gives an excellent and detailed description of a Canarian shepherd which, accompanied by the corresponding print, undoubtedly inspired many subsequent descriptions and pictorial reproductions. On the other hand, its value from an ethnographic point of view is immeasurable, because it has left a unique testimony about clothing, food uses (cheese, gofio) and practices such as the shepherd's leap for the future generations of Canary Island people.

The discovery for global tourism: from Alfred S. Brown to Olivia Stone

Many travellers from all over Europe stopped at the islands for various reasons other than science. Motivations ranged from mere curiosity to economic and commercial interests or health or tourist visitors, coming for the archipelago's mild and favourable climate. Since 1583, when Thomas Nichols published in London his "*Pleasant Description of the Fortunate Ilandes, called the lands of Canaria, with their straunge fruits and commodities*", the number of works about the archipelago and the sacred mountain area grew significantly particularly from the latter decades of the 19th Century.

Generally, the visitor from abroad presented various cultural elements that contributed to a totally idealised image of the region: the virtues of the highland landscape and the outstanding beauty of the area in which certain ethnographic elements were described in a very picturesque way. But they also contributed to popularising the figure of the mago (indigenous inhabitants of the Gran countryside), who had already featured in

works by local writers such as the Millares Cubas Brothers (1990 [1894]) or Pancho Guerra (Guerra Navarro, 2010 [1958]), particularly as urban immigrants coming from the countryside.

Brown's tourist guide was particularly important. It has been the trusty manual of many generations of tourists since 1889, the year in which it was first published under the title "*Madeira and the Canary Islands: A Complete Guide for the Use of Invalids and Tourists*".

Brown's guide must have greatly influenced other travellers mainly from England and France who arrived to the island's shores in the second half of the 19th Century. This was certainly true for Charles F. Barker (1890-92), Margaret D'Este (1908) and Florence Du Cane (1910). The route to the highlands followed one of the most important royal roads on the island: Las Palmas de Gran Canaria, Tafira, Monte Lentiscal, Santa Brígida, San Mateo, with a branch off to Tejeda and Artenara. They all published their respective experiences, as did Harold Lee, whose book incorporated several traditionalist prints of the island.

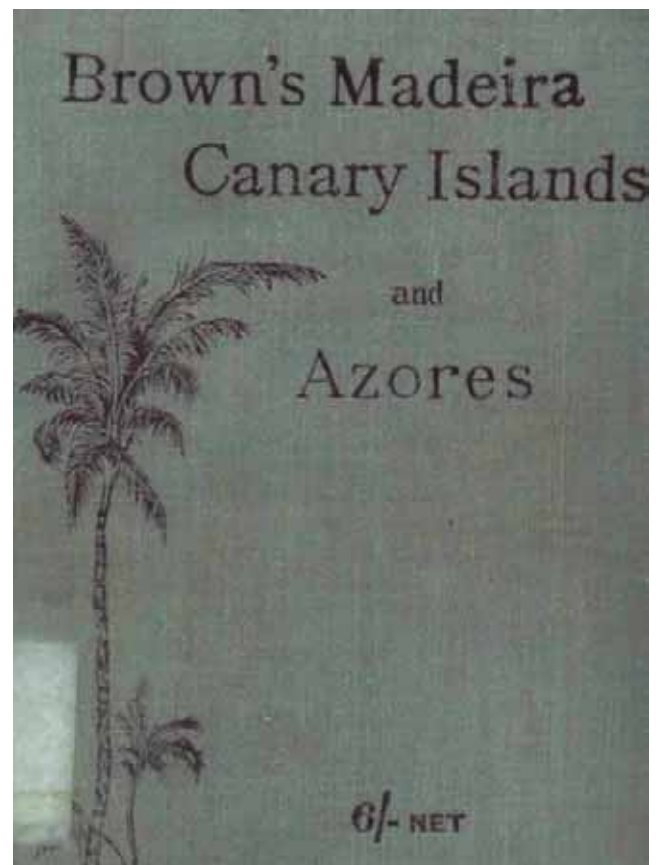


Figure 2.b.77. One of the first editions of the famous guide by Brown (1889).



Figure 2.b.78. Portrait of Jules Verne by Félix Nadar (1820-1910).

Without doubt, the most prominent figure was Olivia Stone, who visited the island in 1883 and wrote about it in great detail.

The fictionalisation of the highland area in literature

With such an abundance of foreign visitors coming to the island, it is not surprising that this woke the interest of various different types of writers abroad. We already mentioned the great Jules Verne, the father of science fiction who was perhaps influenced by René Verneau's wonderfully illustrated books about the Canary Islands. In his novel "The Thompson Agency and Co." (published posthumously) Verne immortalises what has become one of today's most important tourist cruise routes: taking in the Macaronesian islands of Azores, Madeira and the Canary Islands, off the coast of Africa. In "The Thompson Agency and Co.", Jules Verne describes in great detail the trip that the cruise ship made around

the island of Gran Canaria. Verne immortalises the centre of the island, in particular, especially Artenara (whose cave dwellings astound him), and La Caldera de Tejeda:

"Situated on the interior slope of Caldera de Tejeda, at an altitude of 1,200 metres, the village of Artenara is the highest on the entire island, offering a splendid view. The corrie, without any collapse or cutting reveals before astonished eyes its thirty five kilometre ellipse, from the slopes of which streams and low hills converge towards the centre, where villages and hamlets are found. [...] Artenara is a village of cave dwellings. Only the bell tower of the church can be seen outside. The houses are dug into the walls of the corrie, with one placed on top of the other and illuminated by openings that act as windows. The floor in these houses is covered with mats on which people sit whilst eating. As regards the other seats and beds, nature provided these, and the ingenious Canarians contented themselves with availing of nature's bounty.

Keeping up a steady pace, we circled the island's central peak - el Pozo de las Nieves - within the hour. It gets its name from the snowfalls that the Canary Islanders have seen on its flanks. Later we crossed a vast plateau, passing many rocks, including those around Saucillo del Nublo, a 112-metre high monolith, Bentaiga and Cumbre." (Verne, 2003: 223-224)

The best-known description of Caldera de Tejeda is from Miguel de Unamuno (1941 [1911]), who visited the Canary Islands twice (1910 and 1924). In his book "Por tierras de Portugal y de España", Unamuno dedicates a full chapter to the island of Gran Canaria. In his famous excursion to the area of Tejeda and Artenara (recalled by different Canarian authors through the generations), the Basque writer referred to these sacred mountain sites as "petrified storms". The context of this accurate definition of the place, now remembered at the viewing point in Artenara which is dedicated to the author, is as follows:

"Navigating paths chiselled out of steep, rugged cliffs, we caught sight of the valley of Tejeda. This is a stunning sight. All those black walls of the great crater, with what appear to be crenelated crests, with their steep rocks, offer a Dantesque vision. These must have been the very same craters of hell visited by the Florentine. It is a tremendous upheaval of the entrails of the earth; it feels like a petrified storm, but a storm of fire, of lava, rather than water [...] This place must have been the site of the terrible battle between Vulcan and Neptune, between the gods of fire and the gods of water" (Unamuno, 1960: 159).



Figure 2.b.79. Reproduction of one of the works of Tony Gallardo inspired by the image of the indigenous Canarian caves in the sacred mountains (1929-1996) © Germán Gallardo

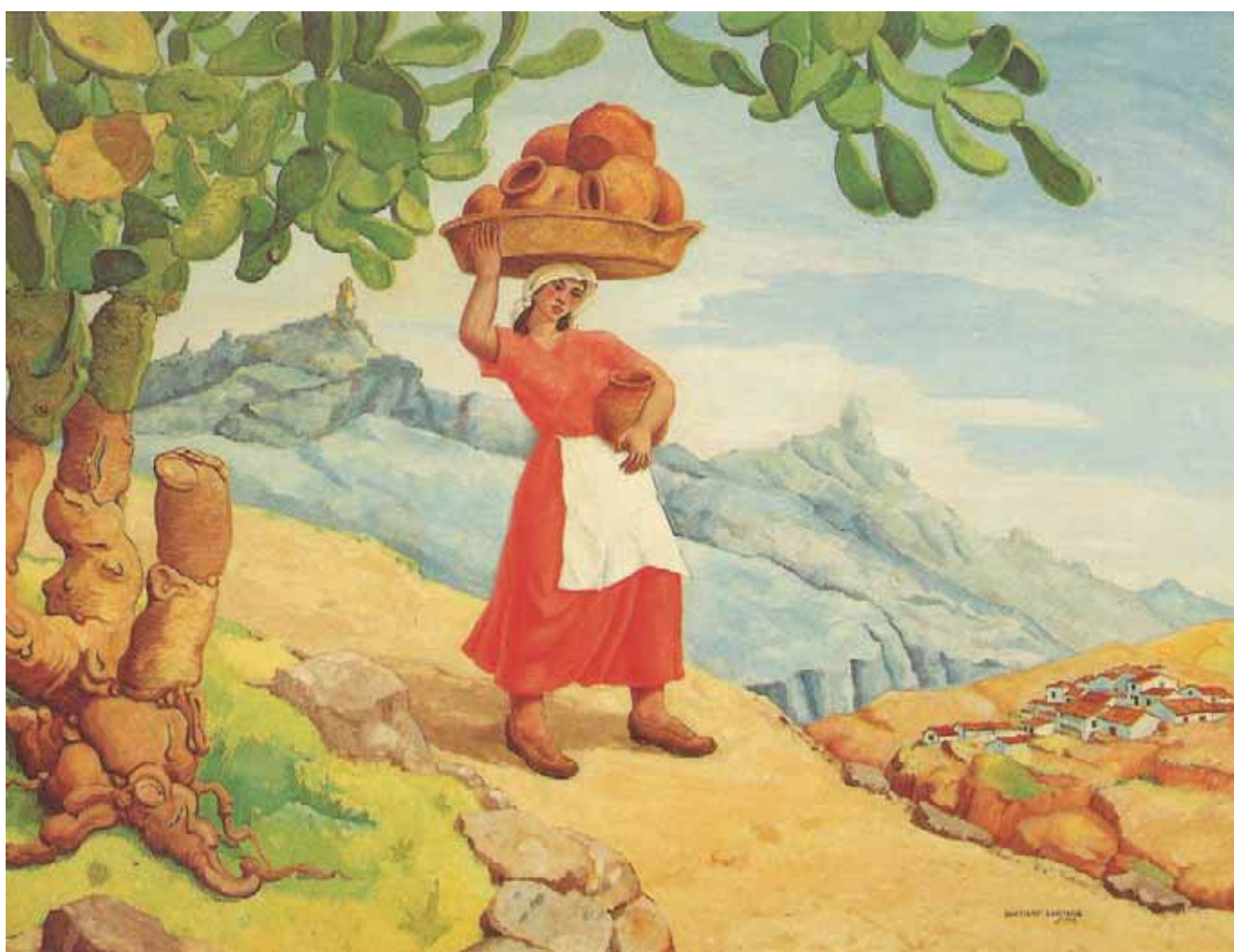
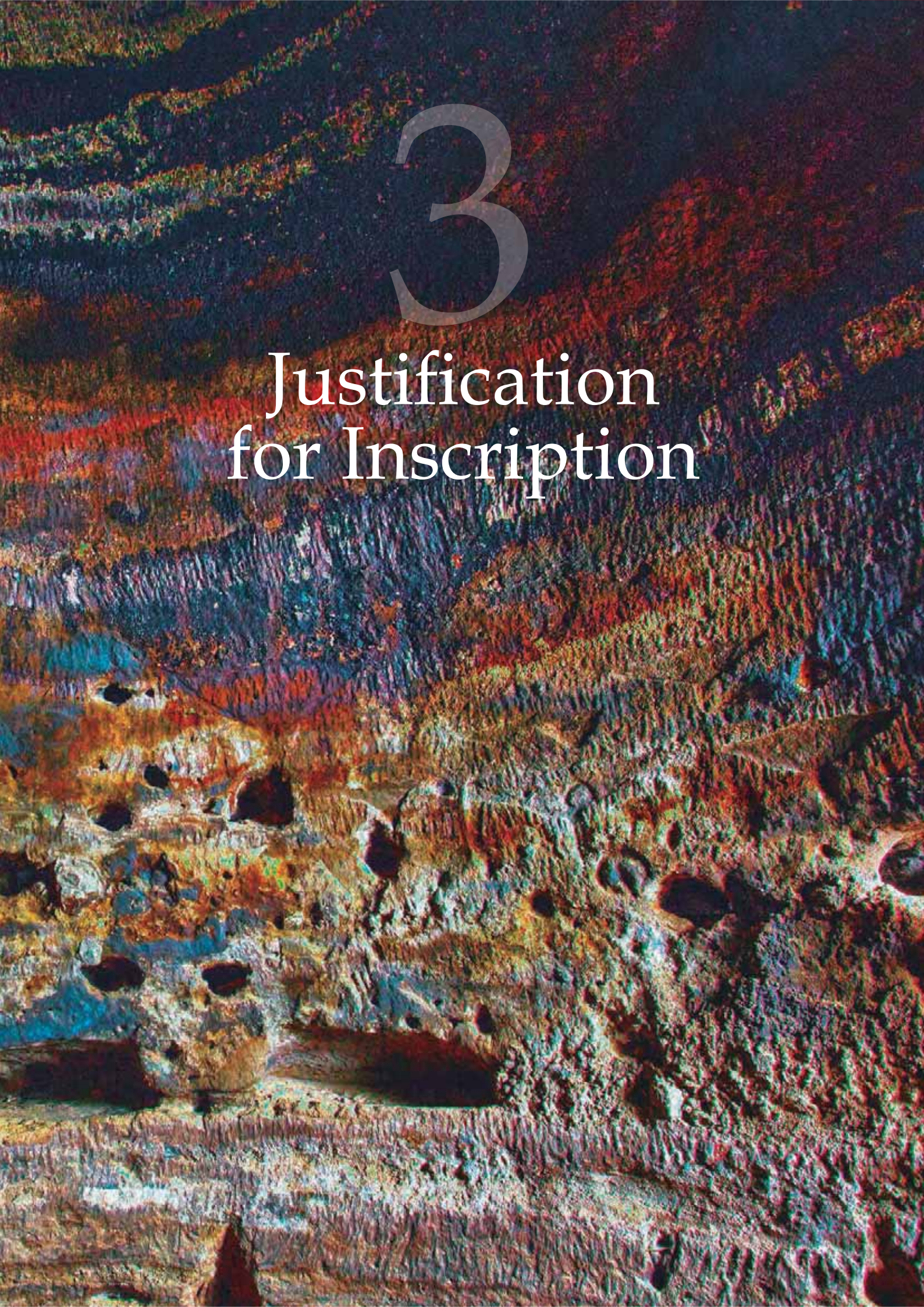


Figure 2.b.80. Pictorial scene in Caldera de Tejada by Santiago Santana (1909-1996). Island painter linked to the indigenous movement.



3

Justification for Inscription





- 3.1.a Brief synthesis
- 3.1.b Criterios de aplicación
- 2.1.c Statement of Integrity
- 2.1.d Statement of Authenticity
- 3.1.e Protection and management requirements

COMPARATIVE ANALYSIS

- 3.2.a Introduction and methodology
- 3.2.b Thematic framework of cultural astronomy
- 3.2.c Troglodyte habitat and rock art
- 3.2.d Techniques and uses of the territory
- 3.2.e Global meanings of the Cultural Landscape
- 3.2.f Regional and local comparisons:

PROPOSED STATEMENT OF OUTSTANDING UNIVERSAL VALUE

3.1

OUV - Criteria - Statments - Requirements





3.1.a

Brief synthesis

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria covers an extensive mountainous area in the centre of the island of Gran Canaria, delimited by the spectacular Caldera de Tejeda, encompassing much of the basin, course and slopes of Barranco Hondo and the forested highlands of Tamadaba. The terrain is extremely rugged, with imposing crags, cliffs, deep ravines and monumental volcanic formations, all in an area of extreme biodiversity.

The nominated property harbours a set of well-conserved, mainly archaeological manifestations and works belonging to an extinct island culture that evolved in total isolation from at least in the year 0 A.D., after the first North African Berbers or Imazighen had reached these shores, until the Spanish conquered the island in the 15th century. Thus, it is an exceptional cultural evolution in an oceanic island space that grew from the background, knowledge and beliefs of the first Berber settlers (Imazighen), finally generating a unique and distinct island culture in this territory.

A cosmological vision encompassing both the skyscape and the landscape provided the means of organising and understanding the space of the sacred mountains of Gran Canaria. Outstanding human troglodyte settlements and rock art sanctuaries are arranged here, along with farming structures surprisingly-well adapted to the unique geology and nature, giving rise to a cultural landscape that still conserves most of its original elements together with the visual relationships between them. The Cultural Landscape offers a clear and outstanding example of how mankind adapts to a complex and difficult natural environment, representing a paradigmatic model in the island context.

Certain material expressions of the indigenous inhabitants of this territory, especially the temples or almogarenes with obvious astronomical connections, are surprisingly complex and the outstanding constructive conception is incredible; the more so if we consider that this was a culture that did not even use metal. Another rarity is that the area contains one of the largest concentrations of pubic triangle engravings, an ancestral symbol of fertility, known in the world.

The way the settlements are laid out, the presence of temples and markers with clear astronomical connotations, and certain reference landmarks, along with certain calendrical reference points, reveal a complex landscape interconnected with the sky. The evolving cultural landscape of the sacred mountains includes both the earth and the skyscape, inextricably combined.

The aboriginal mark has survived through time and space here, moulding the landscape, maintaining the troglodyte culture throughout the area and conserving ancestral practices such as transhumance, the unique terraced fields for growing crops, and methods of managing water and cave pools. In general terms, this is a heritage whose roots are sunk deep into the original culture, as is evident from the extant Libyco-Berber engravings. It can be considered the westernmost expression of the Amazigh culture, which, for the first time, develops into another, unique island culture.

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria is a genuine laboratory of knowledge that illustrates the adventure of the aboriginal island cultures of the planet, which have evolved over long periods of time without any external influence, giving rise to their own cosmology and a distinctive universe of knowledge and beliefs. Thus, it is an outstanding heritage that expresses a unique and unrepeatable cultural process displayed on a stage that has remained almost unaltered over the centuries.



Figure 3.1.2. A cultural landscape interconnected with the sky. The star-studded night over Bentayga. © Nacho Gonzales

The characteristics and attributes that underpin the original, unique nature of the Cultural Landscape, giving the site its Outstanding Universal Value, are as follows:

a) The nominated Cultural Landscape has revealed ample archaeological evidence of the development of an island culture, now extinct, that evolved in isolation for at least 1500 years from the Amazigh settlers who reached these lands from the Berber Maghreb. The aboriginal signs that indelibly mark the identity and personality of the space are representative of the odyssey of isolated island cultures that, in this case, created a unique culture of its own from its original, pre-Islamic Berber roots.

b) The density of tangible attributes and remarkable natural features, with intangible meanings, shapes a really exceptional testimony of the Amazigh culture.

c) The site harbours genuine, well-conserved material evidence of an extinct, isolated civilisation in the form of its outstanding troglodyte settlements. These show a specific, unique social and economic organisation, whose points of reference are distributed along the cliffs and crags of the landscape of the Caldera de Tejera, and which also express an outstanding level of adaptation to the environment, something that is also visible in the spectacular terrace-based farming system. This is a troglodyte culture that has survived to the present day, where the caves, reused or created over the course of

recent centuries, offer outstanding expressions of the syncretism between the two societies that have influenced this landscape.

d) The space as a whole comprises a mountain area organised by mankind, founded on references both to landmarks and natural symbolic elements and to the skyscape, maintaining and expressing the symbolic and cosmological vision of that aboriginal society of Amazigh origin. In other words, it comprises an outstanding, unique landscape interconnected with the sky.

e) The sanctuaries with astronomical connotations are unique expressions of their genre. The *almogaren* of *Risco Caído* comprises an outstanding cosmological sanctuary that shows the high level of conceptual and practical knowledge of the aboriginal people in the fields of geometry and astronomy. This is expressed not only in a sophisticated system of symbols, but also in the form of a hierophany of subtle interactions of sun and moonlight inside the sanctuary. Apart from its astronomical relations and function, the *almogaren* of *Roque Bentayga* forms a prominent focal point of the space, a sacred reference for the sanctuaries and ceremonial caves of its surroundings, which reinforces its symbolic power in connection with the sky.

f) The site is testimony to the memory of the place as a sacred mountain space and the final refuge of the ancestral Canarians before the Spaniards finally con-

quered the island, with the consequent introduction of a new culture. The profusion of sanctuaries or *almogarenes* reinforces the sacred nature of these mountains in the eyes of the ancient Canarians. Furthermore, it harbours a wide diversity of unique rock engravings, including a great profusion of pubic triangles, a universal symbol of fertility. This area contains one of the greatest known concentrations of this pictogram to be found from ancient cultures anywhere in the world. Many of these symbols, together with the documentary legacy, bear witness to the important role that women had at different levels of that society.

g) The nominated property hosts ancestral practices and land-use techniques that are perfectly adapted to the territory, such as the outstanding survival of transhumance, which still uses the same routes as the ancient Canarians. It also bears witness to the continuity of intelligent, traditional models of rural organisation, such as the farming terraces, the water-management systems, the old trades that denote a profound knowledge of

the environment, and the legacy of a primal network of tracks and trails that form an integral part of the cultural landscape.

h) The Cultural Landscape is underpinned by an ample and vigorous set of natural meanings, which include a spectacular geology and morphology, protected in the colossal Caldera, unique ecosystems, significant biodiversity and an outstanding dark night sky. Through the signs of the aboriginal culture, it expresses a unique relationship between human beings and nature, which is especially clear in the cosmological vision, the calendar and the rites.

i) The cultural marks of the ancient Imazighen have survived here, not only in the form of unique manifestations such as the Libyco-Berber alphabetical inscriptions; but also by impregnating the place names, customs and practices relating to a range of aspects of rural life and harnessing resources.



Figure 3.1.3. The *almogaren* of Risco Caído is an outstanding cosmological sanctuary. It demonstrates the conceptual and practical knowledge of the aboriginal people in the fields of geometry, geology and astronomy. © Tarek Ode



3.1.b

Criteria under which inscription is proposed

In accordance with Paragraph 77 of the Operational Guidelines for the Implementation of the World Heritage Convention, the nominated property meets Criteria (iii) and (v).

Criterion (iii)

(Bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared)

The set of archaeological sites and rock art manifestations bears unique and exceptional testimony to an extinct island culture that evolved in isolation for over one thousand five hundred years. Archaeological and historical evidence from the nominated property bears witness to the fact that this culture arose from the first settlers that came from the Berber Maghreb, which in of itself makes it exceptional, as it is a unique case of an island culture that can trace its roots back to the pre-Islamic Amazigh world, of which there are very few manifestations. This place also represents the sacred mountains that were the final refuge of the ancient Canarians before the Spanish conquest.

The site expresses a very strong and highly original relationship of human beings with nature (both land and sky). The nominated property provides exceptional testimony of an island culture that includes the skyscape as a fundamental part of the perception of their world, rites and beliefs. They also developed an astronomical culture closely attuned and related to the natural environment and the surrounding landscape. Evidence of this is provided by the temples with strong astronomical connections, such as the *almogaren* at Roque Bentayga and the cave at Risco Caído, that represent the pinnacle of the evolution of these manifestations.

This heritage legacy also illustrates the odyssey of the aboriginal island cultures of the planet that have evolved

over long periods of time without any external influences, giving rise to their own cosmology and a unique universe of know-how and beliefs.

Among the islands of the world, there are many examples of cultures that evolved in isolation and became extinct for different reasons, a process that is unique in each case. The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria shows this scarcely-represented process exceptionally clearly, conserving the essential vestiges of a civilisation that has disappeared and offering clearer insights into this cultural odyssey than on any other island. These are also expressions that bear testimony to the presence and evolution in isolation of the Amazigh culture in an island territory in pre-Islamic times. The exceptional nature of this space is further enhanced by the fact that the inscribed sites that represent this great North African culture, in ancient times, only include two manifestations of proto-Berber rock art, in the middle of the Sahara Desert.

The sanctuaries with astronomical relations and connotations are unique monuments that not only express the evolutionary pinnacle of this culture and the knowledge they possessed, but also show the close bonds between this cultural landscape and the sky. Inscribed sites with these connotations are extremely rare, and in no other case are these relationships manifested so strongly in such a variety of ways. Although inscribed sites with these connotations are extremely rare, in no case is this relationship so strong. The representativeness of this property as an expression of cultural astronomy is highlighted if we consider that only two inscribed island sites (in the Pacific and the Mediterranean) show any kind of similarity by including works and expressions with astronomical meanings. Moreover, none of the manifestations of this kind from the Amazigh culture in the Berber Maghreb are included on the World Heritage List. This unique and representative character is reinforced if we also consider that, in the cases compared, the astronomical dimension is not included among the

reasons for the nomination, so, this nomination could cover the gaps regarding the scarce representation of astronomical heritage on the World Heritage List.

Criterion (v):

(Be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment, especially when it has become vulnerable under the impact of irreversible change)

The aboriginal troglodyte settlements of the Caldera de Tejeda and the surrounding area are an unrepeatable example of this kind of human habitat in ancient island cultures. They illustrate a highly efficient and complex level of organisation of the space and adaptive resource management. The colossal geological stage and the natural landscapes blend in with the cave settlements, sanctuaries, agricultural works and terraces, to create a genuine cultural landscape that still maintains its main references and its symbolic and cosmological connotations.

The troglodyte habitat has been kept alive as a way of life over time, creating new ways of occupying the space that express the syncretism between the aboriginal culture and the culture introduced after the conquest. There is also the survival of ancestral techniques and land uses, such as transhumance and water management with unique troglodyte traits such as the cave pools.

The orientation and alignment of certain temples and caves also indicates an intimate relationship between settlements of this kind and the skyscape and the main symbolic elements of the landscape.

The spatial distribution of the settlements and the findings from the sites offer a detailed understanding of how the aboriginal communities exploited the territory of the sacred mountains. The current environment contains habitats and species of flora and fauna that also cast light on the lifestyle of the ancient settlers. Our knowledge of the skills and cultural traditions of the aboriginal people, and the survival of many of these skills and traditions, allows us to recognise a territorial culture that was intelligently adapted to a difficult and complex territory and that generates an incomparable cultural landscape.

The cultural landscape represents one of the two most

complex expressions of troglodyte habitat in an island context. The fact that the troglodyte habitat is a basic and defining element of the cultural landscape, along with its multi-functionality—including temples, ritual spaces, granaries and dwellings—is only otherwise represented in the example of Sassi and the Rupestrian Churches, while appreciating the differences between the properties. It is also one of the few examples that maintains well-conserved original troglodyte settlements while at the same time the troglodyte lifestyle remains the traditional existence in the area, exhibiting a unique evolutionary process. This troglodyte tradition can also be considered one of the signs of identity of the Amazigh culture, despite the fact that its richness and diversity is not represented in any inscribed property.

This is also an exceptional case that maintains relics and expressions of traditional forms of highly-adapted and original land-use from an extinct civilisation that are still in use today. These include the relationship with the sacred forests and the practice of transhumance, which continues to use the same routes as the ancient Canarians used in the distant past. The unique culture of water management, collection and storage systems, such as the cave pools, remains alive in this cultural landscape. All these elements reinforce the exceptional nature of this cultural landscape in the context of the island cultures of the planet.



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3.1.c

Statement of Integrity

The Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape meets the criteria of integrity specified in the Operational Guidelines for the Implementation of the World Heritage Convention:

1. Integrity of composition

The nominated property contains all the elements necessary to present its Outstanding Universal Value in terms of the quantity of attributes and their diversity of purpose.

The area of the nominated property houses the highest density of troglodyte manifestations in Gran Canaria, exhibiting a unique phenomenon in the Canary Islands. There are almost one thousand artificial caves of different kinds, from original, well-conserved ancestral villages, to caves that have been used in historic times or hewn-out deliberately over the last century. It also includes a large sample of temples or *almogarenas* with different features, including sanctuaries both in caves and in the open air. These include the presence of one of the largest collections of rock engravings in the world of public triangles, a symbol of fertility, with the sanctuary of Cueva Candiles as the best example of this.

The area also includes a large number of unique material expressions of water culture, including cave ponds, with a wide range of shapes and functions, and a complete representation of the aboriginal tracks that have underpinned the survival and continuity of transhumance since time immemorial.

In qualitative terms, certain tangible attributes attain outstanding value. This is manifested particularly in those that have astronomical meanings and relations, such as the *almogarenas* or temples of Risco Caído and El Roque Bentayga, as explained in the description of the astronomical culture in Chapter 2.a.vii.

The integrity of the individual attributes is generally satisfactory, even with regard to the archaeological sites,

which have been maintained in a surprisingly good state of conservation, despite the major changes that the island has undergone in recent times. The current state of conservation of the archaeological properties allows us to make a reading of the most significant aspects of the original culture that created them, which can be followed in their sanctuaries, rock art, granaries, cave dwellings, refuges and cave ponds. This same level of conservation extends to essential elements that comprise the cultural landscape, such as the integrated system of terraces and the troglodyte habitat.

These parameters show that, within the established limits of the Cultural Landscape, this is a unique space in Macaronesia that offers a representative and sufficient set of manifestations of an island culture that evolved in isolation from its Amazigh roots.

2. Integrity of relationships, completeness of the landscape

The delimitation of the area of the property by the Caldera and Tejeda Basin (decisive geological and geographical factors of the property) is very visible and coherent. It has a series of visual qualities: spectacular and monumental physical features, sacred forests, human troglodyte settlements on the cliffs and peaks, agricultural settlement by means of terraces combined with the cave settlements and traces of the paths of the ancient Canarians, among other important manifestations.

Relationships between attributes and components of different kinds are very visible, with many viewpoints for visitors. In particular, the human use of geographical and astronomical alignments is very readable in relation to the human artefacts. The layout and siting of the main sanctuaries and caves with rock art manifestations are closely related to the symbolic elements and certain astronomical markers, indicating that the elements of the constructed landscape were related to the skyline, contributing an essential factor to the form and essence of this Cultural Landscape. It shows an excep-

tional knowledge of the sky and how to use the sky for practical purposes (farming, rearing livestock) and symbolic beliefs (fertility), which in many cases, shows clear evidence of their Amazigh roots.

The wholeness of the property and its visual expression make it an exceptional, complete and very harmonious cultural landscape that was also the last mountain refuge of the Canarian Imazighen. This landscape offers an exceptional combination of aesthetic features arising from geology, geography, biodiversity and human physical settlement. It also bears witness to scientific and symbolic practices concerning the sky in relation to human beings and understanding nature.

3. Functional integrity

There is no 'functionality' insofar as the society of the ancestral Canarians of Amazigh origin, with its highly specific social, technical and symbolic characteristics of an isolated island culture, has been extinct since the 15th century. However, many features remain 'functional' in different senses:

- The astronomical – geographical alignments are still present and readable, with some minor shifts due to the time elapsed;

- Parts of aboriginal troglodyte settlements are still in use, with some adaptations and modernisations, while there are other parts with outstanding, modern troglodyte expressions in houses and churches that show the cultural syncretism that occurs in this space;
- Part of the network of trails is still usable;
- Some of the terraces and water-management devices are still in working order and used for farming today;
- Ethnographic studies reveal some remnant practical activities from the ancestral Canarians, such as transhumance and the symbolic transmission of certain cultural facets (legends, social feasts, place names, oral traditions).

Against this backdrop, the limits of the property were established so as to include the main attributes that define the Cultural Landscape and the natural and scenic environments of reference, giving the space coherence and guaranteeing its integrity.

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria is both a relic of the Amazigh civilisation and a living space for settlement and human activities today with respect to the heritage.



Figure 3.1.4. Waterfall El Caletón © Orlando Torres

3.1.d

Statement of Authenticity

According to the Operational Guidelines for the Implementation of the World Heritage Convention (2015) and the Nara Document on Authenticity (1994), the authenticity of the Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape relates to the following aspects.

I. Authenticity of attributes

I.1. Form and design, materials and substance

First of all, the main almogarenes and sanctuaries of the nominated property have conserved their original forms and content almost without any changes, particularly those with rock art (engravings and painting). In the case of Risco Caído, interventions have been made to guarantee the stability of the site, seriously endangered by collapse, but there is always a commitment to the materials chosen and none of the significant elements is ever affected and no actions are taken that would alter the form of the property. We would also like to emphasise the fact that this complex was used as a hay barn for a certain time, which has meant that its structure and shape, and the design of its components, have been kept practically intact. At other sites, such as the Candiles and Caballero caves, which are well conserved despite sporadic pastoral use, the caves have been closed from the outside to guarantee their preservation.

Archaeological and architectural studies, including comparative analyses with photogrammetry, laser-scan surveys and radiocarbon and pigment analyses, are conclusive as to the authenticity of these spaces in their form and design, including the main troglodyte settlements considered an attribute of the property.

The inaccessibility of many of the main troglodyte sites situated in cliff faces has, in itself, guaranteed the conservation of their structure and form, except for the impacts caused by passage of time, such as erosion. However, some parts of the troglodyte villages were re-used over time for different purposes. In the case of the

important caves and sites, refurbishment and recovery work has followed strict quality-control criteria, both in the use of materials and in eliminating any elements that had been added, in order to guarantee their authenticity. This is the case at sites such as Cueva de la Paja. In other instances, we have aboriginal caves that have been re-used over a period of five centuries since the Conquest, and which are still used today.

I.2. Use and function

As far as the main temples or almogarenes included in the nominated property are concerned, the authenticity of their ceremonial or ritual use has been confirmed by the results of archaeological research, excavations and rock art studies. Additionally, the chronicles of the Conquest throw further light on the authenticity of these elements. This confirmation extends to the cave villages, granaries, rock art sites, cave ponds and, in general, to the troglodyte sites.

Archaeoastronomical research has provided sufficient evidence about the sanctuaries with astronomical connections to enable us to deduce their use as equinox and solstice markers. This is particularly clear in the case of the almogarenes of Risco Caído and Roque Bentayga, and analysis is being conducted on other enclaves to provide significant evidence.

Archaeological research and genetic studies conducted in the granaries have revealed the importance and function of these places, which appear as leading elements of the troglodyte settlements. Moreover, comparative and linguistic studies have enabled us to reaffirm the authenticity of the Libyco-Berber inscriptions that comprise some of the most powerful evidence of the Amazigh origin of the ancient Canarians.

In the section on territorial uses and techniques, the most striking aspect is the preservation of the water collection systems (alcogidas), and the fact that the cave ponds are still in use and fit for purpose. In fact, some

of them have remained unaltered since the time of the ancestral Canarians.

3. Location and setting

The location and setting of the troglodyte sites and the rock art manifestations have remained essentially unchanged for over 500 years since the Conquest, and the landscape as a whole has always maintained its authentic location and structure. Changes in the setting have obviously occurred owing to vegetation changes resulting from successive processes of human occupation. None of the rock art elements and other material expressions has been relocated; this has only happened for moveable items.

The biodiversity of the space is undiminished at the most emblematic points and the natural setting has maintained its authenticity, especially with respect to the cliffs, ravine beds and forests: the last of these are in an accelerated process of replanting with the original native species. The only significant changes that have been made since the conquest have affected farming alone, leading to an extension of the original arable lands of the ancient Canarians.

The layout of the nomadic herdsman's tracks has been conserved, as have the old access paths to the temples. The same is true of the location of the old refuges,



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which comprise one of the signs of pastoral activity. The only exception would be that certain sections of these trails have been covered over by the current road network.

4. Language and other forms of intangible heritage

The Libyco-Berber engraving stations in the area of the nominated property, reinforced by historical chronicles, attest to the marks of the Amazigh language and culture. Certain festive traditions, including "La Fiesta de La Rama" (Fiesta of the Branch), have maintained much of their original essence, despite the processes of assimilation of new cultures and the passing of the years. The main caves and sacred sites of the ancients are sites that are still revered or respected by the local population. Furthermore, the Amazigh culture is still expressed today through activities such as nomadic herding and, hand-made pottery, which continue just as they were in aboriginal times, and in many of the place names and oral expressions that reveal their Berber roots.

5. Spirit and feeling of the landscape

The nominated Cultural Landscape is paradigmatic within the island of Gran Canaria. It is a space that has maintained a high degree of isolation up until very recent times, allowing it to maintain the quality of a landscape frozen in time. The perception of this space, its rural and natural character, and the symbolic elements that it contains make it the best place to appreciate the world of the ancient Canarians, rural life and the best natural settings of the island, all at the same time. Both the landscape as a whole, and especially Roque Nublo, have become an essential part of the cultural imagery of the island. In fact, Roque Nublo is its most precious symbol. This landscape arouses a genuine spiritual feeling among visitors; it is an open book clearly perceived as a territory forged in sustainability.

2. Authenticity of landscape

The main scenic elements of the landscape and the sky-scape, including the night sky, have remained practically unaltered since the Spanish Conquest in the 15th century, maintaining the essence of the landscape perceived by the ancient Canarians. This includes the cliffs, the basins of the ravines, the pine forests, the leading geological landmarks and the main aboriginal cave settlements clinging to the crags.



Figure 3.1.5. Photogrammetric survey of Cave 2 of the Cueva Caballero site at Risco Chapín. All restoration interventions are preceded by rigorous technical studies and research aimed at preserving the integrity of the elements. © José Gil Sarmiento

Traditional farming practices, based fundamentally on growing crops on terraces, are well-integrated into the landscape. They conserve traditional forms, and they do not present any fundamental alteration of the landscape of which they form part. The same is generally true of the troglodyte habitat which has evolved since the Conquest. The survival and continuity of the traditional grazing pastures, used since ancient times, constitutes a leading part of the landscape.

The density of the road network is very low and there are no plans for any extensions. Analysis shows that its visual impact on the main basins is slight, and there is even a plan to blend it into the landscape, in order to maintain the scenic quality of the landscape as a whole.

The traditional rural settlements that have grown up since the Conquest are very small and they use traditional architecture, generally blending in well. However, a set of impacts has been identified, concerning buildings with inappropriate forms and materials for this setting. This and the plans to put it right are included in section

4.b.1. The same procedure is also applicable to other visual impacts, such as those triggered by overhead electricity cables. Three unsatisfactory points have been identified, which have also been addressed by a plan to correct the situation.

The excellent conservation of the sky qualities from the Amazigh period because of relatively limited human development will be reinforced by ongoing lighting regulation. There are no visual impacts on the skyline, or more widely on the cultural landscape, because there are very few human constructions. The result is a very authentic conservation of the landscape and an excellent readability of the relationship between earth and sky elements (alignments, use of crests as landmarks, natural landmark reference points).

Regarding other infrastructure, work has been done to put all water pipes and overhead cables underground in fragile areas and in areas close to the main cave settlements, such as in Acusa, in order to fully guarantee the authenticity of the landscape.

3.1.e

Protection and management requirements

The necessary protection requirements for safeguarding the nominated property are guaranteed in the long term by virtue of the legal and planning provisions that affect both the area and its attributes.

In terms of environmental and scenic protection, practically the entire proposed property is listed as an integral part of the Canary Island Network of Protected Natural Areas (ENP, in Spanish). These levels of protection include precise protection and management provisions in their respective master plans, special plans or conservation standards. Apart from declaring the space as protected, the legislation also guarantees the use regime, governs the development of infrastructure and determines admissible activities according to strict sustainability criteria, based on the premise of safeguarding the cultural and natural values of the spaces in question.

On top of this guarantee of long-term protection, most of the space is listed as a SAC (Special Area of Conservation) as part of the European Natura 2000 Network. Furthermore, most of it is covered by two EU Directives: the Habitats Directive and the Birds Directive. Finally, the Gran Canaria Island Planning Document (PIO in Spanish) not only takes on board the above conservation provisions but also classifies all the other land not covered by them as special landscape protection areas and areas of rural vocation. The only exceptions are small enclaves in the built-up areas that are subject to very precise provisions about their necessary development

Thus, in terms of regulating environmental, cultural and scenic protection of the property, there are sufficient, even redundant guarantees to address the protection objectives of the components and attributes of this cultural landscape in the medium and long term.

As well as all the above, the main archaeological sites of the nominated property have been declared Proper-

ties of Cultural Interest (BIC, in Spanish). These include Risco Caído, Mesa de Acusa, Risco Chapín and Barranco Hondo de Abajo. Furthermore, pursuant to the Spanish Cultural Heritage Act (BOE nº 155, 29th June 1985) and the current updated Canary Island Historic Heritage Act (BOC nº 157, 27th November 2002), all rock art manifestations, without exception, are automatically considered BICs (Properties of Cultural Interest).

Even with all this protection, the Cabildo of Gran Canaria, in an initiative without precedent in the Canary Islands, has opted to file applications to have all the other attributes included in the nomination of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria, listed as BICs too.

Even though the guarantees of protection and the sustainable management provisions for the area can be considered sufficient, for the reasons explained above, the Cabildo of Gran Canaria has decided to reinforce these provisions in the current review of the Gran Canaria Island Planning Document (PIO), by considering the area of the nomination as a unit (including the buffer zone) and reinforcing the operational instruments of the PIO, such as better and more up-to-date definitions of the ARIPs (Areas of Important Heritage Interest) that affect the space in question.

Protection measures also include a special emphasis on enhancing surveillance of the main sites with respect to adverse physical factors that could endanger the structural integrity of the property in the future. A strategy has also been established to enhance the prevention of threats, including special surveillance for fires or any other man-made factor that could affect the essential components of the landscape and skyline. These aspects are also included in the management plan.

The Cabildo of Gran Canaria holds title of ownership to the main attributes and components of the cultural

landscape by virtue of the competences transferred to it, especially in matters of cultural heritage, environment and territory. This makes the Cabildo responsible for enforcing and developing the legally mandatory management plans in each area. Furthermore, half of the nominated property lies on land owned by the Cabildo..

Since the nomination process started however, some aspects that form part of the new strategic management view of the nominated property have come to light: a) the need to consolidate a permanent strategy of participative management that reinforces the current level of involvement of the local community in the process and in consolidating a territorial model based on bottom-up sustainability; b) the need to provide an holistic vision of managing the space, by agreeing on a single set of intervention/action criteria in accordance with the different competences of the Cabildo and other entities, such as local councils; c) regarding scientific criteria, the opportunity to tackle the new medium and long-term challenges stemming from the objectives of this nomination; and d) the need for management instruments that provide incentives for a public-private partnership for developing initiatives that benefit the heritage and the conservation of the values to be found in the space.

In response to these new requirements, and at the request of the Cabildo of Gran Canaria, "The Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria Steering Committee" was set up in 2015 as the body responsible for basic co-ordination of the management and intervention strategy in the nominated property. The Steering Committee, chaired by the Cabildo of Gran Canaria, brings together all the parties interested in the process: the units and departments of the Cabildo of Gran Canaria concerned, the municipal districts involved, the Council of Participation and the Scientific Committee. The Steering Committee currently meets once a month, and at least one plenary meeting is held every year with all parties and entities concerned.

One of the Steering Committee's leading tasks has been to draw up the "Integrated Management Plan for the Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape.". This is the real management plan for the nominated property and includes both the provisions covering the ordinary management of this space and the extraordinary or specific provisions relating to the objectives and challenges stemming from nominating the "Cultural Landscape of Risco Caído and the sacred

mountains of Gran Canaria" for inclusion on the World Heritage List. For example, the financial provisions considered in the Integrated Management Plan for 2018 for specific one-off actions in aspects considered in the nomination of the property amount to €1.6m, plus the ordinary actions considered in each management section. The Integrated Management Plan is assessed and up-dated each year by the Steering Committee, setting new recommendations and lines of action, as well as the budget, human resources and time line for each action to be implemented or scheduled for each period.

The management and governance organisational chart for the nominated property is complemented with the creation of the "Risco Caído and the sacred mountains of Gran Canaria Foundation" that is currently being set up. This is a public Foundation promoted by the Cabildo of Gran Canaria, which will contribute significantly to consolidating the participative management model and to fostering the public-private partnership for implementing projects and activities to benefit the property and its sustainable conservation. The Foundation is seen as a basic tool for improving and fully-developing the proposals included in the Integrated Management Plan. This opens up new windows of opportunity for implementing projects and initiatives that enhance capabilities and broaden the spectrum of players currently involved.

Both the Steering Committee and the Integrated Management Plan place special emphasis on all aspects concerning possible changes that could occur and on the preservation of the authenticity and integrity of the attributes and values to be found in this space, both tangible and intangible. By way of example, this is reflected in the emphasis that is put on sheltering the area for tourism models or for intensive or inappropriate visits, opting for a different, low-intensity tourism based on knowledge and closely associated with local, quality-based services and economies.

Figure 3.2.1. View of the main Cuatro Puertas cave on Gran Canaria, a site with clear astronomical connotations included in the comparative analysis © Tarek Ode





3.2

Comparative Analysis



3.2.a

Introduction and methodology

Based on the recommendations of the “Operational Guidelines for the Implementation of the World Heritage Convention” (WH Centre, October 2016) and of the ICOMOS study “The World Heritage List, Filling the Gaps – an Action Plan for the Future” (ICOMOS, 2004), three complementary approaches are generally used for the comparative analysis of the nominated property:

1. The thematic framework
2. The regional-chronological framework
3. The typological framework, based on the categories of the attributes found in the property

Basically, we examine sites and cultural landscapes related to our subject already on the World Heritage List or on national tentative lists or others having international or regional interest and capable of enlightening and helping to explain our choice and the value of the place.

The thematic framework is based fundamentally on analysing the cultural astronomy-related manifestations, with special focus on the cases of islands and the Amazigh culture, regarding both material and immaterial properties. The immaterial aspects make mention of the cultural and symbolic association with the sky-scape and the belief system of the indigenous people of these lands. The basic reference point for addressing this analysis is the Thematic Study entitled “Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention” (Volume 1 and 2) drawn up by ICOMOS and the IAU (Ruggles & Cotte, 2010, Ruggles 2017), together with the new contributions included in the “Portal to the Heritage of Astronomy”, the information support for the UNESCO’s Thematic Initiative “Astronomy and World Heritage”. Risco Caído and the sacred mountains of Gran Canaria is included as an “extended case study” in the context of the aforementioned Thematic Study.

With respect to the typological framework, specific aspects of the different categories are addressed in the comparison, viz-a-viz the attributes of the candidate property, such as the archaeological heritage relating to the aboriginal cave settlements, which also includes the historic and recent manifestations of troglodyte practices, the religious or ritual properties (sanctuaries and sacred mountain landscapes), rock art, the traditional, vernacular water-management systems and the transhumance trails. The thematic studies used as a comparative reference include “Rock Art of the Sahara and North Africa: Thematic Study” (ICOMOS, 2007), and “The cultural Heritage of Water in the Middle East and the Maghreb” (ICOMOS, 2015).

In light of the characteristics of the nominated property, the regional framework of the analysis focuses basically on two main areas: island territories (globally) and the Maghreb (including the area of the Near and Middle East- North Africa). With respect to the island framework, it is worth remembering that ever since the World Heritage Centre launched the Global Strategy in 1994 to establish a representative and balanced World Heritage List that was worthy of credit, new kinds of “non-classical” properties have been added to the List. But if we turn our attention to islands, we find very little global representation of cultural landscapes or mixed properties, and there are of course, very few landscapes containing similar attributes. This is in sharp contrast with the fact that there are over one hundred thousand small and medium-sized islands in the world with extreme cultural and natural diversity, according to Chapter 17 of the Rio Declaration (1992), inhabited by over 300 million people. The analysis has taken into consideration the ICOMOS thematic studies on Cultural Landscapes of the Pacific Islands (Smith & Jones, 2007), the only study of this kind performed on island territories, and Cultural heritages of water in the Middle East and Maghreb (ICOMOS, 2015).

The regional fields mentioned are considered as preferential transversal strands in the comparative analysis. The

← Figure 3.2.2. Public triangle engraving in the Risco Caído almogaren. The comparative analysis highlights just how outstanding this manifestation is © Tarek Ode



Figure 3.2.3. Different phases of the solar hierophany in the Risco Caído almogaren, with clear calendar and astronomical connotations. The cultural astronomy-related aspects are one of the focuses of the comparative analysis. © Julio Cuenca

comparison proceeds in the context of Macaronesia, as a biogeographical and cultural region that includes the nominated property, and then like a camera lens, zooms in: first to the Canary Islands as a whole and finally to provide a comparative context for the property in the local area of the island of Gran Canaria.

The characteristics of the property include manifestations of a culture that evolved in isolation into a proto-state society, although no precise time-line can be drawn. We do, however, know the time limit of each ancient island culture before it either disappeared or was forced into submission after the process of conquest. Also, since the roots of this island culture are situated at least around the start of the Christian Era, the attributes can be compared with the Berber Maghreb and the Amazigh culture; we are referring, in other words, to the expressions and properties of comparable pre-Islamic cultures, including the proto-Berber. Other aspects of the comparative analysis such as the cultural landscapes of sacred mountains, troglodyte expressions or the techniques and uses of the territory in these landscapes, have a global meaning, emphasising their representative and unique character, rather than limiting them to precise time-lines.

Bearing in mind the characteristics of the candidate Cultural Landscape and the approaches mentioned above, the following methodological structure has been established for the comparative analysis, the properties to be identified and the aspects to be taken into considera-

tion. The analysis is organised into three sections:

I. Comparative analysis of the property's main attributes

This is the specific comparative analysis of the main attributes or groups of attributes identified in the nominated property: those relating to a) cultural astronomy and the skyscape, b) troglodyte manifestations and rock art, and c) techniques and use of the territory.

1.1. Cultural Astronomy / Archaeoastronomy

1.1.1. Selection of comparison Items

- Archaeoastronomical sites and properties related to the astronomical culture and skyscape in the islands and in the Berber Maghreb (characteristic of the Amazigh culture)
- Comparable properties globally that present hierophanies (impressive spectacles) of sun- or moonlight in enclosed spaces, with astronomical, calendrical or ritualistic relationships

1.1.2. Aspects to consider

- Astronomical alignments and astronomical markers
- Sacred spaces connected with the sky
- Ethnoastronomical relationships
- Cultural and symbolic associations with the skyscape in ancient, indigenous belief system

1.2. Troglodyte settlements and rock art

1.2.1. Selection of comparison Items

- Sites in which the troglodyte habitat is a fundamental component or attribute of the landscape
- Cultural mountain landscapes that include troglodyte manifestations
- Rock art manifestations in sacred or symbolic places, especially caves, in island territories and in the Berber Maghreb, including proto-Berber manifestations

1.2.2. Aspects to consider

- Important troglodyte settlements, with special attention paid to those that are still in use today (evolved troglodyte settlements)
- Libyan-Berber inscriptions
- Pubic triangles and fertility symbols
- Shrines or sacred places in caves

1.3. Techniques and uses of the territory

1.3.1. Selection of comparison Items

- Cultural mountain landscapes globally related to agro-pastoralism in which old transhumance practices continue to survive
- Cultural mountain landscapes containing unique, vernacular expressions related to water use and management, particularly in island systems
- Sacred forests with associated use practices

1.3.2. Aspects to consider

- Routes and heritage associated with transhumance and agro-pastoralism
- Singular water-management systems and works: collection, distribution, storage and associated landscapes
- Trades, spirituality and harnessing the forest

2. Global meanings of the Cultural Landscape

This is the comparative analysis of the dimensions of the nominated cultural landscape that have global significance: a) those related to the odyssey of isolated island cultures, particularly extinct ones; b) the sacred mountains as a refuge; and c) the cultural landscapes of the sacred mountains.

2.1. The odyssey of isolated island cultures

2.1.1. Selection of comparison Items

- Sites containing evidence of island phenomena of cultural evolution in isolation over long periods of time
- Islands considered sacred or symbolic as an expression of the culture of their forefathers
- Cases of island cultures that have disappeared after being conquered or as a result of population, social or ecological collapse

2.1.2. Aspects to consider

- Archaeological evidence of unique, isolated island cultures
- Ethnographic evidence of mythical or sacred islands
- Historical evidence concerning cultural and/or population collapse or devastation

2.2. The mountain as a refuge

2.2.1. Selection of comparison Items

- Specific mountain sites throughout the world that were a refuge for peoples, beliefs or cultures under siege and fighting for survival

2.2.2. Aspects to consider

- Continued existence of the mountain as a symbol

of resistance or refuge, along with the associated heritage

- Ethnohistorical evidence and traditions

2.3. Cultural Landscapes and sacred mountains

2.2.1. Selection of comparison Items

- Sacred mountains nominated or included in sites nominated as cultural landscapes or which could be included in this category
- Sacred mountains on islands and in the Berber Maghreb of special importance for the comparative analysis

2.2.2. Aspects to consider

- Evidence of the sacred nature of mountains through material heritage as sanctuaries, sacred landmarks, symbols and monuments
- Ethnohistorical evidence and traditions
- Pilgrimage routes in sacred mountains
- Evidence of religious manifestations



Figure 3.2.4. The skyscape is the common thread that stitches the cultural landscape through many of the main attributes of the nominated property. Although it is not an attribute, relations with the sky are a constant in the comparative analysis.

© Juan Rodríguez Sosa

3. Regional and local comparison

This section is sub-divided into two large parts. The first one addresses the marks of the Amazigh culture on the World Heritage List in general terms. The second puts the property into the context of Macaronesia and the Canary Islands.

3.1. Marks of the Amazigh culture on the World Heritage List

3.1.1. Selection of comparison Items

- Sites in the Berber Maghreb that include expressions of the Amazigh culture

3.1.2. Aspects to consider

- Evidence of Amazigh culture on the World Heritage List
- Pre-Islamic archaeological remains not included in the sections above

3.2. Framework of Macaronesia and the Canary Islands

3.2.1. Selection of comparison Items

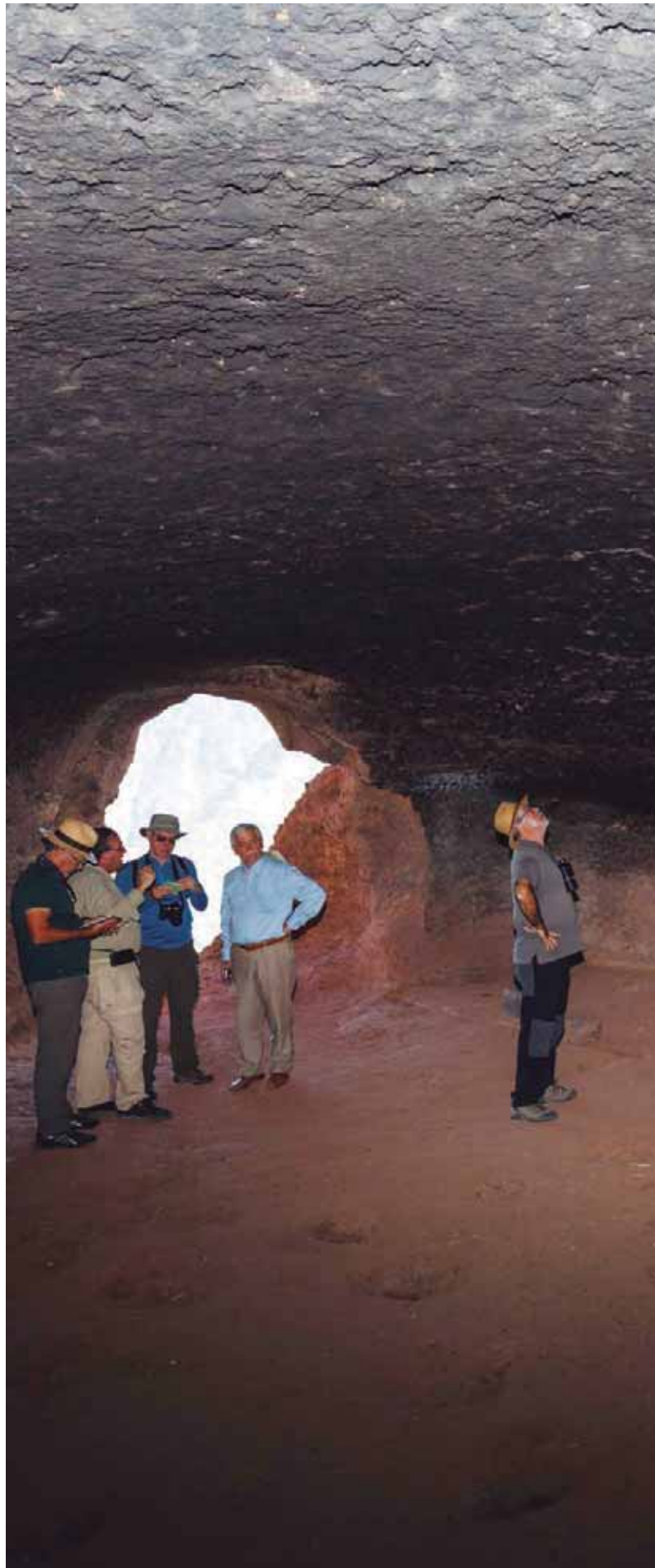
- Other archaeoastronomical sites
- Troglodyte expressions
- Comparable religious and cultural manifestations

3.2.2. Aspects to consider

- Archaeological evidence
- Ethnographic and historical evidence

Tables 3.2.1, 3.2.2 and 3.2.3 appended at the end of each section offer a synthesis of the properties compared, except in the case of the Macaronesia and Canary Island setting. The properties that are included on the World Heritage List or on the tentative lists are indicated, along with the manifestations and properties not nominated that are considered important for the comparative analysis viz-a-viz the attributes and components of the candidate cultural landscape. The tables also indicate the criteria used in the nominations, the date of inscription, the country, thematic study they will refer to and the full name of the site included on the World Heritage List or Tentative Lists.

→ Figure 3.2.5. The troglodyte habitat in its many manifestations brings together a large set of the property's attributes. The comparative analysis addresses their unique and outstanding nature. Snapshot of the scientific mission to Cueva del Rey in 2016
© Javier Gil León







3.2.b

Thematic framework of cultural astronomy

Comparative analysis

I. Cultural astronomy-related properties on islands

Although few and far between, the World Heritage List does include several ancient island culture properties that could bear a similarity to the astronomical manifestations of the attributes of the proposed property. It is important to emphasise that the astronomical component is not mentioned in the nomination dossiers or in the OUV of the properties analysed, except very tangentially, although recent studies have illustrated clear connections.

The new contributions that cast further light on the archaeoastronomical dimension of certain outstanding properties include the aforementioned Thematic Study “Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention” along with the new contributions included in the Portal to the Heritage of Astronomy. Below are the most important island ones that are similar to the nominated property:

Heart of Neolithic Orkney (UK, WH inscription: 1999, criteria (i)(ii)(iii)(iv))

The group of Neolithic monuments on Orkney consists of a large chambered tomb (Maes Howe), two ceremonial stone circles (the Stones of Stenness and the Ring of Brodgar) and a settlement (Skara Brae), together with a number of unexcavated burial, ceremonial and settlement sites. The group constitutes a major prehistoric cultural landscape which gives a graphic depiction of life in this remote archipelago in the far north of Scotland some 5,000 years ago.

← Figura 3.2.6. Sacred etchings resembling footprints (podomorphs) arranged in a pattern with astronomical orientation. Tindaya mountain, Island of Fuerteventura © Tarek Ode

The alignments of these ensembles, and particularly that of Stenness, provide clear evidence of the existence of solstice markers. However, their astronomical function is still being studied.

Megalithic Temples of Malta (Malta, WH inscription 1980, criteria (iv))

Malta and Gozo are small islands in the Mediterranean, situated some 350 km north of Libya and 90 km south of Sicily. It is thought that they were populated by human settlers from Sicily around 6000 BC. In the period between 3500 and 2500 BC, the ancient Maltese settlers constructed monumental stone structures conventionally called “temples”. Although ceramics and obsidian found on the islands reveal occasional contact with Sicily, Lampedusa and the Lipari islands, bearing in mind that navigation may have been treacherous in this era, it appears that the culture remained isolated to a large degree and thus represents another fine example of spontaneous and independent cultural development. In fact, for reasons as yet unknown it became totally isolated. What is known has had to be inferred from archaeological remains, with the temples being the most notable manifestations (Cox & Lomsdalen, 2010).



Figure 3.2.7. Stenness ceremonial site in the Orkney Islands, Scotland. © Sacred Sites / Martin Gray.

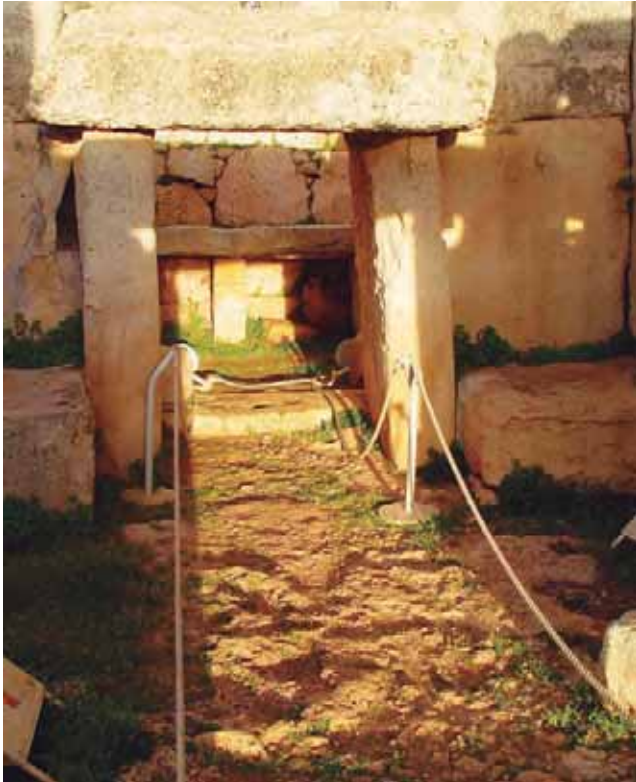


Figure 3.2.8. Mnajdra South spring equinox sunrise
© Reuben Grima

Of the megalithic temples of Malta inscribed on the World Heritage List in 1980, worthy of special mention due to their archaeoastronomical interest are Hagar Qim and Mnajdra (Gray, 2016). The archaeological ensemble of the temple of Mnajdra is located some 500 metres to the west of Hagar Qim, closer to the promontory opposite the sea. Mnajdra consists of two buildings, a main temple with two ellipsoidal chambers and a smaller temple with just one chamber. Amongst other possible uses, the temples of Mnajdra fulfilled calendrical and astronomical functions. The main entrance faces east, and during the spring and autumn equinoxes the first rays of light fall on a stone slab on the back wall of the second chamber. During the winter and summer solstices, the first rays of sunlight light up the corners of the two stone pillars in the passageway that connects the main chambers.

As with the temple of Mnajdra, Hagar Qim has also been shown to be aligned with the solstices. Hagar Qim has various alignments with the sun's rising position at the summer solstice. One, at sunrise, in the northeast side of the structure, where the sun's rays pass through what is known as the oracle to project the image of a disc, approximately of the same perceived size as the moon, onto a stone slab at the entrance to the interior apse. An interesting hierophany is found here where as

time passes the disc become a half moon, it then lengthens out into an ellipse and subsequently lengthens further to finally sink out of view as though sinking into the ground. A second alignment occurs on the northwest side of the temple at sunset, when the sun's rays fall onto a V-shaped groove carved in a distant rock aligned with the temple.

New studies in relation to the site at Mnajdra consider the hypothesis that the astronomical knowledge that informed those building the megalithic temples of Malta was of afro-centric origin (Wendorf, 2001).

Gavrinis - Sites mégalitiques de Carnac

(France, Tentative List, 1996)

With the arrival of the New Stone Age at the end of the 6th or beginning of the 5th millennium BC on the Atlantic coasts of Europe, the Megalithic Phenomenon was born in three different focal points and we still do not know if these are interrelated in one way or another: the island of Ireland, French Brittany and the southwest of the Iberian Peninsula. The Ireland focus has provided the oldest dates (end of the 6th millennium BC.), closely followed by Brittany (beginning of the 5th millennium) and the Alentejo (beginning of the 5th millennium).

The phenomenon was exceptionally important in Brittany where, over a period of 2000 years, more numerous and more impressive megalithic monuments were constructed than anywhere else in the world. Thousands of menhirs, hundreds of dolmens of all types, tens of alignments and a considerable number of stone circles or cromlechs were constructed in Brittany's countryside. This does not detract from the Irish monuments such as Newgrange, which is mentioned in this chapter, or others found in the Iberian Peninsula such as Os Almendres or Menga. However, Brittany does include the oldest menhirs ever built, some of the most complex, beautiful and spectacular dolmens, and the most complex alignments.

Whenever speaking of the megalithic phenomenon, the astronomical aspect must inevitably be discussed, and several studies have been conducted that in one way or another have tried to reveal the astronomical connections of the megalithic sites in Brittany. Yet while there are an incredible number of megalithic sites in the vicinity of the towns of Carnac and Locmariaquer (Morbihan), astronomical connections are not as numerous as one might expect.

The most important monuments include the famous alignments of Carnac where, for reasons as yet unknown, thousands of menhirs were positioned in parallel rows several hundred metres apart. The most famous are those at Le Menec, Kermario and Kerlescan the astronomical purpose of which, postulated by the British engineer Alexander Thom, has yet to be proved. Also in the vicinity of Carnac we find the Crucuno megalithic rectangle, whose diagonals are solstitially aligned, and countless dolmens including the trio of Mane Kerioned, noteworthy for their unusual orientation, and that at Kerkado which is notable for being extremely old.

At Locmariaquer are the remains of the largest menhir ever erected by man which, at 20 metres high, rivals the Egyptian obelisks, which are 2500 years younger and far more abundant. We refer here to Er Grah or the great Broken Menhir. In reality, this menhir, the astronomical use of which has been long discussed, was surrounded by other smaller menhirs including one which was exquisitely adorned. This was destroyed a few centuries after it had been erected and broken into three parts,

which were then recycled as slabs to cover the most beautiful dolmens in the world, Table des Merchands and Gavrinis cairn.

Gavrinis cairn was erected around 3500 BC in what is now an island in the Gulf of Morbihan bearing the same name. Although now considered an island, it is most likely that at that time it was connected to the land or formed part of tidal flats that were occasionally flooded, particularly given the fact that the sea level has increased considerably since prehistoric times when the area was first settled.

Gavrinis cairn is rightfully known as the cathedral of megalithic art and has important astronomical and symbolical connotations. This wonderful monument may have been aligned with the rise of Venus at its most southerly position, or upon full moonrise at a certain time of year (around winter solstice). From an astronomical perspective it may also be significant that the seventh of the orthostats in the northern wall of the monument is an enormous block of white quartz that is

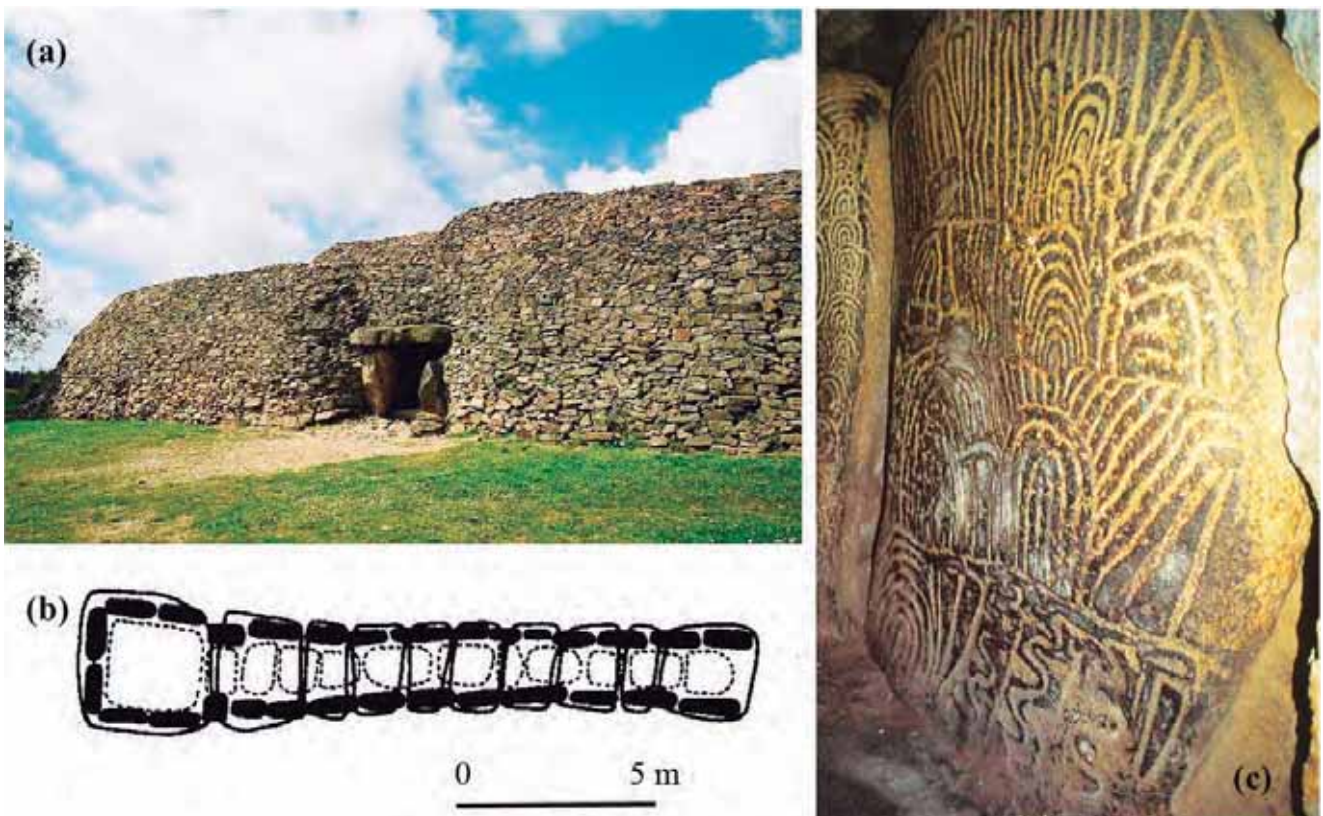


Figure 3.2.9. Gavrinis cairn (Locmariaquer, Brittany), which dates to around 3500 BC. Its exterior appearance (a) in no way suggests the splendour of the adornment of its interior, which has earned it the title of "cathedral" of megalithic art: 26 of the 29 orthostates that form the chamber are adorned. This wonderful monument is perhaps aligned with the rise of Venus at its most southerly position, although theoretically it may also have an alignment upon full moonrise at a certain time of year (with sunrise at the winter solstice). The seventh of the orthostates on the north side (b) is an enormous block of white quartz, which is illuminated by the full moon at major lunar standstill in summer. One of the slabs in its interior (c) has the typical design of the Gavrinis rock carvings with an abundance of spirals, meandering forms, concentric circles and what are known as double axes (similar to a vulva); all of these are typical elements of rock carvings on the European and African Atlantic seaboard. © Juan Antonio Belmonte



Figure 3.2.10. Heliacal setting over the sea of Tautoru, Orion's belt, marking the start of the new year for the Rapa Nui at the axis of the ceremonial platform of Ahu a Kivi, the only group of moais on Easter Island that face the ocean.
© M. Sanz de Lara and SMM/IAC

illuminated by the full moon when around the southern major lunar standstill limit.

In addition, one of the interior slabs includes designs that are typical of those found at Gavrinis with an abundance of spirals, meandering forms, concentric circles and what are known as double axes (similar to a vulva); all of these are typical elements of the rock carvings on the European and African Atlantic seaboard.

Nowadays, the megalithic sites of Brittany are being studied and analysed in detail in an attempt to reveal some of the keys to the role that astronomy, in its cultural dimension, played in the design and orientation of these imposing yet silent witnesses of our past.

Rapa Nui National Park (Chile, WH inscription: 1995, criteria (i)(iii)(v))

Rapa Nui – the indigenous name of Easter Island – bears witness to a cultural phenomenon that is unique in the world. A society of Polynesian origin settled on the island around AD 1000 and in the absence of any external influence they created magnificent architectural forms and sculptures with great strength, imagination and originality. From the 10th to the 16th century this society built shrines and erected enormous stone figures known as moai that create a cultural landscape beyond compare. Geographically, Rapa Nui can be considered the most isolated island on the planet. The property was inscribed on the World Heritage List in 1995.

In light of new research, the ceremonial platforms (ahus) on which the famous moais were erected, can now be reinterpreted from an archaeoastronomical perspective. Several studies have been able to establish parallels between the movements of the brightest stars in the sky and the activities the people of Rapa Nui carried out as part of a seasonal cycle. This link was also reflected in the archaeology of the island: some of the large ceremonial platforms such as Ahu a Kivi show an orientation pattern that follows these concepts (Edwards and Belmonte 2004). Studies of the cyclopean towers known as tupas are now being conducted. These may have been used as observatories by the island natives (Belmonte and Edwards, 2011).

Caguana Ceremonial Ball Courts Site (Puerto Rico - USA)

The Caguana Ceremonial Ball Courts Site is considered one of the most important archeological sites in the West Indies. Approximately 13 ball courts (bateyes) have been identified. Monoliths and petroglyphs carved by the Taínos can be seen among the rocks and stones. Some of the monoliths weigh over a tonne, and were most likely brought from the Tanama River located adjacent to the site. Approximately 13 courts (bateyes) have been identified in the area (Rodríguez, 2011).

The plan of the site indicates that that the aforementioned courts were designed in alignment with specific astronomical events. The site evidently functioned as a place to observe or predict astronomical events. There are symbolic representations of astronomical objects as rock engravings on rock slabs. The cultural landscape surrounding the site (and particularly its topography of

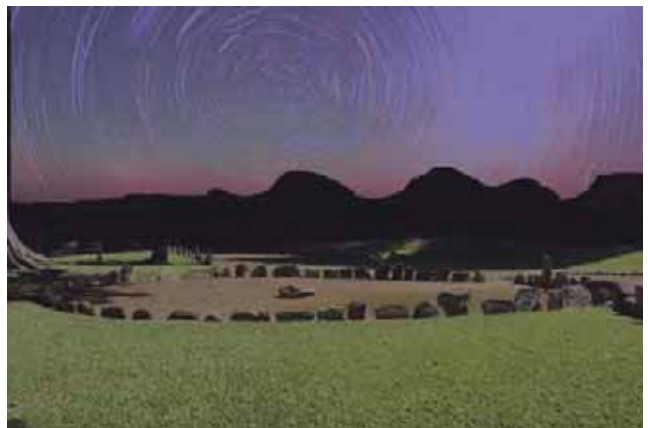


Figure 3.2.11. A series of monoliths aligned with the equinoxes with reliefs of human figures in Canagua archaeological site, Puerto Rico. © Angel Rodríguez

mountains and rivers) represents the cosmovision of the builders.

The site is not inscribed on the World Heritage List or the US national tentative list, but is included in the "Portal to the Heritage of Astronomy" as an ICOMOS-IAU case study.

Atituiti Ruga (French Polynesia - France)

The plateau of Atituiti Ruga occupies the southernmost part of the island of Mangareva, between the coastal plain (Atituiti Raro) to the south and the peak of Auorotini (Mount Duff) (441m) behind sheer cliffs to the north. There are extensive settlement remains on the plateau, including a large platform identified locally as Te Rua Ra ('the pit of the sun'). The archaeoastronomical data confirm ethnohistoric accounts extending back to the mid-19th century showing that the platform was a key location used for solstitial observations that helped to calibrate the lunar calendar, determine the transitions between the two main seasons of the year, and to make predictions about the coming year's breadfruit harvest.

Radiocarbon evidence suggests that the platform was constructed around AD 1450.

There is a good deal of ethnohistoric and linguistic evidence for the existence throughout Polynesia of local variants of a calendar based on the phase cycles of the moon and divided into two main seasons marked by the heliacal and acronychal rising of the Pleiades. In contrast, there are only a few records of ancient Polynesians using systematic observations of the rising or setting position of the sun to mark the seasons, and virtually no actual sites reliably identified where such observations took place. The platform at Atituiti Ruga is exceptional in being the only surviving structure known unequivocally (from both ethnohistoric and archaeological/archaeoastronomical evidence) to have been used for systematic solar observations in Polynesia prior to European contact (Ruggles, 2011).

The site is not inscribed on the World Heritage List or the French national tentative list, however it is included in the "Portal to the Heritage of Astronomy" as a ICOMOS-IAU case study.

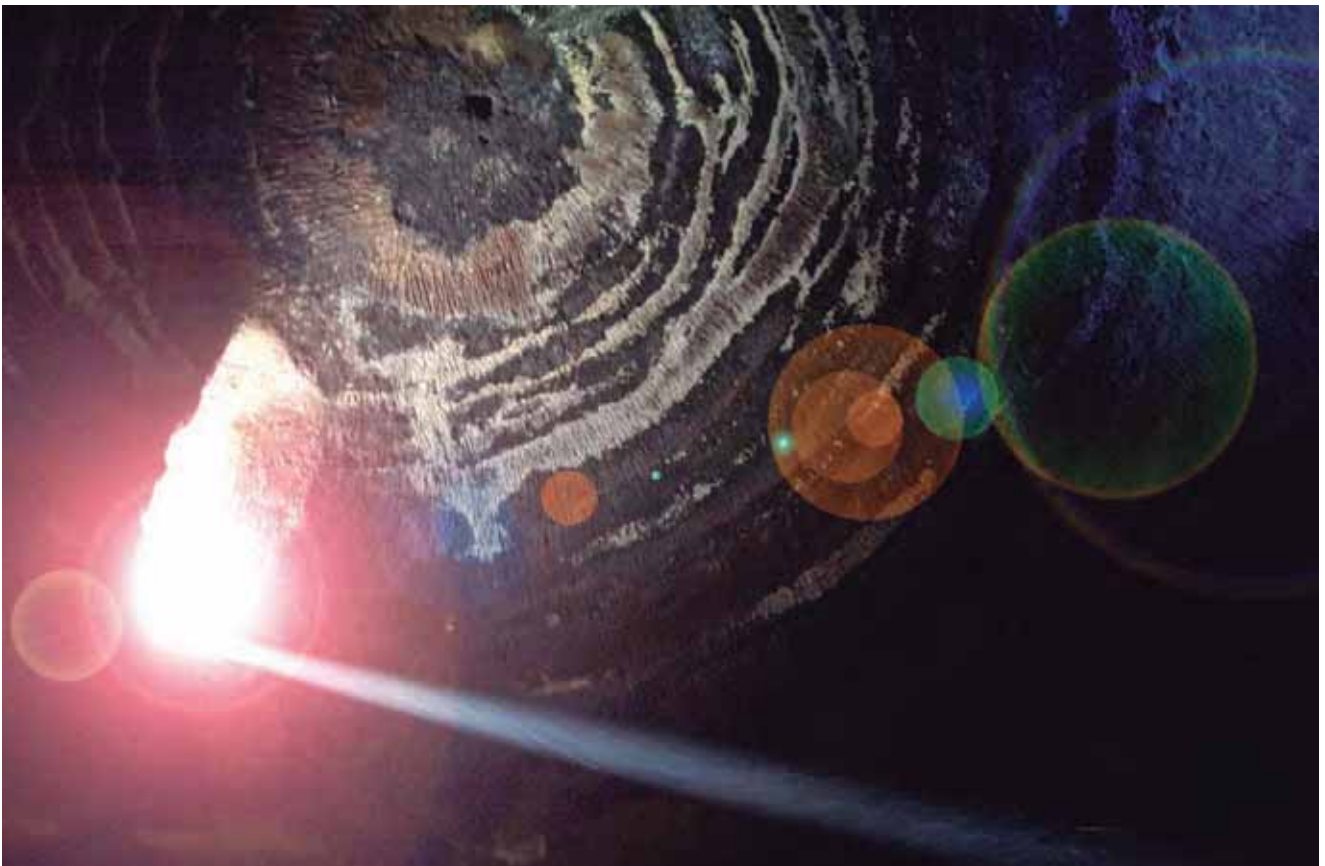


Figure 3.2.12. The hierophany that occurs inside Cave 6 in the algomaren of Risco Caído is similar to other ancient manifestations. These include Gavrinis cairn (France), the interior sanctuary of the main temple of Ramesses II in Abu Simbel (Egypt), the megalithic temples of Malta or the passage tomb at Newgrange in the Boyne Valley (Ireland), where phenomena also occur involving the projection of sun or moon light that have a cultural calendric connection with the changing seasons and with the worship of fertility, spirits or ancestors.

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2. Comparative analysis with Berber astronomy and culture in the Maghreb

Given the potential Berber influence and the fact that some of the basic attributes of the property are significant in terms of cultural astronomy, a vital part of the comparative analysis is establishing the links between these expressions and other manifestations in the Tamezgha (Berber Maghreb). This also highlights the international and regional significance of the property.

The analysis compares astronomical information obtained from ethnographic sources and regional archaeological evidence that may help to understand what happened, and continues to happen, in Gran Canaria and to put it in context. The lack of properties related to the cultural astronomy in the area of the Berber Maghreb is striking in this context, either as sites inscribed in the World Heritage List or as archaeological evidence included in these sites. As far as immaterial heritage is concerned, the survival of the Berber calendar at the M'Zab Valley site (Algeria, WH inscription: 1982, criteria (ii)(iii)(v)) stands alone as this is a landscape included on the List which also includes collective granaries. This aspect is not mentioned in the nomination.

There is only one item inscribed in the World Heritage List with attributes related to their own astronomy or influenced by the Amazigh culture, and one other included in the tentative lists.

Comparative Items

The only listed item is the Archaeological Site of Sabratha (Libya), a city of Amazigh origin that was inscribed in the List of World Heritage in Danger in 2016. The city was a Phoenician trading post which formed part of the ephemeral Numidian Empire and was later Romanised. There are two temples here, along with certain elements whose orientations highlight certain alignments in its original layout. The fact that these temples and the urban layout of the city and the nearby Sbeitla are astronomically aligned—towards the sun's rising position at the summer solstice and towards Sirius, respectively—is surprising. These orientations were also significant in the case of Gran Canaria, as markers of the new year.

The tentative lists include the archaeological site of

Chimtou and the Temple of the Sun of Makhtar, both included in the property nominated in 2012 as "The Mausoleums of the Kingdom of Numidia" (Tunisia) representing this civilisation of the ancient Maghreb. In the case of Chimtou, excavations have revealed the presence of a megalithic necropolis and, above it, a Numidian funeral monument with its associated temple, facing towards the sun when it rose over the royal mausoleum situated on the peak of the "marble mountain" at the summer solstice.

At the necropolis of Makhtar, the former capital of the Numidian Kingdom, is an equinox marker in the form of a step in the mountains on the eastern horizon. The sun rose at this point on the day after the spring equinox and the day before the autumn equinox, allowing these dates to be determined accurately. This phenomenon can be seen close to a notch on the horizon that could have been used as an equinox marker, showing evident similarities to the case of Gran Canaria.

The lack of comparable items on the World Heritage List is in sharp contrast with the relative abundance of archaeoastronomical manifestations or properties with astronomical connections related to Amazigh culture in the broader area of the Berber Maghreb. The most representative of these include the following:

Jebel Yagour (Morocco)

One of the most interesting elements are the so-called shield-disks associated with the Bronze Age, in the middle of the second millennium B.C. One of the most famous shield-disks is to be found in the Talat n'lisk rock engraving station on Jebel Yagour (or Yagour Plateau), to the south of Marrakech (Morocco). New research has revealed that these are engravings or figures of the moon, which means that this is one of the oldest known representations of the full moon. Jebel Yagour is surrounded by the highest peaks of the Atlas Mountains, like Jebel Toubkal. This is a significant reference point in the comparative analysis, because the moon would have set over this summit at the northern major lunar standstill limit, which could explain the presence of a full moon engraved at this spot. This relationship between the observation point and the reference point that is similar to that between the Bentayga Almorgaren and Roque Nublo in the nominated property.

Foum al Rajm Necropolis (Morocco)

The necropolis of Foum al Rajm, 80km south of Zagora, shows a clear interest in east-facing orientations, and the layout suggests a possible interest in alignment with the limiting rising positions of the moon. The hundreds of burial mounds at this remarkable burial site include what are known as the "mounds with a skylight". Opposite the skylight, there is usually a stone altar where the remains of ash from possible sacrifices have been found. The skylight defines a clear orientation that confirms the astronomical motive for the orientation of these monuments. Furthermore, the mounds with a skylight are found in high areas, with a free view of the horizon.

A striking aspect is that a similar orientation pattern is relatively common among groups of funeral monuments in the western Mediterranean. Specifically, the double orientation pattern found here is also found in other places such as on the island of Gran Canaria. The existence of skylights also offers an interesting point of similarity with the phenomenon found at Risco Caído.

Zinkekra Fortress (Libya)

There is an outstanding oasis in the centre of the Sahara, called Wadi el Agjal (River of the Dead) in the land of the Garamantes. This is the site of the fortified town of Zinkekra, on a clifftop overlooking the valley. The sacred nature of Zinkekra is highlighted by the large number of alphabetic inscriptions, in at least five different alphabets, and of rock engravings and paintings; and above all by the presence of what could be a rock sanctuary with a set of cup-marks engraved into the rock that is an ideal place for observing the solstice.

This is, in fact, an astronomical marker used for sacred purposes with a sanctuary or temple, together with a reference point on the horizon, also sacred on many occasions. This is fairly common in the regions inhabited by the ancient Libyans, if we consider other solstice and equinox markers found in the Maghreb. There are clear parallels between this case and Roque Bentayga.

El Hatiya and Araj Pyramids (Libya)

The Garamantes also built pyramids and mastabas as tombs for their dead. Opposite the tombs, they built hundreds of stelae of different kinds and altars with cup-marks to leave offerings that clearly define one direction. The declination histograms show beyond doubt

that the Garamantes oriented their funeral monuments astronomically and, furthermore, that they did so with a clear tendency towards the declination of the sun at the equinoxes. This preference for the equinox among the Imazighen peoples of North Africa could explain one of the most emblematic aspects of the nominated property: the presence of equinox markers on the island of Gran Canaria, and particularly in the area of the nominated property.

The Jebel Yagour sites and the Zinkekra fortress are mentioned in the ICOMOS thematic study on "Rock Art of the Sahara and North Africa" (ICOMOS, 2007). The study does not mention their possible archaeoastronomical interest but the final conclusions do highlight the fact that these sites are largely unexplored, because they are so large and scattered, because of the lack of resources to do so and because of difficulties arising from conflicts.



Figure 3.2.13. Images of a couple of burial mounds with skylight (general view and close-up) found in the Foum al Rajm necropolis located on top of a rocky outcrop enclosing a canyon in the Moroccan limits of the Saharan Desert. The way they are oriented would be imitated centuries later in Gran Canaria.

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3. Light in rock caves and sanctuaries

These correspond to the ensemble of recorded properties and other expressions in rock caves or inside burial mounds or sanctuaries, where projections of sunlight or moonlight occur that have cultural correlations with the change of the seasons and with the worship of fertility, spirits or ancestors. The cases compared bear some similarity to the manifestations that occur in the *almogaren* of Risco Caído, as well as perhaps with other locations in the proposed property such as *Cueva Candiles*.

In addition to the aforementioned cases of Gavrinis (France) and the megalithic temples of Malta, already outlined in the preceding section in relation to properties linked to the cultural astronomy of the islands, a few manifestations of this type, which are not very abundant, are worthy of special mention in this comparative analysis. One is the famous manifestation of the divine at the temple of Ramesses II. Also relevant are the cases of the passage tomb at Newgrange in Ireland and the caves of Lacco in Peru which bear a certain yet remote resemblance.

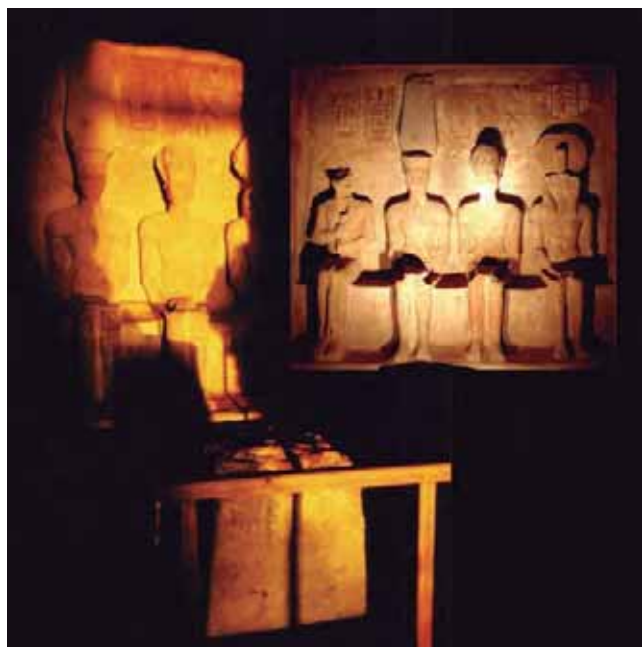


Figure 3.2.14. In the early morning of 22 February 2004, the light of the rising sun entered the *sancta sanctorum* of the main temple of Abu Simbel. The first rays lit up the images of Amón-Ra, the deified king and the right shoulder of Ra-Horakhty, both of which are sun-gods, while the image of Ptah (see image to the right), the god of the underworld remain in darkness. This marvellous hierophany occurred at the beginning of the seasons of Peret and Shemu, during the first decades of the reign of Ramesses II, who built the temple. © Juan Antonio Belmonte

Nubian Monuments from Abu Simbel to Philae (Egypt, WH inscription: 1979, criteria (i)(iii)(vi))

Owing to its astronomical orientation, one of the most interesting examples of the effect of light and shade is undoubtedly the phenomenon of the illumination of the interior sanctuary of the main temple of Ramesses II in Abu Simbel. This famous temple forms part of the ensemble included on the World Heritage List in 1979 under the name "Nubian Monuments from Abu Simbel to Philae".

Much has been written about this phenomenon and many of the theories are unfounded, including that recounted by most tourist guides concerning the celebration of the "birthday" of Ramesses. Without doubt, the light phenomenon must be associated in some way with the calendar and with its social, political and religious consequences, and the presence within the temple complex of a shrine dedicated to Thoth, the God of wisdom and "inventor" of the calendar, supports this idea. The era of Ramesses II was very important in the history of the calendar of ancient Egypt as, during most of his reign, the seasons of the civil calendar were based on nature. This alignment between nature and calendar was particularly dramatic in Abu Simbel (see Figure 3.2.14).

At the latitude of the temple, the heliacal rising of Sopdet (Sirius) took place on I Akhet I, the festival of Upet Renpet, the new year in the civil calendar; in the four-year period centred on 1270 BC, the tenth year of the reign of Ramesses II. This event occurred in this way for the first time since the start of the era of the pyramids, 1460 years earlier, when it is likely that the heliacal rising of Sirius was not yet a phenomenon observed systematically. In addition to this, during the reign of Ramesses the light phenomenon occurred on two occasions, on I Peret I and on I Shemu I, the start of the other two seasons in the Egyptian year. This happened for a period of almost 48 years centred on 1269 BC for the illumination that occurred at the end of October (I Peret I) and on 1253 BC for the end of February (I Shemu I), the latter covering most of the reign of this king (1279-1216 BC). In addition, according to old photographs, the sun may have risen over a recess in the landscape similar to that of Akhetaton (unfortunately, the repositioning of the temple makes it difficult to verify this fact).

To further complete the calendrical aspect of the temple, the shrine dedicated to the sun god (see Figure

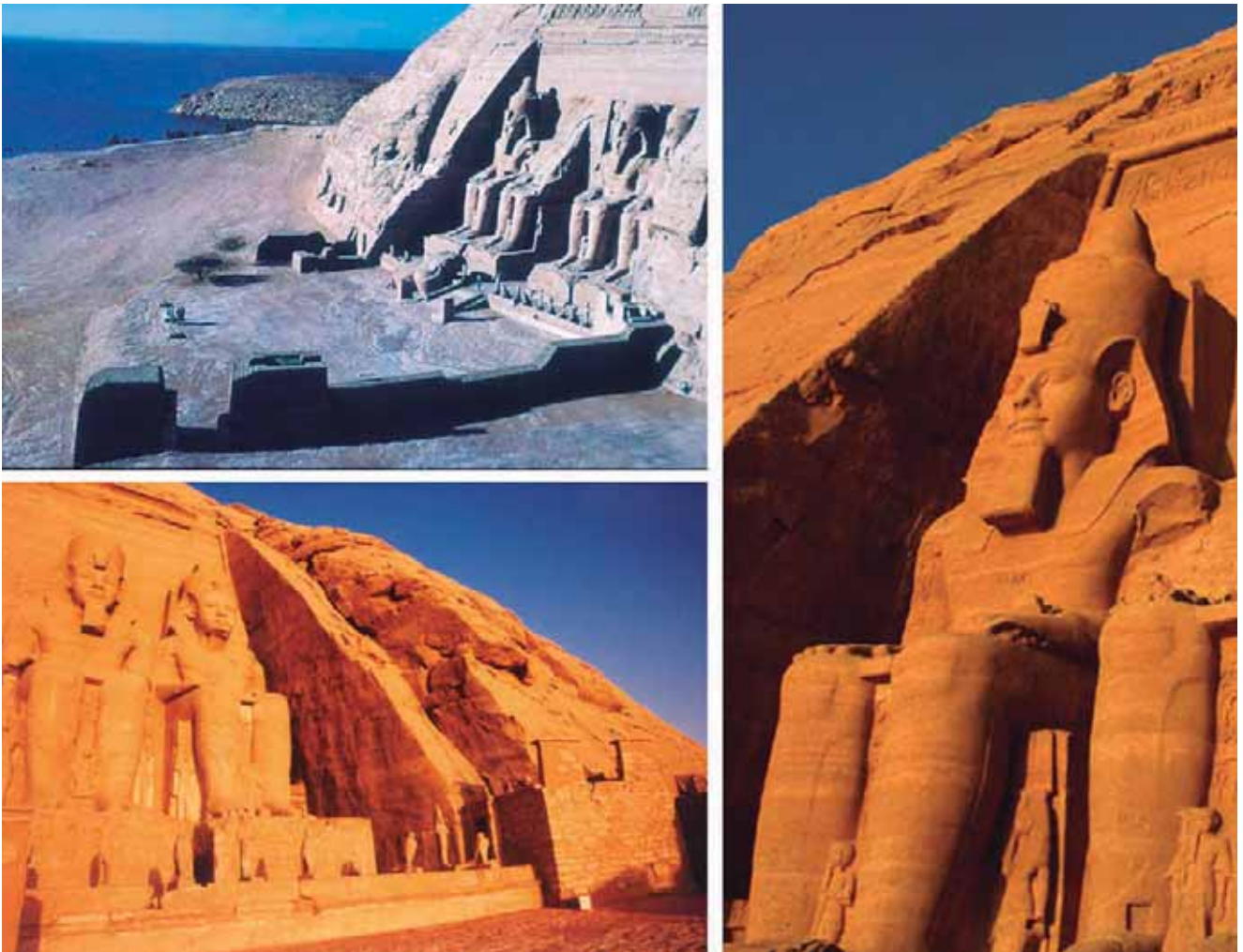


Figure 3.2.15. Facade of the great temple of Abu Simbel with the great statue of Ramesses II, in its new position beside lake Nasser. The small shrine of Ra-Horakhty, aligned with the rising sun at the winter solstice, is situated to the right of the statues (bottom left image). © Juan Antonio Belmonte

3.2.15), located to the north of the colossal images of the Pharaoh, seems to be aligned with the rising sun at the winter solstice. Once again we have a sanctuary aligned with the solstice.

In 1260 BC the winter solstice fell at Ill Peret I, the date of a very important festival dedicated to Amón-Ra, and owing to the slow movement of the rising sun around the solstice, the solstitial alignment would have occurred at Ill Peret I for a period of around 40 years, once again coinciding with most of the reign of Ramesses II. This may have had a series of political or religious consequences associated with the spectacular hierophany that took place within the sanctuary. All this is difficult for us to imagine today, but without doubt these phenomena contributed to making the reign of Ramesses II one of the best remembered in the Era.

Brú na Bóinne - Archaeological Ensemble of the Bend of the Boyne (Ireland, WH inscription: 1993, criteria (i)(iii)(iv))

The Brú na Bóinne complex, containing the three great passage tombs of Newgrange, Knowth and Dowth, is located north of Dublin. Inscribed on the World Heritage List in 1993, owing to the size and quality of the sites, these are the most important example of prehistoric megalithic monuments in Europe, which include a large number of monuments with social, economic, religious and burial functions.

The megalithic passage tomb of Newgrange was built around 3200 BC. The largest mound in the complex, it is some 80 m in diameter and its base is held in place by 97 massive kerbstones, some of which are richly deco-



Figura 3.2.16. Location of the "lightbox" situated above the main entrance of the tomb at Newgrange. Spiral carvings can also be seen on the entrance stone.

© Juan Frías Velatti –WHC, UNESCO

rated with expressions of megalithic art based on sun motifs, the most impressive of which is that situated at the entrance to the tomb. The ring of monoliths surrounding the tomb is likely to have been built at least a thousand years after the original structure. It is also believed that building the mound at Newgrange required a workforce of almost three hundred over a period of at least twenty years.

The tomb has an 18-metre long passageway that leads to an inner cruciform chamber. Over the entrance to the passageway there is an optical device or lightbox that is worthy of special mention (see Figure 3.2.16). This roofbox device allows the light of the sun to penetrate the passageway at a certain time of the year, to impressive effect. In fact, both the passageway and the burial chamber are only lit up just after sunrise on mornings around the winter solstice when the sun penetrates the passageway through the specially designed opening above the main entrance. This exceptional event lasts 17

minutes from 19 to 23 December. Although alignment with the sun is not uncommon in passage tombs, Newgrange is one of the few that has this additional roofbox feature (Smyth, 2009).

The alignment of the optical device is surprising in its precision. Currently, the first rays of the sun enter roughly four minutes after sunrise, but calculations based on the variability of the inclination of the ecliptic show that 5000 years ago the first rays of the sun would have entered exactly at sunrise (see Figure 3.2.16). The alignment of Newgrange with the sun is very precise when compared with similar manifestations in other tombs such as Dowth or the case of Maes Howe in the Orkney Islands, referred to in point 1 of this chapter.

For the Neolithic culture of the Boyne valley, the winter solstice marked the start of the new year, a sign of rebirth in nature and the hope of new life - crops, animals and humankind. It may also have served as a powerful symbol of the inevitable victory of life over death, perhaps promising new life to the spirits of the dead.

Caves of Lacco (Peru)

The caves of Lacco are located in the archaeological complex of Kenko, a sacred place known in Quechua as Q'inqu (labyrinth). They are located on the outskirts of Cuzco (Peru), the historical centre of which was declared a World Heritage Site in 1983. Under the rule of the Inca Pachacutec this city became a complex urban centre with distinct religious and administrative functions. While the archaeological complex of Kenko and the caves of Lacco are located outside the limits of the

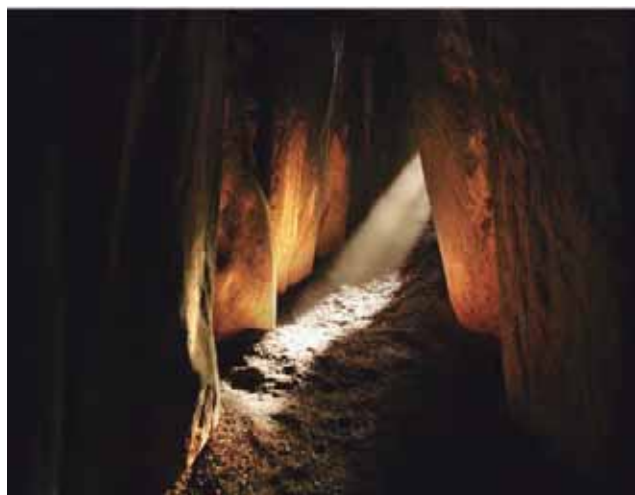


Figura 3.2.17. The phenomenon whereby the passageway of the tomb at Newgrange is lit up during the winter solstice.

© Clare Tuffy

property they are just 5 km away, meaning they could be deemed to be inside its area of influence.

The three caves of Lacco, hewn from limestone rock, show the great interest and capacity the Incas had in incorporating various astronomical orientations into the design of these monuments. The caves situated to the southeast and southwest incorporate optical devices or light tubes, specifically aligned to project the rays of the sun or moon to create various light phenomena at key times of the year.

Each of the caves has altars that the Incas managed to illuminate at certain times with the light of the sun or the moon. Thanks to the design of the optical tube, the altar of the northeast cave is fully illuminated at sunrise during the days immediately before and after the June solstice, the great Inca festival of Inti Raymi.

The southwest cave is of particular interest. It is the smallest but appears to have been the most prominent of the existing three caves, as can be seen from the quality and detail of the carvings, which include fine pumas and snakes, near the entrance and a polished altar situated in its interior chamber. The altar, of a size and height appropriate for sacrificial ceremonies, is bathed in the light of the noonday sun creating, by reflection, an impressive light effect inside the cave (Gullberg, 2009).

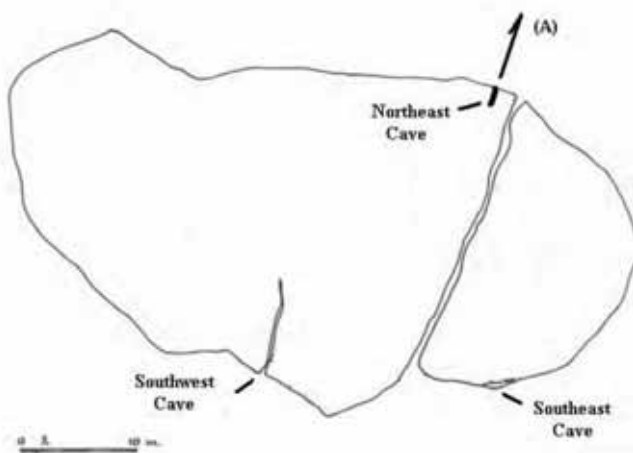


Figura 3.2.18. Map of the caves of Lacco. (A) indicates the direction of the sun at sunrise at the June solstice from the caves situated to the northwest. The two remaining caves have vertical alignments with their optical devices (Van de Goutche, 1990).

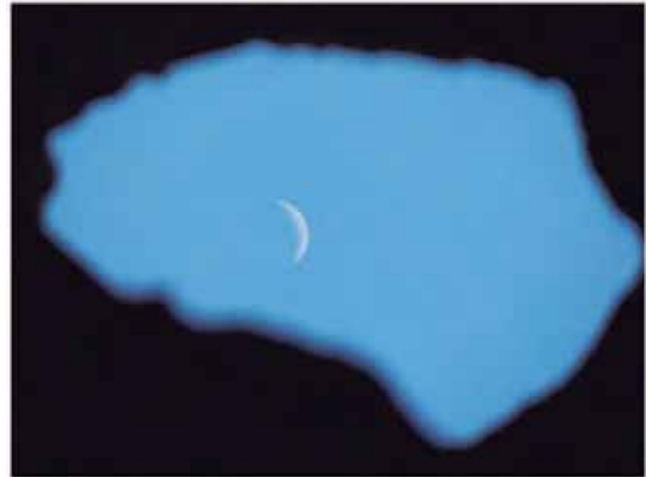


Figura 3.2.19. View of the crescent moon through the optical device or light tunnel in the southwest cave of Lacco. © Steven Gullberg

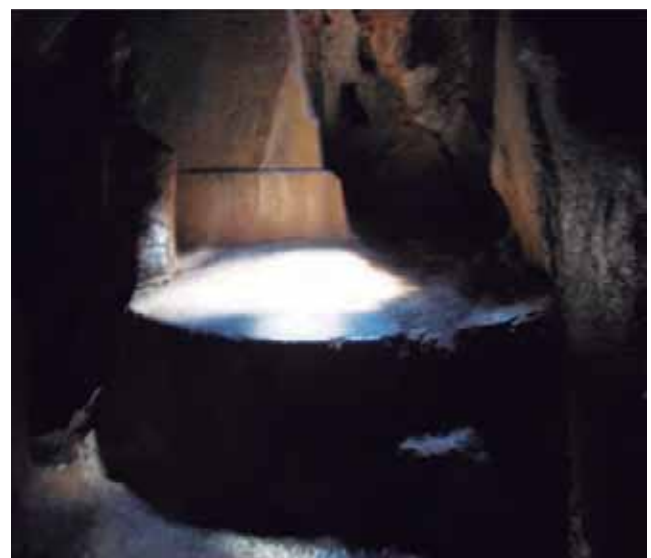


Figura 3.2.20. Sacrificial altar illuminated in the southwest cave of Lacco. © Steven Gullberg

TABLE 3.2.1 - PROPERTIES CONSIDERED IN THE COMPARATIVE ANALYSIS

Name	Country	World Heritage	Date	Criteria	Remarks
CULTURAL ASTRONOMY - THEMATIC NETWORK					
ISLANDS					
Heart of Neolithic Orkney	UK	Listed	1992	(i)(ii)(iii)(iv)	Astronomical alignments
Megalithic Temples of Malta	Malta	Listed	1980	(iv)	Sanctuary and astronomical marker Solar hierophany
Rapa Nui National Park	Chile	Listed	1995	(i)(iii)(v)	Cultural landscape and astronomical relationships of some attributes
Gavrinis	France	Not nominated			Important astronomical and symbolical connotations UAI-ICOMOS Thematic Study (*)
Canagua – Puerto Rico	USA	Not nominated			Cultural landscape and ceremonial site UAI-ICOMOS Thematic Study (*)
Atituiti Ruga - French Polynesia	France	Not nominated			Calendar and astronomical marker UAI-ICOMOS Thematic Study (*)
Gotland Grooves	Sweden	Not nominated			Astronomical markers
BERBER MAGHREB – AMAZIGH CULTURE					
Talat n'lisk - Yagour plateau	Morocco	Not nominated			Rock art - disc shields. Astronomical relations. ICOMOS Thematic Study (**)
Sahara desert - Multiple locations	Several countries	Not nominated			Cup-marks and channel ensembles Astronomical relations
Idebns in Fadnun	Central Sahara	Not nominated			Funerary monuments Astronomical orientations
Foum al Rajm	Morocco	Not nominated			Necropolis with astronomical orientations.
Fortress city of Zinjecra	Libya	Not nominated			Sanctuary Cup-marks and astronomical relations. ICOMOS Thematic Study (**)
El Hatiya and Jarajj	Libya	Not nominated			Garamante pyramids Astronomical connections
Garamante stelae at Archaeological Museum of Germa	Libya	Movable property Not nominated			Astral character. Funerary cult.
Menzel Temine	Tunisia	Not nominated			Punic necropolis Astronomical orientations
Archaeological site of Simithu (The Royal Mausoleums of Numidia, Mauritania funerary and pre-Islamic monuments)	Tunisia	Tentative List	2012	(ii)(iii)(iv)	Megalithic necropolis, Numidian funerary monument. Astronomical alignments.
Mactar – Temple of Sun (The Royal Mausoleums of Numidia, Mauritania funerary and pre-Islamic monuments)	Tunisia	Tentative List	2012	(ii)(iii)(iv)	Temple with equinoctial orientation
Temples of Sabratha (Archaeological Site of Sabratha)	Libya	Listed	1982	(iii)	Astronomical correlations Amazigh, Punic and Roman influence
LIGHT IN ROCK CAVES AND SANCTUARIES – OTHER ARCHEASTRONOMICAL REFERENCES					
Main temple of Abu Simbel (Nubian Monuments from Abu Simbel to Philae)	Egypt	Listed	1979	(i)(iii)(vi)	Calendar temple Solar hierophany
Newgrange passage tomb (Brú na Bóinne - Archaeological Ensemble of the Bend of the Boyne)	Ireland	Listed	1993	(i)(iii)(iv)	Solar hierophany on winter solstice Light device
Lacco caves	Peru	Not nominated			Solar hierophany. Light device.
INTANGIBLE HERITAGE					
Mزاب Oasis	Argelia	Listed	1982	(ii)(iii)(v)	Relations with Berber calendar
Tuaregs of Hoggar	Argelia, Níger	Not nominated			Relations with Berber calendar

(*) ICOMOS-IAU Thematic Study: Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention (Ruggles and Cotte, 2008).

(**) ICOMOS Thematic Study: Rock Art of the Sahara and North Africa: (2007)

4. Individual conclusion

In the context of the comparative analysis, mention must be made of the Thematic Initiative on Astronomy and World Heritage launched in 2003 with the aim of promoting the identification and recognition of astronomy-related sites, in order to help balance the representation of these properties on the World Heritage List. The Initiative aims to establish a link between Science and Culture towards recognition of the monuments and sites dispersed throughout all geographical regions that are connected with astronomical observations, not only scientifically, but also through testimonies of traditional community knowledge, such as in this case. The initiative reaffirms the importance of sites that are connected to astronomical observation considering that: "The sky, our common and universal heritage, forms an integral part of the total environment that is perceived by mankind. Including the interpretation of the sky as a theme in World Heritage is a logical step towards taking into consideration the relationship between mankind and its environment. This step is necessary for the recognition and safeguarding of cultural properties and of cultural or natural landscapes that transcribe the relationship between mankind and the sky".

There is no doubt that some level of interest in celestial objects and events is a feature of nearly all, if not all, human societies throughout the ages. For most of those in the past, the sky formed a prominent and immutable part of the observed world, its repeated cycles helping to regulate human activity as people strove to make sense of their world and keep their actions in harmony with the cosmos as they perceived it. In some cases, this was simply in order to maintain seasonal subsistence cycles; in others, it helped support dominant ideologies and complex social hierarchies. Astronomy really is a fundamental attribute of humankind, a vital facet of human culture common to every chronological period, geographical situation, and type of human society (Ruggles & Cotte, 2010),

Despite these considerations, in general terms, the vast astronomy-related heritage is still highly under-represented on the World Heritage List, with the exception of a few sites like Jantar Mantar, Jaipur (India), or the monuments of Dengfeng in "The Centre of Heaven and Earth" (China), both inscribed in 2010.

In this context, we must highlight the fact that practically all the comparable inscribed items considered in the

analysis do not include this dimension in the reasons for their nomination. This also suggests the possibility of re-assessments for some of the properties mentioned.

The comparative analysis in this section on cultural astronomy reaches the following conclusions regarding the importance, outstanding value and representativeness of certain attributes of the nominated Cultural Landscape:

- Signs of archaeological manifestations with astronomical connections in island cultures, especially isolated cultures, are relatively common throughout the world. However, there are only five sites on islands on the List that show any similarity, although the astronomical connections and their relations with the sky have not been mentioned in the grounds for their nomination in any of the five cases. Furthermore, Gavrinis (France) and the Newgrange passage tomb (Ireland) can hardly be considered as strictly island manifestations in terms of culture, context or isolation. In any event, works of an astronomical nature are highly exceptional expressions in each site. Thus, the examples that could be considered the closest are those of Rapa Nui (Chile) and the neolithic temple of Hagar Qim (Malta), whose astronomical meanings are currently being studied.
- The comparative analysis in the Berber Maghreb suggests the presence of a large number of sites with roots in the Amazigh culture with clear astronomical connections, and these could be related to the nominated property (see details in Section 2.b.v). This is the case of some sacred sites with connections with the sky that present cup-marks and grooves, which are also very common in the area of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria. Furthermore, there are several striking parallels between some of the calendar systems of North Africa that take inspiration from the oldest sources, and the one mooted in the case of the Canary Islands (see details in Section 2.b.iv). However, it must be pointed out that none of the manifestations analysed is inscribed among the properties of the World Heritage List.
- Other expressions, such as the example of the main temple of Abu Simbel and its solar hierophany, are exceptional expressions included in classical properties that did not consider the astronomical and calendrical relations in their nomination.

Thus, the comparative analysis indicates that the nominated property is a unique and outstanding case that clearly represents the manifestations of cultural astronomy in island territories, and it is related to certain expressions of the ancient Amazigh culture - the origin of the ancient Canarians.

Added to this is the fact that the cultural landscape of the nominated property is to a large extent determined

by, and comprised of, the skyscape; not solely and exclusively because of the existence of its *almogarenes* with astronomical connections, but also because a substantial part of the settlements and rock art are related to observations of the sky and with the terrestrial landmarks that reference celestial events. Hence, it is a landscape that is interconnected with the sky, providing the nominated property with an outstanding, unique dimension.



3.2.c

Troglodyte habitat and rock art Comparative analysis

Over the centuries, troglodyte communities have created a little-known form of architecture that shows exceptional versatility and ingenuity. Ever since the Stone Age, the diverse troglodyte cultures have created spaces that could be used as dwellings, economic activity, places of worship, funerals or defence. In certain, exceptional cases, such as that of the nominated property, all these functions are encompassed in a single settlement or group of settlements.

Living in caves is a custom that belongs to an ancient and widespread tradition that continues to be practised today. There are currently more than 30 million people living in caves in China, and in countries such as Tunisia, Spain, Italy and France, there are still remarkable examples of communities that live in caves.

Apart from dwellings, one of the most spectacular forms of this architectural tradition is the sacred cave dwellings. Temples in caves and caverns, monasteries, sepulchral vaults and catacombs sculpted in rock form a vast heritage designed for worship or burial, showing how the human imagination has considered rock as a form of impenetrable refuge. These forms of sacred rock architecture are generally highly sophisticated, as sculpting a sanctuary in a cave leaves little or no room for mistakes (Rewerski, 1995).

I. Comparable items on islands

Troglodyte manifestations on islands included on the World Heritage List are certainly few and far between. There are only three sites: two necropolises and a set of cave temples. No further examples of this kind are found on national tentative lists. Nor are there any cultural landscapes in which the troglodyte habitat is an

essential element or attribute.

Rocky Necropolis of Pantalica

(Italy, WH inscription: 2005, criteria (ii)(iii)(iv)(vi))

The Rocky Necropolis is one of two areas that comprise the site known as Syracuse and the Rocky Necropolis of Pantalica (Italy). It is situated in the proximities of an open quarry that contains over 5,000 tombs excavated in the rock between the 13th and 7th centuries B.C. Vestiges of the Byzantine era survive in this necropolis, particularly in the foundations of the “Anaktoron” (Prince’s Palace). Hence this is a troglodyte site that was used fundamentally as a funeral site, on an island that we could call quasi-continental, because of its size and proximity to the mainland.

Hal Saflieni Hypogeum

(Malta, WH inscription: 1980, criterion (iii))

Inscribed in the World Heritage List in 1980, this hypogeum houses an enormous subterranean structure excavated around 2500 B.C., with colossal blocks of lime-



Figure 3.2.22. Rocky Necropolis of Pantalica (Italy).
© Susan Wright / UNESCO-WHC

← 3.2.21. Close-up of the silos inside Cueva del Guayre, in the archaeological complex of Cuevas del Roque del Rey
© Javier Gil León



Figure 3.2.23. Hal Saflieni Hypogeum (Malta)
© Heiko Gorski / UNESCO-WHC

stone that have been lifted into place with Cyclopean apparatus. It was probably initially built as a sanctuary, but this unique monument was used as an underground cemetery, which is thought to have originally contained the remains of some 7,000 people. The structure of the hypogeum comprises three levels, one on top of another, that were built and used throughout prehistoric times in Malta, between 4000 and 2500 B.C. What is striking because of the parallelism is the fact that only chert, flint and obsidian tools were used in its construction.

Elephanta Caves

(India, WH inscription: 1987, criteria (i)(iii))

Situated on the island of the same name, in the Sea of Oman, off the coast of Mumbai (formerly Bombay), the “city of caves” is a monumental set of rock art caves characteristic of the worship of Shiva, built between the mid-5th century and the 6th century A.D. Indian art has achieved one of its most perfect expressions here, especially in the gigantic high reliefs that decorate the main cave. This site was inscribed in the World Heritage List in 1987. The small island of Elephanta is dotted with numerous ancient archaeological remains that bear unique witness to its rich cultural past and prove that it was occupied since the 2nd century B.C. In this case, it is a set of exclusively sacred, religious caves that are found on an island just off the east coast of Mumbai.

Going beyond the comparable items on the List, there are many islands in the world with troglodyte manifestation to a greater or lesser extent, representing a large component of island cultural landscapes. Some examples at different latitudes will give us a better appre-

ciation of the diversity of these expressions in island cultures.

The island of Santorini (Greece) stands out as a benchmark of troglodyte habitat because of the persistence of these dwelling systems. Furthermore, they comprise a central element of the island landscape. This is one of the few places in Europe where dwellings of this kind are still used, and even highly valued. In this case, these have proven to be the best structures in the area to provide protection from earthquakes, a solution to the problem of earthquakes that has long been known traditionally.

Staying in the Mediterranean, we can also find outstanding examples of pre-historic cave dwelling in Menorca (Spain) or in the area of Alghero in Sardinia (Italy). In the case of Menorca, we have the outstanding Talayotic necropolis of Cales Coves.

As a counterpoint, the Island of Niue (Niue) deserves mention. The first Polynesian settlers lived in the caves of this South Pacific island. Currently, many of the coastal caves are considered sacred and a symbol of identity.

2. Comparable items in the Berber Maghreb (Tamazgha)

Despite the profusion of Berber troglodyte manifestations in the area of the Maghreb or Tamazgha to be more precise, these expressions and the associated cultural landscapes are not represented on the World Heritage List. Tamazgha refers to the territory in North Africa in which a range of different Amazigh cultures have settled and developed. It encompasses an area running from west to east, from the Canary Islands to the Siwa Oasis in Egypt, and north to south from the Mediterranean to the Sahel.

The nomination in 2002 of the Parque des Aurès (Algeria, Tentative List), entitled “Parc des Aurès avec les établissements oasiens des gorges du Rhoufi et d’El Kantara” is worth mentioning. Several troglodyte settlements are located in this area, such as the one at Maafa, although it must be said that these manifestations are not included in the nomination. Mention must also be made of the nomination of the Siwa archaeological area (Egypt) in 1994, one of the Berber enclaves in Egypt, with highly interesting troglodyte expressions in the surrounding area, at Gebel al Mawta (Mountain of the Dead). The

nomination does not make any mention of this facet of the property in this case either.

But as we have said, these manifestations are really abundant in several countries of the region. The evidence suggests that caves were the most common dwelling habitat among the Berbers (Basset, 1920). In the case of Tunisia, Berber cave habitats are located in the south of the country, in the sub-desert zone between Medenine and Tataoune, but are particularly spread along the great mountain arc of the Jebel from Matmata to Tripoli. Two leading examples are::

Matmata (Tunisia)

The Berbers developed two kinds of cave dwellings in the south of Tunisia: those excavated horizontally into the side of the rock, and those cut vertically, like a well. The latter kind is the most widespread in Matmata, where an extraordinary underground complex of dwellings has been laid out, often on two levels, the first as dwelling places and the second for storage. This particular kind is not represented in the case of the nominated property, although cave dwelling does represent a fundamental component of that amazing cultural landscape.

Chenini (Tunisia)

The kind of habitat and the building techniques represented in this troglodyte Berber settlement, situated 18km from Tataouine, are similar to the case of Gran Canaria, including the stone enclosure. The settlements are excavated horizontally and laid out on three organisational levels. As in Gran Canaria, their construction and maintenance also require specialist labour (the *Elhaffar*), equivalent to the “*Piquero*” in the case of the nominated property. An important aspect of this landscape is the existence of olive presses in caves that, despite the appearance of modern oil industries, continue to be the method preferred by the local population, indicating the degree of survival and deep roots of this culture (Khatalli, Sghaier y Sandron, 2015). To complete the analogies, the settlement also has a “*qsar*” or fortified place for the collective storage of grain and other goods, similar to the granaries of Gran Canaria. There are other outstanding examples of fortified granaries in the area, such as those of Guermassa and Douiret.

Libya is also well represented by troglodyte Berber habitat, particularly in the area of Jebel Nefusa, where there are outstanding, large and well-conserved settlements

such as Gharyan. Imposing fortified granaries (*qsar*) like those at Kawab, al Haj and Nalut are also found in this same area.

Morocco also bears witness to a long troglodyte tradition, where the traditional Berber habitat in caves is manifested in such emblematic places as Ouaouizeght or the Dadès Valley and gorges. Even in major cities like Fez or Taza, the signs of old, populous troglodyte sites are conserved. Manifestations relating to the troglodyte fortified granaries, also known as *agadir*, are well represented, including examples such as Tizgui, in the Souss-Massa-Drâa región, or what are known as the hanging granaries of Oushgal in the upper basin of Oued el Abid.

3. Comparable items in other parts of the world

Unlike the extreme scarcity of similar items listed in the World Heritage List on islands and in the Berber Maghreb, in the rest of the world, there is a range of items that represent various facets of the troglodyte culture.

Göreme National Park and the Rock Sites of Cappadocia

(Turkey, WH inscription: 1987, criteria (i)(iii))

In the Göreme Valley and the surrounding area, in the middle of a spectacular landscape, sculpted entirely by erosion, there are rock-hewn sanctuaries that bear unique witness to post-iconoclastic Byzantine art and the troglodyte dwellings and villages that are the vestiges of a traditional human habitat that dates back to the 4th century. All these elements conserve the fos-



Figure 3.2.24. Elephanta Caves (India)
© Francesco Bandarin / UNESCO-WHC

silised image of a province of the Byzantine empire that evolved from the 4th century until the arrival of the Seleucid Turks in 1071, bearing testimony to a civilisation that has now disappeared. The natural environment of this mountainous region of Cappadocia, some forms of the troglodyte habitat and the fact that it is a manifestation of an extinct culture, offer important similarities. It was inscribed as a mixed property in 1985.

The Sassi and the Park of the Rupestrian Churches of Matera

(Italy, WH inscription: 1993, criteria (iii)(iv)(v))

Situated in the Basilicata region, this site houses the most extraordinary and best-conserved set of troglodyte dwellings in the Mediterranean basin, perfectly adapted to the morphology of the terrain and the ecosystem of the area. This settlement excavated in the tuff (*tuffo*) is a fine example of vertical urbanism blending into the background that shows an intelligent management of resources such as water and a careful concept of orientation for the winds. Forms and geographical and cultural differences aside, the final concept bears a certain similarity to the settlements identified in the nominated property. With the exception of other major differences such as the timelines, there is a certain similarity around the fact that it is a place that illustrates successive stages of human occupancy.



Figure 3.2.25. The Sassi and the Park of the Rupestrian Churches of Matera (Italy) © UNESCO / Author: Yvon Fruneau

Cultural Landscape of Maymand

(Iran, WH inscription: 2015, criteria (iii)(iv)(v))

Maymand is a remote, semi-arid area at the end of a valley at the southern extremity of Iran's central mountains. The villagers are semi-nomadic farmer-pastoralists. They raise their animals on mountain pastures, living in temporary settlements in spring and autumn. During the winter months, they live lower down the valley in cave dwellings carved out of the soft rock tuff (*kamar*), an unusual form of housing in a dry, desert environment. The similarities focus especially on two aspects of the cultural landscape: transhumance and the troglodyte habitat, understood as marks that compose the landscape. But in this case, consideration must be given to the fact that the cave habitat is seasonal in this case, which offers a possible parallelism with the pens, sheds and refuges of the nomadic pastoralists of the nominated property.

Mogao Caves (China, WH inscription: 1987, criteria (i)(ii)(iii)(iv)(v)(vi))

Excavated into the cliffs over the Dachuan River, formerly a strategic point on the Silk Route, the Mogao Caves contain one of the richest sets of Buddhist art in the world. Thanks to their sculptures and friezes, made by artists of very different origins, the caves are a testimony to ten centuries of the history of Central Asia. These works provide an abundance of vivid materials depicting various aspects of medieval politics, economics, culture, arts, religion, ethnic relations, and daily dress in western China.

Mesa Verde National Park

(USA, WH inscription: 1978, criterion (iii))

This is one of the oldest properties inscribed in the List. The habitat of the Pueblo Indians, appearing initially (in the 6th century A.D.) in the form of semi-underground villages excavated into the surface of the plateaus - or mesas - of New Mexico and Arizona, became mixed villages in the 8th century, with a mixture of cave dwellings and constructed dwellings. The excavated part, with circular, underground chambers called *kivas*, was used for a range of worship-related activities. The Pueblo Indians belong to the Anasazi Civilization, which reached its height between the 12th and 13th centuries. At the end of this period, the above-ground villages were abandoned in favour of a defensive, troglodyte habitat, clinging to the cliff walls. Some 4,400 sites have been record-

ed, including villages built on the Mesa top. There are also imposing cliff dwellings, built of stone and comprising more than 100 rooms in some cases. This example bears major evolutionary similarities to the nominated property in both the form and the evolution of the settlement process.

Petra (Jordan, WH inscription: 1985, criterion (v))

Inhabited since prehistoric times, this Nabatean caravan city, situated between the Red Sea and the Dead Sea, was an important crossroads between Arabia, Egypt and Syria-Phoenicia. The city is partially sculpted in the rock and partially built in the middle of a circus of mountains criss-crossed with mountain passes and canyons. Temples, tombs and palaces, semi-constructed or semi-sculpted and excavated in the sandstone cliffs, comprise a unique architecture in its genre, in which traditional oriental traditions are combined with Greco-Roman style.

While the above-mentioned items include religious manifestations, among other uses, there is another set of inscribed properties in which the sacred or religious component is decisive to their function. The temples of Ajanta and Ellora in India and the Longmen and Yungang grottoes in China are admirable examples of troglodyte sanctuaries that continue to attract the faithful, as do, for example, the Lalibela churches in Ethiopia. This group bears a certain similarity to some attributes of the nominated property, insofar as they are both works excavated in the rock and because they are used exclusively as sanctuaries or sacred places.

Ajanta Caves

(India, WH inscription: 1983, criteria (i)(ii)(iii)(vi))

Unlike Ajanta, the Ellora rock site, also inscribed in 1983, is the product of the three major religions of ancient India. Excavated into a basalt cliff of the Maharashtra, the thirty-four Ellora caves, along a 2km stretch, house Buddhist, Brahman and Jain temples and monasteries. The oldest date back to the 7th century A.D., whereas the most recent ones were probably carved out between the 8th and the 10th centuries A.D.

Ellora Caves

(India, WH inscription: 1983, criteria (i)(iii)(vi))

Unlike Ajanta, the Ellora rock site, also inscribed in 1983, is the product of the three major religions of ancient



Figure 3.2.26. Mesa Verde (USA)
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India. Excavated into a basalt cliff of the Maharashtra, the thirty-four Ellora caves, along a 2km stretch, house Buddhist, Brahman and Jain temples and monasteries. The oldest date back to the 7th century A.D., whereas the most recent ones were probably carved out between the 8th and the 10th centuries A.D.

Longmen Grottoes

(China, WH inscription: 2000, criteria (i)(ii)(iii))

The Longmen Grottoes, located on both sides of the Yi River to the south of the ancient capital of Luoyang, Henan province, comprise more than 2,300 caves and niches carved into the steep limestone cliffs over a 1km-long stretch. These contain almost 110,000 Buddhist stone statues, more than 60 stupas and 2,800 inscriptions carved on steles. The high cultural level and sophisticated society of Tang Dynasty China are encapsulated in the exceptional stone carvings of the Longmen Grottoes.

Yungang Grottoes

(China, WH inscription: 2001, criteria (i)(ii)(iii)(iv))

The massive Yungang Buddhist grottoes were cut from the mid-5th Century to the early-6th Century AD. Comprising 252 caves and niches and 51,000 statues within a carved area of 18,000 square metres, the Yungang Grottoes represent the outstanding achievement of Buddhist cave art in China. The Five Caves created by Tan Yao, with their strict unity of layout and design, constitute a classical masterpiece of the first peak of Chinese Buddhist art. The property was inscribed in the List in 2001.

Rock-Hewn Churches, Lalibela

(Ethiopia, WH inscription: 1978, criteria (i)(ii)(iii))

In a mountainous region in the heart of Ethiopia, some



Figure 3.2.27. Mogao Caves (China)
© Vincent Ko Hon Chiu / UNESCO-WHC

645 km from Addis Ababa, eleven medieval monolithic churches were carved out of rock. Their construction is attributed to King Lalibela who set out to construct a “New Jerusalem” in the 12th century, after Muslim conquests halted Christian pilgrimages to the Holy Land. The whole of Lalibela offers an exceptional testimony to the medieval and post-medieval civilization of Ethiopia, including the extensive remains of traditional, two-storey circular village houses with interior staircases and thatched roofs next to the eleven churches.

Another two properties that could be associated with the troglodyte habitat or with other majestic, excavated manifestations are mentioned in other sections. These are the site entitled “Cliff of Bandiagara, Land of the Dogons” in Mali (included in Section 3.2.e of the Comparative Analysis) and the temple of Abu Simbel in Egypt (included in Section 3.2.b of the Comparative Analysis).



Figure 3.2.28. Yungang Grottoes (China)
© Ian Whitfield / UNESCO-WHC

3. Comparable items in rock art

There are two kinds of important rock art manifestations worth considering in the comparative analysis of the property in question, as they are associated with main attributes such as the sanctuaries. These are the Libyco-Berber alphabetical engravings and the representations of pubic triangles.

Libyco-Berber engravings

The Libyco-Berber alphabetic inscriptions and other rock art manifestations with Berber connotations in the nominated property, along with the other expressions of this kind in the Canary Islands, are the westernmost of the Tamazgha or Amazigh territory. As such, they are comparable with the others in the region. Inscriptions of this kind are an undisputable marker of the Amazigh world on the African continent, where the oldest inscription is the bilingual inscription of the mausoleum of Dougga (Tunisia, Les Mausolées Royaux de Numidie, de la Maurétanie et les monuments funéraires pré-islamiques), dating back to 138 B.C. (Boukous, 2015), a site that was included on the Tunisia Tentative List in 2012.

The ICOMOS Thematic Study “Rock Art of the Sahara and North Africa” (ICOMOS, 2007) offers a benchmark analysis that pays special attention to Amazigh inscriptions and rock art. It is worth pointing out that the conclusions of this study states that, in general, this is outstanding heritage in danger.

Apart from the Dougga site mentioned above, there are several sites in the region inscribed in the World Heritage List that include manifestations of Berber rock art and inscriptions. First of all, there are the sites of Tassili n’Ajjer (Algeria, WH inscription: 1982, mixed property, criteria (i)(iii)(vii)(viii)), and the Rock-Art Sites of Tadrart Acacus (Libya, WH inscription: 1985, (iii)), currently included in the List of World Heritage in Danger. Both sites document the earliest representations of the first Berber or proto-Berber pastoralists. Another site worth mentioning is the Air and Ténéré Natural Reserves (Niger, WH inscription: 1991, criteria (vii)(ix)(x)), although this example was inscribed in the List for other reasons and without any mention of these manifestations.

The aforementioned study and other sources consulted highlight many other areas of great heritage interest that are more directly related to the rock art expressions of the nominated property, especially to the Libyco-Berber

inscriptions and engravings. These include the Messak Plateau (Libya) that houses the sites of Messak Mellet, Messak Settafet, and Mathendous; Djebel Uweinat and Gilf Kebir (Egypt); Wadi Djerat (Algeria); Tagant Region (Mauritania); Wadi Akka, Wadi Tamanart, Imi ougadir and the Fom Chenna Zagora site (Morocco). Hence, this is a vast and outstanding heritage that is scarcely represented on the List.

The symbology of the pubic triangle

Graphic representations of manifestations associated with the pubic triangle or the vulva are related to the first symbolic manifestations engraved or painted by homo sapiens during the Aurignacian period, around 30,000 years ago. The custom of engraving vulvas as an abstract symbol, both on walls and on almost life-like female figures has lasted throughout human history.

There are several sites inscribed in the World Heritage List that include some of the first representations of this female symbol. There are the examples of the "Decorated Cave of Pont d'Arc, known as Grotte Chauvet-Pont d'Arc", inscribed as such in 2014, and the Lascaux Cave included in the site known as "Prehistoric Sites and Decorated Caves of the Vézère Valley", inscribed in 1979 (Duhard and Delluc, 2014). We also find representations of the pubic triangle in Lombardy, specifically at the site inscribed as "Rock Drawings in Valcamonica (Italy, 1979) that houses one of the densest sets of prehistoric petroglyphs ever discovered (Anati, 2008).

The presence of triangular shapes as a symbol of fertility has also been a constant in rock art in many parts of the world. There are many rock-art stations in the Mahanadi valley, in the Orissa region (India), with triangular-shaped engravings that look like a vulva or Yonis (Pradhan, 2001). At least 35 rock-art refuges show engravings of inverted triangles with a bisecting line or with incisions in the centre. The example of Australia is also striking, where the aborigines still identify representations of this kind as the symbol of women (eg. Carnarvon Gorge, Queensland).

These vaginal images are also very common in Amazigh rock art, in both the eastern and western deserts, and over many epochs. This evidence has been recorded by travellers and researchers over the course of recent decades (Winkler, 1938-1939; Krzyaniak, 1990). It is true that the interpretations of many of these images vary depending on the context (Verner, 1973) and some are



Figure 3.2.29. Nabataean temple of Al-Deir, ruins of Petra (Jordan).
© Martin Gray / UNESCO-WHC

associated with *wusum* (Bedouin tribal marks).

A good example of this is the Kharga Oasis, included in the area of the property included as "Kharga Oasis and the Small Southern Oases" on the Egyptian Tentative List in 2015. At the rock art site known as Split Rock, from the time of the Pharaohs, there is a panel of engravings that includes inverted, equilateral triangles with central incisions that show an extraordinary similarity to the engravings of the almogarenos of Risco Caído and Cueva Candiles in the nominated property (Salima, 2009). It has to be said that these sites are not included among the reasons for nominating this property.

The inscriptions of this kind are located across the length and breadth of the Tamazgha, from one extreme to the other, at sites like Adrar des Ifoghas (Mali) or Tagant (Mauritania).



Figure 3.2.30. Fortified cave granary of Tizgui (Morocco)
© Michel Terrier

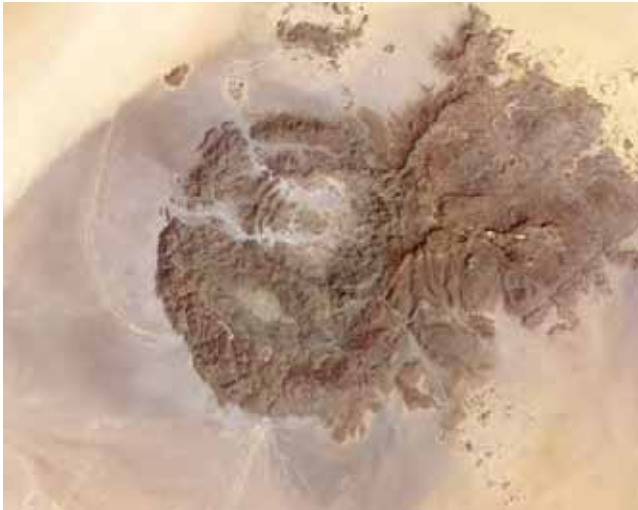


Figure 3.2.31. Photograph of the Jebel Uweinat satellite, mountain chain in the border area between Egypt, Libya and Sudan. © NASA

3. Individual conclusion

From this comparative analysis we may conclude the following concerning the importance, outstanding value and representativeness of the considered attributes of the nominated Cultural Landscape in relation to troglodyte habitat and rock art:

- This is an outstanding representation of the troglodyte habitat in the island universe, diverse but scarcely represented. Moreover; there is no cultural landscape with attributes that include this component.
- Understanding that the troglodyte habitat is one of the particular signs of identity of the Amazigh heritage, the nominated property as part of the Tamazgha, offers representation of these unique expressions that have not to date been considered on the World Heritage List.
- Globally, only the examples of Matera, Cappadocia and Mesa Verde, apart from the nominated property, contribute expressions of a multi-functional troglodyte habitat, with a broad diversity of uses, and seen as a whole ecosystem. But this is the only case in which the skyscape forms part of the structuring and conception of troglodyte settlements, and the only case that offers sanctuaries in caves with astronomical connotations.
- Together with Matera and the Cultural Landscape of Maymand, it is also one of the few cases in which this kind of settlement has been kept alive over time, and is still used and appreciated by the local population.
- The nominated property includes unique manifes-

tations of Libyco-Berber inscriptions and Amazigh rock art, which are not represented on the World Heritage list. Their inclusion is suggested by the aforementioned ICOMOS Thematic Study “Rock-Art of the Sahara and North Africa”.

- Along with the region of Orissa in India, not included on the List, the nominated property is an enclave characterised by an extraordinary concentration of pubic triangles, one of the recurring symbols of fertility since prehistoric times.



Figure 3.2.32. View of the fortified granary of Ksar Nalut (Libya). © Juan Antonio Belmonte



Figure 3.2.33. Anthropomorphic rock engravings in the area of the nominated property. Majada Alta. © Tarek Ode

TABLE 3.2.2 - PROPERTIES CONSIDERED IN THE COMPARATIVE ANALYSIS

Name	Country	World Heritage	Date	Criteria	Remarks
TYPOLOGICAL FRAMEWORK - TROGLODITE SETTLEMENTS					
BERBER MAGHREB – AMAZIGH CULTURE					
Tassili n'Ajjer	Algeria	Listed	1982	(i)(iii)(vii)(viii)	Proto-Berber rock-art manifestations
Tadrart Acacus	Libya	Listed	1985	(iii)	Proto-Berber rock paintings
Les Mausolées Royaux de Numidie, de la Maurétanie et les monuments funéraires pré-islamiques (Mausoleum of Dougga).	Tunisia	Tentative List	2012	(ii)(iii)(iv)	Set of megalithic Numidian tombs Libyco-Berber alphabetic inscriptions
Chenini, Douiret and Guermessa	Tunisia	Not nominated			Troglodyte settlements and fortified collective granaries in mountain areas
Matmata	Tunisia	Not nominated			Singular Berber troglodyte settlement
Djebel Nefusa - Gharyan	Libya	Not nominated			Fortified collective granaries (Qsar), Troglodyte settlements
Garganta del Dadès - Ouaouizeght	Morocco	Not nominated			Troglodyte Berber settlements
Tizgui, Amtoudi Id Aissa, Oushgal	Morocco	Not nominated			Fortified troglodyte granaries
Imi Ougadir site	Morocco	Not nominated			Amazigh petroglyphs
Foum Chenna Zagora	Morocco	Not nominated			Alphabetical Libyco-Berber engravings
Wadi of Tamanat (Tighzdarin, Ait Harbil)	Morocco	Not nominated			Amazigh rock engraving stations
Imawn site (Tata)	Morocco	Not nominated			Amazigh rock engraving stations
Mountain of the Dead (Siwa archaeological area)	Egypt	Tentative List	1994	Undefined	Troglodyte settlement of Berber roots, Egyptian and Roman influence.
ISLANDS					
Syracuse and the Rocky Necropolis of Pantalica (Sicily)	Italia	Listed	2005	(ii)(iii)(iv)(v)	Necropolis and troglodyte landscape
Elephanta Caves	India	Listed	1987	(i)(iii)	Shrines excavated and rock art
Hal Saflieni Hypogeum	Malta	Listed	1980	(iii)	Great necropolis in caves
Fels Cave Chief Roi Mata's Domain	Vanuatu	Listed	2008	(iii)(v)(vi)	Symbolic cave, rock engravings
Santorini	Greece	Not nominated			Settlements and live troglodyte culture. Vernacular rural landscapes.
Island of Niue caves	Niue	Not nominated			Aboriginal settlements and burial grounds in sacred natural caves.
OTHER PROPERTIES IN THE WORLD					
Göreme National Park and the Rock Sites of Cappadocia	Turkey	Listed	1985	(i)(iii)(v)(vii)	Cave sanctuaries and troglodyte settlements
The Sassi and the Park of the Rupestrian Churches of Matera	Italy	Listed	1993	(iii)(iv)(v)	Living troglodyte settlement integrated into the ecosystem
Cultural Landscape of Maymand	Iran	Listed	2015	(iii)(iv)(v)	Transhumance and seasonal troglodyte habitat
Mogao Caves	China	Listed	1987	(i)(ii)(iii)(iv)(v)(vi)	Caves that house manifestations of Buddhist art
Mesa Verde National Park	USA	Listed	1978	(iii)	Caves that house manifestations of Buddhist art
Petra	Jordan	Listed	1985	(v)	City dug into the rock. Astronomical connotations.
The Loire Valley between Sully-sur-Loire and Chalonnes	France	Listed	2000	(i)(ii)(iv)	Troglodyte settlements Tourism in caves
Ajanta Caves	India	Listed	1983	(i)(ii)(iii)(vi)	Troglodyte sanctuaries
Ellora Caves	India	Listed	1983	(i)(iii)(vi)	Monasteries and troglodyte sanctuaries
Longmen Grottoes	China	Listed	2000	(i)(ii)(iii)	Sanctuaries excavated on cliffs



Figure 3.2.34. View from inside the Cueva Candiles showing the many engravings of public triangles. The cave sanctuaries of the nominated property house one of the largest concentrations in the world of this fertility symbol, only comparable with places like Orissa in India, or Carnarvon Gorge in Australia.

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TABLE 3.2.2 - PROPERTIES CONSIDERED IN THE COMPARATIVE ANALYSIS

Name	Country	World Heritage	Date	Criteria	Remarks
Yungang Grottoes	China	Listed	2001	(i)(ii)(iii)(iv)	Troglodyte Buddhist shrines and rock art
Rock-Hewn Churches, Lalibela	Ethiopia	Listed	1978	(i)(ii)(iii)	Hewn churches
TYPOLICAL FRAMEWORK - ROCK ART					
Dougga / Thugga	Tunisia	Listed	1997	(ii)(iii)	First known Libyco-Berber inscription
Air and Ténéré Natural Reserves	Níger	Listed	1991	(vii)(ix)(x)	Amazigh rock art
Tassili n'Ajjer	Algeria	Listed	1991	(i)(iii)(vii)(viii)	Amazigh rock art
Rock-Art Sites of Tadrart Acacus	Libya	Listed	1985	(iii)	Proto-Berber rock art
Decorated Cave of Pont d'Arc, known as Grotte Chauvet-Pont d'Arc	France	Listed	2014	(i)(iii)	Pubic triangles
Lascaux cave - Prehistoric Sites and Decorated Caves of the Vézère Valley	France	Listed	1979	(i)(iii)	Pubic triangles
Kharga Oasis and the Small Southern Oases	Egypt	Tentative List	2015	(i)(ii)(iii)(iv)(v)(vii)(viii)(ix)(x)	Pubic triangles and engravings

3.2.d

Techniques and uses of the territory

The special characteristics of the nominated property bear some similarities to a number of Cultural Landscapes and properties inscribed in the World Heritage List, especially in the decisive components of the landscape, such as growing crops on terraces, managing water resources and other key factors like transhumance and its marks.

I. Transhumance and agro-pastoralism

With regard to transhumance, there are a inscribed properties and some on national Tentative Lists in which vernacular practises and their marks, such as routes and summer grazing areas, constitute important components of the cultural landscape or which are included as one of the property's attributes. There are no inscribed properties of this kind on an island, and none that include the practises of ancient or extinct cultures that have survived to the modern day.

Inscribed properties on mainland territories include the case of the Cultural Landscape of Maymand (Iran, WH inscription: 2015, criteria (iii)(iv)(v)) mentioned in the previous section. This is a small, largely self-sufficient community within one large valley, that is a reflection of a traditional three-phase transhumance system with unusual troglodyte winter housing in a dry desert environment. The example of Causses and the Cévennes, Mediterranean agro-pastoral Cultural Landscape (France, WH inscription: 1993, criteria (iii)(iv)), is also striking in comparative terms. This is also a mountain landscape criss-crossed by deep valleys that is one of the last places where summer transhumance is still practised. In this case, the presence of important archaeological remains at the site is another similarity.

Along these same lines, one example of the survival of ancestral transhumance that must be mentioned is the cultural landscape of Hallstatt-Dachstein / Salzkammergut (Austria, WH inscription: 1997, criteria (iii)(iv)), with its higher pastures used for the summer grazing for sheep and cattle since prehistoric times as part of

the process of transhumance, which still gives the valley communities rights of access to specific grazing areas to this day. Rights of this kind are also conserved in the highland peaks of Gran Canaria, covering grazing areas and transhumance livestock trails.

The high valleys and the limestone summits of the Pyrénées – Mont Perdu (France-Spain, WH inscription: 1997, criteria (iii)(iv)(v)(vii)(viii)) are an outstanding example of a landscape shaped by a pastoral transhumance system that was developed in the Middle Ages and still exists today. The use of high pastures such as Gaulis or Ossoue bear invaluable testimony to this transhumance system. This is one of the few places in Europe where transhumance has been maintained over the centuries. By ancestral agreements, Spanish farmers also graze their herds on the French side. This practice strengthens the trans-border nature of the World Heritage property.

Finally, other cases like the Laponian Area (Sweden, WH inscription: 1996, criteria (iii)(v)(vii)(viii)(ix)), constituting a pastoral transhumance landscape, or the Orkhon Valley Cultural Landscape (Mongolia, WH inscription: 2004, criteria (ii)(iii)(iv)), are not considered similar in comparative terms as they are very extensive manifestations and they are related to nomadism.



Figure 3.2.35. Cattle on transhumance in the nominated property through the old route of the Cañada Real. © Javier Gil León



Figure 3.2.36. Singular cave pond evolved in Ventanieves that still remains in use © Javier Gil León

The national Tentative Lists include some sites with meanings related to “pastoralism” or “transhumance”. There are some cases showing the large diffusion of such relationships of human being with nature:

- Corredor do Kwanza - Angola, cultural landscape
- La Réserve de la Biodiversité des éléphants du Gourma - Mali, natural property
- Sudd wetland - South Sudan, mixed property
- The Hawf Area - Yemen, natural heritage
- Zagorochoria, North Pindos National Park - Greece , mixed property
- Mesta Livestock trails - Spain, cultural property
- Ancares – Somiedo - Spain, mixed property
- The Transhumance: The Royal Shepherd's Track - Italy, Mixed property
- Cold Desert Cultural Landscape of India - India, Mixed property

The national Tentative Lists show similar distinctions from Gran Canaria transhumance. The proposals are mainly associated with nomadism or long-distance transhumance. Generally speaking, pastoralism constitutes a very important way of life in Amazigh tradition, and we can see it in Northern Africa nowadays; but it is mainly a “plain” or “plateau” long distance transhumance of animals and humans, following rain seasons from South to North and back.

It should however, be pointed out that the phenomenon of transhumance in the highlands of Gran Canaria differs substantially from the cases it is compared with

above, as in this case, we are talking about management systems, customs and species associated with the pastoralism of the Amazigh culture, which also develops its own systems associated with unique island ecosystems.

The varieties of cereals grown on the terraces and the grazing lands of the Gran Canaria highlands offer another vector of comparison. Although the similarity is remote, the example of the Pre-Historic Caves of Yagul and Mitla in the Central Valley of Oaxaca (Mexico, WH inscription: 2010, criteria (ii)(iii)(iv)), is worth mentioning. Cucurbitaceae seeds thousands of years old were found in one of the caves, constituting the earliest remains of domesticated plants discovered to date on the American continent, along with fragments of corn sheaves that are one of the oldest testimonies to the domestication of this plant. This unique trait allows for a certain comparison to be made between this space and the nominated property, as prehistoric barley seeds were found here in the El Álamo granary; the difference being that here, these same varieties of seeds are still grown on the terraces and crops of the sacred mountains of Gran Canaria. This is an exceptional fact that is seen only in very few places in the world, such as Sudan, Egypt and China.

2. Cultural heritage of water and crops on terraces

The language and culture of water in the nominated property has a powerful influence on the layout of the landscape and exhibits different forms of the water heritage in the form of different techniques used in the archaeological sites of the area: canals and alcogidas (irrigation ditches), cisterns (cave pools) and tunnels (water mines). The ancient Canarians completed this repertoire with the use of pools on rock towers, “eres” or lagoons in gorges and ponds to capture and distribute the water for their needs. Water management is and was closely associated with systems of growing crops on terraces (“bocados”, “andenes” and “cadenas”), supported by dry-stone walls, sometimes enormous, that define a farming landscape with roots that go back to the landscapes developed by Amazigh islanders.

In the comparative area of small and medium-sized islands, we can only find one reference that presents a cultural landscape in which a system of terraces supported by stone walls survives, and which also uses thousand-year-old, intelligent ways to manage water in an area with scarce water resources. This is the Cultural

Landscape of the Serra de Tramuntana (Spain, WH inscription: 1996, criteria (iii)(v)(vii)(viii)(ix)), which constitutes a peculiar example of a terraced farmed landscape that combines an interconnected and highly specialised system of waterworks for collecting and storing water. These waterworks have a powerful Arab influence, unlike the Amazigh culture and the culture genuinely developed by the islanders during their period of isolation in the case of the nominated property, although it is true that the Christian conquerors did impose their management models, as is the case in Gran Canaria.

In any event, the terraces as important rural and landscape features are already recognised by the World Heritage List in different countries. There are around fifty listed sites mentioning rural “terraces” as important or major attributes. Rural water supply systems are not so frequent on the WH List however, although some examples can be mentioned such as: Mount Qingcheng and the Dujiangyan Irrigation System (China, WH inscription: 2000, criteria (ii)(iv)(vi)), Cultural Landscape of Honghe Hani Rice Terraces (China, WH inscription: 2013, criteria (iii)(v)), Cultural Landscape of Bali Province - the Subak System (Indonesia, WH inscription: 2012, criteria (ii)(iii)(v)(vi)) and Shushtar Historical Hydraulic System (Iran, WH inscription: 2009, criteria (i)(ii)(v)).

From this standpoint, the case of the traditional, pre-Hispanic farming and irrigation systems in the nominated property, although not totally unique and outstanding per se, do take on a remarkable value if we consider that they were developed in an isolated island context, in rugged, mountainous areas and that they are the expression of a system whereby mankind has adapted to the environment with a wise combination of terraces and unique irrigation systems.

Concerning the comparative analysis with the culture and manifestations in the Berber Maghreb, the best reference is to be found in “The cultural heritages of water in the Middle East and Maghreb” Thematic Study (ICOMOS, 2015), which offers a system and a structure to classify heritage of this kind. The Thematic Study includes some case studies that refer to a range of techniques for collecting and distributing water that bear some similarities to those identified in the nominated property.

Regarding water culture in the Maghreb, a certain similarity can be detected to some manifestations like the *foggaras*, found in the south of Algeria, also known as

khettaras in Morocco or *kriga* in Tunisia. Outside of this region, this ancestral water catchment system is also similar to the *kanats* (or “qanats”) in Iran, the *karez* (Karez) in China, Azerbaijan, Pakistan and Afghanistan, or the *sahridj* of Yemen. Although they do not have a system of vertical wells that connect to the underground water catchment canal, the similarity lies in the fact that in the case of the mountains of Gran Canaria, they also dig mines or small galleries into the geological substrates to drain the aquifers, creating filtration galleries. Furthermore, there is also a certain similarity to the complex distribution and storage system, with channels dug into the volcanic tuff and underground cisterns. As in many regions of the Maghreb, a knowledge of the ancestral management of water in these territories can still provide answers for the sustainable use of this resource today.

Some of these manifestations are recognisable and the finest examples are to be found at sites inscribed in the World Heritage List like M’Zab Valley (Algeria, WH inscription: 1982, criteria (ii)(iii)(v)), a settlement built by the Ibadites around five fortified villages (ksur) around the 10th century, which has always conserved its strong Berber roots.

The thematic study provides countless evidence of storage systems associated with the archaeological heritage, including underground cisterns, especially from Numid-



Figure 3.2.37. Small water mine with filtering gallery in El Hornillo © FEDAC

TABLE 3.2.3 - PROPERTIES CONSIDERED IN THE COMPARATIVE ANALYSIS

Name	Country	World Heritage	Date	Criteria	Remarks
TECHNIQUES AND USES OF THE TERRITORY					
Cultural Landscape of the Serra de Tamontana	Spain	Listed	2011	(ii)(iv)(v)	Water management and farming terraces
Rice Terraces of the Philippine Cordilleras	Philippines	Listed	1995	(iii)(iv)(v)	Terraced farmland
Cultural Landscape of Honghe Hani Rice Terraces	China	Listed	2013	(iii)(v)	Rural water supply system
Cultural Landscape of Bali Province	Indonesia	Listed	2012	(ii)(iii)	The Subak System
Shushtar Historical Hydraulic System	Iran	Listed	2009	(i)(ii)(v)	Irrigation systems
Cultural Landscape of Maymand	Iran	Listed	2015	(iii)(iv)(v)	Transhumance and seasonal troglodyte habitat
The Causses and the Cévennes, Mediterranean agro-pastoral Cultural Landscape	France	Listed	2011	(iii)(v)	The marks of transhumance
Pyrénées – Mont Perdu	France-Spain	Listed	1997	(iii)(iv)(v)(vii)(viii)	Landscape shaped by a pastoral transhumance
Hallstatt-Dachstein / Salzkammergut Cultural Landscape	Austria	Listed	1997	(iii)(iv)	The survival of ancestral transhumance

ian and Phoenician times, that may bear a certain similarity to the collective and domestic cave pools used by the ancient Canarians, which have been maintained over the course of history. However, the kind and building techniques used for the cave pools in the nominated property differ significantly, because of the very different geological substrates and the tools used.

Other catchment techniques that bear similarities to the Amazigh culture are the *eres*, which consist of hollows dug in sandy areas of river beds to catch water from beneath the river bed. In fact, the name “*ere*” comes from the Berber term “*iris*”, meaning a well or a hollow dug in the sand to catch water.

As for the use of terraces for growing crops, it is a well-known fact that they have been used widely since ancient times, particularly throughout the Mediterranean basin. Nevertheless, the evidence indicates the enormous influence that the Berbers had in places like the south of Spain, where they exported their methods of growing crops on terraces, their terraced irrigation systems and the use or adaptation of “*qanat*” (Watson, 1998). These Amazigh influences could also have been decisive in the case of Gran Canaria in developing their water and farming culture.

In comparative terms, mention must be made of the terrace systems of the eastern Maghreb, where a distinction can be made between terraces and *jessour*, stone or earth barriers built in the bottom of the valley

to facilitate a build-up of soil and water after floods of the drainage network, which are similar to the evidence of some kinds of water management identified in the nominated property. Building works of this kind are not expressly mentioned in any of the inscribed properties in the area of the Tamezgha.

3. Individual conclusion

- The nominated property would be the only example that includes transhumance and the marks of agro-pastoralism on an island, with well-conserved, tangible expressions like transhumance routes, refuges and grazing areas. Its outstanding value is reinforced by the fact that these are practises that have conserved the legacy of the Amazigh culture, and they are still used today.
- Varieties of pre-historic seeds associated with the forage and crops of the area that are still grown today can be identified in the nominated property, which is a unique expression in comparison with other cultural landscapes associated with transhumance and terraced farming systems.
- Although certain connections can be identified with some water catchment and distribution systems and techniques of the Berber Maghreb, the expressions of this kind associated with the archaeological heritage and the troglodyte habitat in the nominated property can be considered remarkable, the result of isolated cultural evolution that has adapted to this specific volcanic, island environment.

3.2.e

Global meanings of the Cultural Landscape

I. The odyssey of isolated island cultures

In the island universe, encompassing more than one hundred thousand inhabited islands on the planet, there have obviously been phenomena of isolated cultural evolution over long periods of time, particularly on oceanic islands. These are places where the first settlers provided the original seed from which unique cultures developed without interference and over a given period of time. Each of these unique cultures reflects the essence of insularity. The odyssey of the evolution of these

unique cultures however, is barely represented on the World Heritage List, with the exception of some significant cases. In general, these islands become genuine laboratories of cultural and natural evolution.

The geography of the islands of the world varies enormously, as does the history of specific island societies. Whereas the sea was often a barrier to exploration and human interaction, it also facilitated travel and trade for many later and more sophisticated maritime peoples. In the island universe, isolation and interaction are rela-



Figura 3.2.38. 'Ngutu Ana'. Anaana Cave in the cliffs of Avaiiki on the north-west coast of Niue island (South Pacific). The Niue caves represent the space of the island identity and the sacred spirit of this Pacific island. © Oil Painting by Mark Cross, Niue Artist



Figure 3.2.39. Moais on Rapa Nui. The island is a genuine paradigm of the evolution of island cultures in isolation.
© Cipriano Marín

tive states that form a continuum that stretches from complete isolation at one end of the spectrum, to constant interaction at the other (Erlandson, 2008). In our case, the comparative analysis focuses on the end of the spectrum dealing with the most isolated island cultures, territories trapped between the sea and the sky.

Comparative Items

In comparative terms, the Rapa Nui National Park (Eastern Island - Chile, WH inscription: 1995, criteria (i)(iii)(v)) is a genuine paradigm of the evolution of island cultures in isolation, as is the case of Gran Canaria. A society of Polynesian origin settled on the island around 1000 A.D., created grandiose architectural forms and sculptures endowed with enormous strength, imagination and originality, without any kind of external influence. The Rapa Nui culture is linked to Polynesia, but in their isolation, these people developed outstanding systems of beliefs and stone constructions that cannot be found anywhere else in the world. Between the 10th and the 16th centuries, they built sanctuaries (*ahu*) and sculpted countless stone statues (*moai*), that give this space its identity. Despite external cultural incursions in recent centuries, the Rapanui language survives to this day, although the meaning of the local engravings and inscriptions remains beyond the bounds of our current knowledge. Certain evidence corroborates the hypothesis that a severe ecological crisis occurred, around the 16th century, triggered by population pressure and the over-exploitation of resources, and the island can be considered as one of the cases of reference that illustrates a population and ecological collapse on the

islands of the world. In this context, there is a striking evolutionary parallelism between Rapa Nui and Gran Canaria, where we witness the creation and practical extinction of its own independent culture from its original roots, leaving behind unique archaeological works and expressions. In the one case, from the Polynesian culture and, in the other, evolved from its North African Amazigh roots.

Uninhabited since 1930, the archipelago of St. Kilda (United Kingdom, WH inscription 1986, criteria (iii)(v)(vii)(ix)(x)) has vestiges that bear witness to man's uninterrupted presence in these remote, inhospitable and impressive parts of the Hebrides Islands, going back over 2,000 years. The islands offer an exceptional, well-conserved and documented example of how islanders have been capable of living in such a difficult environment with such scarce resources, even in the most extreme conditions, creating a unique culture, perfectly adapted to the environment, and which has now disappeared. The vestiges of this culture include the amazing farming systems known as *cleits* and the traditional Highland stone crofts, fragile marks of a human settlement that developed a subsistence economy based on sea birds, agriculture and sheep. St Kilda is now a model of archaic or fossilised island cultural landscape that illustrates the

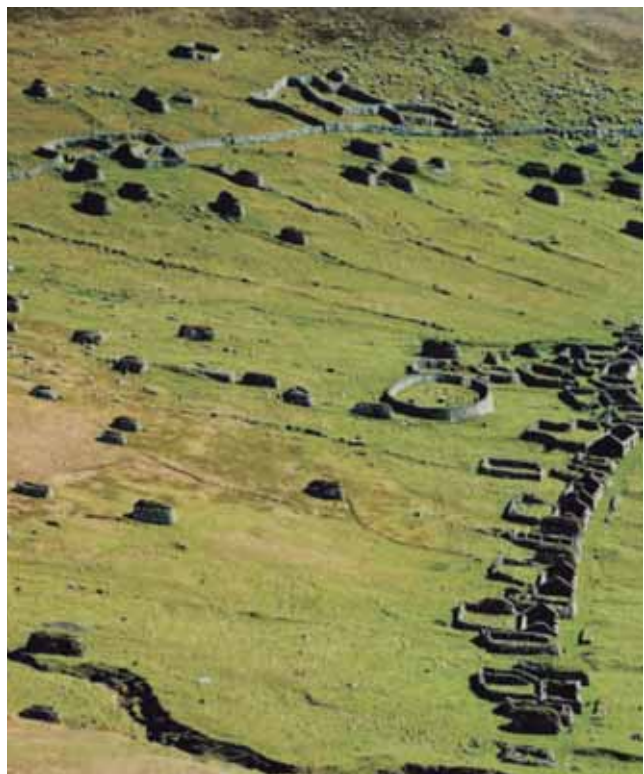


Figure 3.2.40. St Kilda World Heritage site. In the picture, Village Bay, Hirta – the hub of the cultural landscape © Scottish Executive

feat of island survival over time. The parallelism in this case lies not only in the particularities of island isolation, but also in the contribution that these cultures make to creating unique stone landscapes, on the surface in one case and in caves and troglodyte grounds in the case of Gran Canaria.

Papahānaumokuākea is a natural world heritage site comprised of a set of small islands and atolls, 250km north-west of the main Hawaii Islands (USA), encompassed in one of the most important protected marine areas in the world. For the Hawaiian people, this area has a profound cosmological meaning, as it embodies the bond between man and nature, the cradle of life and the place where spirits return after death. Two of these islands, Nihoa and Mokumanamana, also known as Necker, have archaeological remains that bear witness to the presence of human settlements, sanctuaries (*heiau*) and peculiar systems of occupying the land based on farming terraces before the arrival of the first Europeans. 49 of the 141 archaeological sites are clearly ritual sites, and as a whole, they document the evolution of Polynesian societies. The ceremonial platforms and monoliths located both on Nihoa and on Mokumanamana are unique manifestations of traditional Hawaiian architecture, and they are related to other similar manifestations in the interior of Tahiti and the Marquesas Islands (Smith & Jones, 2007).

This evidence highlights one of the great feats of the pre-historic world, when Polynesian travellers reached the Hawaiian archipelago around 1000 A.D. (Kirch, 2012), as a continuation of the great migration across the Pacific Ocean that supposedly started three thousand years ago in South-East Asia. There is evidence to suggest that the island of Nihoa could have suffered a population collapse similar to that of Rapa Nui, after a predictable process of deforestation and pressure on sea birds as a food source. In comparative terms, however, it must be pointed out that in this case, we are not talking about total isolation, except for during certain periods of time, as these islands have always been visited sporadically by the inhabitants of the other Hawaiian Islands that have always considered them as a sacred place. In comparison with Gran Canaria however, it must be pointed out that both these cases are unique, exceptional territories considered sacred by the original island cultures.

Other sites inscribed in the World Heritage List, where isolation has not been as extreme or continued as long as on Gran Canaria, also represent the cradle of unique,



Figure 3.2.41. The island of Mokumanamana has the highest concentration of cultural sites in Hawaii with 34 documented *heiau*, or sacred sites, most of similar design and whose purpose is yet to be determined. © Andy Collins/NOAA

outstanding cultures that remain in the memory of the descendants, or in the testimony of island cultures whose territories were abandoned in recent centuries. This is the case of SGang Gwaay (Canada, WH inscription: 1981, criterion (iii)) in British Columbia. The remains of ancient cedar dwellings and sculpted funeral and commemorative totem poles provide testimony to the art and way of life of the Haida. The site celebrates the relationship of the Haida with the land and the sea, and their surviving immaterial culture, and also provides a visual key to their rich oral traditions. The island was permanently settled until the 1880s, when it was abandoned.

This is also the case of the mixed property known as Rock Islands Southern Lagoon, in Micronesia (Palau, WH inscription: 2012, criteria (iii)(v)(vii)(ix)(x)), which comprises 445 limestone desert islets of volcanic origin. These illustrate a case where islands were totally abandoned between the 17th and 18th centuries. The islands contain a significant set of sites that bear exceptional witness to the organisation of small island communities



Figure 3.2.42. In very few places in the world was resistance to white colonialisers so strong as among the aborigines of Tasmania, but they were practically exterminated in just one generation after the Black War.
© Painting by Robert Dowling / Victoria National Gallery

sustained by harvesting marine resources for at least three thousand years. These manifestations include cave habitats, rock engravings, funeral grounds and ancient stone constructions. The archaeological remains are to be found in two island clusters, the islands of Oolong and Negmelis, and on the three islands of Ngeruktabel, Ngeanges, and Chomedokl. The descendants of those islanders, who moved to the main islands of Palau no more than three hundred years ago, identify with their ancestral islands by keeping oral traditions alive. These are recorded in traditional legends, myths, dances, proverbs and place names of the land and seascape of their former dwellings. These desert islands now provide exceptional evidence of the way of life of those small island communities.

Socotra Archipelago (Yemen, WH inscription: 2008, criterion (x)) offers another outstanding example of cultural evolution in an environment of exceptional biodiversity. Owing to its peripheral location and historically difficult access because of the weather and sea conditions, the natural setting of Socotra retains an impressive level of integrity today, plus the unique culture and traditions associated with this peculiar environment. What is striking about the case of Socotra is the fact that many of its cultural manifestations are endemic, even though

it cannot be considered a benchmark of cultures that have evolved in total isolation over a long period of time.

Other islands that are not inscribed on the World Heritage List or tentative lists are striking as islands of isolation, revealing notable models of human occupation and adaptation to the environment. Such is the case of the Aleutian Islands in Western Alaska (U.S.A.), which are considered as one of the most isolated places on earth. Despite this fact, human occupation of them is well documented from 8500 years ago, in different periods, until they were discovered and annexed by Russia in the 18th century. Faced with a scarcity of resources the Aleuts have developed an outstanding culture based on fishing and hunting marine mammals, and the well-known kayak is one expression of this culture.

Tasmania is another significant example of processes of cultural evolution in isolation, representing a case of a culture driven to extinction by colonisation. The Tasman people have probably experienced a longer period of isolation than any other group of humans ever (Pardoe, 1991). After settling Tasmania over 30,000 years ago over the Bass Plain, the original people were cut off from the Australian mainland after the sea-level rose

about 8,000 years ago (Cosgrove, 1989). Ever since, the rough conditions of the sea in the Bass Strait and the lack of a sailing culture meant that the inhabitants of Tasmania remained isolated from continental Australia for thousands of years. At the time of British colonisation, in 1803, there was an estimated population of around 10,000 native inhabitants. However, by the end of the Black War in 1833 the indigenous population had virtually been exterminated, with a remaining population estimated at the time as no more than two hundred survivors, who were finally imprisoned on the island of Flinders in the north of Tasmania. Almost all the native Tasman languages were lost, although a major effort is currently being made to reconstruct one of the languages from the common oral memory kept alive in some families with aboriginal forefathers.

If we are addressing the case of extinct, isolated, remote island cultures, then mention must be made of what are known as the “Mystery Islands” (Kirch, 1988). When European sailors started to systematically explore the Pacific, they visited totally uninhabited islands with signs of previous human occupation. These abandoned islands were mainly in Polynesia, although some islands were identified in Eastern Micronesia as well (Terrell, 1986) and more recently, other islands from Melanesia have been added to this list. Some of the “mystery islands” include the islands of Nihoa and Necker, to the northwest of Hawaii; Walpole, near New Caledonia; Pitcairn and Henderson in the Eastern Pacific; Palmerston and Suvarrow in the Cook Islands; the Bonin Islands, 600 miles south of Japan; Napuka and Tepoto in French Polynesia; the Melanesian island of Anuta and several of the Phoenix Islands and the Line Islands (Kiritimati and Tabuaeran) in the central Pacific. Furthermore, there are some famous “mystery islands” off the coast of Australia, such as Kangaroo Island near Adelaide, and the islands of the Bass Strait between Tasmania and Victoria (Sand, 2004). The first archaeological studies in the early 20th century showed a common Micronesian-Polynesian cultural origin in most of these islands, based on the presence of marae (communal spaces or sacred sites), ahu (ceremonial platforms) or stone tools. But the cause for the disappearance of these cultures and peoples appear to be far from uniform. The different reasons that suggest extinction include: random demographic and environmental processes, natural catastrophes, inbreeding and social dysfunction factors, such as political threats or losing the custom of travelling between islands (Weisler, 1996). Later authors have suggested other causes for the mysterious abandonment of these islands, including

water availability crises (which affects human consumption, the prospects of growing fruit and vegetables and the existence of coconut palms), the introduction of rats and the overexploitation of large sea birds in nesting areas (Anderson et al., 2000). Only Nihoa and Necker, of all these islands, are on the World Heritage List, in the area of the mixed property of Papahānaumokuākea (U.S.A.) as already mentioned; additionally, the islands of Kiritimati and Tabuaeran are included on the tentative list of Kiribati. In any event, they are all good examples of the grand human odyssey in the Pacific.

Individual conclusion

The cases and properties mentioned represent a small sample of the wide range of cultural responses to insularity and isolation, and, with the exception of Rapa Nui and Gran Canaria, the most striking element is that the dimension of the odyssey of isolated island cultures, particularly the extinct ones, is not very well reflected in the World Heritage List and tentative lists, nor is it clearly expressed in the attributes, components and OUV of the related nominations. It is also worth pointing out that most of the cases of reference with a certain similarity are focused in the Pacific. In these conditions, the property proposed would help to offset this gap and to better assess these processes, particularly in the area of Atlantic oceanic islands, which together with the African influence and the culture clash with Spanish-European colonisation, would significantly complement the outstanding universal value of the nomination.



Figure 3.2.43. Aleutian Islands, considered one of the most remote places in the world with continuous human occupation for thousands of years. © U.S Fish and Wildlife Service



Figure 3.2.44. The Rock Islands, situated in Micronesia (Palau), mixed World Heritage property, contain a significant set of sites that pay exceptional testimony to the organisation of small, isolated island communities sustained for at least three millennia by gathering natural resources.

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2. Mountains as a refuge

Some mountain areas have acquired an outstanding cultural and symbolic value as the final refuge of certain peoples and cultures in the face of a siege and fight for survival. This is what happened in the area of the proposed Cultural Landscape of Risco Caído and the sacred mountain of Gran Canaria, where Bentayga and the Tejeda Caldera became one of the last refuges of the aboriginal people before succumbing to the conquistadores, probably because it was considered a sacred place and refuge for threatened people, but basically because the terrain was so rugged and hence difficult for the Castilian troops to penetrate.

Very few properties on the World Heritage List bear any similarity to this refuge aspect. This includes all those that do not correspond to manifestations of the same cultural or regional context.

Comparative Items

An important case is that of the rugged mountainous massif of Le Morne Cultural Landscape (Mauritius, WH inscription: 2011, criteria (iii)(vi)), which sticks out from the south-west coast of Mauritius into the Indian Ocean, which was the emblematic refuge for runaway slaves from the 18th century until the early 19th century. Protected by its rugged, wooded and practically inaccessible

terrain, the escapees lived in small settlements in the caves and on the summit of this promontory. The cultural landscape of Le Morne thus became an outstanding testimony to the resistance to slavery in a mountainous, island territory that was used as an impregnable fortress for sheltering runaway slaves.

Another significant case is Namhansanseong (Republic of Korea, WH inscription: 2014, criteria (ii)(iv)), which was designed during the Joseon Dynasty (1392-1910) as an emergency capital in case of an attack. It is in a mountainous site 25km to the south-east of Seoul (Korea). Built and defended by Buddhist monks, it could hold 4,000 people and carried out important administrative and military functions, covering the needs of government during times of siege. Its oldest remains date back to the 7th century, but it was re-built several times, notably at the beginning of the 17th century as protection against the Sino-Manchu Qing Dynasty. The city incorporates a synthesis of the defensive concepts of military engineering of the time, based on Chinese and Japanese influences, and changes in the art of fortification, after the introduction of firearms from the West.

The site entered under the name of the Bandiagara Escarpment, Land of the Dogon (Mali, WH inscription: 1989, criteria (v)(vii)), is an impressive plateau rimmed by spectacular cliffs, with many of the old settlements of this culture clinging to them. Some of these settlements have roots that go all the way back to the Stone Age and, as a whole, they have generated an exceptional model of integration into the landscape, as in the case of the Tellem who live in caves. Ever since the 15th century this hostile environment, difficult of access, has provided a natural refuge, perfectly in line with the need for defence of the Dogon against new, formidable invaders. Entrenched on the plateau and perched on the walls of the cliffs, they have managed to conserve their culture and centuries-old traditions, largely thanks to this defensive shelter. Dogon architecture has been adapted to benefit from the physical constraints of a place of this kind. Either on the altiplano or on the cliffs, the Dogon have used all the elements available to them to build their villages, which reflect their ingenuity and their philosophy of life and death. Totemic sanctuaries (*binu*) stick out from the cliffs. These are privileged places that keep the places of worship alive. They also have a quite unique cosmogony, the distinctiveness of which has been enhanced by its persistent isolation until recent times. The inaccessibility, as a factor of defence and protection, underpinned by a form of vertical planning

on cliffs and in caves, shows certain similarities with the proposed property in Gran Canaria, especially regarding the fact that a substantial part of its cultural attributes remains in a good state of conservation.

The old fortified town of Montsegur (France) is included on the Tentative List, under the title of "Cité de Carcassonne et ses châteaux sentinelles de montagne". As a final consequence of the crusade against the Cathars, ordered by Pope Innocent III, the fortified town with its walls and small castle, located on the summit of Mount Pog, 2km from the current site, was besieged by Hugues des Arcis and Pierre Amiel, Archbishop of Narbonne, in early May 1243, and taken after a long siege that lasted over ten months. It has been estimated that there could have been about 500 people in the small fortified town, including defenders, their families and some two hundred Cathar refugees. Arrayed against them was an army of over six thousand armed men under the command of Hugues des Narcis. After their surrender, on the 16th of March 1244, over two hundred heretics who refused to renounce their Cathar faith were burned at the stake at the foot of the Montsegur fortress. Their martyrdom marks the end of the crusade against the Albigensians. As at Montsegur, the Canary Islander rebels in the Sierra del Bentayga in Gran Canaria became a symbol of the resistance of their culture for posterity.

The facet of the mountain as a place of refuge against the conquering hordes is something that can be clearly seen in the region of La Montaña, on the border between Yucatan and Guatemala, which has not been included on the World Heritage List or any Tentative List. Although the conquest of Yucatan by the Crown of Castile was considered officially complete in 1542, for over a century this rugged territory and its indomitable inhabitants represented a wall that blocked successive attempts to subject and integrate the fugitive Indians into the colonised area. Although the Spaniards scored some military triumphs, the most famous in 1697, they could never establish their bastions there with the same assurance as they could in the north and part of the west of the Yucatan peninsula. Thus the Yucatan Mayas made the flight to these mountains their preferred form of escape from and rebellion against the colonisers. The central importance of the mountains for the survival of the indigenous people meant that they took on a significant symbolic value: this was also the space that "enclosed the immediate cosmos, where the guardians of the mountains reside, where the winds and the variations in the moon originate and the forces of nature



Figure 3.2.45. Le Morne, World Heritage site, cultural landscape and emblematic refuge for runaway slaves from the 18th century to the early 19th century.

© Le Morne Heritage Trust Fund

face off against one another in impressive battles that maintain, day by day, the balance of the cosmos and nature" (Rocher Salas, 2014).

Mount Taranaki on the North Island of New Zealand, also not included on the world heritage lists, is a good example of a pre-European, Polynesian (Maori) fortified landscape, with its attributes of defence and refuge. Building started on the fortifications, known as pā, around 1500 A.D., some three hundred years after the arrival of the first Polynesian settlers, acting initially as a place of refuge and defence against the sieges of other tribes. In the 1820s, before European settlement, the tribes of the north carried out a series of bloody incur-



Figure 3.2.46. Namhansanseong World Heritage Site was designed during the Joseon Dynasty (1392-1910) as a refuge and emergency capital in the mountains to the south of Seoul.

© NCTI



Figure 3.2.47. Bandiagara Escarpment in Land of the Dogon. World Heritage site and natural refuge for a culture that is exceptionally well adapted to the environment that survived for centuries.
© Ferdinand Reus

sions in Taranaki. Several sites and places are associated with the battles of that time, especially Okoki, Rewarewa and Te Koru. In the 1850s, conflict broke out between the Taranaki tribes and the European settlers, leading to what is known as the Taranaki wars. This was the start of a broader conflict known as the New Zealand wars (1859-1871), a time in which most of the fortified elements and defensive redoubts were built on cliffs. Given its characteristics, the landscape also represents the indigenous response to military colonisation and the adaptation of pre-European fortifications as defensive refuges against the new tactics used by the British army (Smith & Jones, 2007). This case is surprisingly similar to the different defensive works built to protect the grain stores and troglodyte settlements in the sacred mountains of Gran Canaria and emblematic places of rituals and worship such as Roque Bentayga.

The outstanding aspect of the cultural landscape proposed, compared with the cases mentioned and properties compared, lies in the fact that the survival of the aboriginal culture of the mountains of Gran Canaria, considered a refuge during the Conquest, was maintained over time, as the ancient people never gave up the highlands of Gran Canaria altogether. Another outstanding fact is that some of the cultural expressions, such as the troglodyte lifestyle, have been kept alive until the present day, representing a unique and outstanding case of a living refuge of an island culture.

3. Cultural landscapes and sacred mountains

The recognition of the value of traditional knowledge and value systems has gained ground in the World Heritage Convention thanks to the creation of the category of “cultural landscapes” in 1992. The variety of manifestations of interaction between peoples and their natural environment encompassed in the concept of cultural landscapes, and in particular sacred mountains, comprises a very special group. The only thematic study conducted by the ICOMOS on island landscapes, “Cultural Landscapes of the Pacific Islands”, illustrates the special importance of sacred mountains and volcanoes for islands (Smith & Jones, 2007). The thematic study conducted by the IUCN, “World Heritage Volcanoes” (Wood, 2009), highlights the major cultural values that many of these properties hold, which often reinforce their sacred nature.

In a similar manner to the case of Gran Canaria, some islands have important cultural landscapes inscribed in the World Heritage List or the tentative lists that show the evocative power and the spiritual association of certain peoples and cultures with their sacred mountains. Basically, these are associative landscapes in which the associations are reflected in the natural environment even more powerfully than in the material cultural expressions the environment holds.

Comparative Items

One emblematic case is the Tongariro National Park (New Zealand, WH inscription: 1990, criteria (vi)(vii)(viii)), which became the first property to be included on the World Heritage List in accordance with the new criteria applicable to cultural landscapes in 1993. The mountains situated at the heart of this national park have important cultural and religious meaning for the Maori people, as they symbolise the spiritual bond that these people have with nature and their cultural legacy. This bond has been maintained uninterruptedly, particularly by the Ngāti Tūwharetoa tribe, the ancestral custodians of Tongariro National Park, descendants of the mythical explorers who led the great oceanic migration that reached New Zealand in the canoe Arawa, one of the flagships that formed part of the original fleet according to tradition. Ethnic mythology defines the mountains of the park as tupuna or divine ancestors. Tribal chief Te Heuheu has clearly expressed the intensity of this spiritual association: “The physical, cultural and

spiritual bonds that tie my people to Tongariro are real. Management systems may change over time, but the only constant is the affection and the association with this landscape ... “man passes, but the earth remains. *Te ha o taku maunga ko taku Manawa* (The breath of my mountain is my heart)” (Kawharu, 2009). The peaks of Gran Canaria and some of their main natural symbols, such as Roque Nublo and Roque Bentayga, were also places of worship for the ancient Canary Islanders, and their mark has been kept alive in popular imagery over the centuries, albeit without currently reaching the associative intensity of the Maori culture.

The sacred landscape of the high mountain of Mauna Kea is located on the Island of Hawaii (USA). The peaks of the five volcanoes of Hawaii are revered as sacred places and Mauna Kea, the highest, is considered the holiest mountain. Mauna Kea, and also neighbouring Mauna Loa, are revered places and they are the highest volcanic formations in the world if we measure them from the ocean bed. The area is partially included in the World Heritage Site of the Hawaii Volcanoes National Park, although Mauna Kea is outside its boundaries. According to Hawaiian beliefs, they are the higher dwelling

places of the gods, including Akea, the father of Hawaii, and Poliahu, the goddess that keeps the summits of the mountains below the ice and snow and who provides the springs that feed the fertile valleys of the coast of Hāmakua and Kohala in the north. One of the largest prehistoric quarries in the world is located on the flanks of Mauna Kea, covering an area of almost 20km², which provided high-density basalt for making stone tools such as adzes (Smith & Jones, 2007). Almost one hundred ancient sanctuaries and symbolic or ritual manifestations of different kinds have been identified on the plateau that surrounds the summit, although what their function was has still to be clearly determined.

Adam’s Peak, also known as Sri Pada, the “sacred footprint”, is located in the Central Highlands of Sri Lanka (Sri Lanka, WH inscription: 2010, criteria (ix)(x)). The sacred footprint stems from the fact that there is a platform at the peak where there is a small Buddhist temple and Saman sanctuary that contains a print in the stone that resembles a human foot. This mountain has the unique distinction of being sacred for the followers of the four main religions of the world: Hinduism, Buddhism, Christianity and Islam. But long before the



Figure 3.2.48. Altavista mountain in the Cultural Landscape of Risco Caído and the sacred mountain places of Gran Canaria is one of the emblematic landmarks of this area that was revered by the ancient Canarians. © Orlando Torres



Figure 3.2.49. The mountains of the Tongariro National Park are of important cultural and religious significance for the Maori people as they symbolise the spiritual bonds that these people have with nature and their cultural legacy. © Tongariro National Park

appearance of these religions, the mountain was worshipped by the aboriginal people of Sri Lanka, the Veddas. Their name for the peak was Samanala Kanda, in honour of Saman, one of the four guardian deities of the island.

Although this is a case of a large island where insularity is diluted, on the island of Honshū the beauty of a solitary stratovolcano is striking, known throughout the world as Mount Fuji or Fujisan (Japan, WH inscription: 2013, criteria (iii)(vi)). This is another leading example of sacred mountains that emerge on volcanic islands. This property, registered under the denomination of “Fujisan, sacred place and source of artistic inspiration”, comprises a serial nomination that includes 25 sites, which reflect the essence of this sacred and artistic landscape,



Figure 3.2.50. Fujisan, sacred mountain and source of artistic inspiration. © Fujisan World Heritage Centre

managed in practice as a cultural landscape. From ancient times, right up to the present, the reverential fear of Fujisan because of its intermittent volcanic activity and its imposing presence have inspired countless manifestations of worship and religious practices associated with Shintoism and Buddhism. Fujisan has been attracting pilgrims since the 7th century at least and over time sanctuaries, temples, symbolic elements and refuges have been built on its flanks. Its power of evocation even dates back 13,000 or 14,000 years, as can be seen from the archaeological remains of a settlement and a ritual site that could have been built facing Fujisan.

The property proposed on the island of Gran Canaria presents certain similarities with these last two cases, as an ancient place of pilgrimage, mountain space containing ritual grounds and caves, sanctuaries and “almogarenas”, or places of worship, containing unique and outstanding symbolic manifestations that enhance the sacredness of these elements, such as the engravings of pubic triangles and certain Berber inscriptions. Another exceptional aspect is the fact that the proposed property includes such surprising cases of religious secrecy as the Christianised cave temples. The comparison with sacred mainland mountains is also outstanding.

Although most of them are not considered cultural landscapes, there is a broad representation of sacred mountains entered on the World Heritage List on the mainland, or located within these territories. In most cases, the tangible evidence of their sacred nature, such as places of worship, sanctuaries or places of pilgrimage, religious rites, activities or other elements of worship that have been conserved and handed down to the present day, is decisive. This marks a certain difference from the island properties on the list, where the predominant aspect of these cultural sites is their immaterial associative nature.

Uluru-Kata Tjuta National Park

(Australia, WH Inscription: 1987, criteria (v)(vi)(vii)(viii))

Initially known as the Uluru National Park (Ayers Rock-Mount Olga), this site has a series of spectacular geological formations that dominate the vast sandy plain of central Australia. The immense monolith of Uluru, an example of sedimentary rock island-mountain created by erosion, and the rocky peaks of Kata Tjuta, to the west of the park, form part of the ancestral system of beliefs of one of the oldest human societies in the world. Uluru is a sacred place for the aboriginal people of the area, the Anangu, custodians of the area, and this is reflected

in the many caves and rock engravings it contains.

Archaeological Site of Monte Albán

(Mexico, WH Inscription: 1987, criteria (i)(ii)(iii)(iv))

The World Heritage Site comprises the "Historic Centre of Oaxaca and Archaeological Site of Monte Albán", the most important archaeological site of the Oaxaca Valley. Inhabited for 1,500 years by a succession of peoples - Olmecs, Zapotecs and Mixtecs – the terraces, dams, pyramids and artificial mounds of Monte Albán were literally carved into the mountain as symbols of a sacred topography. This site presents archaeological evidence of astronomical observation and patterns of alignment in some of its monuments, such as Buildings J and P.

Mount Taishan

(China, WH Inscription: 1987, criteria (i)(ii)(iii)(iv)(v)(vi)(vii))

A place of imperial worship for two millennia, this sacred mountain contains masterpieces of architecture and art

in perfect harmony with their natural surroundings. A symbol of the civilisations and beliefs of ancient China, Mount Taishan is considered a sacred place by Confucians, Buddhists and Taoists. For Taoists, this mountain is the most representative of the five sacred mountains: Taishan, Hengshan, Songshan, Huashan and Hengshan.

Lushan National Park

(China, WH Inscription: 1996, criteria (ii)(iii)(iv)(vi))

Situated in the province of Jiangxi, the Cultural Landscape of Mount Lushan is one of the spiritual cradles of Chinese civilisation. Countless Buddhist and Taoist temples and important Confucian schools where the leading maestros of the time imparted their teachings, all blend into a landscape of impressive beauty. Mount Lushan is also known as the epicentre of Pure Land Buddhism from India, established by Huiyuan (334-416), a school of Mahayana Buddhism that, along with Zen, constituted one of the best-known manifestations of Buddhism in East Asia.



Figure 3.2.51. The Milky Way over the outstanding natural monolith of Uluru, sacred icon of the local aboriginal people, the Anangu, custodians of the area. © Uluru-Kata Tjuta National Park



Figure 3.2.52. The Cultural and Scenic Landscape of Mount Emei, entered in the World Heritage List, holds the first Buddhist temple in China, built in the 1st century. It is also an area blessed with extraordinary biological diversity, as in the case of Gran Canaria. © UNESCO

Mount Emei Scenic Area and Leshan Giant Buddha
(China, WH Inscription: 1996, criteria (iv)(vi)(x))

The first Buddhist temple was built in China in the 1st century, in the heart of the impressive Mount Emei landscape, in the province of Sichuan. The enormous profusion of temples that followed has turned this mountain into one of the most important sacred places of Buddhism. Over the centuries, an extraordinary repertoire of exceptional works accumulated in the area. The most impressive of these is the Leshan Giant Buddha, sculpted in the 8th century. At a height of 71 metres, this figure carved into the side of a hill, dominating the confluence of three rivers, is the largest statue of Buddha in the world. Mount Emei also stands out for its extreme biodiversity and for its endemic flora.

Historic Monuments of Dengfeng in "The Centre of Heaven and Earth"

(China, WH Inscription: 2010, criteria (iii)(vi))

In the province of Henan, near the city of Dengfeng, at an altitude of 1,500 metres, lies Mount Songshan, con-

sidered the central sacred mountain of China. At its foot, scattered over an area of 40 km², are eight sets of buildings: the three Que Han gate towers, the remains of the oldest religious buildings in China; several temples; the platform of the Zhougong sundial; and the astronomical observatory of Dengfeng. The astronomical idea of the centre of heaven and earth is closely associated with the survival of imperial power, with the intention of establishing a capital at the centre of heaven and earth, based on a natural attribute: Mount Songshan.

Sulaiman-Too Sacred Mountain

(Kyrgyzstan, WH Inscription: 2009, criteria (iii)(vi))

This mountainous massif dominates the Fergana Valley at the crossroads of the Central Asian Silk Routes. For over fifteen centuries, Sulayman-Too has been a genuine lighthouse for travellers, and a sacred, revered place. Its five peaks and slopes contain old sanctuaries and rock engravings, along with two 16th-century mosques, largely re-built. To date, 101 sites have been located with rock engravings representing human beings, animals and geometric forms. It also has numerous places of worship, seventeen of which are still used for ritual ceremonies. The mountain is an outstanding spiritual landscape that reflects Islamic and pre-Islamic beliefs, particularly horse worship.

Great Burkhan Khaldun Mountain and its surrounding sacred landscape

(Mongolia, WH Inscription: 2015, criteria (iv)(vi))

Located in the north-east of the country, the site is in the centre of the Khentii mountain range. Here, the great steppes of Central Asia give way to conifer forests and the Siberian Taiga. Burkhan Khaldun is associated with the worship of mountains, rivers and ovsos (shamanic stone cairns), in which the ceremonies merged shamanic and ancient Buddhist practices. Furthermore, Burkhan Khaldun is also associated with the birth and burial place of Genghis Khan and it is testimony to his efforts to formalise mountain worship, an important element in the unification of the Mongol peoples.

One of the major differences that consolidate the unique and outstanding character of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria with the properties already inscribed lies in the powerful cosmological component that defines the associative character of this mountain cultural landscape. Not only are the natural symbolic places, engravings and milestones decisive; the cultural landscape can only be understood in relation to the skyscape. The ritual places

with astronomical meaning, the aboriginal calendar and the ancestral rituals all bear witness to this. Moreover, the layout and the location of the main sanctuaries and caves with rock manifestations are closely related to these emblematic symbolic elements.

It is well known in Mediterranean cultures for certain mountains to be attributed with a sacred character, as in the proto-historical societies of the Maghreb and, by the same token, the island cultures of the Canary Islands, especially in Gran Canaria. But in the Berber Maghreb, there are no references to these manifestations, either in the World Heritage List or in the respective tentative lists of the region.

The Atlas mountain range holds many manifestations of sacred mountains that are of special importance in the Berber world. The case of the Libyan people is highly significant; there is a widespread consensus among scholars of some aspects of the Libyans of the Maghreb, and also among their descendants, the Berbers, that the mountains were worshipped and revered. Originally, the Libyans professed a belief, that could be called “primary” (also common throughout mankind), in which they worshipped the natural elements like the mountains and the stars, the sun and the moon. The Atlas in this context, was considered a sacred place, “the pillar of heaven” (Herodotus, 2:389). This strong feeling among the indigenous Amazigh peoples survived over time, judging from the invective used by Saint Agustin on the Christians of Africa when he reproached his contemporaries about the customs of going up to the mountains and down underground to feel closer to God, as can be seen in one of his sermons (XLV, 7), between 408 and 411, in which he says the following: “We clearly know that it is this mountain. I do not suggest other mountains like Giddaba (Djebel Chettabe, Algeria) or any other named by you. Sometimes, for example, men read: It will be heard from his sacred mountain, and they understand it carnally, although at times he talks about a mountain and he refers to Christ. And the men run to the mountain to pray, as if God heard them there. Thinking carnally, as they see how frequently the clouds adhere to the sides of the mountains, they climb up to their summits to be closer to God”.

The powerful tradition of these outstanding sites is maintained today because of the reverence felt by the people who make pilgrimages to these sites, even taking into consideration that many of the traditions and customs of the Berber people of this area have been Islam-

ised to a greater or lesser extent. The fact that many of these sites were especially consecrated in Roman times – they were associated with the existence of a *genius montis* in many places – is revealing in itself, not only in order to understand the continuity of a set of cultural traditions linked to the cosmogony of the Libyans, but also to confirm the existence of a set of beliefs in a distant age that continued and survived among these North African peoples beyond the introduction of Islam (Tejera Gaspar and Chávez, 2005).

There are many testimonies in the Moroccan Atlas to mountains considered sacred, as is well documented among the Amazigh ethnic groups, and shown by different monuments, some ancient, such as the rock engravings of the mountains of this area, including those of Yagour (Rhat), which probably date back to the Bronze Age and the beginning of the Iron Age, which would partially explain why the strong tradition of these beliefs among contemporary Berbers has survived to the present. These beliefs include the highest mountains of Mediterranean Africa, such as Djebel Tubkal, and others that are revered, such as Djebel Ghat, where the Berber peoples make pilgrimages every year to pray that there will be no droughts; this is an ancestral tradition that reminds us of the propitiatory rituals of the indigenous peoples in the highlands of Gran Canaria.

Jábal La'lâm, situated in the Riff, in the north of Morocco, is another leading example of a sacred mountain. This



Figure 3.2.53. Mount Songshang is considered to be the central sacred mountain of China. It also has what is known as the Dengfeng observatory from the Yuan dynasty. Source: The Portal of the Heritage of Astronomy. © Xu Fengxian



Figure 3.2.54. Ritual ceremony in the Belliin *Owo*, in the sacred landscape of the great mountain of Burkhan Khaldun (Mongolia). *Ovos* are stone markers that serve as spiritual guardians of the territory around them.
© Mon Agency - UNESCO/WHC

mountain is currently inhabited by the Banî 'Arûs tribe and other Arab and Berber groups, who maintain strong spiritual bonds – including cultural roots and local beliefs – with the mountain where their forefathers lived (Zouanat, 2008). On the summit is a sanctuary to Saint 'Abd al-Salâm Ibn Mashîsh, founder of the Sufi Shadhiliyya order. For five centuries, the summit of Jâbal La'lâm has been the destination of an important pilgrimage, known as “the pilgrimage of the poor” (*haj al-fuqarâ*), although the sacred nature of this mountain is assumed to date back to pre-Islamic times.

The importance of mountains as sacred places, or as the dwelling places of the gods, can also be seen in some Tunisian mountains, such as Mount Bul Qornin, the former Balcaranensis, which surrounds Tunis. Its name was associated with the deity worshipped and revered there by the Berbers in ancient times, before the Phoenician sanctuary was built on the same site, which the Romans later dedicated to their god Saturn (Basset, 1910; Camps, 1974). This and other similar places were also later consecrated by the Carthaginians, who associated them with the God Baal; these were also considered sacred by the native people, and also devoted to the Baal divinity in Phoenician times, and later associated with the God Saturn (Le Glay, 1961).

Especially remarkable in addition is the Zinkekra clifftop fortress in Libya. There is a more detailed discussion of the Zinkekra Fortress in Section 3.b.v. This mountain, which rises from the edges of the Djebel Messak, pointing towards the Oasis of Garama, was one of the first Garamante (peoples of Libyan origin) settlements in Wadi el Agial. Once the capital was established in the

valley, next to a lake (now dry) and the oasis itself, the cliff became a place of worship and burial, protected by a wall – more symbolic than functional – that isolated the sacred grounds and is highly reminiscent of the sacred grounds of Roque Bentayga, in the area of the nominated property. The symbolic and cultural parallelism appears to go beyond a simple phenomenon of convergence in this case.

The impression of the sacred nature of certain mountains that impregnated the world of Amazigh beliefs probably originated from the first settlers of the Canary Islands, reaffirming the sacred character of some mountain landmarks such as Mt. Teide and the highlands of Gran Canaria. The sacred mountains of Gran Canaria are an outstanding case in its broad regional context, where this powerful feeling of the sacredness and evocative force of nature is transferred to the islands, contributing unique expressions through mountain rituals and sanctuaries.

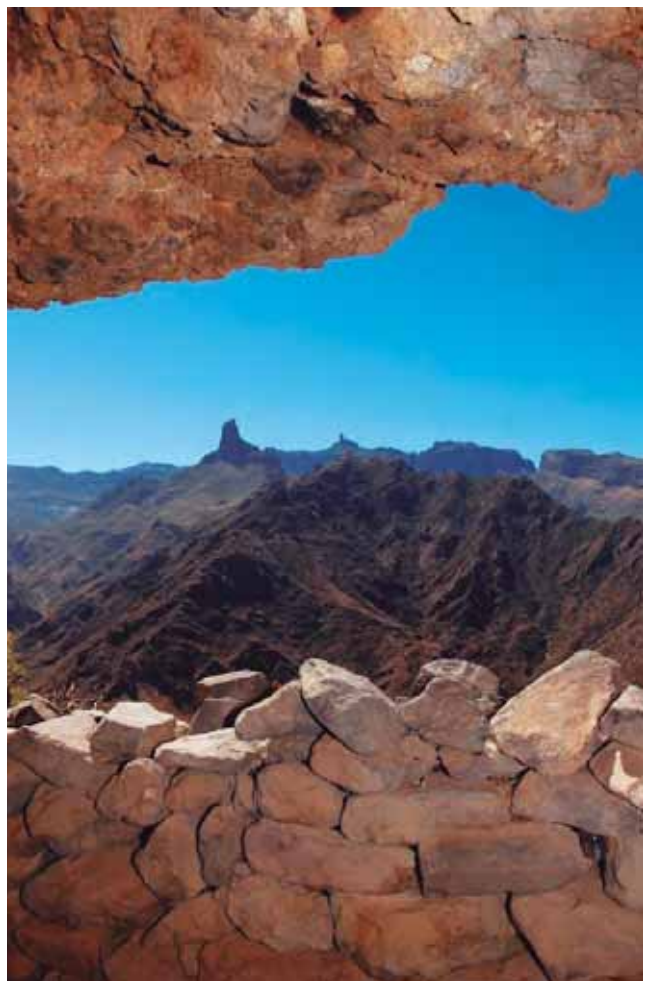


Figure 3.2.55. Panoramic view of the Tejada basin from Acusa, in the centre of the sacred mountains of Gran Canaria, which contains a substantial portion of the places worshipped by the ancient Canarians.
© Orlando Torres

3.2.f

Regional and local comparisons: Maghreb, Macaronesia and Canary Islands

I. The mark of the Amazigh culture on the World Heritage List

Although there are no properties inscribed on the World Heritage List that explicitly represent the Amazigh culture, the impression of this culture are evident in a range of different multi-cultural manifestations in which its presence converges. We should not forget that the Koutoubiyya Mosque in the Medina of Marrakesh and the Giralda in Seville are Almohad monuments, and therefore Amazigh, and they are part of sites on the List.

The sites on the World Heritage List from the countries of the Berber Maghreb include a series of properties where the marks of the mainland Amazigh people can be found. The oldest are the neighbouring rock art sites of the Tassili n'Ajjer Highlands (Algeria) and the Tadrart Acacus desert (Libya), whose paintings document the earliest representations of the first Berber herders that settled these Saharan lands, probably about 6,000 years ago. The case of Tassili n'Ajjer, as a mixed property, offers an interesting comparison with the sacred mountains of Gran Canaria, as it includes the set of geological manifestations and the landscape containing them, along with the rock art itself.

The remains of the Punic city of Tipasa date back to ancient times. Here there is accredited evidence of exchanges between settlers and Libyan-Berber peoples, as well as three important archaeological sites whose origin is associated with the royal Mauritanian and Numidian dynasties, with Amazigh roots: the cities of Volubilis (Morocco), Dougga (Tunisia) and Sabratha (Libya). The Ibadites, who settled in the Mزاب Valley (Algeria) in the 10th century to build a set of five well-known cities, were also Amazigh, as were the groups of people who built the impressive fortified Kasbah of Ait Ben-Haddou, perhaps in the 17th century, a magnificent example of

the architecture of the pre-Saharan oasis lands of the south of Morocco.

On the other hand, the respective national tentative lists do currently include several archaeological sites that show visible material traces of the former indigenous kingdoms of Amazigh origin that ended up succumbing to Roman domination, and other Berber people prior to the arrival of Islam. These include the ancient city of Lixus and the monumental burial ground of El Gour, both in Morocco, and a whole series of monumental tombs (royal Numidian and Mauritanian mausoleums, pre-Islamic funeral monuments of different kinds) scattered over Algeria and Tunisia.

The island of Yerba (Tunisia) is of great interest as a proposed island cultural landscape, in accord with the case of the Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria. The island also has Amazigh and Ibadite characteristics: the remains of the Numidian mausoleum of Henchir Bourgou is conserved, and the

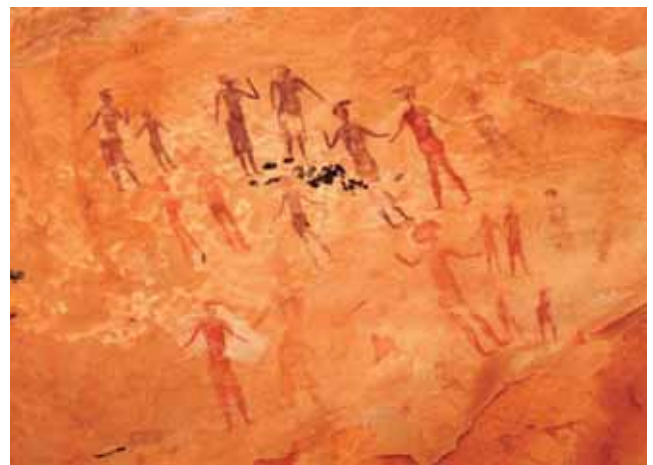


Figure 3.2.56. Rock painting at Tassili n'Ajjer (Algeria). This is a mixed property inscribed on the World Heritage List with one of the largest sets of pre-historic rock art in the world, documenting the earliest representations of the first Berber herders, together with geological formations of eroded sandstone "rock forests" of outstanding interest. © Gruban – UNESCO/WHC



Figure 3.2.57. Comprised of a set of adobe buildings surrounded by high walls, the Qsar of Aït Ben Hadu is a typical kind of traditional pre-Saharan habitat that shows an impressive citadel created by the Ibadites in the south of Morocco.
© IRCAM

original land occupation system, based on a dispersed habitat system, is striking. The same could be said in comparative terms of the Aurès Mountain Park (Algeria), a mountainous Highland populated by Choui Berbers that includes a series of oases scattered along the gorges of Rhoufi and El Kantara in its bid to be declared a mixed property. Here, there is no shortage of pre-Islamic archaeological remains and fortified grain stores, known locally as “guelâas”.

We cannot complete this tour of the signs of Amazigh culture in properties aspiring to be included in the World Heritage list without considering the rosary of oases of Tighmert, in the Moroccan pre-Saharan region of Oued Nun. Recently included on Morocco's tentative list, this cultural landscape, whose immediate origin lies in the trading and farming-livestock activities of the flourishing medieval caravan city of Nul Lamta, is very close to the Canary Islands, with which it has ancient historical ties. As a case in point, this oasis formed part of the territory received by the governor of Gran Canaria, Lope Sánchez de Valenzuela, on behalf of the Catholic Monarchs, when he signed what is known as the Bu-Tata pact in 1499. As a result of this treaty, the Crown of Castile commissioned Alonso Fernández de Lugo to build the San Miguel de Asaca Tower in the very mouth of Oued Nun. That is where the Governor disembarked at the head of a large expeditionary force in 1500, which included many of the indigenous natives

of Gran Canaria who were settled in Tenerife at the time and who were very close to his family clan. But the heavy defeat suffered by the Castilian army in the battle of Las Torres put an end to this colonial project. The casualties of this battle included native aristocrats, Pedro Maninidra, brother of Don Fernando Guanarteme, and Juan Delgado, son-in-law of the Fayzague (or Faycan – Lord or King) of Telde.

Although we are not in a position to certify any genetic ties between them, it is useful to compare the pre-Hispanic troglodyte culture of Gran Canaria with the troglodyte customs that are characteristic of the south of Tunisia, including the Matmata Highlands, populated by groups of Amazigh origin, and the Moroccan region of Taza, also occupied by Berber-speaking people. We should also insist on the relationship, in terms of type and function (even if there is no proof of direct genetic relationships) between the cave grain stores of Gran Canaria and the fortified grain stores, only exceptionally dug into the rock, typical of the Amazigh world that are scattered, with different names (gasr, guelâa, agadir, ...), from Djebel Nefousa in Libya to the Saharan slopes of the Moroccan Anti Atlas. One must not, of course, forget the analogies between Gran Canaria and the Maghreb in terms of farming and herding landscapes: organisation of plots, crop terraces, water systems and mountain pastures, which do not necessarily have to have a common origin.



Figure 3.2.58. Next to the Algerian world heritage site of Tasili n'Ajer, the Rock-Art Sites of Tadrart Acacus, also entered on the World Heritage List, form a rocky highland enclosing thousands of rock paintings of different styles, including early representations of Berber shepherds.

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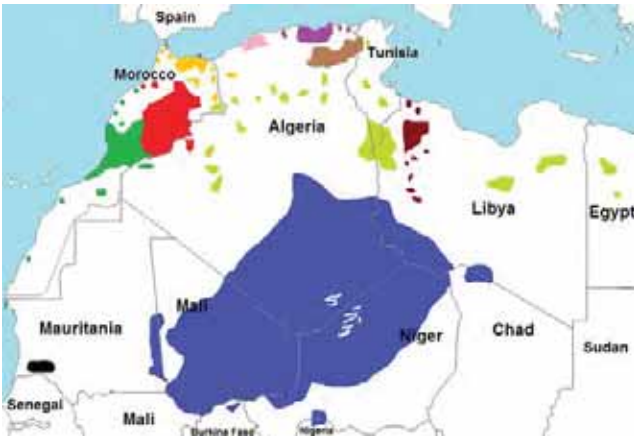


Figure 3.2.59. Map of the current distribution of the different dialects of the Amazigh language (Tifinagh alphabet)
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2. The nominated property in the context of Macaronesia

In bio-geographical terms, the nominated property forms part of what is known as the Macaronesia region. The boundaries of this space vary depending upon the discipline concerned and the bio-geographical analyses performed. This area encompasses the North Atlantic archipelagos of the Azores, Madeira, Selvagens, the Canary Islands and Cape Verde. Because of the affinity of the flora, certain authors also include a coastal strip of Africa opposite and to the south of the Canary Islands, from Morocco to Senegal, known as the “Mainland Macaronesian Enclave” (García-Talavera, 1999). The area falls within co-ordinates: 39° 45'N, 31° 17'W (of the northernmost island of Corvo in the Azores) and 14° 49'N, 13° 20'W (the southernmost island of Brava in Cape Verde) (see Map 3.2.3).

The only one of these archipelagos that was inhabited before they were conquered by European expansion in the 14th and 15th centuries was the Canary Islands. Although the first arrival of explorers to these islands is always surrounded by controversy and unconfirmed tales of previous visitors, the most widespread, and now accepted, hypothesis is that Madeira was known to appear on late 14th century Portolan charts, and was first settled in 1425. The Azores had been visited by Portuguese sailors in 1420 and were settled around 1439, while settlement in Cape Verde started in 1462 in Rivera Grande, on the island of Santiago, although it could possibly have been visited years beforehand.

Hence, we can say that up until the 15th century, the

Azores, Madeira and Cape Verde were in pristine natural condition with no human impact, and that it was only from then on that these islands make their appearance in history. This is not the case of the Canary Islands: although there is a recurrent debate about their settlement, and despite possible earlier contact and visits by Phoenicians and Carthaginian explorers, there is no longer any doubt that they have been inhabited by Berber or Amazigh people since the time of Christ, whose arrival possibly took place in the context of the Romanisation of North Africa.

Despite the prolonged occupation of the Canary Islands by man, the impact of the aboriginal people on the environment was never very significant, although they did leave a peculiar mark on certain elements of their natural surroundings, after more than 1500 hundred years of occupancy, adaptation and harvesting of the natural resources. The island with the most significant reflection of human activity is undoubtedly Gran Canaria, with its extraordinary development of pre-European architecture, its habitat (with large settlements), its economic activities (walls, corrals, dry-stone walls, crop terraces) and, above all, its manifestations in artificial caves, including pools, store houses, cave dwellings, sometimes forming notable cave villages, large collective grain stores and sanctuaries.



Map 3.2.60. Boundaries of Macaronesia including the “continental Macaronesian enclave” © WATCH



Map 3.2.61. Diagram of the Macaronesia oceanic eco-region including island fauna and the marine species associated with the islands, the Cold Canary Island Current and the associated bio-geographic and hydrographic processes © Alberto Brito Hernández

This cultural trait is not only a peculiarity of the Canary Islands, but of the whole of Macaronesia, representing a unique and outstanding cultural landmark for this important region of the Atlantic.

Furthermore, some of these outstanding cultural elements were taken to other islands by the aboriginal people of the Canary Islands, and in particular the natives of Gran Canaria, shortly after they were discovered by Portuguese explorers. Canary Island natives have been identified in mid-15th century documents, when Gran Canaria had yet to be conquered, implying that these elements were brought by the first slaves captured from the island and taken, mainly, to Madeira. The presence of aboriginal Canary Islanders was documented by Cadamosto on his voyage to Madeira around 1455 (Cadamosto, 1432-1488).

Several papers refer to the transportation of indigenous settlers from Tenerife, La Palma and Gran Canaria to Madeira, from the early days of settling this island. On occasion, this was the result of clandestine slave trade, with the Portuguese explorers taking advantage of trading deals: *“we are told that the people of Madeira bought certain products, preferably in the Canaries: ...they asked Prince Ferdinand to allow them to import from our island*

tax free, apart from meat, fat and cheeses that they used as supplies, along with slaves that were for their services and not for sale” (Siemens & Barreto: 1974: 115).

In the case of Gran Canaria, then, we are talking about aboriginal natives who still had not been converted to Christianity, nor were they accustomed to European ways. They would, therefore, follow their own cultural behaviour in their destination, especially if they were kept in a state of semi-captivity. This slave population grew to be so large that it represented a genuine threat to the Portuguese settlers, who on several occasions called for the Canary Islander population to be expelled. This was finally done in 1505, with the exception of a few Canary Islanders who were integrated into the new society, working in the sugar industry.

“As for what they say about there being many Canary Island slaves that their owners employ as herders of their flocks in the mountains and that they revolt and wander around the highlands destroying other people’s flocks, which is why livestock breeding in this island is being lost” (Siemens & Barreto. 1974: 118).

This interesting and little-known page of history shows that there were groups of Canary Islanders, initially associated with grazing flocks, in the highlands of Madeira, who conserved their customs and who exported techniques and trades from their place of origin. Such is the case of the presence of canals, excavated water galleries, dry-stone walls and above all, artificial caves in the mountainous areas of Madeira. These were built, furthermore, at a time when these people had fled to the most inaccessible mountains and forests. It is fair to say that just as the technique of the artificial cave was exported to other islands, as has been documented for the island of Tenerife by Canary Islanders who took part in the conquest of that island (Mederos and Escribano, 2004), this also took place in Madeira, where the marks of this cultural trait and singularity can still be seen in some areas of the island.

Furthermore, historic documentation and oral tradition mention the existence of religious practises by the Canary Island people in parts of Madeira that were inaccessible at the time. The evidence of this tradition survives today around the church of La Peña, close to Santana in the municipal district of Machico. This is a small chapel dug into a large rock, with a domed roof and several windows cut into the top, now partially destroyed owing to the extension of the original church.

“One must add that the broad area that goes from Faial to Ponta Delgada belonged to the domain of Lord Teixeira, descendants of the first Lord of Machico, Tristao Teixeira. When the owners discovered that there was a cave in that rock, they had a church built there in 1685 dedicated to our Lady of the Rock (Nuestra Señora de la Peña). Having reached this point, we considered the hypothesis that these rebel Canary Islanders not only used the cave as a hideout, but they also engaged in magical-religious practises there” (Delgado & Quintana, 2004).

The presence of native people on the later-discovered islands of Macaronesia can also be seen in place names such as *Pico del Canario* – Canary Islander’s Peak - in Madeira or *La Cueva del Canario* (Canary Islander’s Cave or Lapa do Canario), or in the Azores, *Lago del Canario* (Lagunas do Canario – Canary Islander’s Lake). These place names bear witness to the role played by Canary Island natives in the settlement and early colonisation of other islands of Macaronesia. A large number of aboriginal Canary Islanders and their descendants must have travelled on many of the trading voyages mentioned in historical accounts around the end of the 15th century and in the early 16th century, leaving behind their cultural footprint.

3. Comparison with other properties in the Canary Islands

The comparative analysis with other islands of the Canary Archipelago focuses basically on two categories of attributes that define the outstanding nature of the proposed property: astronomical culture-related manifestations and archaeoastronomical sites on the one hand, and troglodyte culture in all its expressions on the other. Consideration is also given to other, similar manifestations on the other islands, viz-a-viz the outstanding cultural, tangible and immaterial components of the nominated Cultural Landscape.

Manifestations of cultural astronomy in the context of the Canary Island Archipelago

Gran Canaria is not an isolated island in the middle of the Atlantic Ocean; it is a reference point in itself for an archipelago that was known as the Canary Islands at the time of discovery, from the Latin name for what was apparently its “main” island. When Canaria became known as Gran Canaria, the archipelago became universally known as the Canary Islands, abandoning its ances-

tral name of the Fortunate Islands, or Makaron Nesoi, the origin of the term Macaronesia. This preponderance of the one island over the others in the archipelago is strange, given that other islands are larger, such as Tenerife or Fuerteventura, or much higher, such as La Palma or Tenerife once again (the former Nivaria, where the peak of Mt. Teide acts as a lighthouse for the islands as a whole). This may be pure coincidence, but from a cultural astronomy point of view, Gran Canaria stands head and shoulders above the other islands, possibly because it was the island with the most highly developed culture. This, in turn, is reflected in the quantity and the quality of archaeological remains discovered.

This does not mean, however, that references cannot be found on the other islands, which in a few cases are on a par with the elements found in Gran Canaria individually. What Gran Canaria possesses as a whole, particularly in the area of the property proposed as the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria, has no comparison in the rest of the Archipelago, although there are examples that deserve to be highlighted.



Figure 3.2.62. Tindaya mountain on the island of Fuerteventura is outstanding because it has one of the largest collections of engraved foot-prints (podomorphs) in the world, and it is of course, the only on whose location and orientation show evidence of the interest of the society that engraved them in keeping time for both profane and sacred reasons.

© Antonia Perera



Figure 3.2.63. El Verde petroglyph station on the island of La Palma is an interesting Awara marker made by the Awara, the ancient inhabitants of the island. During the summer solstice, the sun goes down behind a V-shape in a nearby rock and the shadow that this projects travels across the main set of rock engravings until it is completely hidden below the horizon.

© Astrotour

Fuerteventura is one of these examples. On this island, one of the most difficult from the point of view of human survival, the ancient inhabitants, the Majos (which is where their modern name “Majoreros”, comes from) also drew on their ingenuity and made the effort to control and follow a sometimes-inhospitable time-space that could help them to survive. The dozens of large stone circles scattered all over the island (the “esqueques” of the chronicles), genuine cromlechs – also found in Lanzarote – although not matching those found on the Atlantic seaboard of Europe, are silent witnesses to this interest in the skyscape and in keeping time, and not so silent in the case of El Tablero de los Majos. The paradigm in this sense is Montaña Tindaya and the area around it. If the area around the proposed property is outstanding for the engraved pubic triangles, Tindaya is outstanding for one of the largest collections of podomorph engravings (foot-prints) in the world and, of course, the only one that justifies an interest shown by the society that engraved them in keeping time for both

sacred and profane reasons – based on their location and orientation. Perhaps Tindaya will one day become a natural extension of our proposal, as a sacred mountain.

Other smaller sites on other islands, such as La Degollada de Yeje in Tenerife, La Fortaleza de Chipude in La Gomera and El Lomo de las Lajitas in La Palma, also reflect this interest of ancient Canary Island societies in the skyscape, but they do not compare with what has been found on Gran Canaria. The rock art of the island of La Palma, and to a lesser extent that of El Hierro, is outstanding for its abundance and ubiquity, and above all, for the quality and beauty of its designs, although it is difficult to demonstrate that they are important from a cultural astronomy point of view.

In short, Gran Canaria, and the area of the proposed property in particular, is a benchmark of outstanding universal value for the relations between cultural astronomy (quite separate from the large modern observatories with state-of-the-art instruments on the peaks of Tenerife and La Palma) and heritage in the scope of the Canary Island Archipelago, without detracting from other manifestations that are undoubtedly also outstanding.

Troglodyte culture in the Canary Islands

Caves became the first shelters for the peoples who first reached the Canary Islands. Initially, they would probably have been coastal caves, in the mouths of gorges and on cliffs. Over time, people started using small volcanic pipes known as “jameos”—such as Cueva del Llano in Fuerteventura, Cueva de los Verdes in Lanzarote, and La Cueva de Don Justo in El Hierro—and, above all, natural hollows, in some cases more inland, towards the rugged and unknown interior of the highlands, such as Los Chabocos de Las Cañadas on Tenerife. They also sheltered under large rock overhangs in thick forests, such as La Zarza and El Tendal in La Palma, and in steep gorges such as those to be found in Los Polieros in La Gomera and Guayadeque in Gran Canaria. The cave was gradually used for more and more purposes: as a dwelling, a corral, a storehouse, and even a sanctuary and a cemetery.

Natural caves became the main habitat throughout the archipelago, becoming almost the exclusive form of shelter on some of the islands such as La Gomera, La Palma and even Tenerife, with the exception of tem-

porary huts and open-air shelters. As for building on the ground, the most complex and best examples of these are to be found in the easternmost islands, with an architecture designed for more permanent use. Some settlements in Lanzarote (Zonzamas, Fiquineo) and Fuerteventura (Rosita del Vicario, Las Hermosas) attained a striking level of development. But it is Gran Canaria that contains the most abundant, technically complex and elaborate surface architecture of the Canary Islands, even including true town-planning design in some coastal settlements such as El Agujero, Caserones, Arguineguín and Tufia, although these manifestations are not relevant to the field in question.

Notwithstanding this, where the architecture of the original settlers of the archipelago is truly outstanding is in their use of artificial caves, and this cultural practice is most prominent in Gran Canaria, both in the aboriginal past and after the island was conquered: the use of this kind of habitat was widespread throughout most of the island, and the tradition survives to this day. Over the long aboriginal period of Gran Canaria, the artificial cave became a characteristic creation of this island, and it was perfected to the point of building monumental, highly sophisticated, perfectly built works. We can identify a range of possible reasons why this cultural phenomenon only occurred in one of the seven inhabited islands. To a large extent, this cultural peculiarity would have been associated with the process of endogenous adaptation to the environment, even though many of the rock features that could have been excavated easily (particularly volcanic pipes) are to be found on almost all the islands.

Contrary to the idea of some authors from the 16th century, such as the engineer Torriani, who described them as a regressive form of architecture for the poor, we have now seen that an underground dwelling is often a cheaper and more efficient way of living (Rewerski, 1995). This is true in the case of Gran Canaria, where there are large settlements comprised solely of artificial caves and manifestations of more monumental, complex caves. This is a phenomenon that takes a particular form in the area of the Cultural Landscape of Risco Caído and the Sacred Mountain Sites, as is evident in the Cueva del Rey, in the Bentayga Highlands, Cueva de La Candelaria in Acusa, and El Solapón de Barranco Hondo, formerly Artevirgo.

Another reason that could explain the presence of a troglodyte lifestyle as a characteristic trait of the culture

of the ancient indigenous people of Gran Canaria, and which represents one of the most notable elements of the survival of their culture to this day, is that this is a legacy of the Berber or Amazigh peoples that reached the island, or maybe the archipelago, and maybe this cultural practice was lost on the other islands. Some authors defend the idea that some of the islands were settled by different tribes, which could also explain the fact that such an outstanding and notable element can only be found on the island of Gran Canaria.

This colossal work of engineering in Gran Canaria, which perforated whole mountains, made passageways, galleries, gates, stairs, granaries and windows hanging over impressive precipices, is a distinctive element of the history and identity of Gran Canaria, not only in comparison with the archipelago as a whole, but also internationally. On the other islands of the Canary Archipelago, there are just a few particular cases in which artificial caves have been constructed, going beyond minor improvements or extensions of natural hollows. We can see constructions of this kind, or elaborate caves, in Jandía and in the Tiscamanita Gorge in Fuerteventura as well as small caves in Caldera Blanca in Lanzarote. In Tenerife, some authors consider that certain artificial caves located in different areas of the south of the island, such as Fasnía, Ario and primarily around the area of Güimar, could originally have been dug by the Guanches, the aboriginal settlers of the island (Espinosa, 1980; Tejera and González, 1987). Popular tradition has associated some of these with important political or religious spaces (Cueva de Los Reyes in Barranco de Chimisay). But most of the researchers who have referred to this aspect consider that most of them are probably more recent, or they are the product of aboriginal peoples



Figure 3.2.64. The Belmaco Caves Archaeology Park on the island of La Palma. This site comprises a village of 13 natural dwelling caves and also has a rock engraving station.

© La Palma Biosphere Reserve



Figure 3.2.65. Rock engravings at El Julan on the island of El Hierro. The engraving station, known as Los Letreros, includes an extraordinary collection of Libyan-Berber alphabetic inscriptions and above all, geometric engravings with clear ties to the Amazigh culture. © El Hierro Biosphere Reserve

displaced from Gran Canaria and forced to fight or work on other islands, where they have left their cultural mark. The work done by researchers Mederos and Escribano on some of the artificial caves of the south of Tenerife (Arico and Granadilla) offers a range of documentary references in “*Datas de Tenerife*” – a record of the land that was distributed by the Governor General on behalf of the crown after the conquest of the island - which associate many artificial caves with settlers from Gran Canaria who had been displaced during the conquest of Tenerife, even including explicit data on the construction of these caves by these settlers (Mederos and Escribano, 2004).

A possible conclusion is that the troglodyte culture of Gran Canaria did not just represent a cultural landmark on the island, but, as a characteristic technique, was exported to other latitudes by the people of Gran Canaria who were displaced to fight the war of conquest, or as slaves.

Other cultural traits of the primitive inhabitants of Gran Canaria in comparison with the rest of the Archipelago

The island of Gran Canaria was the only one to be known as such. “Ever since there has been news of these islands under the title of Fortunate, this island has always had and conserved the name of Canaria, which it has never lost”. (Abreu, 1977:146). The island of Canaria was mentioned on the expedition ordered by King Juba II of Mauritania Tingitana, around 1 A.D. The importance of Gran Canaria is already clear in the description of

the island made in the early 15th-century history of the conquest, Le Canarien:... *is the most famous of all the islands of here* (Cioranescu y Serra Rafols, 1959-1964).

Due to their isolation from the outside world, the different ecosystems and availability of strategic resources, and possibly social and ideological customs inherited from the first groups of humans to settle them, each island developed a culture quite distinct from the others, although Gran Canaria was a case apart; it attained levels of development and complexity that had no comparison on any other of the other islands.

The major difference between Gran Canaria and the other islands in terms of cultural architecture can also be seen in the world of the dead: there are extensive walled cemeteries in the lowland areas of the island, with hundreds of burial sites, generally in mounds, using large volcanic bad lands. The sacred buildings deserve special mention. Although there are some important elements on other islands, especially sacrificial circles (La Gomera, El Hierro) and important spaces with cup marks and grooves (Lanzarote, Fuerteventura), the size and complexity, above all in artificial caves, as in the case of Risco Caído, make the almogarenes or sanctuaries of Gran Canaria the most elaborate and monumental. The architecture associated with economic practices is also spectacular and unique, such as the large collective granaries, which abound in the proposed property, where large surpluses of crops could be stored. This not only implies rigorous social organisation and management, in order to cover times of crisis and shortage, but also a highly developed concept of planning.

There was a highly diversified economy in Gran Canaria and a large population, which involved a more rigorous social control and a more complex institutionalisation. This is reflected in its immaterial culture, which attained a high-level of symbolic, artistic and spiritual development.

Although small statues, generally in stone, have been found on the other islands, the more than two hundred clay idols found in Gran Canaria—the vast majority of which are female representations—are clearly elements that identify its culture and distinguish it from others. There are also some animal figures and, to a lesser extent, schematic figures, such as what is alleged to be the Tirma sanctuary in the buffer zone around the nominated property. This remarkable and singular aesthetic, symbolic and spiritual manifestation reaches one of its

maximum expressions in the representation of the pubic triangle, and sometimes of the navel, and there are even hermaphrodite figures. These elements, especially the vulva (related to fertility and a matrilineal society) are repeated in other objects and, above all, in a variety of stone engravings in different caves of the island, found mostly in the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria.

Gran Canaria is the only island where the technique of painting is widespread. Here, painting is used both on pottery (with a wide variety of kinds and styles), and for idols and “pintaderas” (geometric patterns used on pottery and on other materials). It was also common practice for them to paint their houses and caves, both as decoration and for symbolic purposes. This aesthetic sense was also commonly found on more perishable elements, such as clothing and bodily decoration. Another element that was peculiar to Gran Canaria in the material culture of Canary Island pre-European societies is the existence of “pintadera” stamps. To date, they have only been found on Gran Canaria—almost three hundred complete and broken pieces in total.

In the case of the pottery, different kinds and decorative techniques (particularly chiselled and printed), with a great aesthetical and functional sense, are found on other islands such as La Palma, Lanzarote or Fuerteventura, but it is only on Gran Canaria that pieces of pottery were painted with decorative motifs of very different kinds, albeit always in schematic and geometrical form.

In the world of cave art manifestations, Gran Canaria also shows the broadest range and variety of motifs, styles, techniques and, particularly, meanings. From a comparative point of view, the work to be found on the island includes figurative and schematic representations made with incisions such as chipping, abrasion and even painted decoration in caves or in the open-air. These are found on the coast and up in the highlands (as seen in the area of the proposed property), in ravines and on plains. Gran Canaria is the only island where anthropomorphic engravings can be identified and where there is such an abundance of zoomorphs.

From the perspective of the conquest and settlement of Gran Canaria, we can also see differences in comparison with the other islands. Chronicler Abreu Galindo tells us: *This island of Gran Canaria is the fifth in the order of conquest of these Fortunate Isles, and the one that cost the most work and blood for those that subjected it to*

the Catholic faith.... Known as great (the “Gran” in Gran Canaria), not because the island was large, nor the largest in quantity, but in quality, because of the great resistance and strength that was encountered from the inhabitants in defending themselves and in attacking with skill those that wished to do them harm and damage.. (Abreu, 1977: 145-146).

The heights of cultural development reached by the pre-European society of Gran Canaria, the outstanding and spectacular nature of some of their achievements, and their complex social, political and religious organisation have been found to be powerfully striking by every serious investigator of the groups of human beings that inhabited the Canary Islands before the conquest. In the case of Gran Canaria, the internal mechanisms that drove the evolution of these cultures throughout the archipelago achieved unrivalled levels of development in total isolation. Their material and immaterial culture, their great works, their abstract knowledge and their spiritual world, which has survived to a large extent until today, are undoubtedly an outstanding paradigm, both in the context of the Canary Island Archipelago, and worldwide.



Figure 3.2.66. Piece of pottery found on Gran Canaria. It is the only island of the Archipelago where pieces of painted pottery have been found. This singular aspect of the ancient Canarians is not only applicable to the pottery; it also extends to caves and other elements like idols and “pintaderas”. © Museo Canario



Figure 3.2.67. Cenobio de Valerón granary, one of the most spectacular examples of constructions of this kind on the island, situated in the municipal district of Santa María de Guía, in an area outside the nominated property. © Cabildo de Gran Canaria

4. Comparison with other properties in the Gran Canaria island

Other cultural astronomy-related properties in Gran Canaria

As explained elsewhere in this nomination bid, in the 15th century, Gran Canaria was a well-organised proto-state that had a caste of people who were seasoned observers of the sky for both practical and ritual reasons. These “observers” chose a set of emblematic sites where (i) either by altering the surroundings by creating outstanding ritual elements (the case of almogaránes in the open air or in cave sanctuaries), or (ii) by using the devilish topography of the island or distant elements of the landscape (such as the peak of Mt. Teide on the neighbouring island of Tenerife), or (iii) even by using a combination of the two, they could scrutinise celestial phenomena in order to create a calendar that would enable them to keep time and, therefore, control a suitable time space for both the sacred and the profane activities of the community.

These sites are scattered all over the island. Some of them, such as Cuatro Puertas or Tara, designed as sophisticated caves, are paradigms of the aboriginal troglodyte tradition that allow the solstices and equinoxes to be determined by how the light was cast inside them. At others, such as Los Llanos de Gamona, Montaña Santidad or the Necropoleis of La Guancha or Arterara, it was the landscape that played the role of the outstand-

ing reference point (see Map 2.a.7). And many other examples could be mentioned. But where manifestations of this kind are reflected in their full splendour is in the area of the property proposed as the Cultural Landscape of Risco Caído and the Sacred Mountain Places of Gran Canaria. Here moreover, they are framed in a dazzling, almost pristine landscape that unfortunately, has disappeared completely or has been highly modified in other parts of Gran Canaria.

There is a large set of important elements in the area of this property that offer the characteristics described here, along with others of an exceptional nature, such as La Cueva Candiles, but the special focus is on two sites of outstanding universal value: Risco Caído and Roque Bentayga. In the latter, the volcanic tuff was chiselled to create a set of reference points that frame outstanding elements of the landscape around the rim of the imposing Tejada basin (with Roque Bentayga as its central, core element). They also created other new reference points in order to allow an exhaustive control of time and space, where almost all the elements that would describe the calendar of the ancient Canary Islanders could be tracked, exactly as described in the chronicles of the conquest.

Despite not having this grandiloquent landscape, Risco Caído is even more outstanding because here, the ancient Canarians used all their architectural ingenuity to build, in fact sculpt, a sanctuary where the astronomical symbology, reflected in the lighting effects created inside by the sun and the moon, would reach new heights, hence creating a suitable, extraordinary place for holding rituals that relied on time-keeping. Only Tara and Cuatro Puertas are comparable, albeit distantly, as they lack the refined building technique and the outstanding rock art of Risco Caído: the public triangles that are so characteristic of the area around the proposed property.

For all these reasons, the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria reveals itself to be a top-flight benchmark in studies of cultural astronomy worldwide and it is, of course, an exceptional setting on such an outstanding island as Gran Canaria.

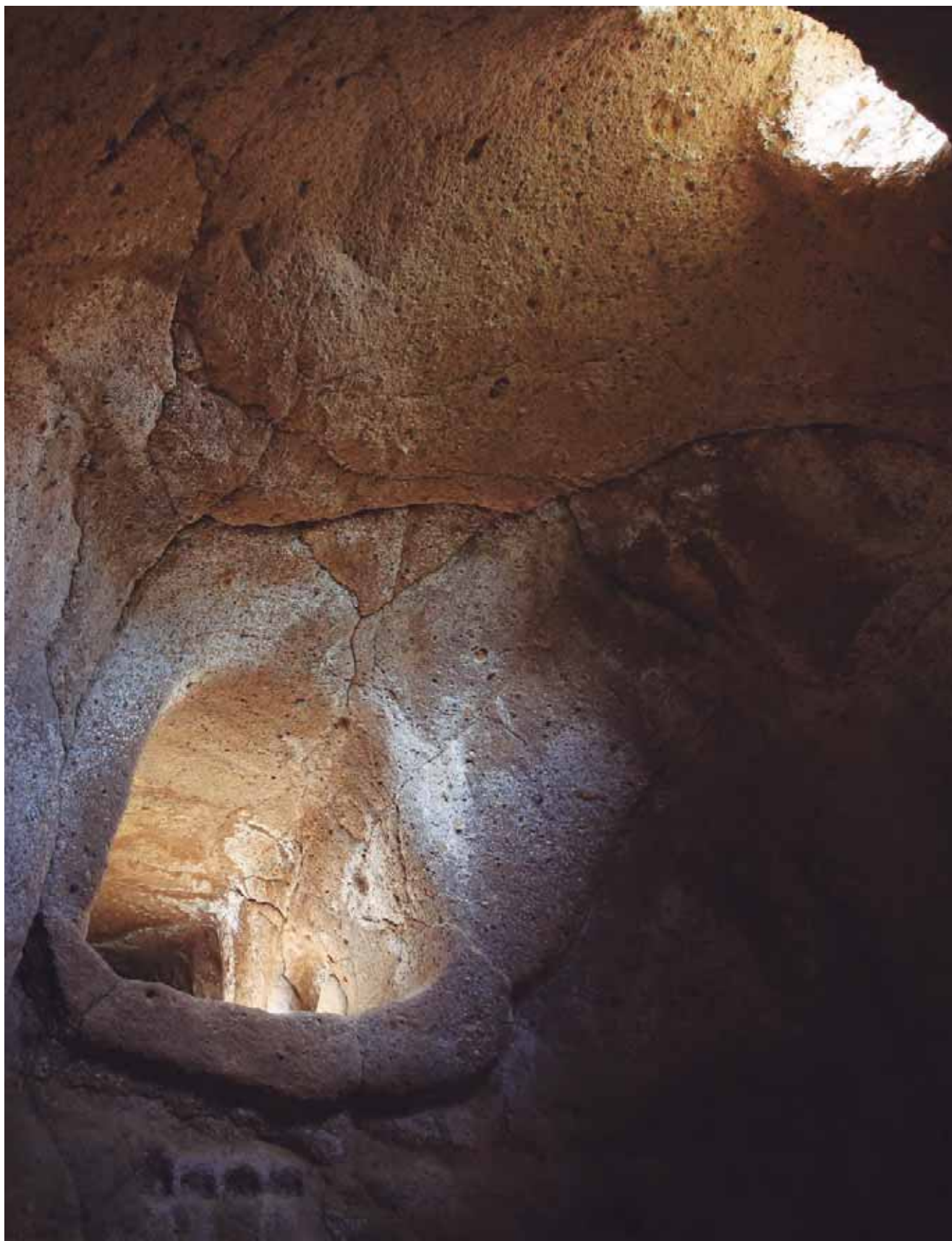


Figure 3.2.68. The recent discovery of the Tara cave in the Municipal District of Telde, far from the area of the nominated property, offers another extraordinary cave sanctuary reference with astronomical connotations, albeit not as complex or ingenious as the Risco Caído sanctuary. Like Risco Caído, it has an optical device and an interesting solar hierophany is deployed inside it. This temple is located in the *"Guanartemato"*, or *Kingdom* of Telde, one of the two that the island was divided into before the conquest. Risco Caído is located in the Guanartemato of Gáldar, leading one to suppose that these two exceptional temples were the most outstanding examples of this kind on the island. © Julio Cuenca





3.3

Proposed Statement of
Outstanding Universal Value



3.3

Proposed Statement of Outstanding Universal Value

a) Brief synthesis

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria covers an extensive mountainous area in the centre of the island of Gran Canaria, delimited by the spectacular Caldera de Tejedá, encompassing much of the basin, course and slopes of Barranco Hondo and the forested highlands of Tamadaba. The terrain is extremely rugged, with imposing crags, cliffs, deep ravines and monumental volcanic formations, all in an area of extreme biodiversity.

The nominated property harbours a set of well-conserved, mainly archaeological manifestations and works belonging to an extinct island culture that evolved in total isolation from at least in the year 0 A.D., after the first North African Berbers or Imazighen had reached these shores, until the Spanish conquered the island in the 15th century. Thus, it is an exceptional cultural evolution in an oceanic island space that grew from the background, knowledge and beliefs of the first Berber settlers (Imazighen), finally generating a unique and distinct island culture in this territory.

A cosmological vision encompassing both the skyscape and the landscape provided the means of organising and understanding the space of the sacred mountains of Gran Canaria. Outstanding human troglodyte settlements and rock art sanctuaries are arranged here, along with farming structures surprisingly-well adapted to the unique geology and nature, giving rise to a cultural landscape that still conserves most of its original elements together with the visual relationships between them. The Cultural Landscape offers a clear and outstanding example of how mankind adapts to a complex and difficult natural environment, representing a paradigmatic model in the island context.

← Figure 3.3.1. Dome of the cave sanctuary of Risco Caído, symbol of the evolution of an island culture in total isolation.
© Julio Cuenca

Certain material expressions of the indigenous inhabitants of this territory, especially the temples or almogarenas with obvious astronomical connections, are surprisingly complex and the outstanding constructive conception is incredible; the more so if we consider that this was a culture that did not even use metal. Another rarity is that the area contains one of the largest concentrations of pubic triangle engravings, an ancestral symbol of fertility, known in the world.

The way the settlements are laid out, the presence of temples and markers with clear astronomical connotations, and certain reference landmarks, along with certain calendrical reference points, reveal a complex landscape interconnected with the sky. The evolving cultural landscape of the sacred mountains includes both the earth and the skyscape, inextricably combined.

The aboriginal mark has survived through time and space here, moulding the landscape, maintaining the troglodyte culture throughout the area and conserving ancestral practices such as transhumance, the unique terraced fields for growing crops, and methods of managing water and cave pools. In general terms, this is a heritage whose roots are sunk deep into the original culture, as is evident from the extant Libyco-Berber engravings. It can be considered the westernmost expression of the Amazigh culture, which, for the first time, develops into another, unique island culture.

The Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria is a genuine laboratory of knowledge that illustrates the adventure of the aboriginal island cultures of the planet, which have evolved over long periods of time without any external influence, giving rise to their own cosmology and a distinctive universe of knowledge and beliefs. Thus, it is an outstanding heritage that expresses a unique and unrepeatable cultural process displayed on a stage that has remained almost unaltered over the centuries.

b) Justification for Criteria

Criterion (iii)

(Bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared)

The set of archaeological sites and rock art manifestations bears unique and exceptional testimony to an extinct island culture that evolved in isolation for over one thousand five hundred years. Archaeological and historical evidence from the nominated property bears witness to the fact that this culture arose from the first settlers that came from the Berber Maghreb, which in of itself makes it exceptional, as it is a unique case of an island culture that can trace its roots back to the pre-Islamic Amazigh world, of which there are very few manifestations. This place also represents the sacred mountains that were the final refuge of the ancient Canarians before the Spanish conquest.

The site expresses a very strong and highly original relationship of human beings with nature (both land and sky). The nominated property provides exceptional testimony of an island culture that includes the skyscape as a fundamental part of the perception of their world, rites and beliefs. They also developed an astronomical culture closely attuned and related to the natural environment and the surrounding landscape. Evidence of this is provided by the temples with strong astronomical connections, such as the *almogaren* at Roque Bentayga and the cave at Risco Caído, that represent the pinnacle of the evolution of these manifestations.

This heritage legacy also illustrates the odyssey of the aboriginal island cultures of the planet that have evolved over long periods of time without any external influences, giving rise to their own cosmology and a unique universe of know-how and beliefs.

Criterion (v):

(Be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment, especially when it has become vulnerable under the impact of irreversible change)

The aboriginal troglodyte settlements of the Caldera de Tejeda and the surrounding area are an unrepeatable

example of this kind of human habitat in ancient island cultures. They illustrate a highly efficient and complex level of organisation of the space and adaptive resource management. The colossal geological stage and the natural landscapes blend in with the cave settlements, sanctuaries, agricultural works and terraces, to create a genuine cultural landscape that still maintains its main references and its symbolic and cosmological connotations.

The troglodyte habitat has been kept alive as a way of life over time, creating new ways of occupying the space that express the syncretism between the aboriginal culture and the culture introduced after the conquest. There is also the survival of ancestral techniques and land uses, such as transhumance and water management with unique troglodyte traits such as the cave pools.

The orientation and alignment of certain temples and caves also indicates an intimate relationship between settlements of this kind and the skyscape and the main symbolic elements of the landscape.

The spatial distribution of the settlements and the findings from the sites offer a detailed understanding of how the aboriginal communities exploited the territory of the sacred mountains. The current environment contains habitats and species of flora and fauna that also cast light on the lifestyle of the ancient settlers. Our knowledge of the skills and cultural traditions of the aboriginal people, and the survival of many of these skills and traditions, allows us to recognise a territorial culture that was intelligently adapted to a difficult and complex territory and that generates an incomparable cultural landscape.

c) Statement of Integrity

The designated property not only includes all the necessary components and elements to express the Outstanding Universal Value in terms of a cultural landscape, sacred for the ancestral settlers of the island; it also has the right size and adequate boundaries to fully represent the attributes and processes that transmit the importance of the property.

With respect to the integrity of the composition of the landscape, the area of the nominated property the highest density of troglodyte manifestations in Gran Canaria, exhibiting a unique phenomenon in the Canary Islands. There are almost one thousand artificial caves of differ-



Figure 3.3.2. Partial view of the Tejeda Basin from the almogaren of Bentayga, epicentre of this sector of the Cultural Landscape.
© Tarek Ode

ent kinds, from original, well-conserved ancestral villages, to caves that have been used in historic times or hewn-out deliberately over the last century. It also includes a large sample of temples or almogarenes with different features, including sanctuaries both in caves and in the open air:

The Cultural Landscape clearly maintains the integrity of its relationships. The delimitation of the space of the property by the Caldera and Tejeda Basin (geological and geographical factors that determine the property) is very visible and coherent. It has a series of visual qualities: spectacular and monumental physical features, sacred forests, human troglodyte settlements on the cliffs and peaks, agricultural settlement by the use of terraces combined with the troglodyte settlements and traces of the paths of the ancient Canarians, among other important manifestations. Relationships between attributes and components of different kinds are highly visible, with many viewing points for visitors. The human use of geographical and astronomical alignments is especially readable in their relationship with the human constructions.

The wholeness of the property and its visual expression make it an exceptional, complete and very harmonious cultural landscape that was also the last mountain refuge of the Canarian Imazighen. This landscape offers an exceptional combination of aesthetic features arising from geology, geography, biodiversity and human physical settlement. It also bears witness to scientific and symbolic practices concerning the sky in relation to human beings and understanding nature.

d) Statement of authenticity

The authenticity of the nominated property's attributes can be seen particularly in the almogarenes or sanctuaries, the many granaries and the multiple manifestations of the original troglodyte habitat that conserve their original forms and content almost unchanged, particularly those containing rock art (engravings, paintings, Libyco-Berber alphabetic inscriptions), which include the extraordinary collection of pubic triangles. The relationship between these manifestations and the Amazigh culture is confirmed by archaeological and ethnographic evidence. The authenticity of the ceremonial or ritual

use of the sanctuaries has also been confirmed by the results of archaeological research, excavations and rock art studies, along with the clear references provided by the chronicles of the Spanish conquest of the island.

Archaeoastronomical research has provided sufficient evidence about the sanctuaries with astronomical connections to enable us to deduce that they were used as equinox and solstice markers.

The location and setting of the main troglodyte sites and the manifestations of rock art have remained without any significant change for over 500 years since the conquest, maintaining their original structure and location. Even the layout of the herding trails for nomadic grazing and the old access tracks to the temples, the continued survival of cave tanks/ponds and the siting of the old refuges have all been maintained through time and space.

In terms of intangible heritage, the relationship with the sky follows the same patterns as it did with the ancients, as the ethnographic studies reveal. Even certain festive traditions have maintained much of the essence of the original ones, even taking into consideration the processes of assimilation of the new culture and the passing of the years.

In these conditions, the main scenic elements of the cultural landscape and the skyscape, including the night sky, remain practically unaltered since the Spanish conquest in the 15th century, maintaining the essence of the landscape and skyscape perceived by the ancient Canarians.

e) Requirements for protection and management

The necessary protection requirements for safeguarding the nominated property are guaranteed in the long term by virtue of the legal and planning provisions that affect both the area and its attributes. A raft of natural and cultural protection provisions converges on the nominated property to guarantee the integral protection of the landscape and the set of cultural attributes it contains, in the short and medium term.

Most of the area delimited for the nominated property and its buffer zone is covered by some of the protection provisions of the Canary Island Network of Protected Natural Areas, which clearly arbitrate the management criteria for the space with regard to uses, criteria and

conservation, and they identify the natural, scenic and cultural properties that are protected. Moreover, the entire protection zone has been listed as a SPA (Special Protection Area) by virtue of the EU Habitats Directive and Birds Directive, by including them in the Natura 2000 Network, which is an extremely important guarantee of protection.

With regard to the cultural heritage, the main attributes of the nominated property have been listed as BICs (Properties of Cultural Interest), giving them maximum protection status in both national legislation and in Canary Island regional legislation. Furthermore, all the rock art manifestations have been automatically listed as BICs, since the Spanish Historical Heritage Act and the corresponding Regional Canary Island Historical Heritage Act came onto the statute books.

The Cabildo of Gran Canaria is directly responsible for and is the competent authority for managing the main attributes and components of the cultural landscape by virtue of the devolved powers it holds, especially for cultural heritage, the environment and regional planning. It has the means and the human and financial resources to address this task. Nevertheless, bearing in mind the new challenges and objectives entailed in the nomination, such as enhancing grass-roots participation in the management process or the need to provide an holistic vision of managing the property that includes all the entities and departments concerned, the "Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape Steering Committee" was set up at the end of 2015 as the body to provide permanent co-ordination of the management and the intervention/action strategy of the nominated property.

One of the Steering Committee's leading contributions has been to draw up the "Integrated Management Plan for the Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape", which provides the management guidelines for the nominated property, which are revised periodically. The management and governance organisational chart of the nominated property is completed with the "Risco Caído and the sacred mountains of Gran Canaria Foundation", which is currently in the process of being set up.



Figure 3.3.4. © Javier Gil León





4

State of Conservation
and factors affecting the Property



4.a

Present state of conservation

The nominated property is deemed to be in an excellent general state of conservation. Nevertheless, restoration work is being carried out on archaeological sites at present and environmental and landscape recovery work is also underway. This work, however, had already been planned several years ago as part of measures proposed by the Gran Canaria Island Council within the framework of various plans and programmes to enhance and preserve the cultural and natural heritage of the area. It has to be said, however, that the nomination of the property has significantly enhanced this on-going effort to continue to improve the quality of the heritage and landscape in the area.

1. State of conservation of the nominated property

The general state of conservation of the Cultural Landscape can be considered excellent. The property's attributes that lend it its Outstanding Universal Value are in particularly good condition. They are consistent with the landscape which can be described as a virtually unaltered natural and geological environment. The indigenous settlements, sanctuaries and rock art that constitute the outstanding attributes of the property are well preserved, as are the other archaeological and paleontological sites. Together these create a pool of information and knowledge for present and future generations and for research. The inaccessibility and good conservation of many of these sites bode well for new discoveries and the future evolution of our understanding of the culture and habitat of the ancient inhabitants of the Canary Islands and their connection to the Berber culture. Thus, monitoring of the sites, as part of the research and conservation strategy implemented in the area, will help ensure that the properties are kept in a good state of repair, particularly those related to the indigenous

troglydite habitat. The complex renovation work and archaeological restoration carried out at Risco Caído are good examples of actions that have developed from the detailed study of the site and the state of conservation of its elements and surroundings.

In order to guarantee the best possible conservation of certain sensitive cultural properties, in particular caves, rock carvings and relevant sanctuaries, restrictive measures have been taken to regulate or discontinue access. Measures range from the closure of fragile sites such as Cueva Candiles and Cuevas de Caballero to regulating visits co-ordinated by the Historical Heritage Service (Servicio de Patrimonio Histórico), as occurs at Risco Caído and Roque Bentayga. New measures are required to safeguard the conservation of other sites such as Cuevas del Rey.

Troglydite sites built or reused in the past are deemed equally important in terms of authenticity. These are well preserved in the area of the nominated property and are thus considered exceptional expressions of the



Figure 4.a.2. The restoration and conservation actions relative to the main cultural attributes of the property have intensified notably since the area was nominated. Archaeological excavation work at Risco Caído. © Cabildo de Gran Canaria

Figure 4.a.1. The continued practice of transhumance inherited from the ancient Canarians constitutes one of the best preserved intangible attributes of the property. © Javier Gil León



Figure 4.a.3. Partial view of the aboriginal cave settlement at Acusa. The inaccessibility of many of these manifestations has favoured their conservation throughout history. © Cabildo de Gran Canaria

amalgamation of the two cultures that influenced this landscape.

The natural components of the landscape are in good condition and are largely unaltered. The geological setting and the appearance and structure of emblematic reference landmarks have not suffered damage or been altered. Despite the significant changes to the environment and landscape of the island of Gran Canaria, the landscape in this area has been kept intact, partly due to its persistent isolation throughout history. The best examples of the ecosystems to which the indigenous people belonged are found here and despite the mining damage suffered after the Conquest, they are now slowly returning to their natural state. Good indicators of this are the high levels of endemism and biodiversity recorded in areas such as Tamadaba, as well as other



Figure 4.a.4. One of the premises of the Integrated Management Plan is to monitor the state of conservation of the attributes of the property. Image of work being carried out in Cave 6 at Risco Caído. © Cabildo de Gran Canaria

natural areas like Riscos de Chapín, the area around Roque Nublo, Mesa del Junquillo or Macizo de Tirma, which are biodiversity hotspots in the Canary Islands. These are being further supported by reforestation and afforestation programmes, for Canarian pine in particular, as well as restoration of highland areas where retama broom flourishes in abandoned grasslands. It is also important to consider that practically all of the area is included in one or another of the protected categories of the Canary Island Network for Protected Areas (Red de Espacios Naturales protegidos de Canarias) and all actions have to comply with the established Conservation Plans or Norms and consider any potential impact on natural and landscape assets.

However, the greatest challenge we now face in terms of conserving the components of the natural environment is the recovery of the monteverde (sub-humid montane layer) that once covered part of the northeast of the area, particularly in the buffer zone. Bioclimatic maps of potential vegetation and historical studies show that the monteverde in the island of Gran Canaria occupied a much greater area in the 15th Century than it does now - approximately 16,344 hectares - and penetrated parts of the zone in question such as Barranco Hondo. The most characteristic species of Canary Island laurel are found in that forest, which the historians refer to as the Doramas rainforest. However, continuous logging, over-exploitation and changes to the land over four centuries have resulted in part of the forest cover being lost which has endangered many of its component species.

Various elements and enclaves inside the property, none of which are considered attributes of Outstanding Universal Value, require attention and are being dealt with. This is the case of the area around Cuevas del Rey and of the inhabited cave settlement and small population centre that surround the base of it. Following a detailed inventory of the impact on the area, including the rural settlements, the Integral Plan for Risco Caído and the Sacred Mountain Sites of Gran Canaria, developed by the Island Council, has established an ambitious and prioritised action plan to meet the conservation needs of the area in which the main attributes and landmarks are located. One of the most unique aspects of the diverse intervention projects and proposals is that, as well as correcting any impacts, it aims to recover the original landscape of each area. The ultimate idea of each intervention project is not to just maintain the physical integrity of the property but also to recover the flora and

endemic vegetation, recovering the original indigenous landscape; a criteria that not only aims to conserve the landscape but which has also become a new and exceptional educational resource and visitor attraction.

Another aspect that requires attention is the conservation and maintenance of the road network, particularly those roads categorised as Caminos Reales, the ancient bridle paths that were the only communication roads in the interior of the island for hundreds of years. These roads were designed by the indigenous people and date back to prehispanic times. Over a long period of time traversing its deep ravines, ridges and gorges they have been cleverly adapted to the rugged mountainous terrain of the island's interior. Various maintenance and enhancement programmes and plans have been developed for this purpose.

The conservation strategy for the region has also focussed on the intangible heritage associated with the area. Of particular interest are the ancestral livestock breeding methods -such as transhumance - that have been maintained in the property. These have been supported by the Strategic Primary Sector Plan (Towards Food Sovereignty on a Sustainable Island) and through actions aimed at preserving trades and knowledge, such as the distinctive indigenous earthenware tradition or the unique cheese making industry, in this case with the support of the Protected Designation of Origin. However, it is important to consider that the issue of an aging population threatens the conservation of intangible attributes and assets which is why it is important that generational replacement be accelerated through new sustainable economies and quality strategies.

2. Conservation and historical vicissitudes

Although this area had important towns in the indigenous era, it was never as highly populated nor did it endure the same level of human pressure as the lower zones of the island. Another reason for the good state of conservation is that these areas were traditionally far removed from the large centres of power after the Conquest and from the demographic pressure mainly in the coastal flatlands that was associated with export crops that fundamentally changed the landscape. Although many indigenous settlements were abandoned along with part of the associated infrastructure, surviving groups of the ancient people continue to use a good part of this area in a manner very similar to that of their ancestors, whereby its conservation forms part of their



Figure 4.a.5. The image shows the process involved in regenerating the natural broom (*retamar*) covering in the highlands when pastures are abandoned. The strategy for improving the landscape of the area includes the recovery of the natural vegetation of the protected areas. © Águedo Marrero

daily activity.

After the conquest, this area was colonised by a new people that intermingled with the existing population. This occurred in some of the villages of the ancient settlers where their buildings were used and adapted to the new needs and to the different cultural norms. From this period new forms of occupying and using the area emerged. In relation to cave dwellings, the introduction of metal to perforate the caves played a very significant role in the changes that occurred in the material culture. At this stage, the foundations of what we know as the traditional culture were laid. In the area of the nominated Cultural Landscape these represent an element of great cultural value, due to the fusing of different systems and extreme adaptation to a highly difficult terrain.



Figure 4.a.6. In order to guarantee the proper conservation of the sites, sites considered at risk have been closed and are now only open for research work or strictly controlled guided visits. © Cabildo de Gran Canaria



Figure 4.a.7. The relative fragility of the escarpments and volcanic tuff that affects the troglodyte manifestations, means that constant monitoring is required as are remedial actions to guarantee their conservation. © Cabildo de Gran Canaria

In this area, the two cultures have a highly integrated and unique symbiotic relationship and this is one of the characteristics that make this cultural landscape distinctive and unique. But if something particularly characterises this territory it is the survival of numerous remains of the ancient cultures of the island, all of which are well preserved and some of which are still in use today. Many of the properties inherited in this Cultural Landscape have revealed traces of the past and it has also been possible to recover, restore and rehabilitate them.

However, in terms of impact on nature, the overuse after the conquest of the forest resources in the highlands for activities that were external to this area is worthy of mention. In terms of efforts made to conserve this Cultural Landscape, the pioneering efforts of some elites and civil associations since the 19th Century to preserve the mountains in the area deserve special mention as does the work carried out by the Council since the middle of the last century to recover the natural landscape

of the central zone of Gran Canaria, particularly its pine groves. This has been achieved following strict criteria that respect the pre-existing biodiversity. This commitment has been further consolidated since the Council took on responsibility for the conservation of the Environment and Historical Heritage. Environmental agencies, Historical Heritage inspectors, the support of the City Councils, civil society initiatives and legislation in the sector have all contributed to protecting and conserving this area. Alongside the initiative to promote Risco Caído and the sacred mountain sites of Gran Canaria as a World Heritage site, an interdepartmental committee has been established in the Gran Canaria Council which conducts periodic environmental surveys of this terrain and co-ordinates the adoption of conservation measures.

In essence, we could say that the area nominated for World Heritage status is in a good state of conservation overall. Threats are being identified and there is a strategy and work methodology in place that is linked

in with the Integral Plan in question and works to eliminate or mitigate these threats. Logically, actions by public authorities are a decisive factor when it comes to assessing how the situation is evolving. The backing of the city councils in the area is also very important as is constant monitoring by the public, whose proposals and initiatives help to ensure that plans stay on the right track. In contrast to traditional conservationist or coercive policies, the nominated project aims to generate positive actions that are proactive and aim to reinstate uses that generate resources in order to improve the living conditions of the people that live in these areas. For this, the Council has been very active in promoting citizen awareness through its website and through scheduled visits, workshops, temporary exhibitions and meetings. This strategy is not aimed solely at conserving this Cultural Landscape in a merely contemplative sense, to achieve a picture postcard landscape that is in good condition but that has no soul. Instead it aims to promote a living landscape that is enhanced and constantly producing goods and values, and whose cultural elements are enriched - both those inherited and those new ones that arise as new identities emerge, inspired by the new development and coexistence proposals that have come to light in this area.



Figure 4.a.8. Section of the Camino de la Plata road that passes through the highlands of Cumbres de Tejeda. Conservation of the network of ancient Caminos Reales (royal roads) is one of the objectives identified in this area. © Cabildo de Gran Canaria



Figure 4.a.9. View of Agaete valley from El Hornillo. The escarpments and cliffs in the nominated property constitute a stronghold of biodiversity in contrast with the populated and occupied zones outside of the nominated property. © Julio Cuenca



- 4.b.i Development Pressures
- 4.b.ii Environmental pressures
- 4.b.iii Natural disasters and risk preparedness
- 4.b.iv Responsible visitation at World Heritage sites
- 4.b.v Number of inhabitants within the property and the buffer zone



4.b

Factors affecting the property



4.b.1

Development Pressures

In recent decades, due to the move away from rural areas, accelerated by the arrival of mass tourism to the island, the territory that encompasses the Cultural Landscape of Risco Caído and the Sacred Mountain of Gran Canaria has suffered an intense depopulation phenomenon. Although paradoxical, this has meant that pressure on the landscape and the heritage has not affected this area during the years of booming development as it has in many other large areas of the island.

As far as man-made impact is concerned, despite the slow development in many rural areas, there have been some occasional actions carried out in some enclaves of this area that have not always followed landscape-friendly criteria. These are new buildings, sometimes on protected land, or the unfortunate rehabilitation and use of old buildings. One characteristic of these new interventions is that they are usually associated with a temporary habitat, generally for week-end or holiday use, by former residents of the area or by their heirs. There is also a process of permanent or temporary occupancy by new residents that, while still not very significant, does seem to suggest a growing trend, sometime a positive one in our understanding, towards recovering primary activities, following criteria of sustainability and the refurbishment of traditional properties based on the pre-existing cultural values.

Whatever the case, impacts of this kind are highly localised and do not represent a worrying deterioration of the landscape, beyond the strict application of town-planning or environmental regulations. The participative process that started between the Biosphere Reserve and the local population to implement sustainability criteria and best practises is having an important effect. The Cultural Landscape nomination is co-ordinated with this process, which has its own participative pro-

gramme aimed at conserving and galvanising the cultural heritage (further information in Section 5.c). The Integral Plan launched by the Island Cabildo (Island Government) as part of this nomination also established strategies to redirect negative situations by means of a series of environmental and scenic recovery and heritage value plans.

What is of greater concern is the existence of some new infrastructure facilities that have a negative impact on certain priority enclaves of the landscape, such as some illegal tracks, high and medium voltage overhead cables, certain water works or the nocturnal lighting of some isolated hamlets in this area.

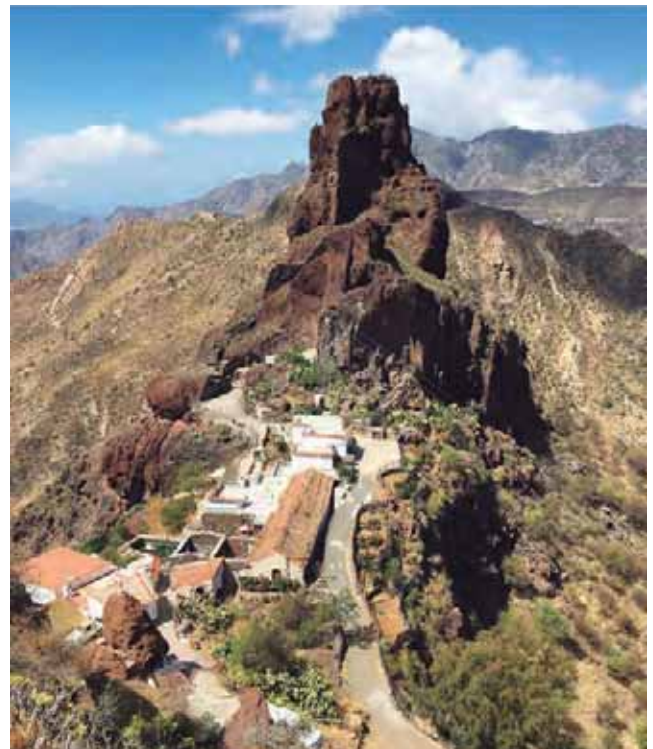


Figure 4.b.2. Picture of the current state of the area around Roque de las Cuevas del Rey. This area has been identified as a top priority in the Integral Plan for implementing one of the environmental integration, impact correction and sustainability projects.
© DYPA, Diseño y Planeamiento Arquitectos

← Figure 4.b.1. Farmlands in Caldera de Tejeda. Agriculture in the region is not a pressure factor as it would have been in the past. Now it is a component that adds value to the landscape.
© Javier Gil León



Figure 4.b.3. Graphics of the project for the improvement, scenic recovery and beautification of the rural settlement and area around Roque-Cuevas del Rey.
© DYPA, Diseño y Planeamiento Arquitectos.

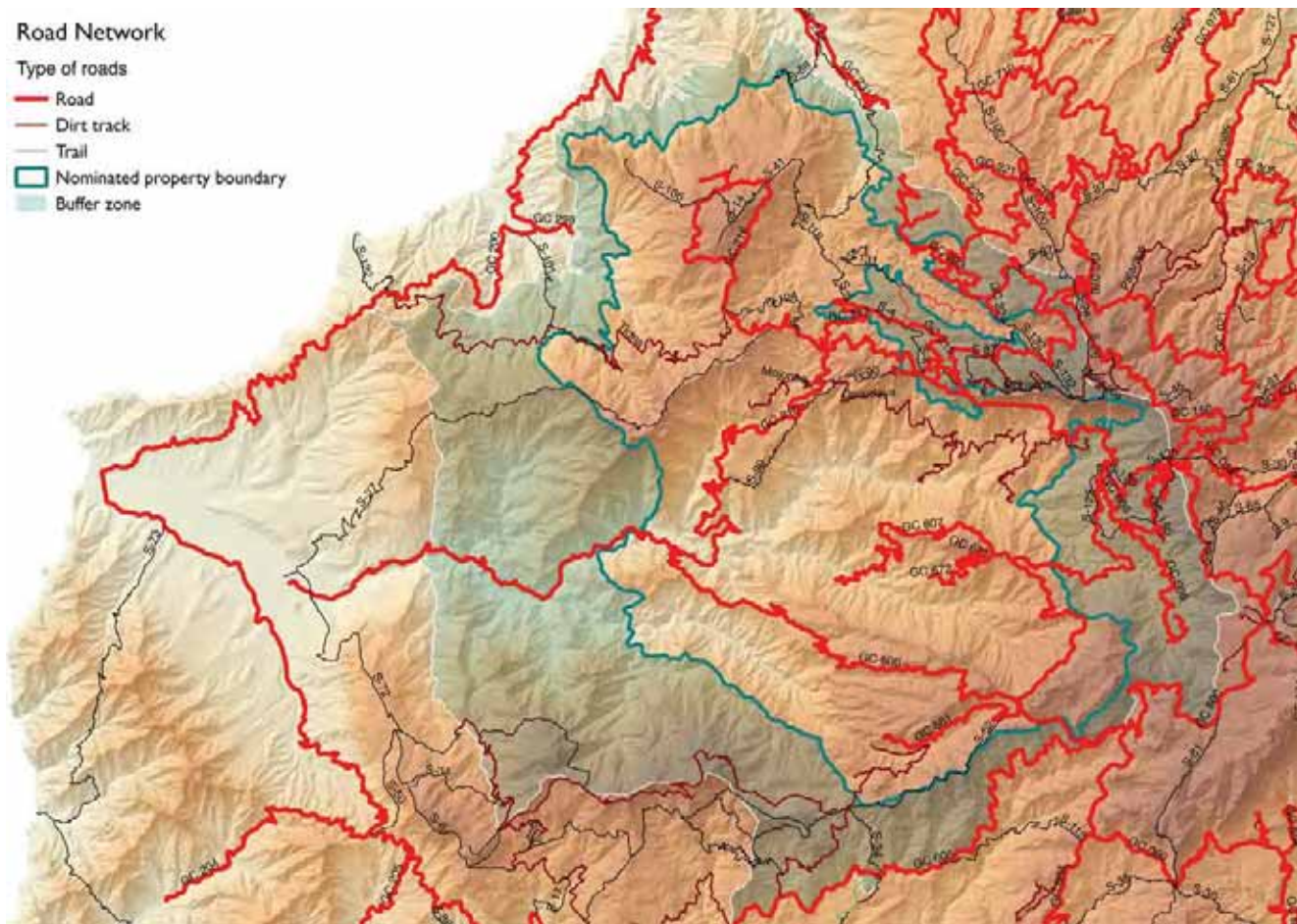
A raft of strategic actions has been launched in the most sensitive areas in order to minimise these impacts, such as building sustainable, underground water supply and drain pipes around Acusa Seca, or the actions programmed for the immediate future, such as the project to improve and beautify the village and the area around Roque-Cuevas del Rey and improve the landscape, in the municipal district of Tejeda. This latter project has become a reference model for recovering the area around one of the most emblematic attributes of this space.

This on-going project will integrate the settlement of inhabited cave dwellings and recent surface buildings in terms of landscape and the environment, overhead cables will be eliminated and routed underground, sources of light pollution will be eradicated and access to the sites will be blended in by using traditional architecture and its self-regulating capacity will be monitored and its carrying capacity limited.

The road network has always been a factor in the degradation of the landscape in developing rural areas. In this space, however, this factor is not a threat, at least as far as public road works are concerned. The Island Regional Planning Regulations (PIO, as it is known in Spanish), municipal planning regulations and the management instruments and plans covering protected areas that affect practically the entire space, do not envisage any new roads being built, but they do include measures to improve and landscape the existing roads (see Map 4.b.1). The only source of risk is the possibility of new illegal tracks being opened up without authorisation. The solution to this problem is being addressed by increasing surveillance measures and grass-roots co-operation to enhance and preserve the space.

Light pollution is another interesting focus in the environmental and scenic recovery of the area. Although the levels of light pollution are low in comparison with other areas, based on the measurements taken, there is room for improvement by bringing certain lamp bulbs in line with the Canary Island Sky Act (CAI, 1998). This is a key aspect in preserving an essential element of the Cultural Landscape, the skyscape, and in this case, in preserving the quality dimension of the night sky. All the municipalities involved have made the pertinent plenary resolutions to adopt the Starlight Declaration and its commitments (Marin and Jafari, 2007). This pact is also included in the certification of the area as a Starlight Reserve and Starlight Tourist Destination, a UNESCO-MaB initiative partnership. The action plan for this addresses the light pollution issue by replacing current lighting systems with ones that conserve the night sky. This replacement system will obviously also offer substantial energy savings in the area, reducing emissions and is seen as a manifestation of a new commitment to the climate in the area of the bid property.

Pressure from visitors and tourists, very low to date, has increased in recent years, with the first pressure points, such as La Puerta del Nublo, an access to this emblematic spot, and around Roque Nublo itself. These aspects



Map 4.b.1. Road network in the proposed area divided into categories. Map source: Cabildo of Gran Canaria. Our own work.

are dealt with in greater detail in Section 4.b.iv. Another element that represents a threat for some archaeological and ethnographic sites is direct or indirect plundering, or uncontrolled visits. A growing presence of amateurs has been detected, sometimes in association with unscientific and even misleading advertising campaigns on web sites that organise individual or group visits to the sites.

Squatters have also been detected in some aboriginal caves. In recent years, the Cabildo of Gran Canaria has boosted its inspection activities, using technicians from the Department of Historical Heritage, environmental officers, the police and guards in a closely co-ordinated effort to put an end to these practices. Thus, the squatters have been removed from the aboriginal caves and surveillance has been boosted in the most sensitive areas. Controls over some of the more valuable properties of the area, such as those containing rock engravings or paintings, have been intensified.

With regard to farming activities, no significant pressure on the landscape or its components has been detected,

On the contrary, the traditional farming area within the area of the Cultural Landscapes has fallen due to the ageing population and the difficulty involved in farming areas that are currently inaccessible. Curiously, in certain steep terrain and on the slopes, this phenomenon is



Figure 4.b.4. Light pollution is a factor to be controlled in the area, in order to achieve excellence. The Starlight Programme has started to correct the impacts. © Nacho González



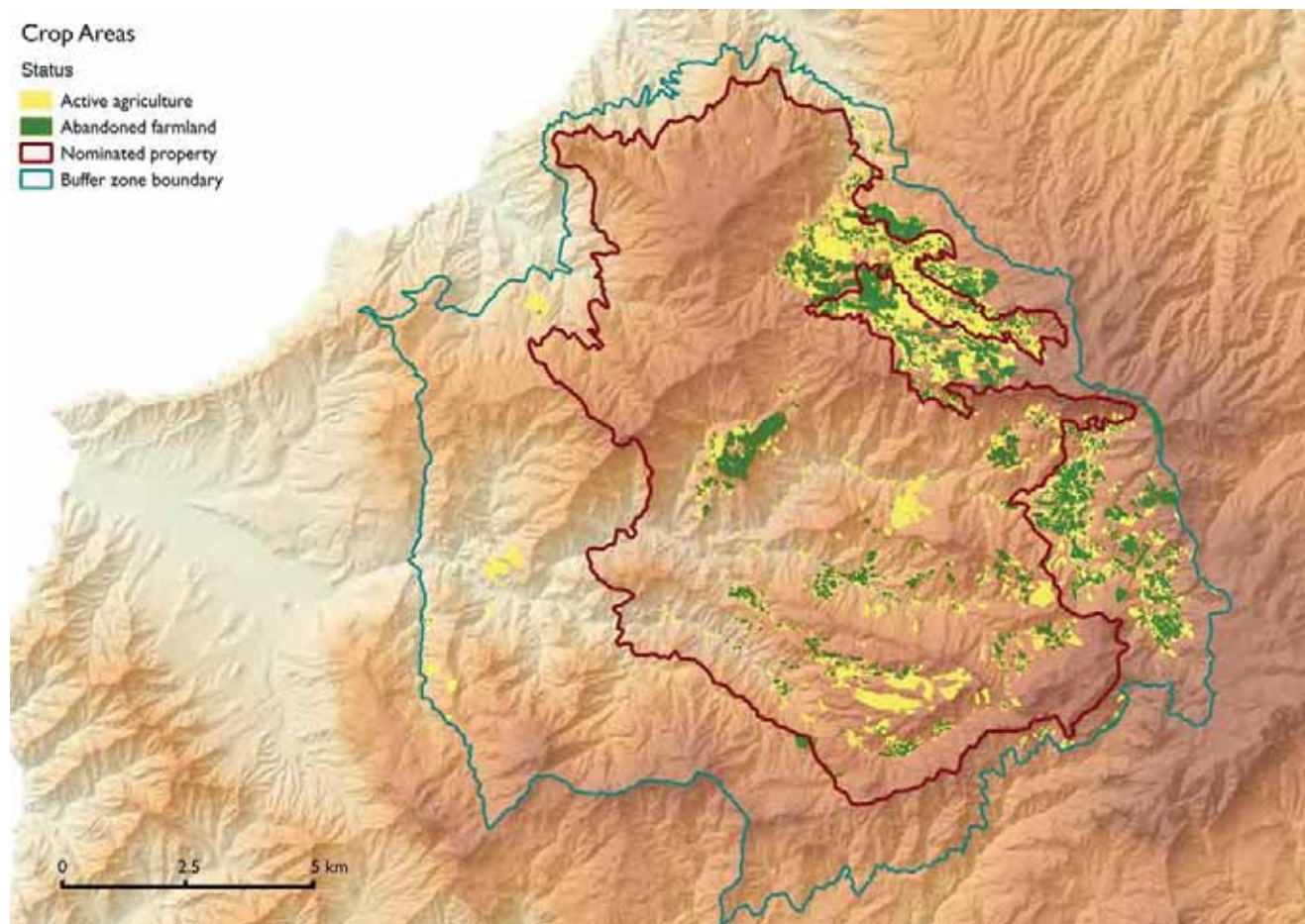
Figure 4.b.5. Farming terraces on the edge of the village of Artenara. © Javier Gil León

new opportunities for sustainable development for young farmers, as in the case of the new smallholdings around Tejeda.

As for livestock, there is no intensive grazing, and all livestock activity is in line with traditional livestock systems, such as transhumance - moving flocks from one pasture to another depending on the season - which is one of the non-material attributes of the proposed property

allowing the natural vegetation of the area to regenerate at quite a rate. No new intensive crops have been identified and in the buffer zone, we are witnessing new process, such as the introduction of grape vines, which conserve the traditional terraced landscape and offer

→ Figure 4.b.6. Palm grove in Cuenca de Tejeda. Factors such as depopulation and reduced pressure from agriculture have favoured the natural regeneration of the vegetation returning the landscape to its primeval state. © Javier Gil León



Map 4.b.2. Distribution map of the areas that have traditionally been cultivated in the nominated property: Source: Cabildo de Gran Canaria.





4.b.11

Environmental pressures

From the perspective of natural factors with potential to impact negatively on the state of conservation of heritage and tangible attributes there are certain such factors that are intrinsic to the Cultural Landscape. The islands are volcanic in origin and some of the islands are of more recent formation, meaning that the physical support of much of the constructed heritage has a certain fragility, particularly that pertaining to the old pyroclastic formations (volcanic tuffs). The troglodyte culture is at times affected by this threat as it is linked to habitat, water and agricultural or livestock activities. Throughout the history of the island, there have been several collapses of hillsides or ledges that may have affected archaeological and ethnographic properties. The policy taken to address this includes taking urgent action to maintain these during specific episodes, but also involves implementing a strategy to adopt preventive measures to avoid the effect of the risk causes. Particular consideration is given to effects related to certain agents of erosion such as water, invasive vegetation or the growth of microorganisms that deteriorate the supporting rock.

Some of these factors affect properties of important heritage value in this area, such as carvings or rock paintings. In the diagnostics carried out on the pathologies of the caves of special heritage value, these tend to correspond to specific factors that affect the rock such as chipping, micro cracks etc., or alterations to the pigments on the walls. Thus, the microclimatic data control carried out at the main archaeological sites is considered of vital importance.

The special and favourable climate conditions in these mountain areas explain the presence, state of preservation and continuity of many of the archaeological re-

mains, such as plant fibres, certain forms of mummification or the survival of painted panels on the walls. However, should these parameters be changed this could alter and threaten the continued existence of these properties.

In this context, the Cabildo de Gran Canaria (Island Council of Gran Canaria) has been taking action to minimise or mitigate the causes that have a negative impact on the state of preservation of the attributes included in the Cultural Landscape of Risco Caído and the Sacred Mountain of Gran Canaria. Of the actions taken - most of which focus on the archaeological site of Risco Caído - worthy of special mention is the urgent maintenance and reinforcement work carried out on the interior and exterior walls of the caves themselves, the fitting of buttresses, treatment of cracks and fissures, remediation of the mountain slopes, eliminating invasive vegetation and deviation of run-off water; installation of equipment to control temperature, humidity, microseismicity and land deformation. Similar actions have been taken in other areas such as Cueva de Los Candiles or Cuevas del Rey. Alongside these emergency measures, a series of ac-



Figure 4.b.8. View of a chestnut grove in the buffer zone of the nominated property. Together with the almond groves these constitute an element of identify of the rural landscape, that lend it is unique beauty, but they need to be maintained in line with environmental plans for the recovery of autochthonous flora in the appropriate locations. © Javier Gil León

← Figure 4.b.7. Climate change together with factors such as erosion and the increase in the rate of desertification could mean a deterioration of the natural and landscape components of the area. In the image, a system of abandoned terraces in the vicinity of the nominated property. © Javier Gil León

tions have also been required to document the sites, so that they can be reproduced as exactly as possible for different types of studies or applications in the future, or in the event that they suffer unforeseen damage. Likewise, complementary measures have been taken (bracing or reinforcing walls) to avoid possible dismantling of certain areas, that could affect the higher value attributes and components.

As regards the natural components of the cultural landscape, as occurs with most of the oceanic islands with high rates of endemism and vulnerability, exotic and invasive species constitute one of the main threats for biodiversity and the natural and cultural landscapes of the area. Fountain grass known as rabogato or plumero (*Pennisetum setaceum*) is a particular concern as it is so invasive and so difficult to eradicate. However, other species used in agriculture that become invasive when agricultural activity declines should also be included. This is the case of the prickly pear plant (*Opuntia maxima*, *O. ficus-barbarica*), the agave (*Agave americana*) and almond trees. Opportunistic species that emerge after pinewood fires, such as *hogarzos* or *jaguarzos* (*Cistus horrens* and *Cistus ocreatus*) or *jara* (*Cistus monspeliensis*), only constitute the early stages of ecological recovery,

and are endemic to this part of Gran Canaria. These species together with white broom, Canary Island flat-pod and *retama* shrubs, are good colonisers of degraded pine groves. Their seeds are pyrophytic and support high temperatures, which facilitates their germination.

It should be pointed out in relation to fauna that certain species such as goats and feral cats as well as rodents are high risk factors. We refer here to guanil goats, that is, those bred freely in the area without being branded by their owner. As well as being an illegal practice, their irregular distribution causes severe damage to certain species of autochthonous flora and has a very negative effect on the restocking and afforestation work that has been carried out in the area over the years.

Climate change is a fundamental threat to biodiversity and the natural landscapes of the area, as insular territories suffer considerably more from these types of effects than continental territories. Annexe I includes the projects carried out by the Government of the Canary Islands in accordance with the different scenarios relative to climate change and its effect on the main biodiversity hot spots of the islands, as is the case here.



Figure 4.b.9. The relative fragility of the old pyroclastic formations (volcanic tuffs) that accommodate the troglodyte heritage, require constant monitoring of environmental and structural conditions so that we can act accordingly. Image of work being carried out in Risco Caído caves. © Cabildo de Gran Canaria

4.b.111

Natural disasters and risk preparedness

The risk maps drawn up by the Government of the Canary Islands for the area include a whole series of factors, the ratings for which are given in Table 4.b.1.

NATURAL DISASTERS AND RISKS	
Total Volcanic Risk	Very Low
Total Seismic Risk	Low
Total Slope Dynamic Risk	Very Low
Riverbed flood vulnerability	Low
Total Forest Fire Risk	Mid and High
Total Economic Risk of Forest Fire	Mid and High

Tabla 4.b.1. Source: Dirección General de Seguridad y Emergencias, Gobierno de Canarias.

In conclusion, fire is the main risk for the area in terms of natural or man-made disaster. Map 4.b.3 shows the zone categorised as being at high risk of fire which, as can be seen, incorporates a large part of the proposed Cultural Landscape and its buffer zone.

The big fires in 2007 that almost simultaneously struck four of the Canary Islands, were the largest ever to affect Gran Canaria. The fire which started in a mountain zone in the south of the area spread to the ravines in the south of the island reaching inhabited areas. After it was extinguished, a massive plan of action was put in place to restore the forestry, based fundamentally on sil-



Map 4.b.3. Forest Fire Risk Zone Mapping (ZARI) where incidents occur in much of the area under consideration. Source: General Directorate for Nature Protection - Deputy Ministry for the Environment, Canary Island Government.



Figure 4.b.10. GIS viewer of the Canary Island Government showing in real time georeferenced information on fire risks and available resources.

viciculture treatments, hydrological correction measures and reforestation.

Although the Canarian pine is known for its resistance to fire and its capacity for rapid regeneration after such episodes, it is important to take into consideration that fire also poses a threat to the species that live in this habitat. Some iconic species such as the Pinzón Azul

from Gran Canaria (*Fringilla teydea polatzeki*), which is endangered or the paloma rabiche (*Columba bollii*), are now seen in the areas thanks to a successful reintroduction programme, which is part of the European Commission's Life+ programme. It is also important to remember the exceptional wealth of micro fauna in the Cultural Landscape.

Both the Island Council of Gran Canaria and the Government of the Canary Islands have expertise in the area of prevention, implementing the Fire Prevention Defence Plan and working together in this area. The Fire Coordination Centre (CECOPIN) also works in the area. Since the 2007 episode, fire defence infrastructure has grown hugely in the area, with new surveillance booths being incorporated alongside surveillance cameras, water reservoir network improvements for ground and aerial services, modernisation of telecommunications and installation of spark arrestors in the chimneys of buildings.



Figure 4.b.11. View of the central area of the nominated property from the pine groves of Inagua-Pajonales situated in the buffer zone and included in the fire risk zone. © Julio Cuenca



Figure 4.b.12 © Javier Gil León



Figure 4.b.13. Roque Palmés © Javier Gil León

4.b.iv

Responsible visitation at World Heritage sites

Although the Cultural Landscape is located on an island that receives over 4 million highly-mobile tourists a year, the visitor density of the space can be considered reasonably low in comparison with other areas of scenic interest on the island. This is helped to a certain extent by the relative difficulty of access and the travel times involved.

According to the statistics made available by the Department of Tourism of the Cabildo of Gran Canaria, through local Tourism Offices, the number of visitors who reach the area of the Caldera de Tejeda that includes the entire area of the Cultural Landscapes, was 35,410 in 2010. Table 4b.iv also gives an idea of the origin of these tourists, mainly Spaniards and Germans.

However, these data only indicate the tourists who ask for information, which obviously does not include all those that visit the space. Crossing this information with traffic information gives us figures that amply exceed one hundred thousand tourists. To this figure, we must add the growing phenomenon of local visitors from the island who come up here basically at the weekend.

There is also a new trend in tourist preferences that has been detected with the appearance of companies specialising in active nature tourism. In any event, the flows of visitors do not put significant pressure on the site for the moment, as most of the movements in this space occur on the road network.

However, there are certain hot spots, such as at Roque Nublo for example. Both the access point and the space itself does suffer peaks of considerable crowding, caused in part by guided tours organised by tour operators and also by the crowds of local people visiting this symbolic enclave.

Another important aspect is the regulation of visitors wishing to access the more delicate and unique places of the Cultural Landscape like the almogaren of Risco Caído, Cueva Candiles or the Roque Bentayga almog-

aren, basically, the demand of the local population. In these cases, the Cabildo of Gran Canaria has established precise access regulations, limiting visits in accordance with the acceptable carrying capacity of the sites. An application must be filed on line to gain access. A good example is the regime governing visits to Risco Caído. 200 places were reserved for visits in 2012, 240 in 2013, 600 in 2014 and 720 in 2015. Only 36 visits were organised in 2016, with 432 visitors as part of a site conservation plan.

But the grand challenge of the future is to design a strategy that can combine responsible tourism with the need to preserve the space and its main attributes, and how this activity can have a direct positive impact that benefits the local community, who are the main heritage guarantors. On an island used to a model of standard, mass tourism, all the stakeholders in this site understand that the tourism option in this space could represent a

Table 4.b.iv Origin	Total	
	Tourists	%
Germans	6,243	17.63%
English speakers	2,841	8.02%
Benelux	1,762	4.98%
Spain	8,081	22.82%
Italy	1,207	3.41%
France	3,431	9.69%
Portugal	153	0.43%
Switzerland	269	0.76%
Scandinavia	2,295	6.48%
Eastern Europe	1,902	5.37%
Non-Europeans	1,127	3.18%
Special groups	1,146	3.24%
Others	75	0.21%
Canary Islanders resident on the island	4,123	11.64%
Canary Islanders not resident on the island	755	2.13%
Total	35,410	100.00%



Figure 4.b.14. View of "El Pino de Casandra", pine tree and one of the sights to visit on the different routes that cross this landscape
© Orlando Torres

new paradigm in the tourist industry of the Canary Islands and other islands in similar circumstances. This has given rise to the new Tourist Strategy for Risco Caído and the Sacred Mountains of Gran Canaria, founded on the following criteria:

a) Opting for an adapted, sustainable tourism development model for the area, based on the local community. One of the most important aspects of the participation process rolled out after the nomination has been to identify and promote smart tourist products and activities based on local capabilities. This has led to multiple local initiatives from visits to cheese-making facilities and wineries in caves to everything relating to herbal medicine. Limiting the repatriation of the financial, economic and social benefits of tourism outside of the immediate area have become a prime objective.

b) Promoting knowledge-based tourist products and activities. This is an exceptional case in which we consider science and knowledge as fundamental resources for tourist activity, fleeing from the typical mystifications and processes of "dumbing down" knowledge that are so characteristic of the tourist industry in recent years. For example, the guides starting to be deployed in the

space are for a new generation of tourists, and most of them are locals with intermediate or higher education qualifications (archaeologists, biologists, historians) or local staff with traditional knowledge of the local environment. Thus, the survival of local know-how becomes a palpable benefit of sustainability in tourism and an active conservation factor:

d) Consolidating star tourism. The importance of the skyscape as a fundamental component of the Cultural Landscape and the excellent quality of the night sky in the area have made it possible to have the space certified as a Starlight Tourist Destination. This new range of tourist activities are underpinned by observing the firmament, the sky of the ancient Canarians, by enjoying the night-time landscapes and by discovering the associated cultural and natural values. This is a form of tourism that is more sustainable than any other kind, as the only requirement for observing the heavens is to lift your gaze skywards, or a small telescope. Moreover, the certification process envisages training local guides to a high level of qualification, and to such end, they have the commitment of the Canary Island Astrophysics Institute (IAC) to provide guidance and training.

c) Multi-functional concept of tourist infrastructure. Part of the foundation for avoiding new, unnecessary building works and their consequent impact on the area, and to establish the premise that all new tourism intervention must become an opportunity to recover the cultural and scenic memory and heritage of the area, guaranteeing a minimum impact on the landscape. A good example of this is the recovery of the traditional local cave houses as the foundation for the local accommodation system. In fact, and as we have seen throughout this report, the only important actions proposed are to create the new Artenara Interpretation Centre, based precisely, on remodelling a pre-existing facility.

d) Sustainable transport and mobility. One of the least frequently considered aspects of tourism is mobility. Extreme accessibility based on private vehicles and mass coach transport would put the integrity of the space at serious risk and, just as important, it could substantially deteriorate the quality of the tourist experience. Promoting a sustainable mobility system based on the use of alternative transport or simply walking, using the network of tracks and trails, is an essential point of the tourism strategy for this area. A Cultural Landscape

that aspires to being sustainable and emission-free. The emergence of a new deterrent parking project in the centre of Artenara is significant. It is planned in the proximities of the new Interpretation Centre, which will act as a hub for the network of trails, and as a station for hiring electrical vehicles to visit the area.

e) The local tourist. The starting point for the design review of the tourist offer in the area is a concept that has already been seen in the field of current sustainable tourism: the citizen of the island is also a tourist, a traveller trying to discover his or her territory and his or her symbols of identity.

Against this backdrop, the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria is becoming the embryo of a tourism model that is aligned with the United Nations Sustainable Development Goals (SDG) and with the most cutting-edge ideas of what is now considered sustainable tourism, most of which are set out in the World Charter for Sustainable Tourism adopted by the municipal districts included in the nominated property.



Figure 4.b.15. Guided tour of the Bentayga algogaren organised by the Cabildo of Gran Canaria. The responsible tourism strategy for the nominated property is founded on guaranteeing the integrity of the values of the space, contributing to local sustainable development and consolidating new knowledge-based tourism products. © Cabildo de Gran Canaria



4.b.v

Number of inhabitants within the property and the buffer zone

The number of inhabitants within the perimeter of the designated area and the buffer zone has been obtained from data supplied by ISTAC (Canary Islands Statistics Institute), for inhabitants included in the 2014 census.

The data obtained gives the follows results for each zone:

Population within the boundaries of the nominated property:

788 inhabitants

Population in the buffer zone:

2474 inhabitants

Table 4.b.3. shows the distribution of each population group in the area. It also includes the most prominent characteristics of the different population types. Map 4.b.4. shows the distribution of the different population groups in the territory, distinguishing between rural settlements and areas with a highly dispersed population. In any case, with the exception of the villages of Tejeda and Artenara, located on the peripheries of the nominated property (buffer zone), these are all small and dispersed population groups that rarely exceed one hundred inhabitants and which, in many cases, live in highly dispersed dwellings. The percentage of dispersed population is 57% in Tejeda. This figure evidences the



Map 4.b.4. Distribution of the population entities in the designated area and in the buffer zone. Source: ISTAC. Prepared by the author.

clearly rural and natural state of this zone and the designated area in particular:

It is important to highlight some of the features of the population of the territory. Firstly, the low population density is worthy of note. Taking the buffer zone into consideration there are 6.7 inhab/km², or 24.7 inhab/km². These figures are in marked contrast with the island average, which is approx. 543.4 inhab/km² (ISTAC, 2014).

Another aspect to be considered is the high level of autonomy that also contrasts with the other regions of Gran Canaria, as more than 70% of the inhabitants were born in the area (Spanish National Statistics Institute (INE), Gran Canaria Biosphere Reserve). On the other hand there is a big ageing population with figures reaching 20.5% in Tejeda (AIDER). To an extent this situation reflects the indirect effects of the mass exodus to the coast that started in the sixties when tourism

started to take off on the island, leading to the decline of subsequent generations in the region.

Finally, an aspect to take into consideration in terms of population is the existence of second homes in the area, occasionally occupied by non-resident owners. According to data provided in the report of the Gran Canaria Biosphere Reserve, the percentage of second homes in Tejeda is 23.7%, while in Artenara the rate is 17.7%. These municipalities make up most of the area.



Figure 4.b.16. Transhumant herdsman in the mountains of Tejeda. © Javier Gil Leon

DISTRIBUTION OF THE POPULATION IN THE PROPOSED CULTURAL LANDSCAPE BY ENTITIES

Municipality	Population entity	Inhabitants	Prevailing kind
Agæete	El Hornillo	17	Troglodyte habitat, including reused pre-Hispanic cave houses.
Gáldar	Barranco Hondo de Abajo	45	Troglodyte habitat, including reused pre-Hispanic cave houses.
	Barranco Hondo de Arriba	64	Rural settlement that includes reused, pre-Hispanic cave houses.
Artenara	Ventanieves	25	Hamlet of caves and traditional houses.
	Candelaria	25	Rural settlement that includes reused, pre-Hispanic cave houses.
	Candelaria diseminado	37	Scattered rural houses
	Acusa Verde	60	Aboriginal, troglodyte habitat with some reused houses
	Acusa Verde diseminado	3	Scattered rural houses
	Acusa Seca	2	Aboriginal, troglodyte habitat with some reused houses
	Ámbito de Ermita de la Cueva	40	Troglodyte habitat, including reused, pre-Hispanic cave houses and historic caves like the cave of La Virgen de la Cueva – Our Lady of the Cave.
	Lugarejos	77	Rural settlement
	Lugarejos diseminado	27	Scattered rural houses
	Coruña	35	Rural settlement
Tejeda	El Carrizal	58	Traditional scattered rural settlement
	El Chorrillo	37	Traditional rural settlement
	La Solana	61	Traditional scattered rural settlement
	El Roque	16	Recent cave houses and reused, pre-Hispanic cave houses
	El Espinillo	23	Traditional rural settlement
	El Toscón	60	Traditional rural settlement and scattered houses
	Timagada	76	Traditional scattered rural settlement
Total		788	

DISTRIBUTION OF THE POPULATION IN THE BUFFER ZONE BY ENTITIES

Municipality	Population entity	Inhabitants	Prevailing kind
Agæete	El Sao	5	Scattered troglodyte habitat
Gáldar	Juncalillo	45	Rural settlement
Artenara	Las Arvejas	100	Rural settlement
	Las Arvejas diseminado	56	Scattered rural houses
	Las Cuevas	172	Viviendas rurales y trogloditas tradicionales
	Las Cuevas diseminado	69	Viviendas rurales y trogloditas tradicionales
	Artenara casco	314	Village including traditional troglodyte settlements
Tejeda	El Rincón	76	Scattered rural houses
	El Juncal	77	Rural settlement
	Las Crucitas	44	Rural settlement that includes cave houses
	El Majuelo	41	Rural settlement
	La Degollada	71	Rural settlement
	Lomo de los Santos	169	Rural settlement
	Cuevas Caídas	90	Rural settlement
	Casas del Lomo	55	Rural settlement
	La Culata	275	Scattered rural houses
	Tejeda casco	767	Village
Tejeda diseminado	48	Scattered rural houses	
Total		2474	

Table 4.b.3. Distribution by population entities. Source: Statistical Use of the Municipal Register: Individual groups and dispersed towns of the Canary Islands, 2000-2014. ISTAC (Canary Islands Statistics Institute). Prepared by the author.





5 Protection and Management of the Property



- 5.a Ownership
- 5.b Protective designation
- 5.c Means of implementing protective measures.
- 5.d Existing plans related to property
- 5.e Property management plan
- 5.f Sources and levels of finance
- 5.g Sources of expertise and training in conservation and management techniques
- 5.h Visitor facilities and infrastructure
- 5.i Policies and programmes related to the presentation and promotion of the property
- 5.j Staffing levels and expertise

LIDAR MAP
Nominated property





5.a Ownership

41.58% of the nominated property is located on publicly-owned land, most of which is owned by Gran Canaria Island Council (Cabildo) and managed by local government agencies. Some estates are owned by the Spanish state or the Autonomous Community and a minority are owned by the City Councils. The remaining 55.35% corresponds to privately-owned land, most of which consists of small parcels of land less than one hectare in size. Map 5.a.1 reflects the spatial distribution of the

public property in the nominated cultural landscape and in the corresponding buffer zone.

Table 5.a.1 shows the ownership distribution by municipality in the nominated property. Tables 5.a.2 and 5.a.3 respectively describe the distribution of property in the buffer zone and in the entire area in question.

The location of the property, taking into considera-

Municipality	Nominated area (ha)	Publicly-owned land (ha)	% Publicly-owned land	% Private land
Agæete	1.131,94	668,73	7,1	4,91
Artenara	3.674,92	2.566,96	27,24	11,76
Tejeda	4.397,69	679,24	7,21	39,45
Gáldar	220,48	3,82	0,04	2,3
Total	9.425,03	3.918,75	41,58	58,42

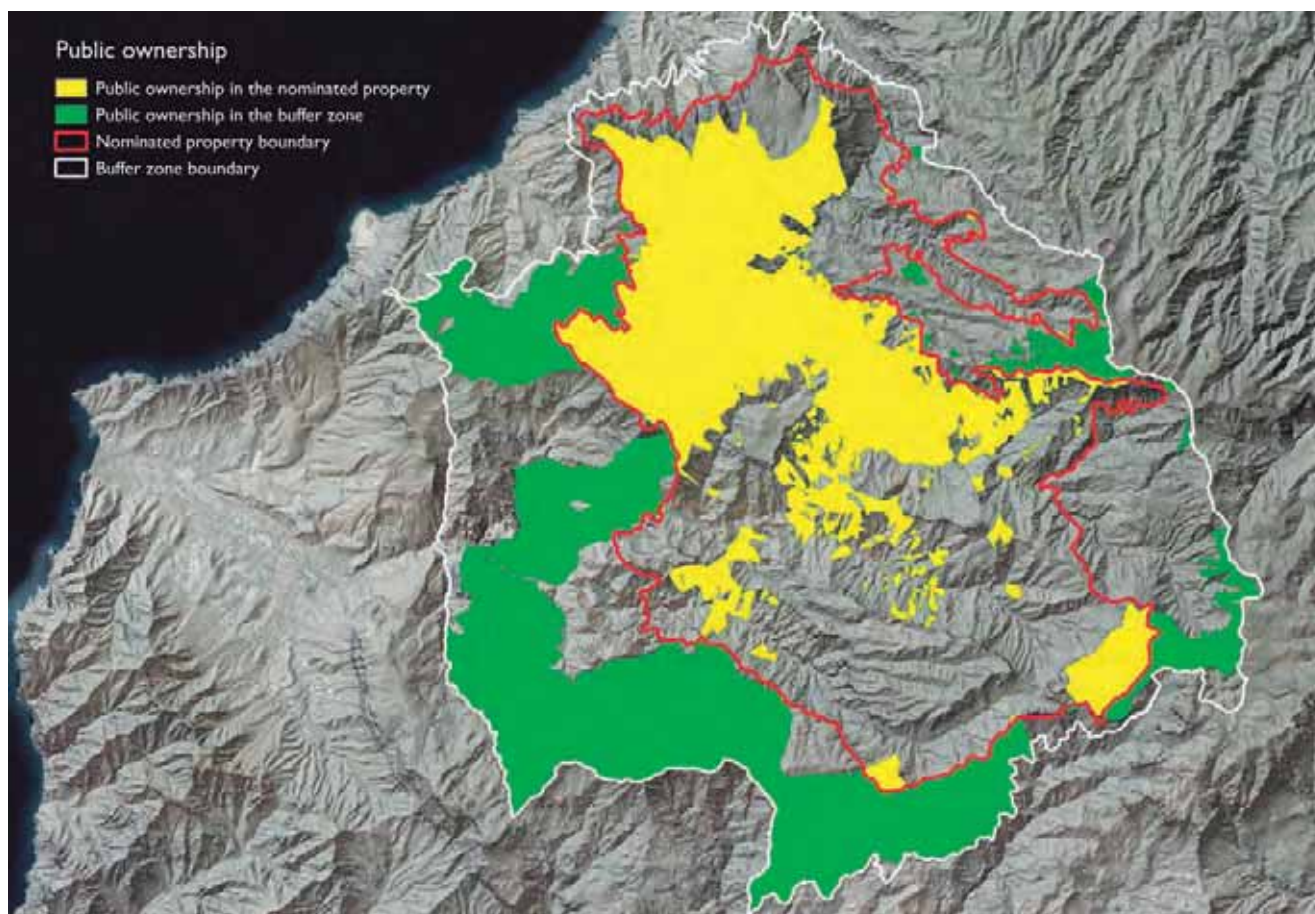
Table 5.a.1. Distribution of public and private property in the area of the nominated property. Source: Cabildo de Gran Canaria.

Municipality	Nominated area (ha)	Publicly-owned land (ha)	% Publicly-owned land	% Private land
Agæete	840,96	150,78	1,76	8,07
Artenara	2.457,49	1.203,45	14,06	14,65
Tejeda	4.764,42	2.860,38	33,43	22,25
Gáldar	494,34	46,18	0,54	5,24
Total	8.557,20	4260,79	49,79	50,21

Table 5.a.2. Distribution of public and private property in the buffer zone. Source: Cabildo de Gran Canaria.

Municipality	Total area area (ha)	Publicly-owned land (ha)	% Publicly-owned land	% Private land
Agæete	1.972,90	819,51	4,56	6,41
Artenara	6.132,41	3.770,41	20,97	13,14
Tejeda	9.162,11	3.539,62	19,68	31,27
Gáldar	714,82	50	0,28	3,7
Total	17.982,24	8.179,54	45,49	54,51

Table 5.a.3. Distribution of public and private property in the entire area of the nominated property. Source: Cabildo de Gran Canaria.



Map 5.a.1. Distribution of publicly-owned land in the nominated property and buffer zone. Made by Cabildo de Gran Canaria.

tion the main protected areas in the region indicates, firstly, that most of the area of the Tamadaba Nature Park included in the proposal is publicly-owned, with the estates indicated below worthy of special mention: El Pinar (645 ha), Tamadaba (585 ha) and part of finca de Tirma (663 ha). In relation to privately-owned lands, with the exception of the Samsó and Tifaracas estates, consisting of more than 30 ha, the rest is distributed across multiple plots none of which exceed 5 hectares.

The situation is similar with the area of the Roque Nublo Natural Monument, most of which is public property. Worthy of special note are the 145 hectares of the Cortijo del Nublo estate that is home to this key reference in the Cultural Landscape. It should also be pointed out that the escarpments of Tejeda basin are on publicly-owned land. These include Santuario de Risco Chapín sanctuary, Cueva Candiles and the caves at Caballero and El Cagarrutal.

The situation is different in the case of Acusa, given that most of the caves in this indigenous troglodyte habitat, including the caves at La Candelaria, El Hornillo and los Corrales de Acusa, are located on privately-owned lands.

A similar situation occurs in the troglodyte ensemble of Barranco de Abajo and in the caves at El Roque, Roque Bentayga, Mesa del Junquillo, El Chimirique, Visique and Montaña del Humo.

In the buffer zone, the publicly-owned estate Finca de Tirma is worthy of special mention. It is included in the buffer zone, which in point of fact encompasses the area known as “Santuario de Tirma”, which has been declared a Site of Cultural Interest. The large areas of mountain that are protected in Inagua, Pajonales and Cortijo de la Data are also public. These are included in the Inagua Strict Nature Reserve. On the other hand, other troglodyte manifestations of interest such as El Hornillo are private property.

The Cabildo de Gran Canaria has developed a policy for ad hoc acquisition of significant heritage elements in order to guarantee their conservation. This is the case of caves 6 and 7 that make up the almogaren at Risco Caído. Table 5.a.4 shows the form of ownership of the most significant elements and attributes of the cultural landscape.

OWNERSHIP SYSTEM OF THE MAIN CULTURAL ATTRIBUTES

Pre-Hispanic almogarenes of archaeoastronomical interest. Archaeological sites.	Risco Caido almogaren Caves 6 & 7	Ownership: Cabildo de Gran Canaria Date of Acquisition: 2010
	Bentayga almogaren	Ownership: private In the process of public acquisition
	Cueva de Las Estrellas (Stars Cave)	Ownership: private
Pre-Hispanic troglodyte sites, collective granaries, fortresses and caves with rock art stations.	Roque de las Cuevas del Rey. Archaeological Complex of the Sierra del Bentayga.	Characterisation of Ownership:: private / public Public access control
	Roque Bentayga. Archaeological Complex of the Sierra del Bentayga.	Characterisation of Ownership: private / public
	Cueva de la Paja	Ownership: Cabildo de Gran Canaria Date of Acquisition: 2016
	Cueva Candiles. Risco Chapín shrine	Ownership: Cabildo de Gran Canaria Date of Acquisition: 2010
	Archaeological Complex of Cueva Caballero. Risco Chapín Sanctuary	Ownership: Cabildo de Gran Canaria Date of Acquisition: 2010
	Cueva del Cagarrutal. Risco Chapín Sanctuary	Ownership: Cabildo de Gran Canaria Date of Acquisition: 2010
	Granary. of Artenara Mountain	Ownership: private
	Archaeological Complex of La Candelaria- Cruz de La Esquina. Mesa de Acusa.	Characterisation of Ownership: Public and Private
	Cuevas de Corrales de Acusa. Mesa de Acusa.	Characterisation of Ownership:: P/P
	Cruz del Álamo. Mesa de Acusa.	Characterisation of Ownership:: private
	El Hornillo. Mesa de Acusa.	Characterisation of Ownership:: private
	El Álamo Granary. Mesa de Acusa.	Ownership: private
	Visvique	Public ownership
Montaña del Humo.	Public ownership	
Mesa del Junquillo	Public ownership	
El Chirimique	Public ownership	
Evolved troglodyte sites. Reused aboriginal caves and historical caves.	Barranco Hondo de Abajo	Characterisation of Ownership: private / public
	Acusa Seca	Characterisation of Ownership: private / public
Ethnographic elements	Transhumance routes	Public ownership
	Estanques cueva	Ownership: private

OWNERSHIP OF THE LEADING NATURAL AND SCENIC ATTRIBUTES

Geological landmarks of reference of the Cultural Landscape	Roque Nublo	Public ownership: Cabildo de Gran Canaria, Finca del Cortijo del Nublo.
	Roque Bentayga	Ownership: private
	Altavista mountain	Public ownership
	Roque García	Public ownership
Areas of natural and scenic interest	Pinar de Tamadaba	private / public

OWNERSHIP OF THE LEADING SITES IN THE BUFFER ZONE

Cultural Heritage	Santuario de Tirma	Propiedad: Cabildo de Gran Canaria Fecha de Adquisición: 2001
	Ermita Virgen de la Cuevita	Public ownership
	Túnel de la Mina	Private ownership: Heredad de La Mina.
	El Hornillo. troglodyte settlement	Ownership: private
Sites of natural and scenic interest	Inagua - Pajonales	Public ownership: Cabildo de Gran Canaria.

Table 5.a.4. Ownership of the main attributes and components of the Cultural Landscape. Source: Cabildo de Gran Canaria.

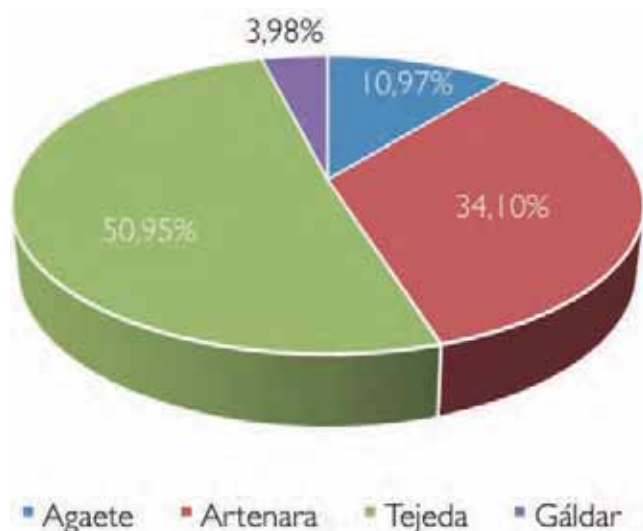


Figure 5.a.1. Proportion of the area occupied by the nominated property, by municipality. Made by Cabildo de Gran Canaria

In terms of water and hydraulic infrastructures, property rights are determined by the unique characteristics of private property ownership in the Canary Islands; a condition that affects both surface and underground water. When the conquest ended in 1483, redistribution of land and water commenced. To this end, by-laws were created that assign ownership of the surface water to the estates so that it can be shared between the heirs to the estate. Subsequently, water schemes were created as water locating organisations. Although, for the purpose of resource ownership "there is no difference between Heredamiento and Comunidad other than that Heredamiento comes into being after the water, while the modern Comunidad was and is born before it exists, to try to extract it" (Guimerá, M., 1957).

Thus, the various different sources, wells, galleries and springs included in the inventory in the nominated area are private. The same occurs with the dams, such as those found in the north, including those at Tamadaba, La Laja, La Nueva and Los Rajones, which belong to the same owner; or with dams as Los Hornos, which is owned by irrigation communities of La Cumbre, El Parralillo owned by the irrigation community of La Aldea de San Nicolás; Los Pérez, Lugarejos and Las Hoyas owned by the irrigation community of El Norte. This also applies to the publicly-owned reservoir at La Candelaria, which is managed by the Island Council of Gran Canaria.

Worthy of special note in the buffer zone is the presence of the water gallery known as Túnel de La Mina, owned by the Heredad de Aguas El Molinillo de Tejada

water rights association, the first large-scale hydraulic works in the Canary Islands and the most important of those carried out by the crown in Castile and Hispano-America of the 16th Century. Also worthy of mention in this area are some of the most important reservoirs of Gran Canaria. These include El Parralillo and Caidero de La Niña owned by the irrigation community of La Aldea de San Nicolás and, finally, Tierras de Manuel in the Caidero Madres del Agua community.

With regard to the road sector, all roads, paths and trails to access villages are public, including footpaths (caminos reales), local roads and right of ways. Access easements or right-of-ways refer to trails that pass through individual estates and that are used by those living in neighbouring estates.



Figure 5.a.2. Percentage of public property in the nominated property by municipality. Source: Cabildo de Gran Canaria

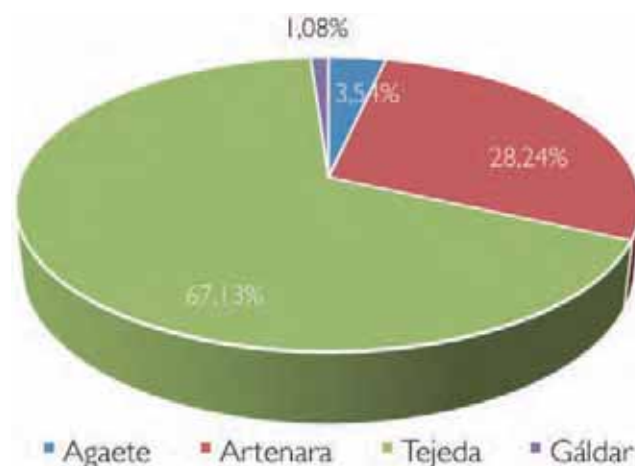


Figure 5.a.3. Percentage of public property in the buffer zone by municipality. Source: Cabildo de Gran Canaria

5.b

Protective designation





5.b.i

Environmental, territorial and eco-cultural protection

I. Inclusion in the Canary Island Network for Protected Natural Areas (ENP)

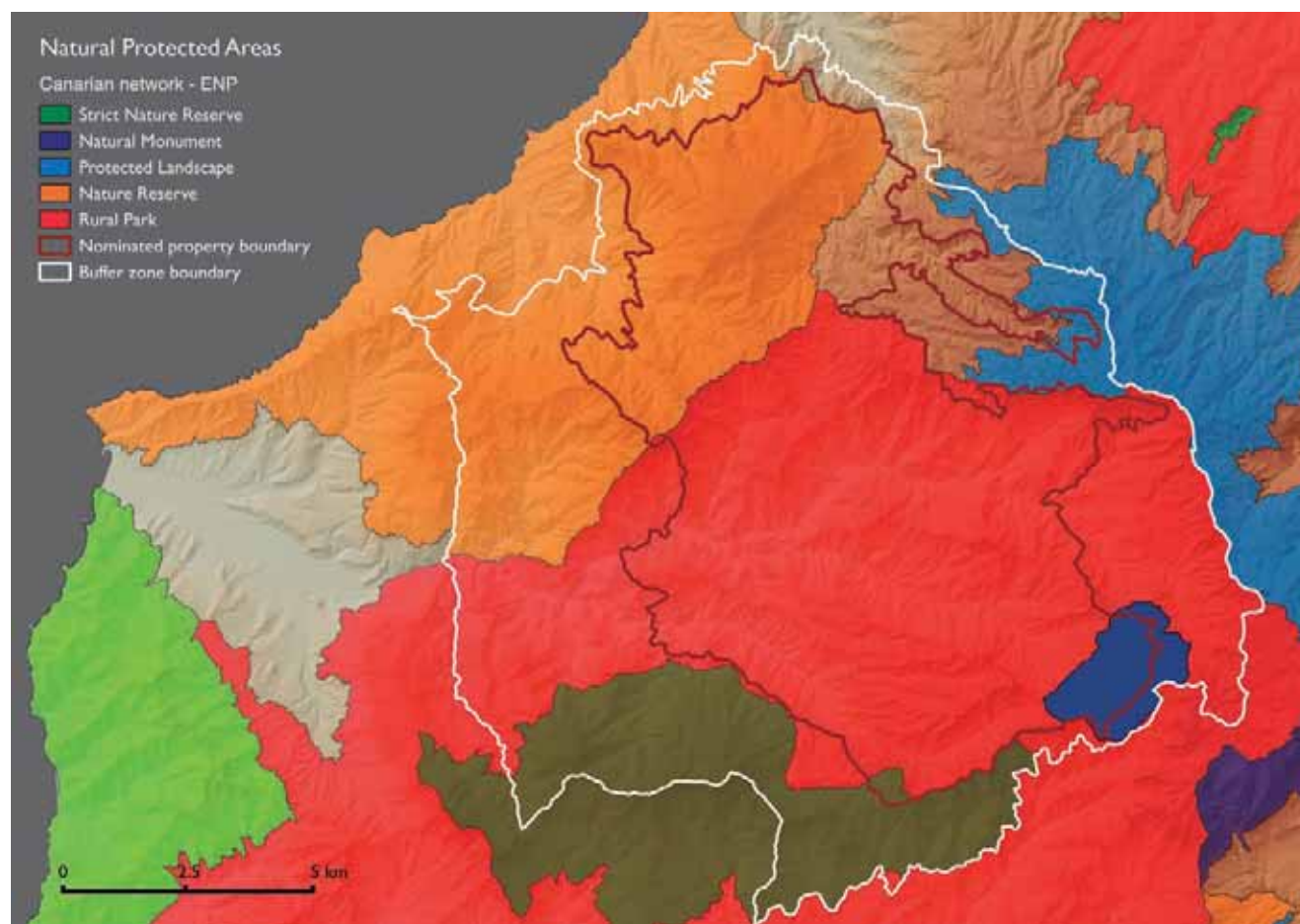
With the exception of the Risco Caído and Barranco Hondo de Abajo area, practically all of the proposed cultural landscape and buffer zone is included in one or several of the protected categories of the Canary Island Network for Protected Areas (Red de Espacios Naturales de Canarias).

The environmental and eco-cultural integrity of the area

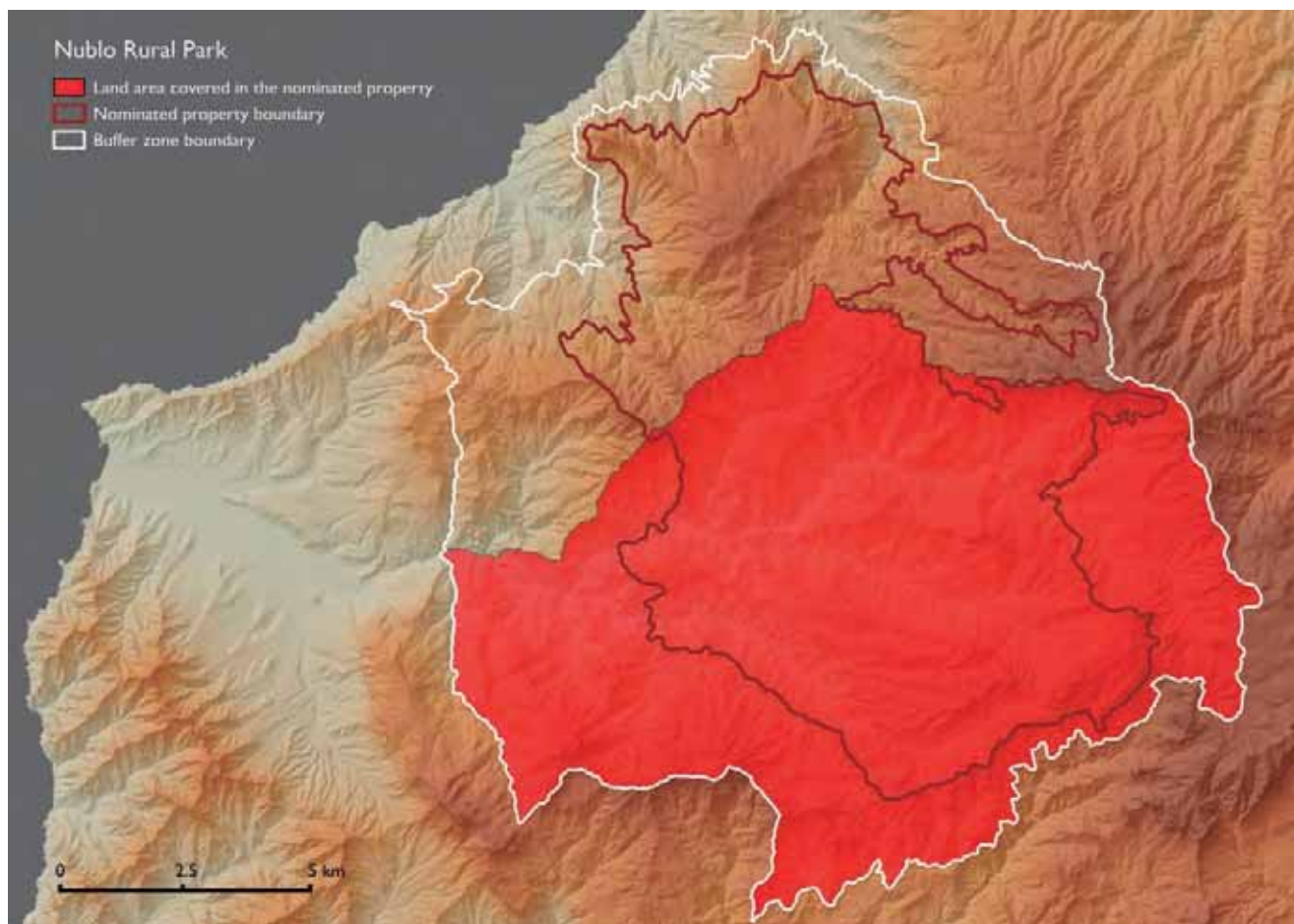
← Figure 5.b.1. Pine groves and cliffs in the area of the nominated property. © Javier Gil León

in question (including the buffer zone) is guaranteed under this protection system, which safeguards the area against intensive and transformational development processes that are not in keeping with the tenor of the declaration for the area in question. The area in question is protected under four categories: Rural Park, Natural Monument, Nature Reserve and Protected Landscape (See map 5.b.1.1).

The environmental legal framework of these areas is regulated by the respective Master Plans for Use and Management or Conservation Measures that apply in each case and which provide for the full upkeep of the properties in question and the surrounding scenery.



Map 5.b.1. Land protection in the property and the surrounding area under the Canary Island Law of Protected Areas (Ley de Espacios Protegidos de Canarias). Source: Gobierno de Canarias.



Map 5.b.2. Part of the nominated property included in the Nublo Rural Park. Source: Gobierno de Canarias. Prepared by the author.

Nublo Rural Park

More than two thirds of this area is classed as a Rural Park under Law 12/1994, of 19 December, on the Natural Areas of the Canary Islands.

Rural Parks are defined as extensive Natural Areas in



Figura 5.b.2. El Aserrador Mountain at Nublo Rural Park
© Javier Gil León

which crop growing, livestock rearing and fishing coexist alongside other activities of special natural and ecological interest, thus creating a landscape of significant ecocultural interest that should be conserved. A rural park declaration aims to conserve the entire area in question whilst promoting the harmonious and sustainable development of the local villages, improving the standard of living and deeming any new uses outside of this purpose incompatible. They correspond to IUCN designated categories V and VI.

There are many reasons for declaring the proposed area a rural park. It is home to well-preserved natural habitats and abundant endemic and endangered species, some of which are only found in this natural area. On the other hand, the pine groves and the abundant artificial pools constitute important habitats for many bird species. In addition, the forests included in this park play a significant role in groundwater recharge. From a geomorphological point of view, relevant structures include the colossal crater formed by the volcanic collapse/erosion of Cuenca de Tejeda basin or Roque Nublo rock.

Within the confines of the rural park is the Inagua Strict Nature Reserve and the Roque Nublo Natural Monu-

ment. The proposed area of the rural park borders the Las Cumbres Protected Landscape to the north. To the east it borders Los Marteles Special Nature Reserve and to the west it borders with the Tamadaba Nature Reserve.

Inagua Strict Nature Reserve

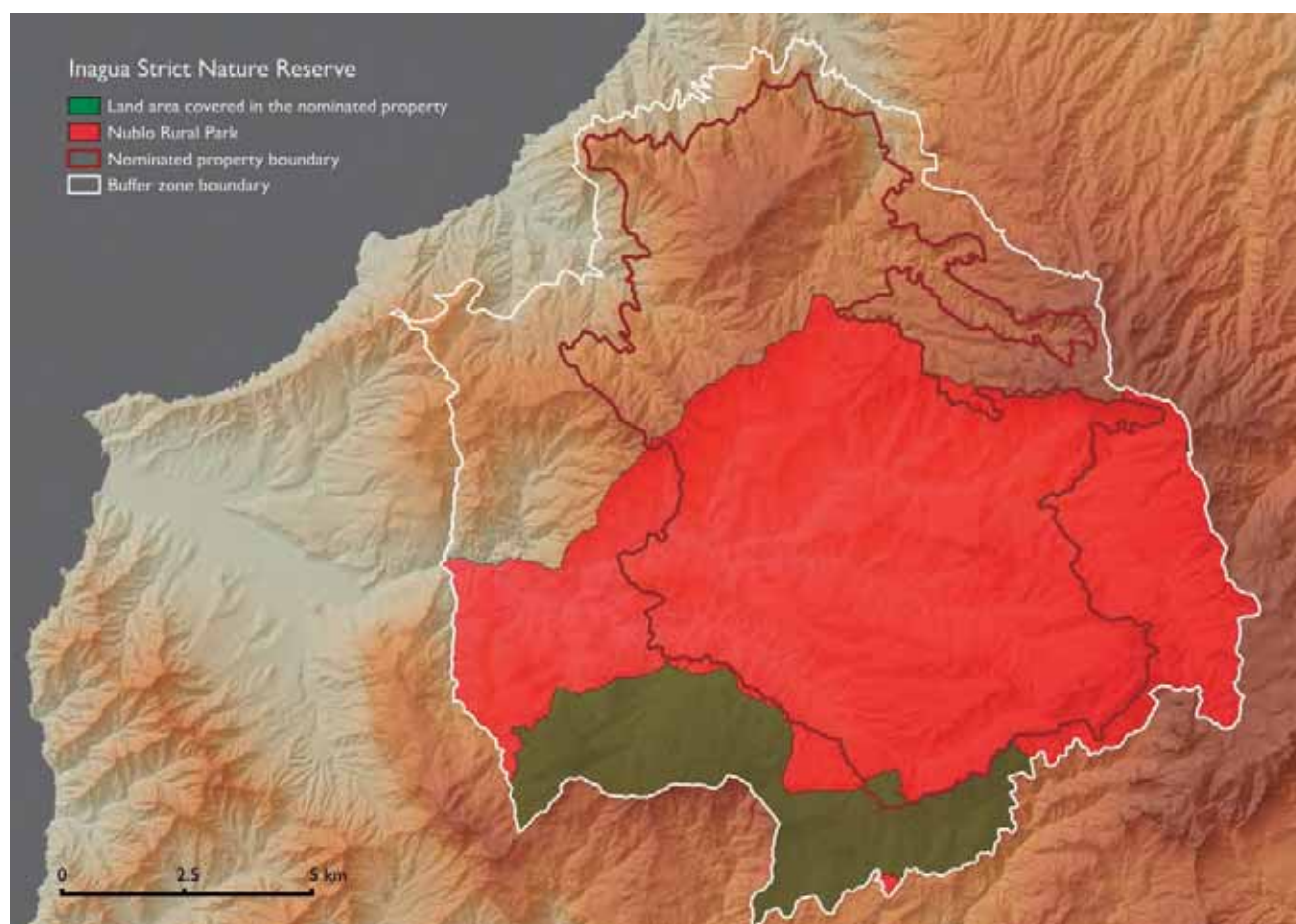
This extensive territory in the southern part of the buffer zone was declared a Strict Nature Reserve (Reserva Natural Integral) under Law 12/1994 of 19 December, governing the Natural Areas of the Canary Islands. The entire reserve is included in the Nublo Rural Park.

The purpose of a Nature Reserve declaration is to protect ecosystems, communities or biological or geological elements that merit special protection because they are rare, fragile, representative, important or unique. Generally speaking, collecting biological or geological material is prohibited except when this is done for the purpose of research or education, subject to a permit being obtained from the relevant administrative body. In international nomenclature, they correspond to the areas of category I of IUCN.

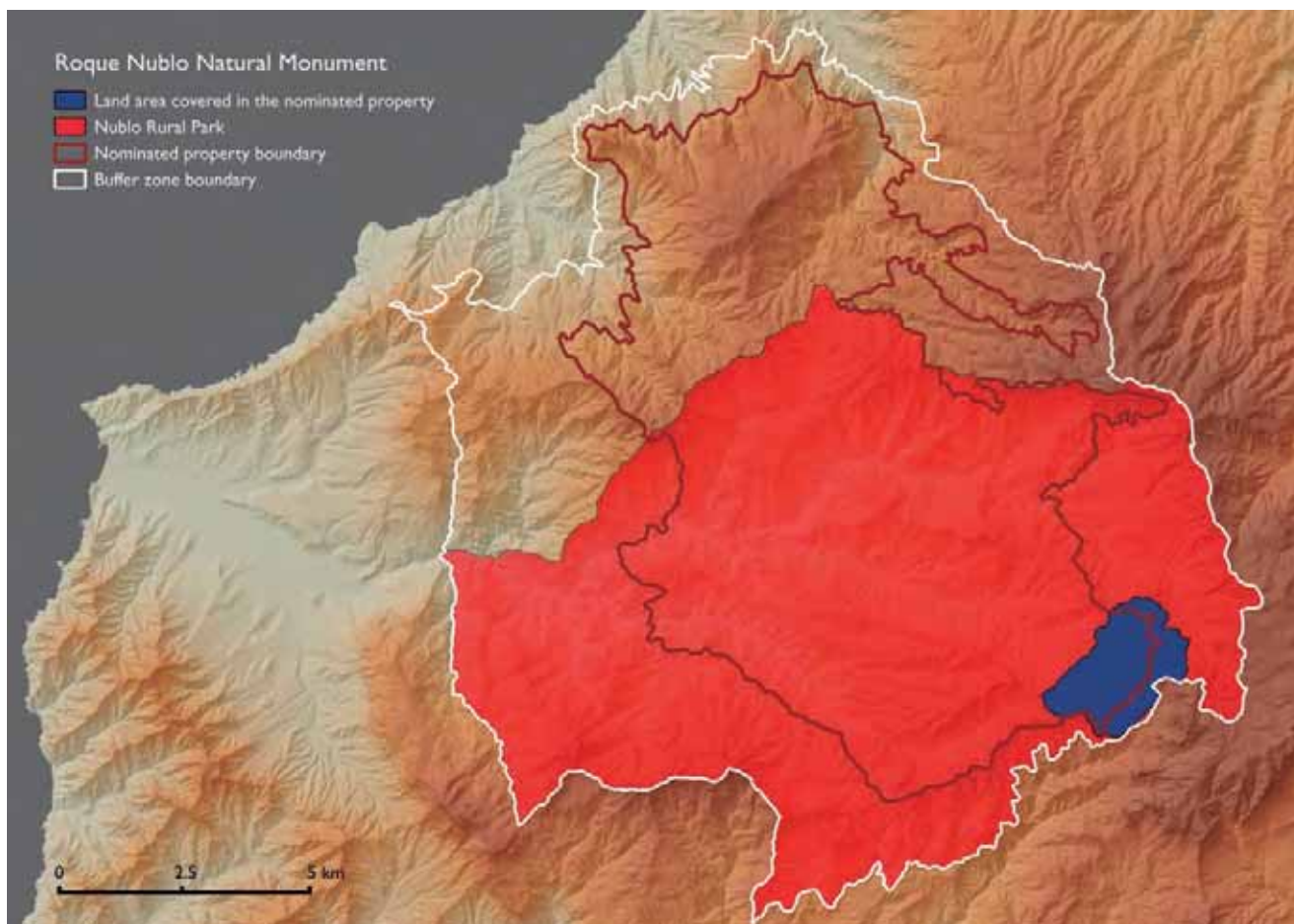


Figure 5.b.3 Slopes of Tamadaba © Águedo Marrero

Inagua was declared a strict nature reserve because its mountains constitute one of the best-preserved natural pine groves in the Canary Islands. In addition, this area was formed with materials from the ancient shield cone volcano that once occupied this part of the island. Not only does the area boast a spectacular landscape but it is also of great scientific, geological and geomorphological interest.



Map 5.b.3. Part of the property included in the Inagua Strict Nature Reserve. Source: ENP Gobierno de Canarias.



Map 5.b.4. Part of the proposed property included in the Nublo Rural Park. Source: Gobierno de Canarias. Prepared by the author.

Roque Nublo Natural Monument

Este espacio, incluido en el extremo suroeste del ámbito. This area, included in the extreme south-west of the proposed area and in part of the buffer zone, is classed as a natural monument under Law 12/1994 of 19 December, governing the Natural Areas of the Canary Islands. The entire natural monument is also included in the Nublo Rural Park.

Natural Monuments are nature areas or elements that are basically comprised of highly unique, rare or beautiful formations that have been afforded special protection because of their unique nature or because they are of significant scientific, cultural or landscape value. These correspond to IUCN designated category III.

The declaration in this case was based on the fact that the area includes a unique and representative natural element of the island's landscape. It forms part of the remains of ancient materials that made up the island's central volcano in which subsequent intense erosive processes formed this peculiar geological expression.

An important added value here is the fact that it is a landmark in the region that is highly symbolic of the island and of the legacy of its first settlers.

Tamadaba Natural Park

The northern area of the proposed property, including the buffer zone, is classed as a Nature Reserve under Law 12/1994 of 19 December, governing the Natural Areas of the Canary Islands.

Nature Reserves are defined as those extensive Natural Areas that have been carefully preserved and not exploited or lived in throughout history and whose natural beauty, fauna, flora and geology, as a whole, are considered unique natural heritage of the Canary Islands. These correspond to IUCN designated category II.

The area was declared a reserve because it is located in one of the best-preserved pine groves in the Canary Islands, which is a highly effective water catchment system, as is evidenced by the various artificial reservoirs in the area. Other well-preserved biosystems are the

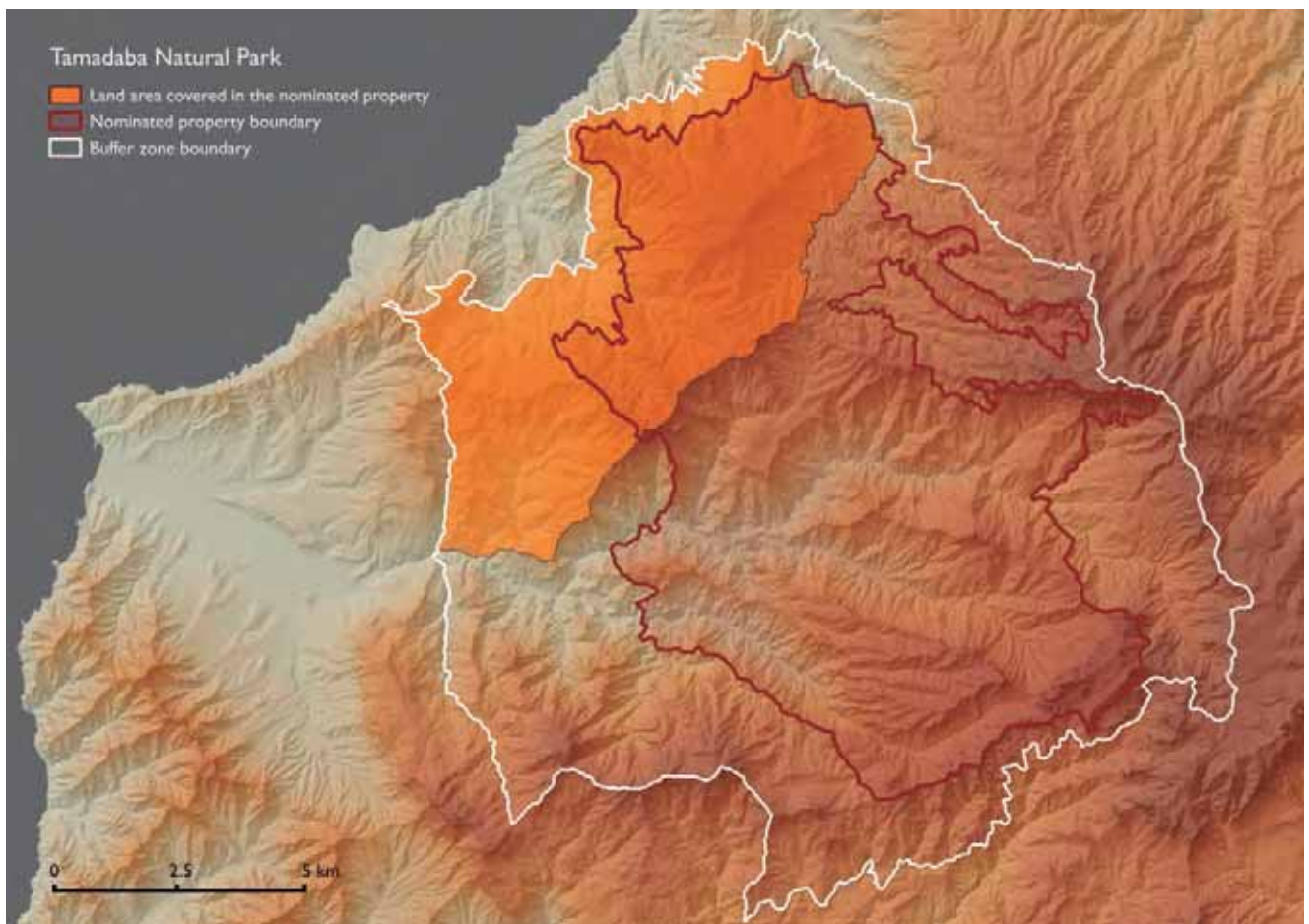
ravines and cardonal-tabaibal shrublands in the areas adjacent to the proposed property, as well as escarpment habitats. The cliffs in the area in question are home to various endangered species, some of which are only found in this particular area. In addition, certain endemic and endangered bird species find the perfect place to build their nests in the pine groves here. Some isolated villages are of particular cultural interest and the area is of particular importance from an archaeological point of view.

“Las Cumbres” Protected Landscape

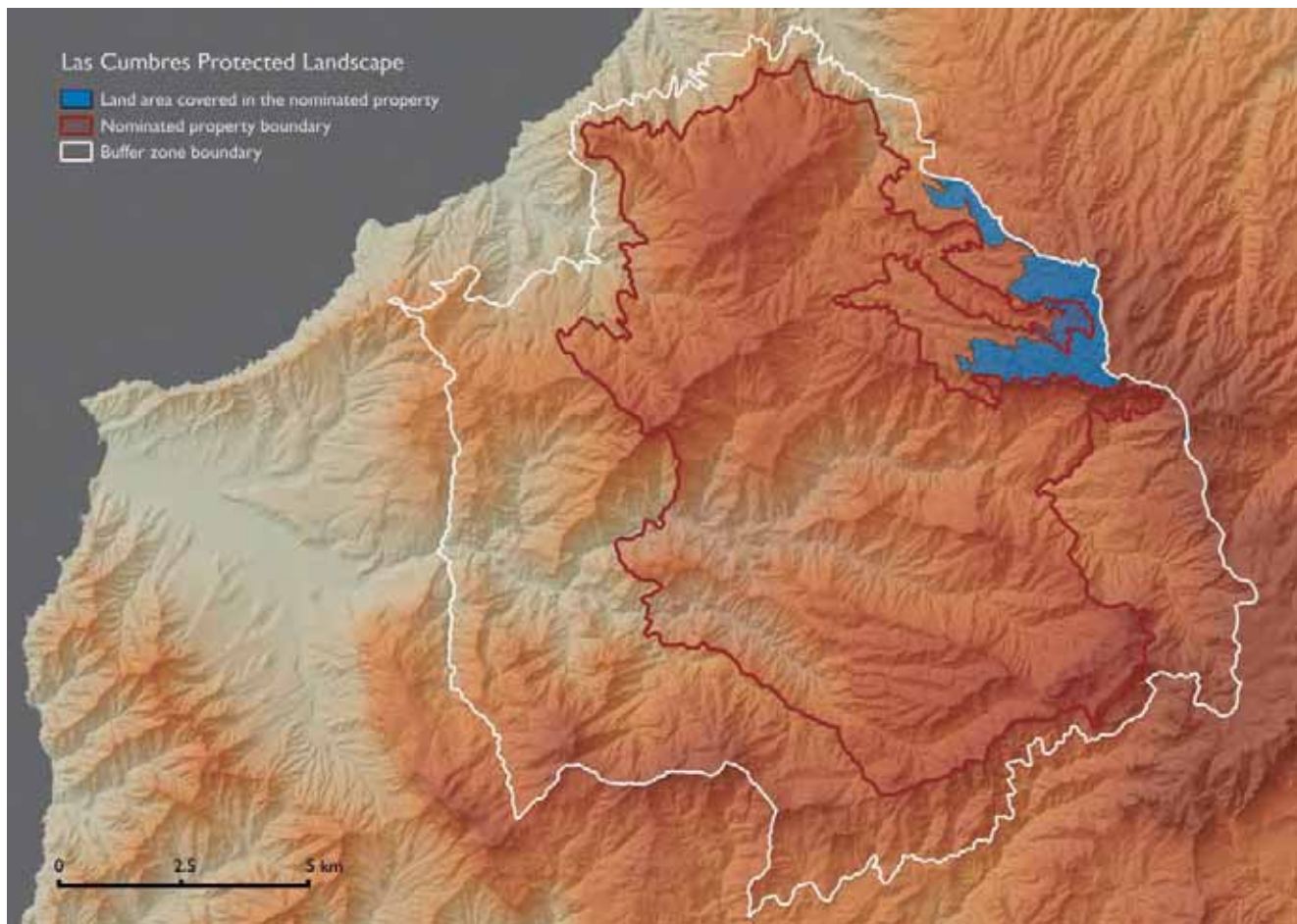
An area situated in the northern part of the proposed cultural landscape that only impacts on the buffer zone, is classed as a Cultural Landscape under Law 12/1994 of 19 December, governing the Natural Areas of the Canary Islands.

Protected Landscapes are areas in the region that are of outstanding cultural value and natural beauty and which merit special protection. These correspond to IUCN designated category V.

Its importance as a traditional humanised montane landscape is one of the reasons for declaring the proposed area a protected landscape. Another reason is its role in maintaining essential ecological processes such as water catchment, as it encompasses the northern part and summit of the island as well as at the top end of the main ravines such as Agaete ravine. The existence of reservoirs in the area bears witness to this, hence the importance of protecting the soil to avoid pools in the area becoming clogged. Abundant endemic and endangered species are also found here.



Map 5.b.5. Part of the proposed property included in Tamadaba Nature Reserve. Map source: Gobierno de Canarias. Prepared by the author.



Map 5.b.6. Part of the nominated property included in the Las Cumbres Protected Landscape. Map source: Gobierno de Canarias. Prepared by the author.



Figure 5.b.4. Allochthonous chestnut landscape and repopulated pine grove. Chestnut is an introduced species in the area that has become part of the rural landscape © Javier Gil López



Figure. 5.b.5. Panoramic view of the Tejeda basin. The entire area is included in the Nublo Rural Park © Javier Gil León

2. Applicable European environmental and landscape legislation

Most of the nominated property and its buffer zone is included in Natura 2000. According to article 3 of the Habitats Directive, Council Directive 92/43/EEC relative to the conservation of natural habitats and of wild fauna and flora, Natura 2000 is a coherent European ecological network that includes Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

The provision set forth in the seventh and final regulation of Law 42/2007 of 13 December governing Natural Heritage and Biodiversity, incorporates into Spanish law Council Directive 79/409/EEC of 2 April 1979, relative to the conservation of wild birds (alias Birds Directive), and Council Directive 92/43/EC of 21 May 1992, relative to the conservation of natural habitats and wild fauna and flora (alias Habitats Directive).

The end of 2009 saw the passing of Decree 174/2009 in which the Special Areas of Conservation (SAC) were declared (Canary Island State Gazette BOC no. 7 of 13 January 2010). It is important to bear in mind that the SACs coincide, in the case of the proposed cultural landscape, with the Protected Natural Areas provided for in the Revised Text of the Law governing land use planning and natural areas in the Canary Islands (Leyes de Ordenación del Territorio de Canarias y de Espacios Naturales de Canarias), approved by Implementing De-

cree 1/2000, whereby protection measures are already in place as per the planning instruments for the cited Natural Areas.

Four areas that impact on the area in question have been declared SACs and these are listed in the below table with their reference codes.

Tabla. 5.b.1. Special Areas of Conservation . Source: Natura 2000

Name	SAC no.	Code	Directive
Tamadaba	49GC	ES0000111	Both directives
Ojeda, Inagua and Pajonales	45GC	ES0000041	Both directives
El Nublo II	40GC	ES7010039	Habitats Directive
Roque Nublo	27GC	ES7010019	Habitats Directive

Worthy of special mention is the fact that the Tamadaba areas, included both in the proposed areas and in the buffer zone, as well as the Inagua Strict Nature Reserve (Ojeda, Inagua and Pajonales according to SAC designation) are territories in which both the Habitats Directive and the Birds Directive apply (see Fig X and Y).

A Special Area of Conservation (SAC) is a designated site of Community importance, in which conservation measures are needed to maintain or return natural habitats of Community interest to a favourable state of conservation. These may include priority habitats and/or the habitats of populations of species in respect of which it has been designated such a site. The Directive consid-

ers priority type habitats those that are in danger of disappearing in the territory of the European Union and the EU has a special commitment to their conservation. Below is a list of existing designated habitats in the area, including their common names and the EU reference:

Priority habitats of Community interest:

- Laurisilva
- 9360 Macaronesian laurel forests - *Laurus*, *Ocotea*
- Canary Island palm grove
- 9370 *Phoenix* palm groves
- Endemic Mediterranean forests of *Juniperus spp*
- 9560 Medium altitude forests dominated by *Juniperus spp* trees.

Other existing habitats of Community interest are as follows:

- Canary Island pine forest
- 9550 Endemic Macaronesian pine forests
- Montane scrubland
- 4090 Endemic oromediterranean heaths with gorse
- "Cardonal", "tabaibal" and gorse communities
- 5330 Thermomediterranean and prestepic scrubland)
- Thermophilic forest
- 9320 *Olea* and *Ceratonia* forests

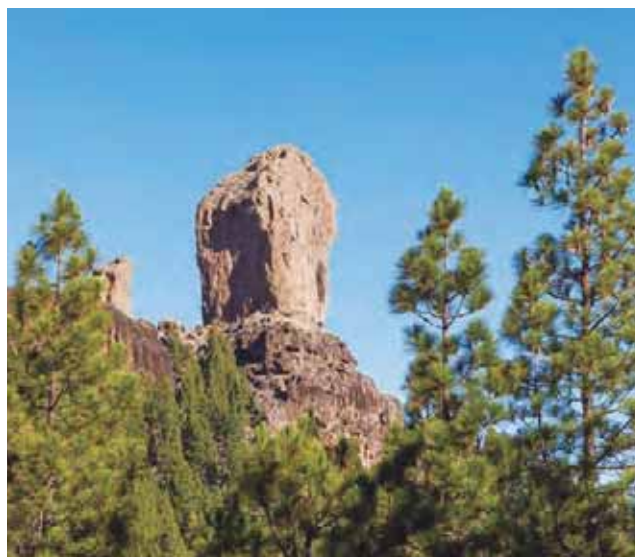


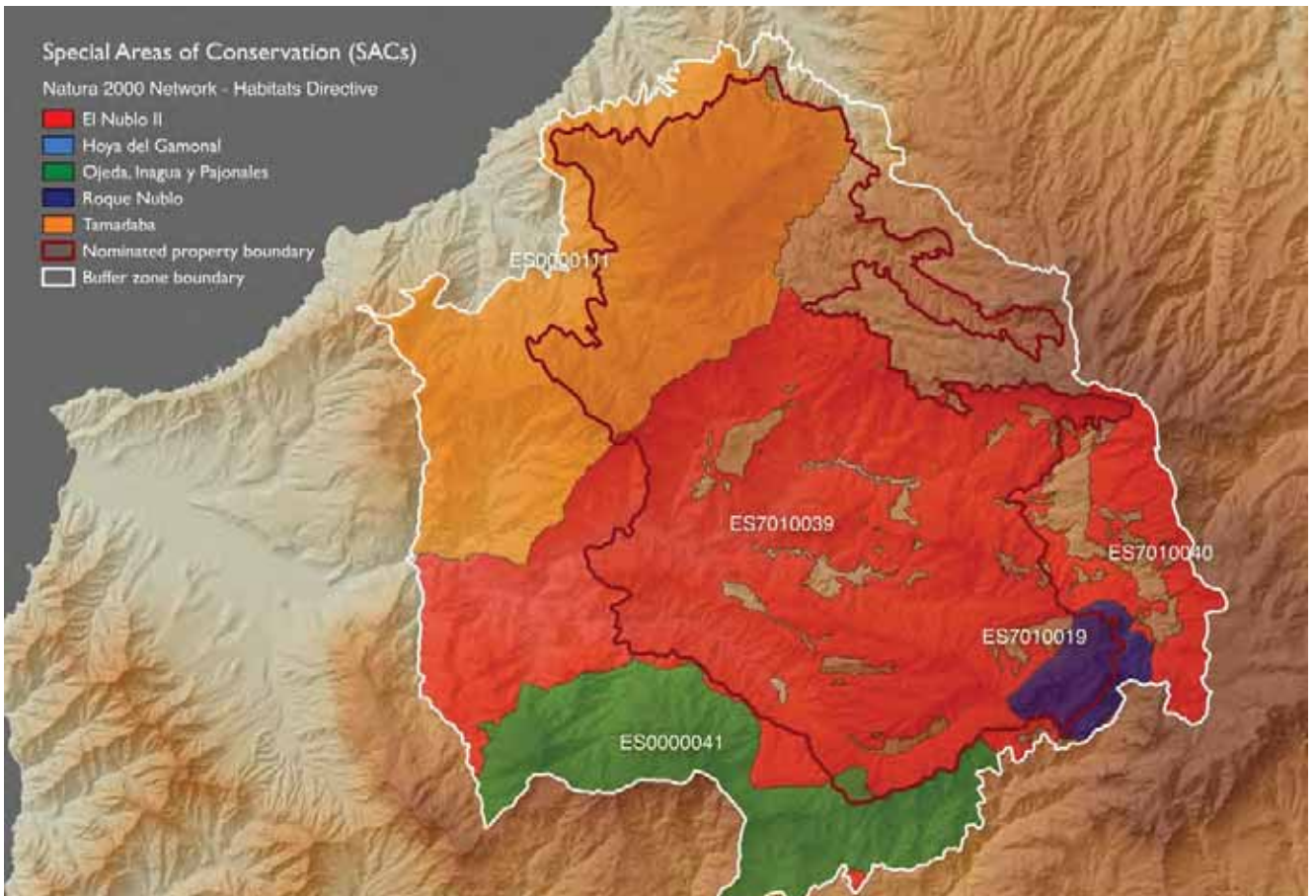
Figure 5.b.6. View of the Roque Nublo Natural Monument landscape included in Zone A.I. © Javier Gil León

- "Malpaís" (badlands)
- 8320 Fields of lava and natural excavations

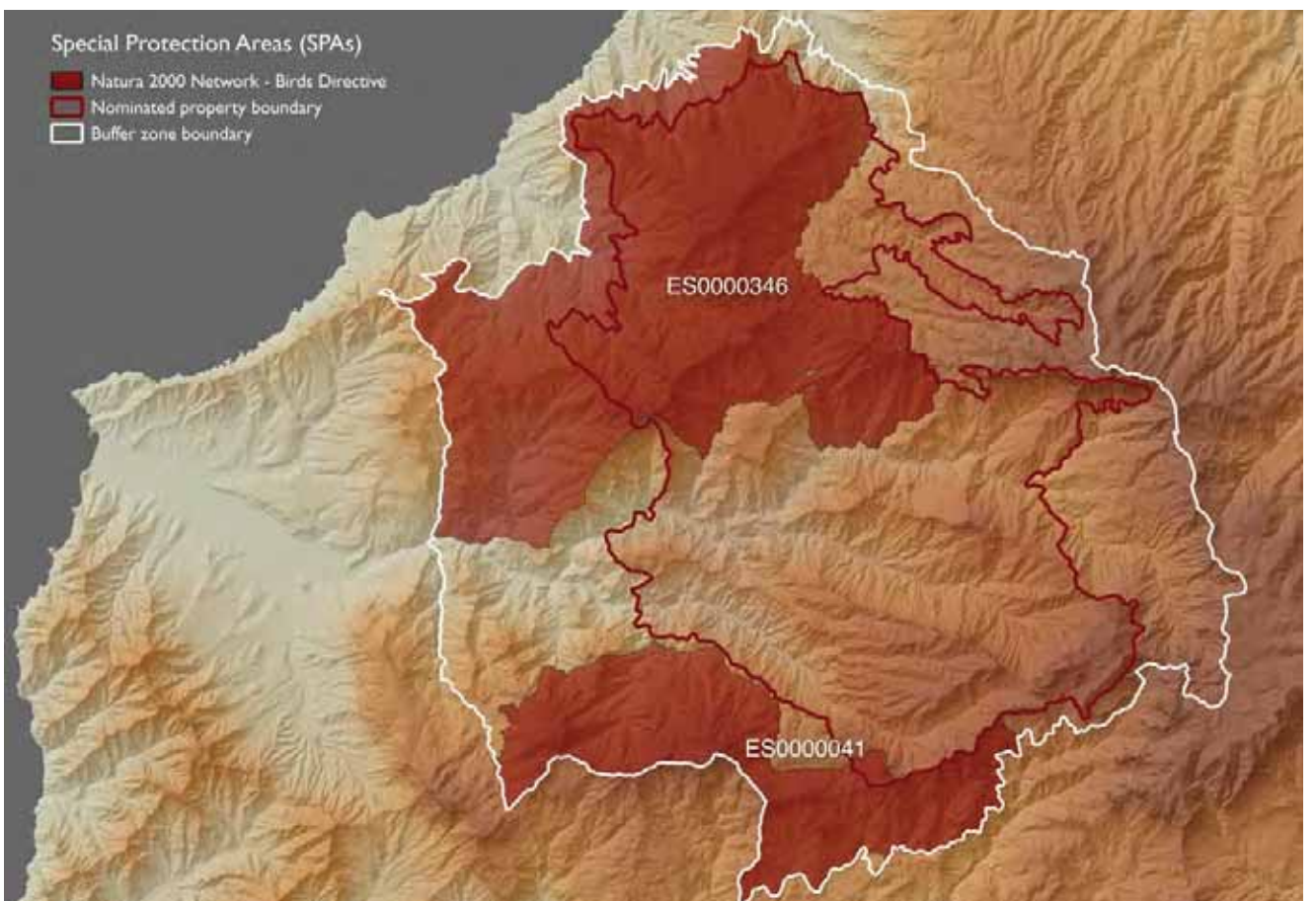
Annex A.I also includes species of animals and plants of Community interest. These areas too have been designated Special Areas of Conservation (SACs).



Figure 5.b.7. Palmeral de Acusa Seca, priority habitat for the Canary Island palm grove in Natura 2000. © Ayuntamiento de Artenara



Maps 5.b.7-8. Nominated property area in relation to SAC and SPA areas. Map source: Spanish Ministry for Agriculture, Food and the Environment. Prepared by the author.



3. Protection in Gran Canaria's Land-use Plan

The Gran Canaria Land-use Planning instrument (PIO-GC) plans the use of natural, cultural, territorial and urban resources for the island of Gran Canaria. Gran Canaria's PIO, definitively approved in 2003, defines the territorial model and island planning, establishing a model for territorial organisation and use to guarantee its sustainable development.

Through this land management, PIO determines, amongst other aspects, the level of protection afforded to the natural and cultural heritage of the island, urban development uses, the use of strategic resources, general infrastructures and land use limitations or characteristics.

In its regulatory implementation, PIO establishes a zoning system for the territory and planning determinations associated with it, including those relative to regulating use. The different categories express the planning aim for each area and the levels of protection afforded to the associated cultural, natural and landscape resources.

Of all the zoning categories that apply to PIO, we have extracted those that apply to the proposed site as a cultural landscape and to the buffer zone, a cartographic representation of which can be seen in Map 5.b.9.

1. High nature value land zones: These are formed of high nature value areas that include parts of the island with high value in terms of their natural state, including parts of the Protected Natural Areas declared Nature parks and Nature Reserves. These can be sub-divided into:

A. Zone A.1, very high nature value.

Comprised of quality areas of conservation and nature based on their value, their state of conservation, their unique nature and the fragility of their biotic and abiotic elements. The planning aim in this Zone is the preservation, protection, conservation and restoration of the natural elements and characteristics and of the species, habitats and landscape.

This zone impacts on the following cultural landscape areas: Tamadaba pine grove, Risco Chapín cliffs, Sierra del Bentayga mountain range, Mesa del Junquillo plateau, Roque Nublo rock, Inagua, slopes and escarpments of Mesa de Acusa plateau including the main,

virtually inaccessible, native troglodyte manifestations as well as Risco Quío cliff to the south of the area.

B. Zone A.2, high nature value in Nature Parks and Nature Reserves.

This is formed of areas situated in Nature Parks and Nature Reserves, where their current characteristics (scrubland and grazing areas, existence of disperse afforestation, tree plantations planted outside their characteristic environment etc) require that these need action to progressively recover the ecological conditions and more specifically, the original tree covering. The planning aim in this zone is to protect and progressively improve the natural state, acting mainly on the existing forest masses and through afforestation actions aimed at recovering the original vegetation.

The designated zone corresponds to Cortijo de Samsó which includes the reservoirs of La Hoya and La Laguna in Tamadaba Nature Park. The buffer zone corresponds to the Parajes de Tirma site and the areas of Hoya del Canario and El Vaquero.

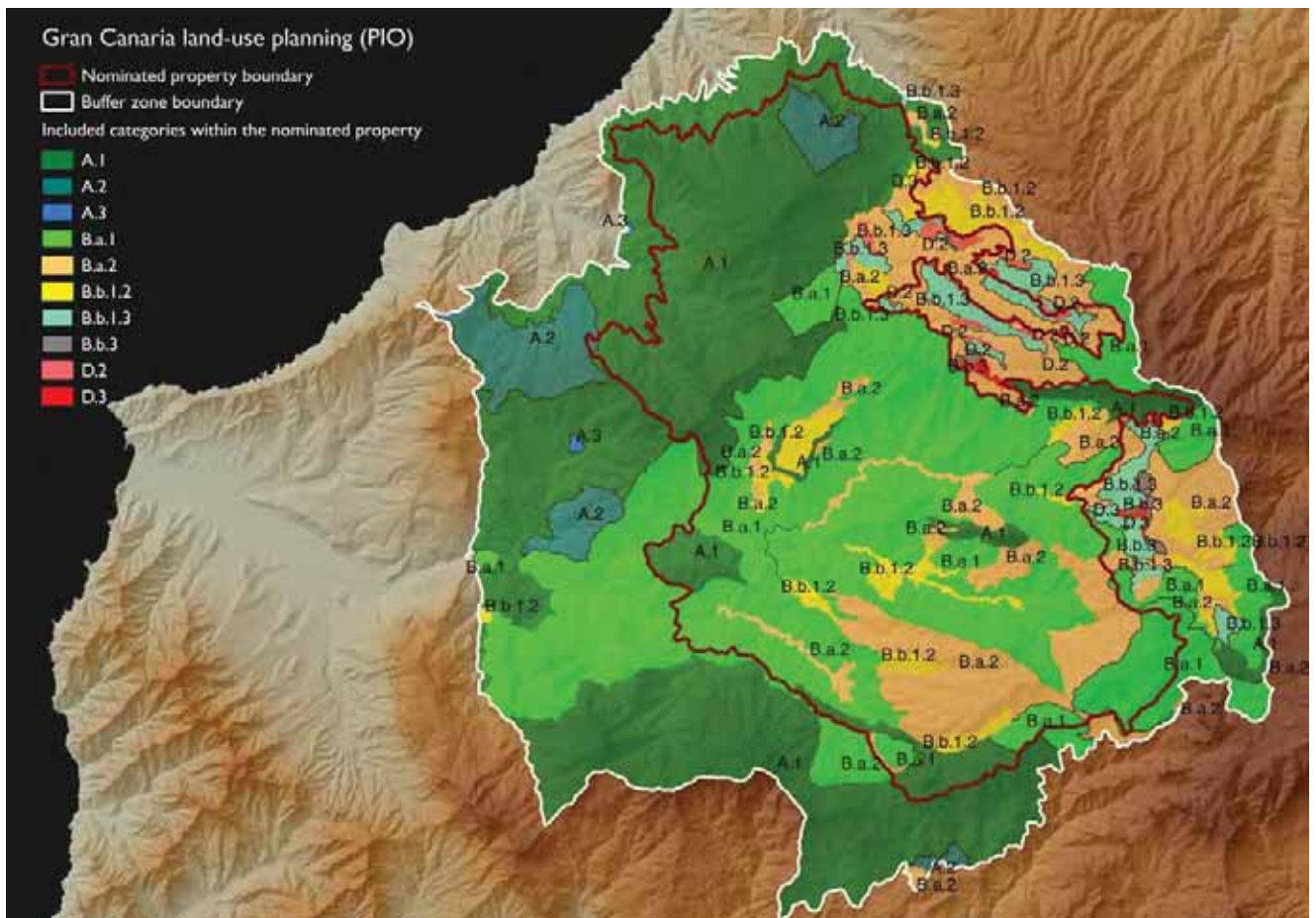
2. Natural aptitude land zones: formed of areas that contain or could contain significant natural, landscape and rural values and where traditional economic values and uses also coexist. The following sub-categories apply to this area:

Zone B.a.1, high nature value and low agricultural aptitude.

Distinguished by the prevalence of natural and environmental values and features that present the fragility of its biotic and abiotic elements that are deserving of special protection and in which traditional production activities take place.

The planning aim in this Zone is to preserve the natural elements and features, species, habitats and landscape and improve forest masses, keeping these and the existing traditional uses in the area in balance, by establishing measures to regulate areas with existing traditional uses, as well as boosting and conserving the present natural values and ecosystems.

The zone includes a considerable part of the Cuenca de Tejada area, in particular the cliffs, escarpments and mountainsides not included in the other categories. It includes some important dams of the nominated property.



Map 5.b.9. Gran Canaria Land-use Plan zoning that expresses the different levels of protection and use of the land in the Cultural Landscape, included the buffer zone. Source: Cabildo Insular de Gran Canaria.

Zone B.a.2, high and moderate nature value and moderate agricultural aptitude.

This zone is characterised by the coexistence of natural, landscape and rural values. It is comprised of high and moderate nature value areas and areas suitable for afforestation and of areas that include or could include agroforestry or grazing activities and disperse and low level agricultural activity.

The planning aim in this case is to keep the existing values in balance by preserving natural and landscape values, boosting compatible traditional activities, restoring natural vegetation, and using natural resources in a sustainable way.

It includes pasturelands, abandoned mountainside crops, widely dispersed agricultural holdings, settlement area in Cuevas del Rey, the basins of the main ravines as well as the areas around the reservoirs such as La Candelaria in Acusa.

3. Land zones with productive capacity: comprised of those areas that include traditional type production activities or that could include them due to their morphology, access and other factors of the production process. Only two categories corresponding to this type of zoning stand out in the area.

Zone B.b.1.2 high agricultural aptitude and high landscape value.

This includes agricultural areas that comprise the traditional high value landscapes or that, due to their situation, constitute areas of special interest and landscape fragility. The areas that make up this Zone should not be subject to any tension or competition with other uses and the planning aim of this Zone is to achieve a balance between agricultural activity, conservation of the traditional landscape and the cultural values included in it, safeguarding it from uses and actions that are not compatible with the territorial area in which they are located.

This category applies to the Mesa de Acusa platform, the agricultural settlements of Acusa Verde, the agricultural landscape of El Carrizal, El Toscón, La Solana, El Espinillo and El Chorrillo, including the basin of El Chorrillo ravine itself and also the Guardoya ravine.

Zone B.b.3 moderate agricultural aptitude.

This zone generally comprises land that is close to or adjacent to villages, in which traditional production activities coexist with other activities that are dependent on or related to the urban structure.

The planning aim for this zone is to preserve or recover, as the case may be, the production capacity and the

quality of its landscape, in a manner compatible with other planned complementary uses or uses that are of service to the local population.

It corresponds to a very small proportion of the territory in the buffer zone which is located in Lomo de los Santos and in properties to the south of Tejeda village.

4. Steady growth land zones: comprised of those areas that may include regular urban planning and building processes. These can be sub-divided into:

Zone D.1.1, urban land.

This zone includes lands that current urban planning has



classed as urban land. This category is only found in the buffer zone and corresponds to the town of Tejeda.

Zone D.1.2, land earmarked for development.

PIO does not envisage new zoned land for the designated area and its buffer zone.

Zone D.1.3, rural land in a rural setting.

This includes lands with varying populations and which current urban planning has classed as rural land in the rural setting category, preventing, in any case, its incorporation, transformation and treatment as urban land.

In terms of cultural landscape this corresponds to the

villages or rural settlements of El Roque, El Carrizal, El Chorrillo, La Solana, El Espinillo, El Toscón and Timagada. In the buffer zone this refers to the settlements of El Juncal, El Rincón, Las Crucitas, El Majuelo, La Degollada, Cuevas del Lomo, Casas Caídas and La Culata.

As can be seen, the PIO-GC determinations are in perfect harmony with the protection and preservation needs of the natural, landscape, and heritage values in the area designated a Cultural Landscape.

Figure 5.b.8 View of the Tejeda basin from Roque Nublo with Roque Bentayga in the centre, where some of the disperse rural settlements can be distinguished as well as the populated centre of Tejeda in the buffer zone © Javier Gil León



4. Environmental protection of the property and planning instruments

The conservation objectives and strategies on ecosystems, habitats, species and landscapes of great significance are defined in the planning instruments of the Protected Natural Areas that regulate their protection. In the case of the Canary Islands, the determinations for protecting each of these areas are paramount in general and island planning. The planning envisaged in the law for each of the protection categories allows us to detect where the greatest efforts will be made in terms of conservation and sustainable development.

The planning instruments for the areas in question and the current situation relative to the process is as follows:

- Inagua Strict Nature Reserve Master Plan (Definitive Approval – April 2010);
- Master Plan for Use and Management of Tamadaba Nature Park (Definitive Approval, October 2003);
- Master Plan for Use and Management of Parque Rural del Nublo Rural Park (Definitive Approval, October 2002);
- Special Plan for the Roque Nublo Natural Monument (Definitive Approval, June 2002).

5. Biosphere Reserve of Gran Canaria

Almost all of the proposed area is included in the Gran Canaria Biosphere Reserve, declared such on 29 June 2005 by UNESCO's International Co-ordinating Council of the MAB Programme (See Fig. X). Thus, all the protection and management provisions relative to this category of the UNESCO MAB programme apply in this territory, on an international, national and autonomous level.

The biosphere reserves are designated by the national governments and remain within the jurisdiction and sovereignty of the states in which they are located and their status is recognised internationally.

The biosphere reserve was introduced as an entity in Spanish law under Law 42/2007 of 13 December, governing Natural Heritage and Biodiversity, which defines it as a "territory declared such in accordance with UNESCO's MAB programme, with which the Kingdom of Spain is associated, for the integrated, participative and



Figure. 5.b.9. *Erysimum albescens*. Species endemic to Gran Canaria in the mountain region of Caldera de Tejeda © Águedo Marrero

sustainable management of heritage and natural resources". It is important to point out that Spanish law is pioneering in the MAB Programme in that it mentions cultural and natural heritage on the same level.

Article 68 of the Law established the creation of a Spanish Network of Biosphere Reserves which includes Gran Canaria. These constitute a defined and recognisable sub-set of the World Network of Biosphere Reserves, as a group of territories under the wing of UNESCO's "Man and the Biosphere" Programme (MAB programme).

Article 70 of the same Law determines that the Biosphere Reserves, for their integration and maintenance as such, should respect UNESCO's applicable rules and guidelines and also have in place a suitable protection and zoning system, that at least, "has a management body responsible for developing strategies, lines of action and programmes and another public participation body in which all the social sectors of the reserve are represented".

In the case of the Gran Canaria Biosphere Reserve, the bodies set up in regulatory compliance are as follows:

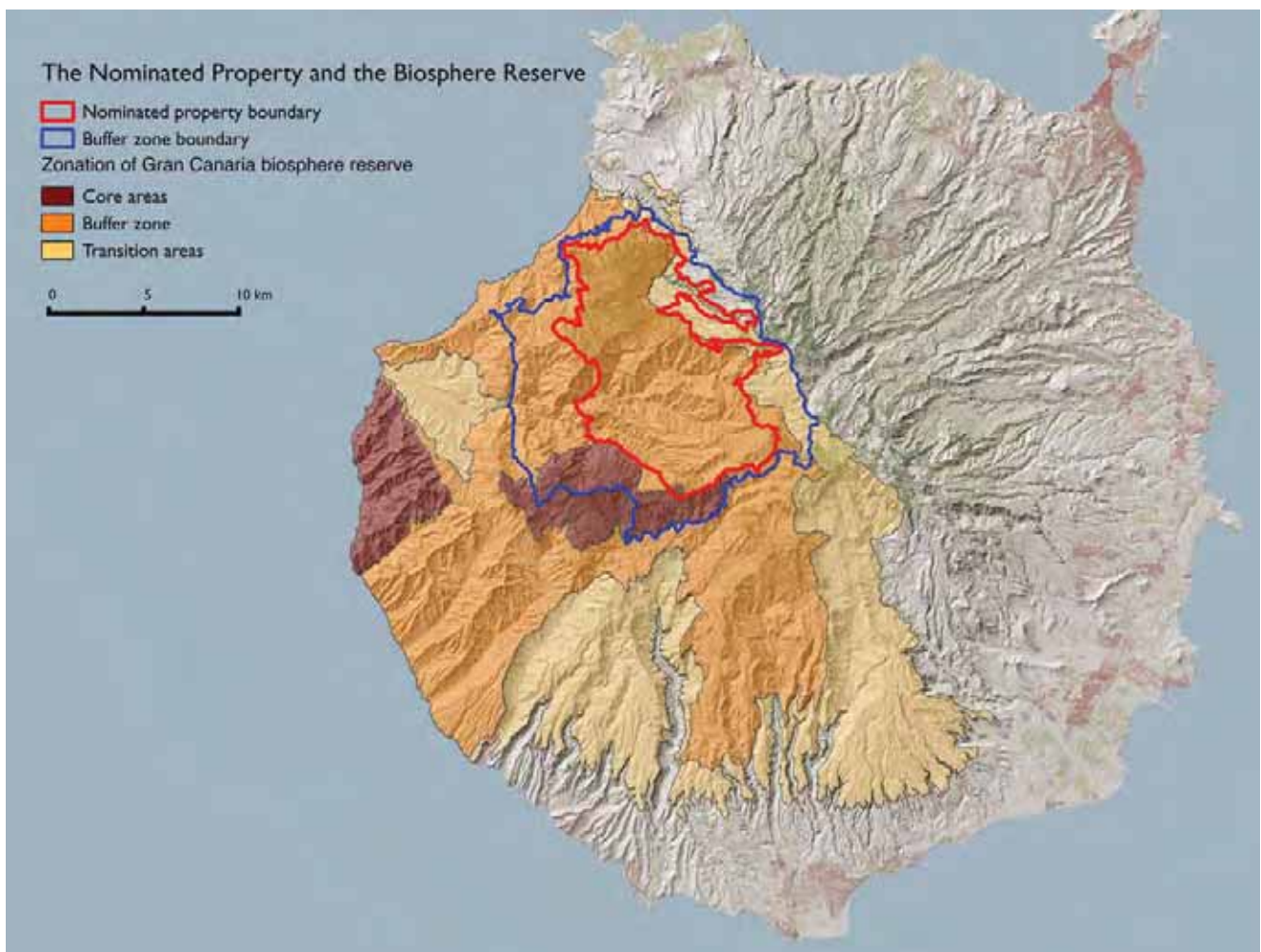
- *Governing Body*: Governing body of the Reserve with an executive board.

- *Citizens' Council (Participation council)*: Body that facilitates the integration and participation of all the public and private sectors in the region of the Gran Canaria Biosphere Reserve.
- *Scientific Board*: Body that permanently monitors and evaluates actions and initiatives and substantiates actions with scientific criteria on conservation and sustainable development.

On the legislative level of the Autonomous Community of the Canary Islands, worthy of special mention is Decree 103/2010 of the Canary Islands Government of 29 July, which regulates certain aspects of the management and administration of the Biosphere Reserves in the Canary Islands, establishing the Canary Island Network of Biosphere Reserves and the Co-ordinating Council of the Canary Island Network of Biosphere Reserves and

approving the Regulation of its organisation and functioning.

It should be highlighted that, within this framework, and on the matter of management and protection, the inter-relationship between the proposed property and the Gran Canaria Biosphere Reserve requires the maximum level of co-ordination with particular attention given to the shared objectives relative to conservation of the landscape, the cultural heritage and valuing the properties in question.



Map 5.b.10. Zonation of the Gran Canaria Biosphere Reserve and boundaries of the property. Virtually all of the proposed Cultural Landscape is included in the Biosphere Reserve. Map source: Biospheresmart-MaB. Prepared by the author.



5.b.ii

Protection of cultural heritage

Protection of the different cultural attributes and components of the proposed property is fully covered under the different laws and provisions on a national, autonomous and island level.

1. Spanish Historic Heritage Law

The maximum cultural protection that can be awarded in the Spanish State is awarded to movable and immovable property declared to be of cultural interest. A Heritage of Cultural Interest (*Bien de Interés Cultural* - BIC) is the legal form that current legislation advocates to recognise and protect cultural manifestations, and is the maximum legal category for the protection and guardianship of Historic Heritage properties.

In this context, Law 16/1985 on Spanish Historic Heritage establishes in Article 40 of Title V, relative to Archaeological Heritage, that “caves, shelters and locations containing rock-art are declared Heritage of Cultural Interest (BIC) by operation of law”. This includes, therefore, all of these types of manifestations in the cultural landscape, which by their very nature are automatically afforded the maximum level of protection.

2. Historic Heritage Law of the Canary Islands

Law 4/1999 of 15 March on the Historic Heritage of the Canary Islands in Article 62, relative to Archaeological Sites of Cultural Interest, establishes that “all sites, locations, caves, shelter or mediums that contain rock art” are declared such. Thus, as with national law, by virtue of autonomous law, all manifestations of rock art in the Sacred Mountain area of Gran Canaria are automatically considered as Heritage of Cultural Interest (BIC), meaning that the provisions and level of protection established therein applies to them.

All Heritage of Cultural Interest sites, of any type, should be properly delineated in accordance with the provisions of Article 26 of the Law, which establishes that “delineation of a cultural heritage site and its protected area, where appropriate, will be provisionally determined from the outset, without prejudice to the definitive delineation that is incorporated into the declaration upon completion of the process”. For the purposes of this Law, what is understood as the protected area is the property’s peripheral, external and continuous zone which is delineated to prevent, avoid or reduce any negative impact of work, activities or uses on the protected site, when contemplating, studying or assessing its values.

The most relevant and representative attributes of the nominated property, what are known as the “star sites”, have been adequately processed and clearly defined, as is the case of Mesa de Acusa, Bentayga, Barranco Hon-do or Tirma (in the buffer zone). Work has also commenced on processing and delineating other sites in the cases of Risco Caído and Santuario de Risco Chapín sanctuary.



← Figure 5.b.10. Light projected onto the rock carvings inside Risco Caído. © Julio Cuenca

Figure 5.b.11. Pubic triangle engravings in Cueva Candiles cave © Julio Cuenca



Map 5.b.12. Zoning of Risco Caído cultural heritage site (BIC), showing the area of the property and the protected area. Source: Cabildo de Gran Canaria, Heritage Service.

Below is a list of the declaratory acts (BICs) and categories that support the protection of these components:

- Decree 258/1993 of 24 September, which declares “Barranco Hondo de Abajo” a Heritage of Cultural Interest site, under the category Historical Ensemble .
- Start of the declaration process on June 7 1988, which declares “Roque Bentayga”, “Roque de las Cuevas” and “Roque Narices” Heritage of Cultural Interest site under the category Archaeological Zone.
- Decree 25/2010 of 11 March, which declares “La Mesa de Acusa” a Heritage of Cultural Interest site, under the category Archaeological Zone.
- Decree of 22 May 2003, which initiates the process for declaring “Santuario de Tirma” a Heritage of Cultural Interest site under the category Archaeological Zone.
- Announcement and Decree of the Gran Canaria Island Council of 10 September 2014, publishing the initiation of a process to delineate the Cultural Heritage Site “Risco Caído Archaeological Zone” and its protected area.

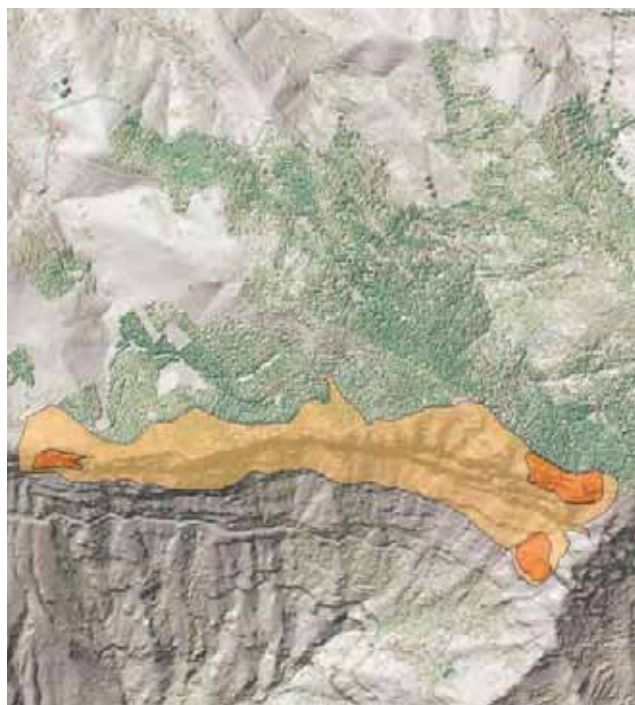
Figures 5.b.11 and 5.b.12 show the declared areas and

its protected zone in the case of Risco Caído and Risco Chapín Sanctuary.

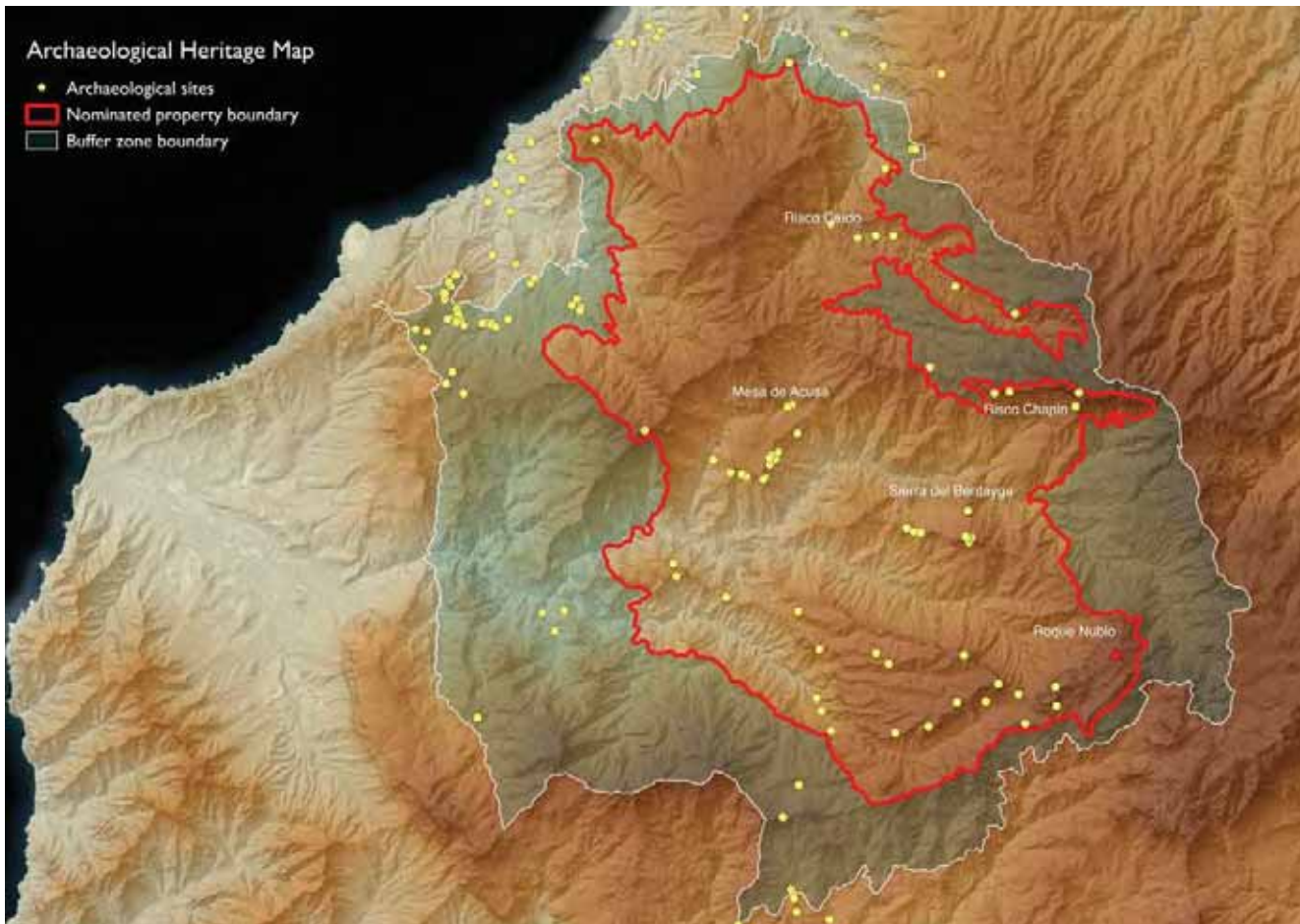
For the purpose of managing, documenting and monitoring protection, Article 15 of the Law establishes - as a general provision - that properties included in Canary Island Historical Heritage should be included in one of the following instruments:

- Register of Heritage of Cultural Interest sites (BIC)
- Inventory of movable heritage
- Municipal architectural catalogues
- Municipal archaeological maps
- Municipal ethnographic maps
- Municipal paleontological maps

Archaeological sites should be identified, located and included on a municipal inventory using “archaeological maps” as stipulated in Article 64 of the Law. As illustrated in Fig 5.b.14, relative to the inventory of archaeological sites and components of the proposed cultural landscape, archaeological maps have been drawn up for each and every one of the municipalities included in the proposal.



Map 5.b.13. Zoning of Santuario de Risco Chapín Cultural heritage site (BIC), showing the area of the property and the protected area. Source: Cabildo de Gran Canaria, Heritage Service.



Map 5.b.13. Archaeological map showing municipalities with sites included in the area. Maps and dates: Cabildo de Gran Canaria. Prepared by the author.

Also, all immovable property included in ethnographic heritage must be documented and included in an inventory using municipal ethnographic maps, in accordance with Article 74 on the System for the Protection of Ethnographic Heritage. The inventory for this is shown in Fig. 5.b.14. Information relative to the ethnographic sites that do not constitute material objects, such as oral heritage relative to uses and customs, traditions, techniques and knowledge, is to be collected and safeguarded on stable media that allows it to be transferred to future generations, thus promoting research and documentation thereof.

3. Cultural protection and territorial planning

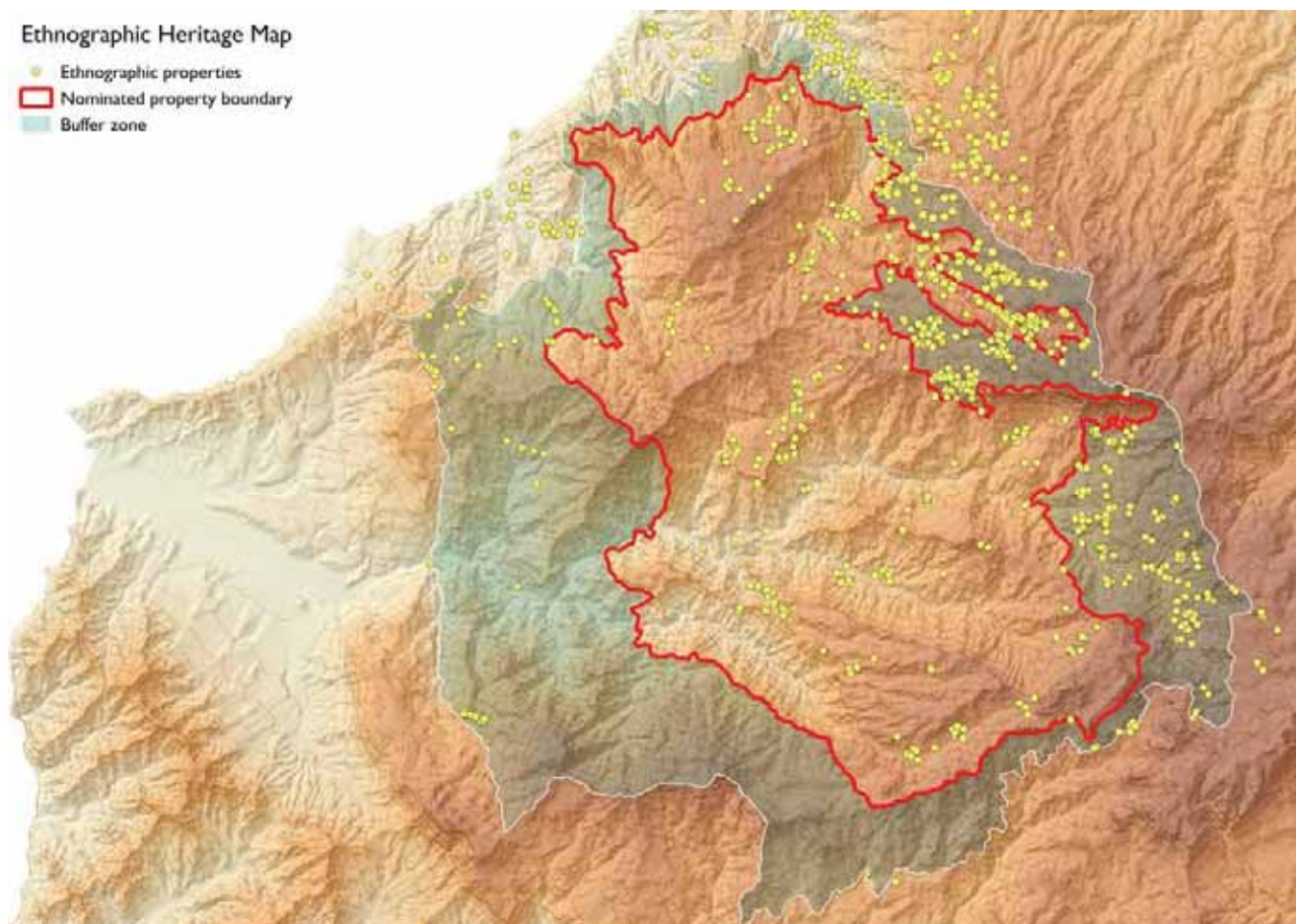
The territorial planning regulation is tasked with ordering protection measures for archaeological heritage not declared of "Heritage of Cultural Interest" (BIC), through interadministrative co-ordination. This affects the plethora of ethnographic, paleontological, historic and other

archaeological sites not included in this category.

As is defined in article 59 of law 4/1999 on Canary Island Historic Heritage: "public administration responsible for drafting urban and general land use planning will request from the Island Council a list of the archaeological, paleontological or ethnographic sites subject to urban planning protection, making the necessary determinations to guarantee the preservation of the area".

Where the proposed cultural landscape is impacted, upon finalisation of the review and update of the Archaeological Map of Gran Canaria and the Gran Canaria Inventory of Immoveable Property of Ethnographic Interest (Ethnographic Map), these properties have effectively been incorporated into the different planning instruments that affect the core zone area, namely:

- Land Use Plan for the Municipality of Agaete (Plan General de Ordenación de Agaete).
- Artenara Municipality Subsidiary Lan Use Rules



Map 5.b.14. Representation of ethnographic sites included in the Gran Canaria Ethnographic Map.
Source: Cabildo de Gran Canaria and FEDAC Cartographic base maps - Prepared by the author.

(Normas Subsidiarias del Municipio de Artenara).

- Land Use Plan for the Municipality of Galdar (Plan General de Ordenación del Municipio de Gáldar).
- Land Use Plan for the Municipality of Tejeda (Plan General de Ordenación del Municipio de Tejeda).

But in terms of territorial significance and influence on protection, incorporation into the planning instruments of the Natural Protected Areas that include the entire territory in question is worthy of special mention:

- Inagua Strict Nature Reserve Master Plan.
- Master Plan for Use and Management of Tamadaba Nature Park
- Master Plan for Use and Management of Parque Rural del Nublo Rural Park
- Special Plan for the Roque Nublo Natural Monument

4. Special Territorial Plan for Historical Heritage Management (PTE 6)

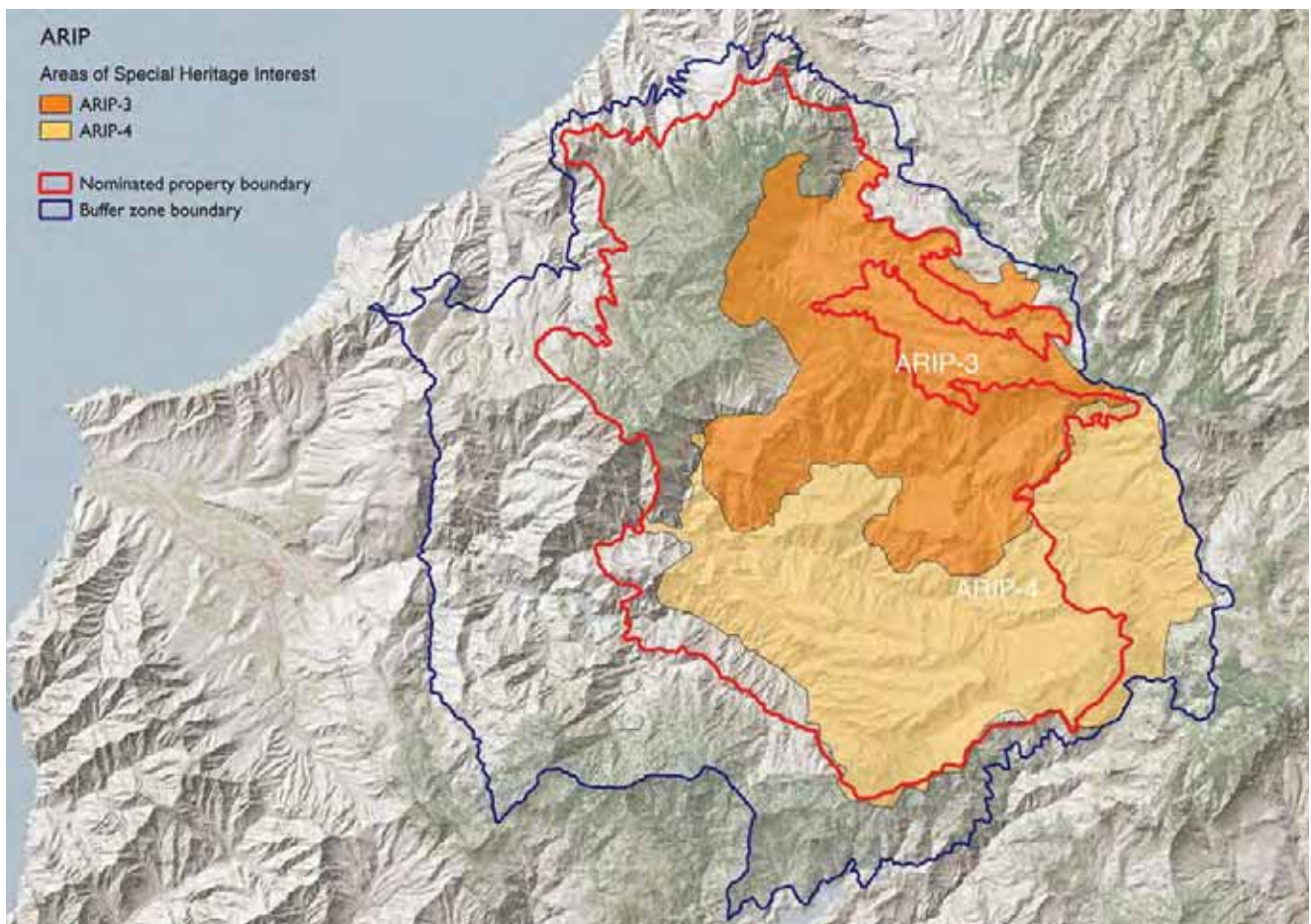
The Special Territorial Plan for Historical Heritage Management (PTE 6) affords the island the necessary regulatory cover to protect its historical heritage within the context of the Island Management Plan and in accordance with Law 4/1999 of 15 March, which governs the Historical Heritage of the Canary Islands. Accordingly, the integration of Historical Heritage into natural area planning, territorial planning and urban planning is promoted through the current Plan.

In its territorial strategy for protection and recovery of these resources PTE6 defines two types of protection and recovery locations or areas: Strategic Enclaves and Areas of Specific Heritage Interest.

Areas of Specific Heritage Interest are zones in which relevant heritage ensembles are located and for which joint measures and programmes exist to encourage their revival based on their special heritage value. Strategic Enclaves are heritage areas in the territory that are considered to be of exceptional value, which makes them an ideal place to develop cultural and educational centres.

The PTE6 defines three fundamental mixed areas found in the island's most interesting heritage zones that are removed from urban pressure and linked to Natural Protected Areas and in which characteristic heritage elements are found. An important part of the proposed cultural landscape is classed as an Area of Special Heritage Interest (ARIP - see Map 5.b.15) under the title "Highland Area I – Troglodyte Settlements" (ARIP 3). This includes the following ensembles and elements, amongst others: El Hornillo (Agaete), Risco Caído, Barranco Hondo, Poblado de Acusa Seca, Centro Alfarero Lugarejos (Municipality of Artenara), Roque Bentayga, Cuevas del Rey, La Higuera (Municipality of Tejeda).

The second ARIP area, under the title "Highland Area II: The Traditional Rural Area", is also included in the cultural landscape and refers to the island's most significant group of traditional highland population centres, in addition to important ethnographic heritage elements, the most important of which are: Era del Llano, El Majuelo, Las Casas del Lomo, Juan Gómez, El Chorrillo, El Carrizal, El Espinillo, Ayacata, Tamagada, Juncal de Arriba, Juncal de Abajo, Molino de la Culata and part of the network of Caminos Reales (royal roads). There are also archaeological sites and troglodyte settlements located in the southern part of the proposed property.



Map 5.b.15. Relevant areas of Heritage Interest in relation to the Cultural Landscape in the Gran Canaria Land-use Plan. Source: Cabildo de Gran Canaria.



5.c

Means of implementing protective measures

The means for guaranteeing the protective measures are all included in the exhaustive body of legislation and regulations that affect the entire nominated property, as can be seen from sections 5.b and 5.d. There is a whole set of mechanisms in place for enforcing the conservation provisions.

In terms of the landscape and the environment, we would draw attention to the fact that almost the entire space is situated in a protected area that forms part of the Canary Island Network of Natural Areas (ENP, in Spanish), and consequently, it must be in line with the mandatory Master Plans, Conservation Standards or Special Landscape Protection Plans. In each case, the applicable regulations determine the limits of action in accordance with the zoning established, which specifies the permitted uses, admissible uses and prohibited uses in each case. Map 5.d.i. shows this zoning in accordance with the different levels of use.

This zoning regime is what articulates activities in the territory and frames the possible activities and actions in accordance with the conservation objectives of the natural and cultural values of the space. This means that any new activity or building work must apply for the mandatory permits for carrying them out or engaging in them. Furthermore, consideration must be given to the fact that, pursuant to the legislation in effect, any action that has an impact on the territory or the landscape must undergo a mandatory assessment of its environmental impact through the regulated channels. This requisite is reinforced by the fact that most of the area is included as a SCA (Special Conservation Area) in the EU Natura 2000 Network. Any breach of these regulations without due authorisation would give rise to sanc-

tions being levied or disciplinary action being taken as indicated in the Appendix, in the section on legislation and planning.

With respect to the areas declared Properties of Cultural Interest (BIC in Spanish), which affects the most significant attributes of the nominated property, the legislation establishes even more restrictive procedures for any action that may affect the integrity of the property, even if this is situated on private land. Any action implemented or building works carried out without administrative authorisation or impact assessment will be considered illegal and the Cabildo of Gran Canaria can order their immediate suspension and other measures aimed at re-establishing the legal situation, and also initiate sanction procedures. Whatever ruling is reached at the end of these proceedings may order anything that has been built to be demolished and to replace anything necessary in order to restore the site to its original state, all at the expense of the perpetrator of the infraction and notwithstanding the corresponding sanctions that may be levied.

Apart from this framework that gives legal grounds for the protective measures, there are also two other important tools. The first is the Gran Canaria Island Planning Document (PIO). Basically, the PIO includes all the measures and procedures already referred to with respect to BICs and Protected Natural Areas, but what is more important is that it has the authority to determine the limits of the major island-wide systems and infrastructures. In the case in question, this refers basically to elements that could have an effect like the road system, overhead cables (telephone and electricity) and the major water supply and sewer grids and facilities.

One can therefore, conclude that there are abundant and sufficient measures and procedures in place to guarantee the preservation of the property's attributes and the integrity of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria as a whole.

← Figure 5.c.i. Partial view of the Caldera de Tejada. Practically the entire area of the nominated property is part of the Canary Island Network of Protected Areas (ENP, in Spanish) and the Natura 2000 Network © Julio Cuenca



Figure 5.d.1. Canary Island Pine in Inagua © Javier Gil León

5.d

Existing plans related to municipality and region in which the proposed property is located

The various plans and planning instruments that affect the municipality and the area in which the property is located are listed below. The list gives the name of the plan, the institution responsible for drafting the plan, the approval date, the implementation area that affects the property and the main objective of each plan in relation to protection and management. The contents that are most relevant to the nominated property are also highlighted in each case.

The aforementioned plans are grouped under the following sections: those that correspond to the Canary Island Network for Protected Areas, which applies to a large part of the area; those included in Natura 2000 and; those affected by island and local planning. As each plan is identified and analysed the cross-cutting issues that are of interest to the protection and management of the property are highlighted. Examples of these are conservation of the landscape and its components or

protection of the cultural heritage and the main attributes of the area in question.

Map 5.d.1. shows the zoning plan deduced from the different categories of protection under the Canary Island Network for Protected Areas. This includes master plans, management plans, special plans and implementation guidelines for each area. This zoning reflects how the management system for the area has been synthesised and how it corresponds with the different categories of uses and activities that are permitted, authorisable and/or prohibited. It should be noted that these plans and regulations do not only cover aspects relative to biodiversity conservation and landscapes, they also place great emphasis on resolutions relative to natural heritage, local sustainable development and public and tourist use of each zone.

All the plans listed below are available in the Additional Documentation together with links to the websites.



Figure 5.d.2. View of El Roque Nublo, area governed by its Conservation Standards. © Águedo Marrero

I. Pertaining to the Canary Island Network of Protected Areas (ENP)

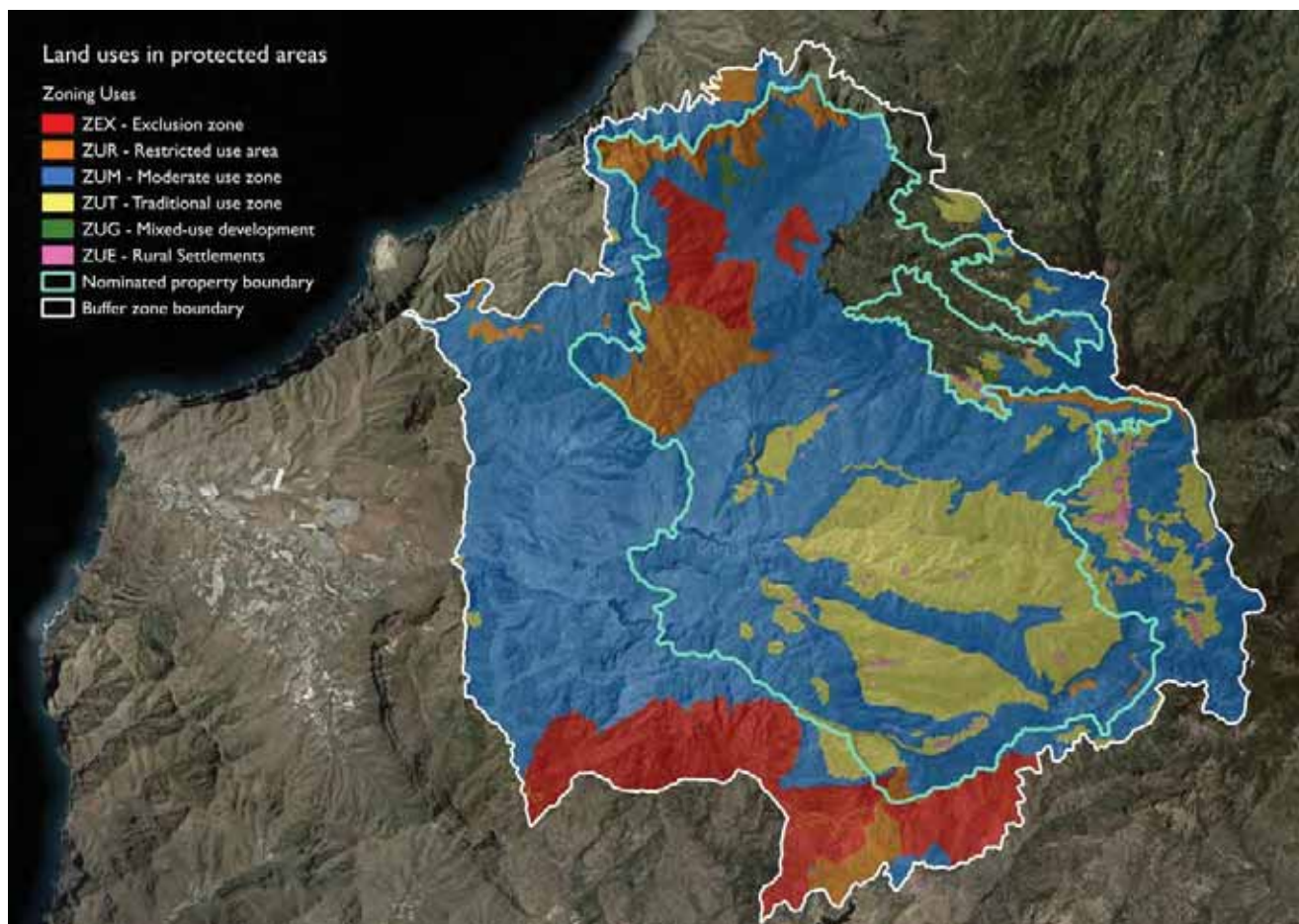
Name of the plan	Master Plan for Use and Management of Nublo Rural Park (PRUG)
Preparer (year of preparation)	Canary Islands Government (2002)
Target area	Caldera de Tejeda
Main objective	<p>Legally regulate how the natural resources in the Rural Park are managed in terms of their conservation, protection and use and guarantee improved living conditions for the inhabitants of the Rural Park through sustainable use of natural resources, social and economic improvements and promotion of infrastructures, equipment and services that are compatible with conservation so that these can be consistently integrated within the social and economic context of the island.</p> <p>Develop an active sustainable conservation strategy where traditional agricultural uses are at the heart of landscape conservation efforts.</p>
Content relevant to the nominated property	As part of the General Conservation Programme, PRUG has outlined a Subprogramme for the conservation of cultural heritage and its defining guidelines in order to advance efforts to maintain archaeological, ethnographic and historical heritage and to preserve traditional elements of local culture and customs.

Name of the plan	Master Plan for Use and Management of Tamadaba Nature Park (PRUG)
Preparer (year of preparation)	Canary Islands Government (2003)
Target area	Tamadaba Highlands
Main objective	Guarantee the conservation and protection of the Nature Park's natural resources and ecosystems placing particular emphasis on conserving the visual identity of the landscape and ensuring that the archaeological and ethnographic heritage are preserved and protected.
Content relevant to the nominated property	<p>PRUG contemplates a Programme for the conservation of cultural heritage, from which specific measures have been developed to ensure that archaeological sites and elements of immovable, ethnographic and historical/artistic heritage are preserved.</p> <p>It also categorises certain areas as protected rural areas of cultural value (Suelo rústico de protección cultural) in order to preserve archaeological sites and their immediate surroundings.</p> <p>Likewise, it classifies certain zones as protected rural areas of landscape value (Suelo rústico de protección paisajística) which can take different meanings depending on function (agricultural, forestry, recreation etc).</p> <p>These classifications mean that conditions are placed on the uses and activities that are permitted, authorizable and/or prohibited.</p>

Name of the plan	El Nublo Natural Monument Standards
Preparer (year of preparation)	Canary Islands Government (2010)
Target area	Roque Nublo
Main objective	Guarantee the conservation and protection of the Natural Monument's natural resources and ecosystems, as well as the archaeological and ethnographic heritage.
Content relevant to the nominated property	It regulates uses related to public/tourist use, education and scientific research to ensure that these are compatible with conservation and to ensure that elements related to Cultural Heritage and those that make up the landscape are resources that are fitting to the interpretation of the area.

Name of the plan	Inagua Strict Nature Reserve Master Plan
Preparer (year of preparation)	Canary Islands Government (2010)
Target area	Inagua (Buffer Zone)
Main objective	Determine which management regulations and Action Programmes should guide actions to meet the conservation and protection objectives, as well as zoning and regulating use of the different areas included in its spatial boundaries. It pays particular attention to the conservation of the visual quality of its characteristic natural landscape and on how to contribute to maintaining the archaeological, ethnographic and historical heritage.
Content relevant to the nominated property	The Plan outlines the development of a Conservation Programme that contemplates a Subprogramme for the conservation of cultural heritage, which will work towards potential restoration of elements of cultural heritage that are in a state of repair that requires urgent measures be taken, as well as formulae to incorporate cultural heritage elements into the Reserve's education management plan.

Name of the plan	Special Plan for the Protection of Las Cumbres (Highlands)
Preparer (year of preparation)	Canary Islands Government (2010)
Target area	Las Cumbres (highlands) of Gáldar, Artenara and Tejeda
Main objective	Develop resolutions to aid the conservation of geological and geomorphological structures and the natural elements they contain. Also to reconcile traditional agricultural activity with this unique environment, because of the role it played in conserving the soil as well as heritage elements and in how humans interacted with the landscape, and to align planning and development of existing human settlements with protection objectives.
Content relevant to the nominated property	Specific landscape protection regulations



Map 5.d.1. Summary of the zoning arising from the different applicable plans and standards of the nominated property included in the Canary Island Network of Natural Spaces (ENP, from the Spanish). Source: Cabildo de Gran Canaria.

2. Pertaining to Natura 2000 Network

Name of the plan	SAC ES7010039 El Nublo II Management Plan
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2016)
Target area	Caldera de Tejeda
Main objective	Maintain or re-establish, in a favourable state of conservation, natural habitat types of community interest and populations of species of community interest that are found in this SAC (Special Areas of Conservation).
Content relevant to the nominated property	<p>For conservation of the landscape and the cultural heritage</p> <ul style="list-style-type: none"> • Activities related to cultural heritage protection, conservation and enhancement are considered compatible. • For environmental education, public and tourist use and research • Scientific activities and essential facilities that are necessary to develop scientific projects related to the natural and cultural values of the zone are considered compatible (research, genetic rescue, reintroduction etc). • Awareness raising and educational activities related to nature and to cultural heritage will be given the same consideration, as will the use of pre-existing buildings for these purposes when properly integrated into the landscape.

Name of the plan	SAC ES700001 I I Tamadaba Management Plan
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2016)
Target area	Tamadaba Highlands
Main objective	Maintain or re-establish, in a favourable state of conservation, natural habitat types of community interest and populations of species of community interest in this SAC (Special Areas of Conservation).
Content relevant to the nominated property	For environmental education, public use and research: Scientific, awareness raising, educational and sports activities related to nature and cultural heritage are all considered compatible with the zone wherever these do not interfere with wildlife.

Name of the plan	SAC ES7010019 Roque Nublo Management Plan
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2016)
Target area	Roque Nublo
Main objective	Maintain or re-establish, in a favourable state of conservation, natural habitat types of community interest and populations of species of community interest that are found in this SAC (Special Areas of Conservation).
Content relevant to the nominated property	Educational activities, public use and scientific activities related to natural and cultural heritage cannot interfere with the conservation aims of the SAC. In any case, the areas will be assigned infrastructures and zoning for that purpose (Natural Monument Regulations) in the protected natural area.

Name of the plan	SAC ES000004 I Ojeda, Inagua and Pajonales Management Plan
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2016)
Target area	Pine groves of Inagua, Ojeda and Pajonales (Buffer Zone)
Main objective	Maintain or re-establish, in a favourable state of conservation, natural habitat types of community interest and populations of species of community interest that are found in this SAC.
Content relevant to the nominated property	For environmental education, public/ tourist use and research: Awareness raising and educational activities related to nature and cultural heritage may be carried out, wherever these do not interfere with the conservation aims of the area and where they specifically comply with the regulatory requirements established in the Inagua Strict Nature Reserve Master Plan. In the Zone defined as Conservation Zone B, for environmental education, public use and research, educational and awareness raising use of tracks and paths will be permitted in accordance with existing regulations and parameters will be established for this use in accordance with priority restoration and conservation objectives

3. General and Island Planning

Name of the plan	Gran Canaria Land-use Plan (PIO)
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2004,2011)
Target area	Entire nominated property
Main objective	Define the land-use model and integrated insular planning establishing the model for organisation and use of the territory to guarantee its sustainable development
Content relevant to the nominated property	It demarcates a large zone that affects the Cultural Landscape as an Area of Special Heritage Interest (ARIP) and sets out general resolutions to protect the landscape.

Name of the plan	Special Territorial Plan for Landscape (PTE-5)
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2014)
Target area	Entire nominated property
Main objective	Establish measures for landscape protection, management and planning in the territory to favour revaluation of the landscape and afford the landscape due consideration in urban and regional planning processes and in the implementation of projects and actions.
Content relevant to the nominated property	Structuring actions in the Cultural Landscape area: a) Highland route, b) Viewing points plan, c) Reservoir routes and specific actions in Juncalillo-Barranco Hondo.

Name of the plan	Special Territorial Plan for Farming (PTE-9)
Preparer (year of preparation)	Cabildo de Gran Canaria (Gran Canaria Island Council) (2017)
Target area	Entire nominated property
Main objective	Land management and integrated regulation of farming on the island of Gran Canaria, as well as its compatibility with environmental and land-use values, to guarantee conservation, support, encourage and improve the development of agribusiness, respecting the traditional agricultural landscape as an added value and its surroundings and avoiding negative impacts on natural resources.
Content relevant to the nominated property	In addition to general resolutions aimed at managing agriculture, livestock and forestry productions, PTE-9 provides for the creation of Strategic Agricultural Reserves (SAR), large areas aimed at protecting soils with good agricultural potential, in order to guarantee that the best soils are preserved and to avoid uses or actions that could limit or impact on the agricultural quality of those soils, with the Tejeda SAR (134.52 hectares) being the chief proposal.

4. General municipal planning

Name of the plan	General Planning Instrument for the municipality of Gáldar
Preparer (year of preparation)	Gáldar City Council (2007)
Target area	Nominated property corresponding to the municipality of Gáldar, all outside the zone included in protected natural areas.
Main objective	Land-use planning for the municipality
Content relevant to the nominated property	Rural area classification in the NNW zone of the nominated property corresponding to the municipality.

Name of the plan	General Planning Instrument for the municipality of Agaete
Preparer (year of preparation)	Agaete City Council (2004/2005)
Target area	Nominated property corresponding to the municipality of Agaete, all outside the zone included in protected natural areas.
Main objective	Land-use planning for the municipality
Content relevant to the nominated property	Rural area classification in the NNW zone of the cultural landscape corresponding to the municipality that is not included in the protected natural areas, within the Hornillo area and in the area bordering the Municipalities of Artenara and Gáldar.

Name of the plan	General Planning Instrument for the municipality of Tejeda
Preparer (year of preparation)	Tejeda City Council (2003/2008)
Target area	Cultural Landscape area corresponding to the municipality of Tejeda, which is fully immersed in protected natural areas. (Nublo Rural Park and Roque Nublo Natural Monument).
Main objective	Land-use planning for the municipality
Content relevant to the nominated property	Rural area classification in the entire area of the cultural landscape corresponding to the municipality. It also demarcates and outlines the El Roque Rural Settlement in the Sierra del Bentayga Archaeological Ensemble.

Name of the plan	Artenara Subsidiary Rules
Preparer (year of preparation)	Artenara City Council (1998)
Target area	Nominated property corresponding to the municipality of Artenara all outside the zone included in protected natural areas.
Main objective	Land-use planning for the municipality
Content relevant to the nominated property	Classification, as a Rural Area, of all of the cultural landscape in the municipality that is included in protected natural areas and demarcation and arrangement of all the Rural Settlements in it, with particular detailing in the NNW zone outside the cultural landscape area that is included in protected natural areas.



5.e

Property management plan

The Property Management Plan was presented by the Cabildo of Gran Canaria for the first time in 2015, entitled Integrated Management Plan for the Risco Caído and the sacred mountains of Gran Canaria Cultural Landscape. Appendix IV includes the Integrated Management Plan up-dated in 2017, which includes the framework, objectives, general measures and actions.

The Integrated Management Plan is conceived as a tool to be used by all players and parties interested in protecting and promoting the Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria in a sustainable and participative fashion. The Plan intends to provide a holistic vision for managing the nominated property, with a special relationship with the unique values that this space has, including the attributes that underpin its designation as World Heritage. Thus, it sets a vision, objectives and goals, which in turn, form a foundation for the raft of measures to be implemented in different areas.

The general objectives of the Integrated Management Plan include:

- Ensuring effective protection and safeguarding the cultural landscape's attributes and components.
- Fostering and rolling out the scientific and research work that will enhance our knowledge of the cultural, archaeological, ethnographic, natural and scenic values to be found there.
- Guaranteeing the continued participation of the local population in the process of managing the nominated property, ensuring interest, respect and pride in the values of the space.
- Offering a tool that can guarantee co-ordination and co-operation among the different parties interested in conserving and promoting the nominated property.

- Ensuring an instrument that allows the responsibilities and tasks of all the actors concerned, both public and private, to be clearly delimited.
- Reinforcing promotion, appreciation and responsible use of heritage in the area addressing education, research and knowledge tourism.
- Providing a management instrument capable of offering incentives for innovation, promoting quality economies and the creation of a space committed to the United Nations' SDGs, maintaining the values that comprise the cultural landscape.
- Keeping alive the traditions, techniques and useful know-how that comprise the identity of this territory, as an expression of a model in harmony with nature and cultural heritage that inspires present and future generations on the island.
- Recovering the skyscape of the ancient Canarians as an expression of the cultural alliance between the past and the future.

The Integrated Management Plan includes the general framework of measures and lines of action for managing the cultural landscape, together with the specific actions and projects to be implemented, distributed in eight management areas:

- Protection and conservation
- Research and monitoring
- Education and capacity-building
- Dissemination and presentation of the property
- Public use and responsible tourism system
- Sustainable local development
- Participation and co-ordination
- Adapting planning

The Integrated Management Plan is discussed and adopted by the "Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria" Steering Committee (see organisational chart in the figure 5.e.5). The management plan is assessed and up-dated each year, setting out new recommendations and lines of action, along with the budget and time line of each of the ac-

← Figure 5.e.1. Responsible public and tourist use of the property is one of the major objectives of the Integral Management Plan. Photograph of a guided tour of the troglodyte settlement of Acusa © Cabildo de Gran Canaria



Figure 5.e.2. View of one of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria Steering Committee meetings held in 2016.
© Cabildo de Gran Canaria

tions scheduled for each period.

The Integrated Management Plan underscores the importance of considering the values of the Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria as parts of a whole, such that it addresses issues like protecting the landscape and the skyscape, promoting local production, sustainable mobility and fostering an innovative model for responsible, smart, low-intensity tourism, associated with the values mentioned, as well as the aspects concerning the consigned attributes of outstanding value.

Governance Structure and Management System

Apart from the responsibilities of the Spanish State and the Autonomous Region of the Canary Islands, the main responsibility for managing the nominated property falls to the Cabildo of Gran Canaria. The Cabildo of Gran Canaria has been delegated practically all the management competences for this territory in most of the aspects that affect the nominated property, such as cultural heritage, the environment and natural areas, tourism, public use and infrastructures.

Against this backdrop, it is the Cabildo of Gran Canaria itself that takes on the challenge of managing the nominated property, by creating the “Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria” Steering Committee in 2015, and by developing the Integral Management Plan with grass-roots participation. This committee has met once a month since the beginning of 2016.

Figure 5.e.5 shows the organisational chart of the different entities involved in administering and managing the nominated property and their fit with the Steering Committee. First of all, there are the different departments and units of the Cabildo of Gran Canaria with direct competences for the different aspects of managing the space. In this context, one of the greatest achievements of the Steering Committee has been to bring the ordinary action plans of the different departments of the island government in line with the spirit and objectives set out in the nomination of the property for the World Heritage List.

The Steering Committee and the implementation of the Integrated Management Plan are also underpinned by three other groups of entities: a) the municipal districts involved, represented by their mayors; b) the Council of Participation that is an umbrella for the residents' associations, local companies and other members of civil society; and c) the Scientific Committee, set up in 2015 as an umbrella currently for 45 national and international experts related to managing and appreciating the

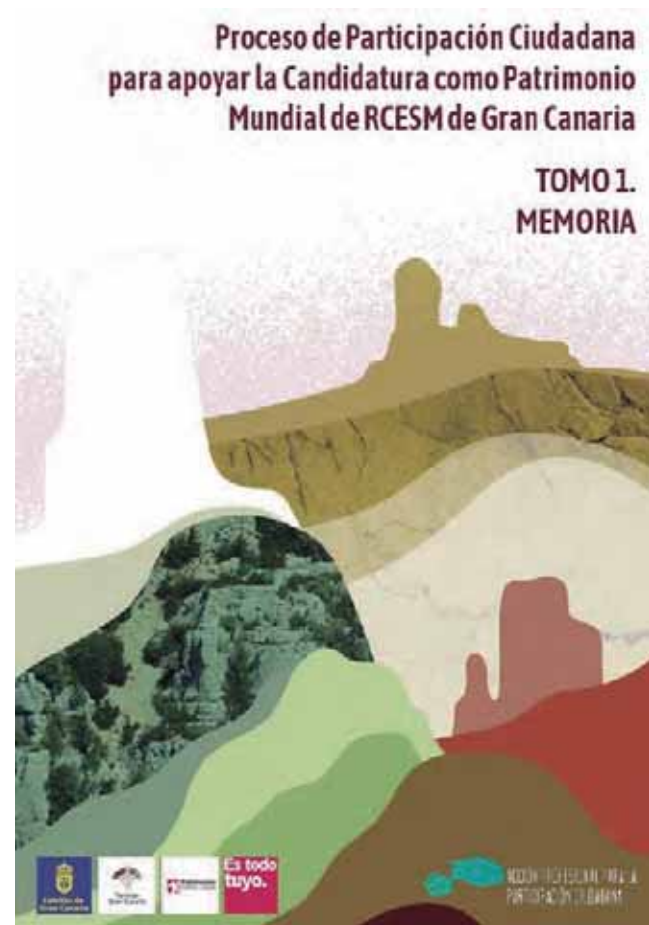


Figure 5.e.3. View of the cover of the 2017 report on the process of grass-roots participation in the nomination of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria. © Cabildo de Gran Canaria

nominated property, along with the representation of the main Canary Island scientific institutions.

Finally, the management and governance organisational chart for the nominated property is completed with the creation of the “Risco Caído and the sacred mountains of Gran Canaria” Foundation, currently in the process of being set up. This is public foundation promoted by the Cabildo of Gran Canaria, which will make a significant contribution to consolidating the participative management model proposed for the nominated property.

The advantage of the legal model of a Foundation, pursuant to Canary Island and Spanish legislation, is that it allows for private players and other entities to be trustees, or to play a role by means of action agreements. This introduces new capabilities for co-operation and funding with public and private actors, including everything from companies to NGOs and other civil society entities. The Foundation is thus conceived as a basic tool for enhancing and fully implementing the Integrated Management Plan. This opens up new windows of opportunities for projects and initiatives that go beyond the capabilities of the actors currently involved and with

greater social and economic interaction. In the end, the Foundation, along with the existing management model, will provide an interesting public/private model against the backdrop of the current great debate on the funding and the sustainable management of UNESCO sites.



Figure 5.e.4. One of the plenary sessions of the Steering Committee held in Tejeda in 2016 © Cabildo de Gran Canaria

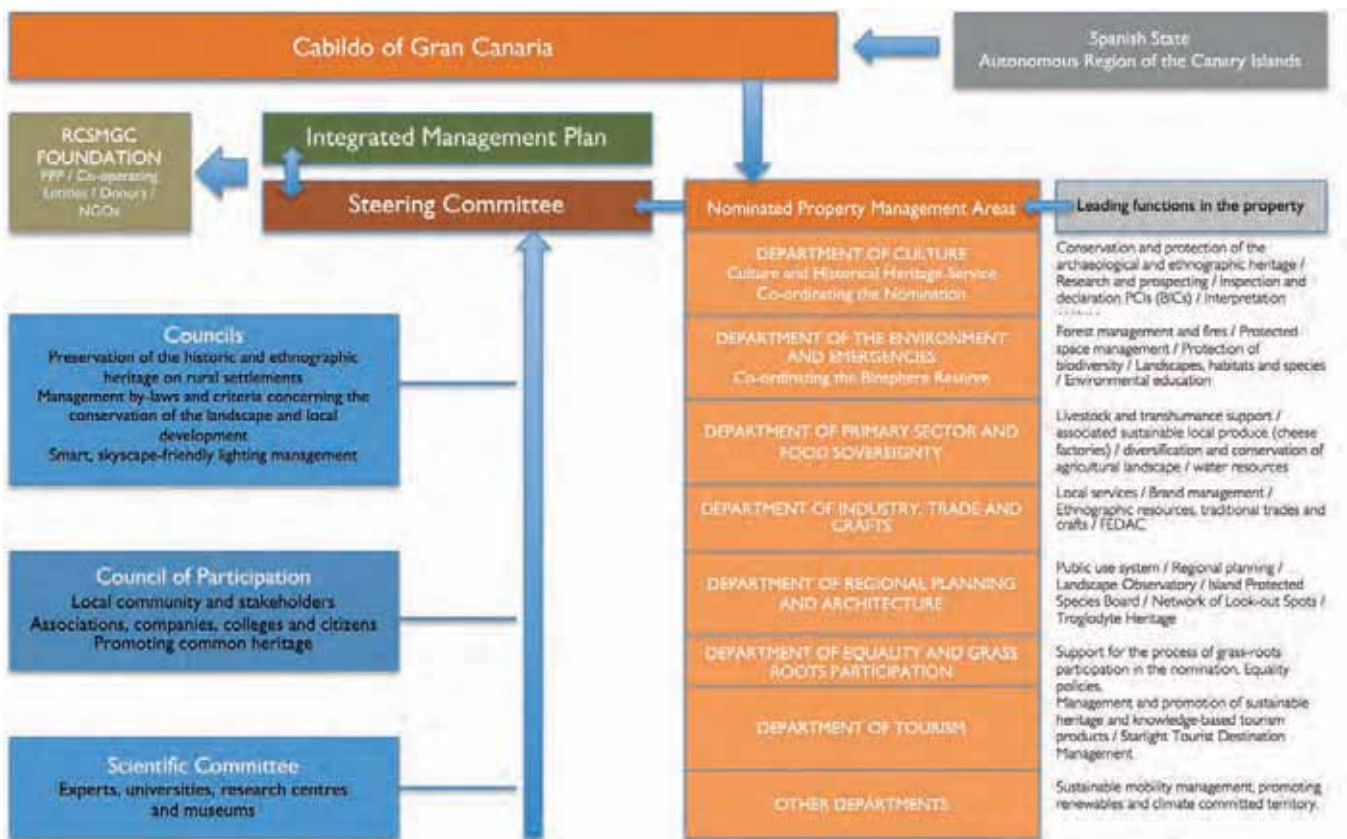


Figure 5.e.5. Management and governance organisational chart for the nominated property. The graph shows the different entities and departments involved in the management of the proposed property, their relationship and the way they cooperate.



Figure 5.e.6. Promoting local produce and generating quality economies based on the values of the nominated property are an essential strand of the sustainability strategy for the region © Javier Gil León



Figure 5.e.7. Maintaining the past and present cultural heritage of the nominated property is one of the main objectives of the Integrated Management Plan. In the photograph, cave dwelling in Barranco Hondo © Cabildo de Gran Canaria

5.f

Sources and levels of finance

Most of the funding goes on maintaining the space and the basic attributes of the nominated property and by virtue of its competences, these expenses are met by the Cabildo of Gran Canaria.

In this context, we need to distinguish between two kinds of funding. There is ordinary investment for environmental, infrastructure and development promotion actions in the area, most of which is channelled through the Cabildo of Gran Canaria, and the specific investment in promoting the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria and in preserving and studying its attributes in greater depth.

The original funding for the first kind of investment includes lines of funding from the Canary Island Government, such as, for example, funding for rural development plans, and other lines from the Central Government or from the European Union, such as the funding from the European Regional Development Fund (ERDF), for example, and instruments like the Interreg Programme. These funds encompass a wide range of actions (environmental, social, infrastructure) and they are generally channelled through the Cabildo of Gran Canaria. Because of their nature, these funds are neither periodic nor are they permanent; they are allocated to programmes and actions to be implemented within a limited period of time.

What is quite separate is the ordinary funding from the municipal councils of the area, which are generally concentrated in the buffer zone or in the rural settlements of the nominated property.

Since 2012 when the nomination process was first embarked upon, the Cabildo of Gran Canaria has increased its investment in specific objectives significantly. This investment has been targeted on improving the space and its cultural and scenic values. This effort has taken the form of a specific, permanent budgeting strategy, currently under the umbrella of the Risco Caído and the Sacred Mountains of the Gran Canaria Integral Management Plan.

Table 5.f.1 shows the lines of specific investment between 2012 and 2017, in accordance with the site nomination strategy.

In order to explain the profile of the investment commitment, we will now look at the most significant actions taken in the period by lines of investment.

I. Building Works, Restoration and fitting out

a) *Ad hoc conservation actions at the main archaeological and ethnographic sites of the Cultural Landscape.*

Conservation work started in 2012 at the Archaeological Zone of Risco Caído, basically in what is known as cave N° 6 - one of the most important attributes of the Cultural Landscape -, cave 7 and in Cueva de la Paja, with a budget line of €400,000, although the scope of intervention was extended to cover the entire Cultural Landscape after 2014 (Acusa, Bentayga-Cuevas del Rey, Risco Chapín and Barranco Hondo). In 2017, the major investments have been balanced to cover all the items

Table 5.f.1	2012	2013	2014	2015	2016	2017
Building works and restoration	94.439,98 €	119.860,69 €	189.589,22 €	75.438,46 €	78.093,46 €	731.929,22 €
Scientific studies and work	10.700,00 €	36.245,87 €	8.329,78 €	41.457,00 €	193.128,27 €	191.730,00 €
Dissemination, communication and others	16.604,50 €	14.031,78 €	32.748,59 €	59.495,13 €	86.119,93 €	45.459,61 €
Total	121.744,48 €	170.138,34 €	230.667,59 €	176.390,59 €	357.341,66 €	969.118,83 €

of the nominated property, including Risco Caído, Acusa Seca, Cueva Candiles, Cuevas del Rey and El Solapón in Barranco Hondo, in accordance with the priorities established by the studies and monitoring.

b) Major planning projects in the Cultural Landscape.

This is the work done to fit out accesses, rest areas, signage, improvement and refurbishing archaeological, ethnographic and paleontological areas of the settings, in order to facilitate their conservation and bring them into operation. These projects are drawn up in parallel with the participative process rolled out specifically with the inhabitants of each area.

These projects are: Adapting, Refurbishing and Promoting the Risco Caído Property of Cultural Interest, with an overall investment of approximately €600,000 for the period 2017-2019, with a first investment of €45,000 for 2017 indicated in the table. Project to enhance, recover the landscape and embellish the village and area around Roque-Cuevas del Rey (Bentayga Highlands), which is already underway, with an investment of €424,765.35 for the period. Diagnosis and proposals for the scenic recovery of Barranco Hondo and surrounding area – this project is currently being drawn up -, with an estimated investment of €340,000 in the Integral Management Plan for the period, and the Acusa Master Plan – the draft plan is currently being drawn up -, with an estimated investment of €500,000 in the Integral Management Plan for the period. Around €140,000 of this money is already being allocated this year.

In parallel with these major interventions, parts of which have already been included in the 2017 budget, other ad hoc actions are envisaged in the budget as part of these projects and at other points of the Cultural Landscape. These include: reinforcement and conservation work on Cueva de la Paja, reinforcement work at Risco Caído, renovation work at Acusa Seca and accesses, fencing Corrales de Acusa, reinforcing and improving access to Cueva de los Candiles and Roque Bentayga.

b) New fittings and fixtures to turn this space into a museum.

The largest item is to create the Risco Caído Interpretation Centre in Artenara, with an investment of around €512,827, between fitting out work, museum fittings and fixtures and the construction of the neo-cave. On the other hand, improvements are being made to the

Bentayga Interpretation Centre and to other areas that are being turned into museum spaces (Acusa Seca).

2. Scientific work and studies

Scientific work started in 2012, with the first archaeological excavations at Risco Caído. The first absolute dating analytics and results were obtained in 2013. Archaeological excavations have also been done at Roque Bentayga and at the same time, conservation and restoration work and graphic documentation (scanning, photogrammetry, topography) has been done. Countless analyses and specialist diagnoses have been performed (geological studies, sounding out the mountain and the walls of the caves of Risco Caído and Candiles with georadar, rock analysis, stability study, micro-climatic analysis, micro-seismicity analysis, terrain deformation analysis, etc.).

With the initiation of the nomination process, a large number and variety of field studies have been conducted in areas like aboriginal architecture, rock art manifestations, archaeoastronomy, food and diet (storage, conservation techniques), geological, paleo-botanical, bio-anthropological, topographical, seismological studies, studying the recovery of the oral memory, historical data in archives, ethnographic studies, etc. We can fairly state that these scientific and technical studies have represented a quantum leap in advancing our knowledge of the culture developed by the ancient Canarians in the interior of the island, and have enabled us to reformulate many aspects of Canary Island archaeology as a whole.

3. Dissemination, communication and others

Scientific work started in 2012, with the first archaeological excavations at Risco Caído. The first absolute dating analytics and results were obtained in 2013. Archaeological excavations have



5.g

Sources of expertise and training in conservation and management techniques

Rolling out the Risco Caído and the Sacred Mountains of Gran Canaria Integral Management Plan has enabled the Cabildo of Gran Canaria, in co-ordination with the municipal councils of the area, to assign the human and technical resources necessary to properly cover the management, supervision and research needs in the area of the nominated property.

The Risco Caído and the Sacred Mountains of Gran Canaria Monitoring and Co-ordination Committee, run by the office of the president of the Cabildo of Gran Canaria, permanently assesses the need for resources available that can be assigned from the different departments and areas of the institution: cultural heritage, regional policy, environment, tourism, primary sector and food sovereignty, grass-roots participation, industry and crafts, public works and infrastructure, transport and mobility.

The effective co-ordination of the intervention and monitoring strategy for the nominated property is run by the Historical Culture and Heritage Service. To this end, this service has a set of qualified human resources to permanently tackle tasks of management, conservation and supervision of any actions taken in heritage matters concerning the nominated property. Table 5.g.1 indicates the human resources available and their qualifications.

These resources are complemented with the Scientific Director of the project and the Nomination Co-ordinator. Moreover, based on the new needs identified during the nomination process, 4 graduates have been hired to reinforce work in the areas of the BIC procedures, monitoring, documentation and administrative procedures.

This is the staff directly involved in heritage-related aspects of the Cultural Landscape. But, one must remember that the technical staff from the different departments of the Cabildo of Gran Canaria involved also

Table 5.g.1

Personnel assigned to the nominated property

4 Historical Heritage Inspectors
Building Engineer
Draftsman
Clerk
Archaeologist (EPCT)
Geographer (EPCT)
Law Graduate (EPCT)
Journalist (EPCT)
Documentalist (EPCT)
Administrative Clerk (EPCT)

intervene directly or indirectly and in a co-ordinated manner, such as those from the Department of Regional Planning and the Environment. This latter department deploys a wide range of means on the ground – explained in detail in Section 5.j. All these departments constantly provide support and information from their experts.

The staff responsible for protecting and managing the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria usually receive vocational training, professional knowledge and management measure training, mainly in the form of daily learning, regular training, strengthening communication, and visits and studies to ensure the effective completion of the protection, management and research of the nominated property.

By virtue of its competences, the Canary Island Government also contributes human and technical resources for monitoring and conserving the space, in co-ordination with the Cabildo of Gran Canaria.

However, mention must also be made of other important sources of expertise and specialisation in management and conservation matters:

1. The Risco Caído and the Sacred Mountains of Gran Canaria Scientific Committee

Created in April 2015, the Scientific Committee is currently made up of 45 local, national and international experts and academics. It has been set up as a permanent advisory body. It includes archaeologists, historians, biologists, geologists, landscapers, architects, sociologists, economists and a wide range of disciplines that converge on the management of the nominated property. The Scientific Committee, or the individual experts, systematically provide guidelines in matters of conservation and management of the attributes and the different facets of the Cultural Landscape.

2. Agreements with scientific institutions and consultants

The sources of expertise and assistance are broadened through co-operation agreements with scientific institutions. These include agreements with the University

of Las Palmas de Gran Canaria (ULPGC), The Scientific Research Council (CSIC) and the Canary Island Institute of Technology (ITC).

The Cabildo of Gran Canaria also has a policy of hiring external, expert advisors and Consultants who contribute to the expertise in these matters. This is clearly shown by the numerous studies and reports that have been elaborated in relation to this dossier.

3. Academic communication and meetings

The numerous scientific and academic meetings held also represent another source of permanent expertise. These include the annual Risco Caído and the Sacred Mountains of Gran Canaria Conference, held every year since 2012. This symposium brings together local, national and international experts for a week every year to address different facets and attributes of the nominated property. This conference is a valuable source of expertise, for both the staff involved and for the local population, the authorities and for local technicians.



Figure 5.g.1. A complex cultural landscape, not just from an archaeological standpoint, that requires an exceptional level of management expertise. The photograph shows a set of caves and farming terraces that comprises an exceptional mosaic in the cultural landscape.
© FEDAC

5.h

Visitor facilities and infrastructure

Despite the distance from the main built-up areas, there is good access to the area of the nominated property, from the north along the GC-21 to Artenara, from the west along the GC-15, from the south along the GC-60 and Gc-605 to Atacata, and from the west coast along the GC-210. Within the space, the road system is not very dense, which clearly favours the conservation of the area. In fact, many of the leading attributes are only accessible along trails. Obviously, all the rural settlements are connected by road, mainly secondary roads.

Visitor infrastructure can basically be divided into three major sections: The Network of Interpretation Centres and spaces that can be visited, the Network of Trails and Mountain Refuges, the Network of Viewing Points and the local accommodation system.

1. The Network of Interpretation Centres

This is a set of public interpretation centres associated with the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria that act as windows of excellence for the local population and visitors to appreciate the attributes of the property and their associated cultural, natural, scenic and ethnographic values. The network is currently comprised of three main centres: Risco Caído and the Sacred Mountains of Gran Canaria Interpretation Centre (Artenara), the Bentayga Centre (Tejeda) and the Degollada de Peraza Centre (Tejeda). These centres offer a complementary thematic offer as a whole, enabling visitors to approach their discovery of the space from multiple dimensions.

The recently-opened Artenara Centre is both an interpretation centre and a museum that has been created with the sole vocation of exhibiting the values of the Cultural Landscape and its archaeological, archaeoastronomical, ethnographic and intangible attributes. The exhibit shows the main attributes of the space, the aboriginal world and especially, the sanctuaries and their connections with the sky. One of the leading exhibits is what is known as the “neo-cave”, which is a reproduc-

tion of the Risco Caído almogaren that uses advanced imaging techniques to recreate the solar and lunar hierophany of this monument. Another of its functions is to act as a deterrent to visiting Risco Caído, as a highly fragile site with very little carrying capacity for visitors.

The Bentayga Centre (Tejeda) focuses on the meaning of the archaeological complex of the Bentayga Highlands, the troglodyte habitat, granaries, utensils and life of the ancient Canarians in the area. The Degollada de Peraza Centre (Tejeda) on the other hand, specialises in the environmental view and the natural values of the setting, and also acts as an interpretative piece of the Biosphere Reserve as a whole. They all offer a magnificent visual perception of the space from different angles.

Apart from these centres, the troglodyte settlement of Acusa and Barranco Hondo de Abajo, etc. can also be considered as open museum spaces that allow visitors to get an idea of the old aboriginal settlements and see that there are also re-used caves that still exist.

The Cultural Landscape Management, Research and Guard Centre is to be built in the near future in Tejeda. This new centre will act as the epicentre for managing and monitoring the nominated property and as a place for researchers and specialist visits.

2. Network of Trails and mountain refuges

As shown on Map 5.h.1, the whole area is criss-crossed by a complete network of trails that often coincide with the same trails used by the ancient Canarians to get around. This network includes large stretches of the nomadic routes used by both shepherds and by visitors, such as El Camino de la Plata. All the routes are well sign-posted and themed, equipped with abundant digital resources to appreciate and interpret them.

The network is dotted with natural mountain refuges that are used, without any kind of alteration, as resting places, or sometimes just to enjoy the delights of the night sky in Caldera de Tejeda.

3. Accommodation

In the space in question, there is only one hotel facility of any size; the Parador Nacional de Tejeda, with 80 beds. Apart from this facility, there are a few rural hotels located in the centre of the towns of Tejeda and Artenara. The rest are country cottages authorised as tourist accommodation, basically in caves. Some of the cave houses, used as first residences until very recently, have been recovered for use by local and foreign tourists. This sets the local accommodation apart from the rest and makes it unique, something that is important as it offers visitors a unique experience.

4. The Network of Viewing Points

The space also has a complete network of viewing points, situated at strategic points of the landscape and they generally blend in very well. The Cabildo of Gran Canaria is currently increasing its efforts to blend these spots into the surrounding countryside and to theme them with its Viewing Points Plan. Theming, with interpretation panels, is based on two criteria: they must help viewers to discover the cultural and natural attributes of the space by day; and by night, allow viewers to see the night sky and discover the main landmarks relating to the view that the ancient Canarians had of the sky.



Figure 5.h.2. The nominated property has an ample network of well sign-posted trails that run along several of the tracks of the ancient Canarians © Cabildo de Gran Canaria



Figure 5.h.3. Outside view of the Degollada de Peraza Interpretation Centre, which opens a window onto the landscape, the environment and the natural diversity of the space © Cabildo de Gran Canaria



Figure 5.h.1. Image of the museum sequence of the Risco Caído and the Sacred Mountains of Gran Canaria Interpretation Centre in Artenara © GAIA



Map 5.h.1. Visitor facilities map. Source: Cabildo de Gran Canaria.



5.i

Policies and programmes related to the presentation and promotion of the property

The last twenty-five years on Gran Canaria have been marked by intense activity regarding the promotion and publicising of the Island's heritage through the *Unidad de Patrimonio Histórico* (Historic Heritage Unit), which belongs to the Department of Culture of the Cabildo de Gran Canaria. During this time, the Unit has taken over the responsibility for this matter from the Autonomous Community of the Canary Islands.

Innovative strategies have been devised and many projects have been set up concerning both physical and intellectual access to our archaeological sites and to the relevant cultural landscapes of the Island. It is a project aimed fundamentally at finding models that lead to our cultural heritage sites being used intelligently.

The internal administrative tasks of selection, documentation and research needed work to be done externally concerning the publicising and appreciation of the value of such heritage. The urgent need arose to communicate, to share concerns, and to call for the participation of citizens in this new stage of management.

Aware that the degree of knowledge and appraisal of the heritage runs parallel to its conservation, this was the turning point in the awareness campaign of the Cultural Heritage of Gran Canaria, which, today, has become a benchmark for the whole Archipelago. A large part of its programmes are aimed precisely at strengthening the strategy of awareness-raising by:

- Raising awareness to gain the esteem and empathy of the population towards their cultural heritage.
- Raising awareness of the potential of heritage as a cultural, educational and sustainable development resource.
- Promoting cultural landscapes and legacy as a

source of reflection and instruction about the relationship between man and the environment as regards sustainability, at a time when new tourist and urban development concealed the importance of our legacy.

The first projects that were undertaken directly related to the property in question consisted of the setting up of web platforms and databases, in order to make them available to the public through the Internet. An example of this was PATRI-NET, launched in 2005 as a management platform within the framework of the European INTERREG IIIB programme. PATRI-NET is the acronym for valuing and promoting the Macaronesian cultural heritage through the Internet. This was precisely the main objective of the project and of the platform, namely, to develop strategies to publicise historic and cultural heritage and to exchange experiences between Madeira and Gran Canaria, through the networking of their cultural resources with different levels of access, according to the objective of the search by the different users.

Another of the strategies first undertaken to facilitate



← Figure 5.i.1. Guided visit to the Mesa de Acusa.Yacimientos Estrella Programme. © Cabildo de Gran Canaria

Figure 5.i.2. Volunteer programme "estodotuyo." © Cabildo de Gran Canaria



Figure. 5.i.3. Promotional brochure about the historic and cultural heritage. © Cabildo de Gran Canaria

access to the archaeological heritage came from the project entitled 'Parqueológica', with the aim of presenting, equipping and interpreting the most emblematic sites on Gran Canaria via a network of parks. The current Cueva Pintada Museum and Archaeological Park is the result of this initiative. Consequently, in 2009, an awareness campaign was designed with an application for all the people of Gran Canaria but the message was mainly directed towards a target audience of young people and users of the new media. This is why the

campaign focuses specifically on multimedia and audio-visual media: videos, television, websites (owned media, digital press, Internet advertising), mobiles (messaging, ringtones), etc., without underestimating its adaptation to the graphic media. This is how the project '*Es todo tuyo*' (It's all yours) came into being.

The heart of the project '*Es todo tuyo*' lies in the blog and in its social networks, having a community of almost 9,000 members on FACEBOOK, 2,100 on TWITTER, with more than 5,000 tweets posted, and over 105,000 reproductions on our *estodotuyo* channel on YOUTUBE.

I. Strategic lines of the Dissemination Plan

Apart from those objectives that are intrinsic to the disciplines themselves, the objectives of the Dissemination Plan drawn up for Risco Caído and the sacred mountains of Gran Canaria aim at the understanding and evaluation of the different elements that make the nominated property unique and exceptional. The maxim is: conservation as a necessity and sustainability as an attribute. The objectives are:

- To show the public in general and, in particular, the local population the importance of the archaeological, ethnographic and scenic heritage of the bid
- To promote knowledge and understanding of the management and conservation problems affecting the property.

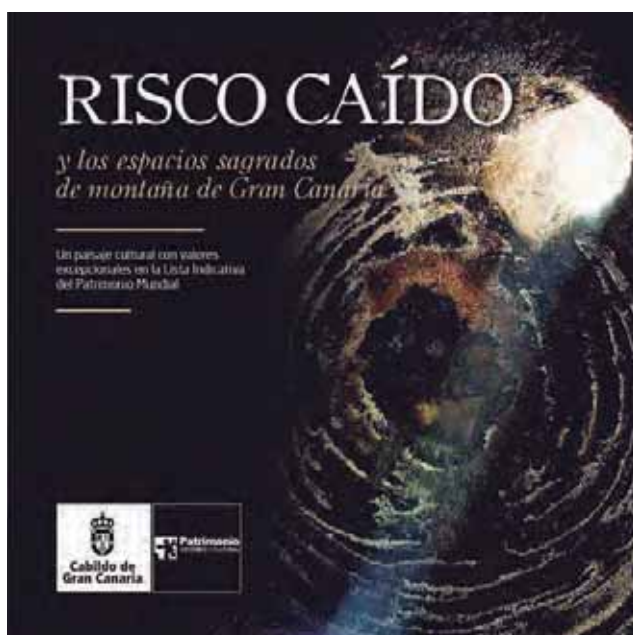


Figure. 5.i.4. Cover of the informative brochure about Risco Caído and the sacred mountains of Gran Canaria © Cabildo de Gran Canaria



Figure 5.i.5. Microsite included on the Historic Heritage web page of the Cabildo de Gran Canaria.

- To encourage a sense of respect and protection within the population, promoting the development of empathic attitudes and values. The aim is for emotion to provoke thought on the subject.
- To foster decision-making, commitment and action in favour of this fragile and valuable legacy.
- To show society that coexistence with conservation of the environment and sustainability is possible. A responsible and sustainable economy.
- To contrast experiences between heritage management professionals and establish discussion forums about the current and future state of the cultural properties.
- To encourage the participation of the population in the management and conservation of the site.

Likewise, these objectives are also applied transversally to the Starlight Initiative developed in the area and associated with the UNESCO MaB Programme, which focuses on the need to preserve the quality of the night sky in the area as an essential resource in the maintenance of the associated scenic, cultural and scientific values. This initiative is part of the actions of evaluation and the spreading of information about the nominated property in all aspects related to the skyscape.

The Dissemination Plan for Risco Caído and the sacred mountain areas of Gran Canaria is organised around

different activities, programmes and phases depending on the technical management, on the conservation and research tasks carried out in the area, on the horizontal inter-administration coordination and on the direct relation with the municipalities and local population.

2. The Risco Caído Conferences

In 2013, the Cabildo de Gran Canaria first launched the annual cycle of conferences entitled 'International Meetings of Risco Caído and the sacred mountains of Gran Canaria'. With the participation of international experts and researchers, this new initiative sought to raise to public debate the understanding of the characteristics, values and components of the Cultural Landscape.

Over the course of five years, the Conference has been established as a necessary annual event for everyone on the Island involved in the project and in the defence of the site, inviting the presence of local, national and international researchers from the most diverse fields concerned with the attempt to understand this landscape: archaeologists, geographers, ethnographers, biologists, geologists, architects, linguists, historians and managers of cultural landscapes. The Conference has also made it possible to establish direct links to the exchanging of ideas and experiences with other cultural landscapes and related sites on the World Heritage List such as: the



Figure 5.i.6. Cover of the programme for the IV Conference on Risco Caído and the sacred mountains of Gran Canaria.
© Cabildo de Gran Canaria

Causses and the Cévennes, Mediterranean agro-pastoral Cultural Landscape (France), Cultural Landscape of the Serra de Tramuntana (Spain), Antequera Dolmens Site (Spain), Brú na Bóinne (Ireland) and the Megalithic Temples of Malta.

The Conference has been the initial meeting point for other entities in charge of the defence of the nominated property and the research into its characteristics. This is the case of the Royal Institute for Amazige Culture - IR-CAM (Morocco), now fully integrated into the initiative, the participation of which was managed through the UNESCO Rabat Office.

At the same time, each of the Conferences has generated the development of a scientific mission to the area, favouring the valuation in situ of cultural landscape elements, with the participation of experts from various fields.

Besides the presence of an interested public and experts in the field, along with the main Canarian and island scientific institutions, it is important to point out that the Conferences last an average of about one week and have always enjoyed the presence of local associations related to the sacred sites, as well as elected representatives of the different municipalities. From the very beginning, the idea was to establish direct links between academia and scientific knowledge and the real 'owners' of these places.

The Scientific Committee

Within the framework of the III Risco Caído Conference, which was held in April 2015, the International Scientific Initiatives Committee was made up of professionals, academics and researchers from different fields who came together to understand and interpret the site and its exceptional characteristics. The Scientific Committee is formed by 46 experts in the various fields and its mission is to:

- Deepen knowledge of the resources and attributes of the property, including its archaeological, archaeoastronomical, architectural, artistic, spiritual, natural, landscape and scientific values.
- Provide new guidelines and criteria relative to the exceptionality, authenticity and integrity of the properties in question.
- Carry out, if necessary, specialised studies or reports that allow a better understanding of the relevant characteristics of the site and its use.
- Provide new multidisciplinary perspectives on the values of the nominated properties.



Figure 5.i.7. Attendees at the Conference on Risco Caído and the sacred mountains of Gran Canaria in 2015 (Jornadas de Risco Caído). © Cabildo de Gran Canaria



Figure 5.i.8. Speakers at the 2014 conference attended by the President of the Spanish National Commission of UNESCO and representatives of the IUCN and ICOMOS.
© Cabildo de Gran Canaria

- Promote active international scientific cooperation on the study when compared to other similar properties.

The Scientific Committee has held five plenary meetings and eight specific meetings focusing on the different aspects of the nomination: archaeological, archaeoastronomical, landscape, environmental, ethnographic, tourist and public use, quality economies and sustainable development. A feature of these meetings is the extensive publication of the results passed on to the media via the communications department of the Consejería de Cultura del Cabildo. The criterion here is, as in other cases, to continually bring together the scientific dimensions of the different aspects of the nominated property and disclose them to as many people as possible, especially to the local population.



Figure 5.i.9. Picture of the 2017 plenary session of the Scientific Committee on Risco Caído and the sacred mountains of Gran Canaria in 2017. © Cabildo de Gran Canaria

3. Interpretive and dissemination actions

Since 2009, the Cabildo de Gran Canaria has launched a wide range of actions based on guided visits to the main events that have happened in the area, with a strong emphasis on the accuracy of the interpretation.

Applications for these visits are limited, in order to maintain conservation and quality standards. The capacity of many archaeological and heritage sites means that a maximum and minimum number of people per visit must be strictly established, so as not to bring about the deterioration of the archaeological areas, and, at the same time, take full advantage of the visit.

The role of professional guides is not only limited to interpreting the site, but also helps to carry out surveillance. The guide fills in a report form which provides information on the state of conservation of the area

Programa de visitas guiadas mayo - septiembre 2016

Yacimientos estrella
RISCO CAÍDO
Un calvario solar para los antiguos canarios.
Wladimir

El conjunto sagrado de Risco Caído, recientemente incluido en la lista indicativa para su declaración como patrimonio mundial, constituye uno de los núcleos de cuevas de los antiguos canarios más espectaculares de Gran Canaria. Destaca de forma especial la cueva nº 6, un espacio de planta circular, con una cúpula de más de 4 metros de altura. En su todo Este, coincidiendo con el punto más elevado, se abre una claraboya rectangular por la que penetra la luz que baña los grabados.

Entre los equinoccios de primavera y otoño, el haz de luz recorre la pared del fondo bañando en su recorrido los grabados públicos, imprimiéndole al yacimiento un carácter marcadamente religioso y astronómico.

¡La experiencia es emocionante!

El Cabildo de Gran Canaria diseña anualmente este programa de visitas guiadas, con el objetivo de facilitar su conocimiento, interpretación y disfrute, garantizando en todo momento la conservación de este importante y frágil yacimiento.

• Punto de encuentro: fachada de la Iglesia de Artenara y salida en guagua hacia Risco Caído: 6.45 h.
• Hora estimada de llegada y observación del efecto astronómico: 8.00 h.
• Plazas limitadas.

Información e inscripción: desde el 3 de mayo 2016
OFICINA DE INFORMACIÓN TURÍSTICA DE ARTENARA.
Tf. 928 666 117 ext. 12. De lunes a viernes de 9:00 a 14:00 h.
artenaratorismo@gmail.com

Figure 5.i.10. 2016 brochure of guided visits to Risco Caído, within the framework of the Yacimientos Estrella Programme.
© Cabildo de Gran Canaria



Figure 5.i.11. Interpretive activities at Roque Bentayga. Guided tour within the framework of the Yacimientos Estrella (Star sites) Programme. © Cabildo de Gran Canaria

or property in question or, for example, information as to whether the programme is suitable for raising public awareness about the heritage.

The most outstanding interpretation programmes which have become permanent activities are the following:

Yacimientos Estrella (Star Sites)

The Yacimientos Estrella programme aims to publicise, sensitise and enhance the archaeoastronomical heritage of the Island through special guided tours designed to observe the skies from the most emblematic archaeological sites.

The programme started in 2009, which was declared the International Year of Astronomy by the United Nations. The Astronomical Society of Gran Canaria and IAC (Instituto de Astrofísica de Canarias) collaborated on a series of guided tours coinciding with the solstices



Figure 5.i.12. Interpretive activities in the context of the Open Heritage Programme © Cabildo de Gran Canaria

and equinoxes to watch the sunrise or sunset from the most emblematic archaeological sites on the Island and see the effect both had on the most important landmarks. 'Yacimientos Estrella' refers to the interpretive archaeoastronomical activities on Gran Canaria, the visit to Risco Caído and the sacred mountain areas being the focal point.

The visit to Risco Caído, and in particular to Cave 6, requires various precautionary measures and restricted use. Due to the fragility of the site and to the conservation and research work carried out there, limited access has only been allowed to small groups under the supervision of specialists, ensuring at all times the preservation of this important and fragile site, which is accessed on foot after almost half an hour's walk along a path from which you can see the impressive massifs of the summit. During 2012, 200 places were reserved for visits. In 2013, there were 240 visits; in 2014, 600 visits; and in 2015, 720 visits. In 2016, as a prevention plan for the site, 36 visits were carried out consisting of 432 visitors.

Open Heritage Programme

This initiative is part of one of the central ideas behind the Historic Heritage Unit. It consists of guided visits with the purpose of presenting the procedures that are carried out at the cultural property of Gran Canaria and explaining criteria and methods used in the tasks of conservation and restoration. The idea is to enter into direct contact with professionals at the property before the start of the procedure, thus making the population feel part of the process.



Figure 5.i.13 Members of the scientific mission during the Conference held in 2015. © Javier Gil León

Interpreted visits to the troglodyte Cultural Landscapes

These activities are carried out within the framework of the 'Troglodyte Cultural Landscapes of Gran Canaria', which have been included in the national catalogue entitled "100 Cultural Landscapes of Spain". Of the four units represented in the activities, three of them belong to the area of Risco Caído and the sacred mountain areas of Gran Canaria:

- Acusa, "the table of time" (Artenara)
- Bentayga or "the pillars of the sky" in Tejeda
- Barranco Hondo, "the use of the vacuum," between the municipalities of Artenara and Gáldar

The guided visits to these places aim at a holistic vision to understand the Cultural Landscape as a dynamic reality, a result of the processes that have taken place at the site over time. It is a complex process because the site is composed of natural and cultural, material and immaterial elements.

4. Multimedia resources and outreach

The Dissemination Plan for Risco Caído and the sacred mountains of Gran Canaria is based on an extensive catalogue of multimedia resources, publications and activities on social networks:

Microsite Risco Caído

Within the framework of the Dissemination Plan, a microsite has been set up to respond to the growing interest in the site. This microsite is located within the domain <http://riscocaido.grancanaria.com/>, which is also linked to the two web pages of the Historical Heritage of the Cabildo de Gran Canaria:

[Http://www.grancanariapatrimonio.com/](http://www.grancanariapatrimonio.com/)

[Http://www.estodotuyo.com/](http://www.estodotuyo.com/)

The content of the microsite deals with the history of the site and its archaeoastronomical features, while, at the same time, relating it to the cultural landscape within which it lies. It presents the different actions carried out for its conservation and responsible use and includes different links associated with the guided visits, so that the user can get information about the next visits to the site and the contents of the Study Days related to Risco Caído.



Fig. 5.i.14 Interactive GIS viewer on the BiosphereSmart platform www.riscocaido.com. © Cabildo de Gran Canaria

Videos, images and advanced systems of geographic information, help to understand the heritage site, while, at the same time, enhancing the user's experience of the visit.

Multimedia

The website www.estodotuyo.com, belonging to the Culture and Historic Heritage Service, houses the profuse audiovisual material relating to the nominated Cultural Landscape. On it, you can see the different YouTube videos about the heritage in question, including a virtual tour of the area with the help of drones, 3D simulations, time lapses, as well as recordings of the various presentations made at the Conference on Risco Caído, alongside other conferences and events of interest related to the matter.

Interactive GIS viewer

The presentation and publicising of the nominated



Figure. 5.i.15. Guided tours to archaeoastronomical sites at the summer solstice. Yacimientos Estrella Programme. © Cabildo de Gran Canaria

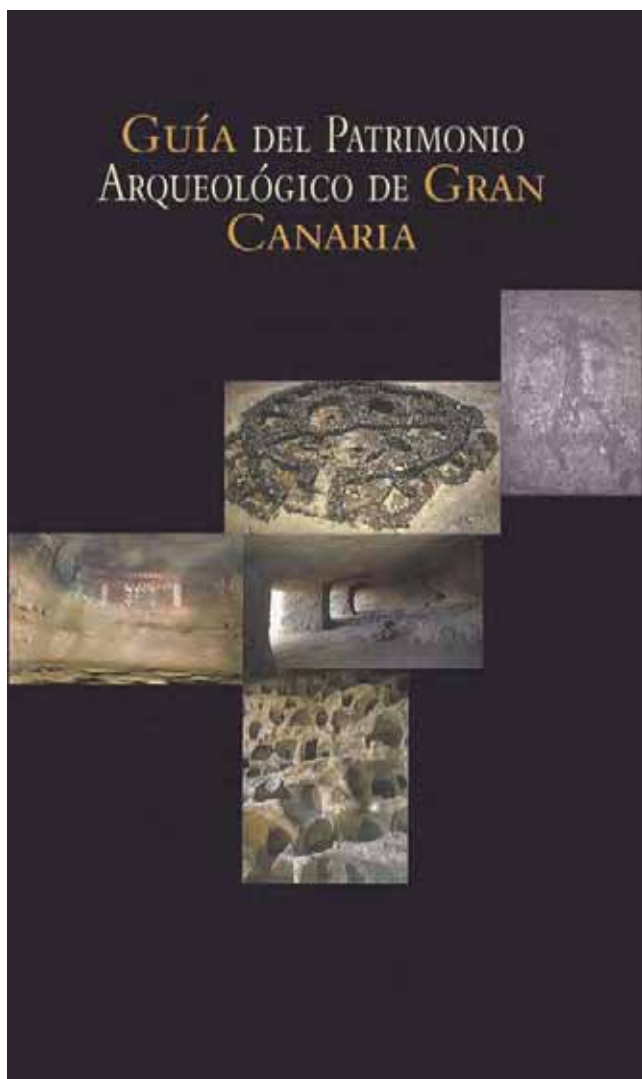


Figure. 5.i.16 The Guide to the Archaeological Heritage of Gran Canaria contains a detailed description of the main attributes of the Cultural Landscape. © Cabildo de Gran Canaria

property has a really innovative tool aimed at the local population, as well as at decision makers, planners and researchers. This is an interactive web-GIS viewer which allows access to all the pertinent information through the Internet, supported on a powerful System of ESRI Geographic Information online. The viewer is inserted in the UNESCO platform called Biosphere Smart, which is the UNESCO Field Observatory associated with the MaB Programme.

The viewer has information maps which are necessary to put the attributes and components of the nominated property into context, such as: scope of the properties, zoning, geology and geomorphology, land uses, natural spaces, habitats, infrastructures, population, etc. At each point of interest, GeoTips allow you to open georeferenced information windows containing all the related information, such as the description, reference documents, significant images, videos and support mapping.

Social networks

The idea behind the Dissemination Plan is the visualisation of its different activities through social networks. Based on the slogan "It's all yours", this brand has been used to give information about the nominated properties and the different related activities on the online platforms linked to Facebook, Twitter, YouTube and Flickr.

5. Other initiatives for presentation of the nominated property

Portal to the Heritage of Astronomy

En 2011 se habilita el Portal del Patrimonio de la Astronomía 2011, the Portal to the Heritage of Astronomy was set up as a tool for the development of the UNESCO Thematic Initiative, 'Astronomy and World Heritage' and the update of the ICOMOS-IAU Thematic Study entitled 'Heritage Sites of Astronomy and Archaeoastronomy' in the context of the World Heritage Convention. The web portal includes case studies of the first report to which other relevant cases of astronomical heritage worldwide are added, whether they are included or not in the World Heritage List or national indicative lists. The web portal provides updated tools for the definition, identification and evaluation of the importance and, potentially, exceptional universal value of this type of heritage. The new study cases called 'extension of case studies' are also incorporated, updating the identification of this heritage, which was carried out in the 2010 Thematic Study, together with relevant information for its protection, conservation, management and promotion.

In 2014, the case of Risco Caído and the sacred mountain areas of Gran Canaria is added as the most relevant exponent of emblematic properties in the category of aboriginal uses of astronomy.

Public presentations and conferences

During the last seven years, more than two hundred acts and conferences have been recorded on the Island in relation to Risco Caído and the sacred mountain areas of Gran Canaria. The presentations and conferences have been held in the most diverse places, ranging from civic centres in the participating municipalities, universities, residents' associations to social centres on the Island. Extensive work has shown that today the nominated Cultural Landscape is more than just an expectation

but has become a tangible reference of identity and the Island's cultural and environmental reality.

Numerous presentations have been held outside the Island in the rest of the Archipelago, presenting the site as common heritage of all Canarians. There have also been relevant national and international meetings. In the latter case, there was a presentation at the National Heritage Management and Restoration Fair (ARPA 2016), where there was a stand with exhibition material, made up of a 360° video accompanied by multimedia resources, allowing visitors to immerse themselves in the main sites and enjoy their exceptionality and realise the proposed scope of the nomination.

This type of material is also the basis for the spreading of information in the nominated area, where, since 2016, meetings have been held jointly with municipalities and local associations at the nominated Cultural Landscape site, sponsored by the Department of the Consejería de Participación Ciudadana del Cabildo de Gran Canarias, the department responsible for citizens' participation.

The participation in the parallel event 'Astronomy and World Heritage Initiative', held at the 39th meeting of the World Heritage Committee held in Bonn in 2015, stands out among other presentations at an international level. Also featured are the presentations at scientific symposiums such as 'The Road to the Stars' organised by INSAP and SEAC in 2017.

The Biosphere Reserve and the Starlight Tourist Destination

A large part of the designated property is found within the Gran Canaria Biosphere Reserve. An agreement has been established with the Council for the Biosphere Reserve for the spreading of information and the promotion of the aspects related to the landscape, the environment and the conservation of the biodiversity. This agreement has been drawn up to complement and unify all actions and criteria, including the promotion of initiatives for sustainable development within the area. The effective coordination of all these actions is endorsed in the organisational chart of the Management Plan for the property (see Section 5.e).

The whole area is certified as a Starlight Tourist Destination. This certification includes a rigorous control over the scientific quality and authenticity regarding the informative and interpretive contents related to promot-



Figure 5.i.17 Inauguration of the Risco Caído stand at the National Heritage Management and Conservation Fair (ARPA 2016), with the attendance of the President of the "Junta de Castilla y León", alongside José de León, who is responsible for the project at the Cabildo de Gran Canaria © Cabildo de Gran Canaria



Figure 5.b.18. Presentation of Risco Caído at the parallel event of the 39th meeting of the World Heritage Committee 'Astronomy and World Heritage Initiative: achievements and issues' with the presence of Anna Sidorenko (World Heritage Centre - Astronomy and World Heritage Thematic Initiative), Michel Cotte (ICOMOS), Clive Ruggles (UAI) and Cipriano Marín (Coordinator of Risco Caído Nomination). © UNESCO - Astronomy and World Heritage.



Figure 5.i.19 Travelling stand to support the actions of the publicising of the nominated property including 3D tours of the main events related to the Cultural Landscape © Cabildo de Gran Canaria

ing the cultural and natural values of the night sky. It highlights the fact that the guides, both tourist and educational, must be properly trained and certified.

The support of their Majesties, the King and Queen of Spain

On April 24, 2017, their Majesties the King and Queen of Spain visited Gran Canaria. Their visit included, among other engagements, a meeting to learn firsthand the progress of the proposed bid for inclusion of the nominated property in the World Heritage List. This act had extensive public repercussion at local, national and international levels. His Majesty, King Felipe VI, publicly expressed his support for this nomination and for the objectives outlined in the project.

6. The public commitment of local authorities

On October 19, 2016, in an unprecedented expression of public commitment on a local basis, all the elected

representatives of the four municipalities involved in the nomination bid, with or without government powers, as well as elected members of the Cabildo de Gran Canaria, signed the so-called Declaración de las Cumbres de Gran Canaria (Declaration of the mountain areas of Gran Canaria). This proves the strong public commitment in favour of the inclusion of Risco Caído and the sacred mountain areas in the UNESCO World Heritage List, going far beyond the objective by recognising the necessary defence of the values of the area for present and future generations.

The declaration of the local authorities has become one of the most powerful tools for raising public awareness and for the presentation of the nominated property to the public, especially since it is the first time that there is a public commitment transcending political differences and focusing clearly on the defence and preservation of the common heritage. The full text of the resolution adopted is included in the attached document.



Figure 5.i.20. Family photo of the act of presentation and support by their Majesties, the King and Queen of Spain for the initiative and nomination of Risco Caído and the sacred mountains of Gran Canaria to be included in the World Heritage List, with the presence of the President of the Government of the Canary Islands, President of the Cabildo de Gran Canaria, President of the Autonomous Parliament of the Canary Islands, Mayors of the area involved, Councillors of the different institutions and persons in charge of the nomination. The act was held at the Casa de Colón on 24 April 2017. © Cabildo of Gran Canaria

THE COMMITMENT OF LOCAL AUTHORITIES

in favour of the nomination of
RISCO CAIDO AND THE SACRED MOUNTAINS OF GRAN CANARIA
for inscription on the UNESCO World Heritage List

Meeting of elected local representatives - Final Resolution

Highlands of Gran Canaria, October 19, 2016



We, elected from the municipalities of Agaete, Artenara, Galdar and Tejeda and from the Cabildo de Gran Canaria (Gran Canaria Island Council), meeting in Tejeda, on 19th October, 2016,

Aware the duty to identify, protect, conserve, rehabilitate and pass on the cultural and natural heritage of the region to future generations, in accordance with the spirit of the Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO, 1972):

Considering that the area known as "Risco Caído and the Sacred Mountains of Gran Canaria" was included as a Cultural Landscape on UNESCO's World Heritage Tentative List in February 2016;

Taking into account the exceptional archaeological, archaeoastronomical, ethnographic, landscape and natural value of our region, underpinned by the colossal Caldera de Tejeda as evidenced by the sanctuaries, astronomical sites, cave settlements, rural landscapes and living traditions that represent an essential part of the collective memory of our people;

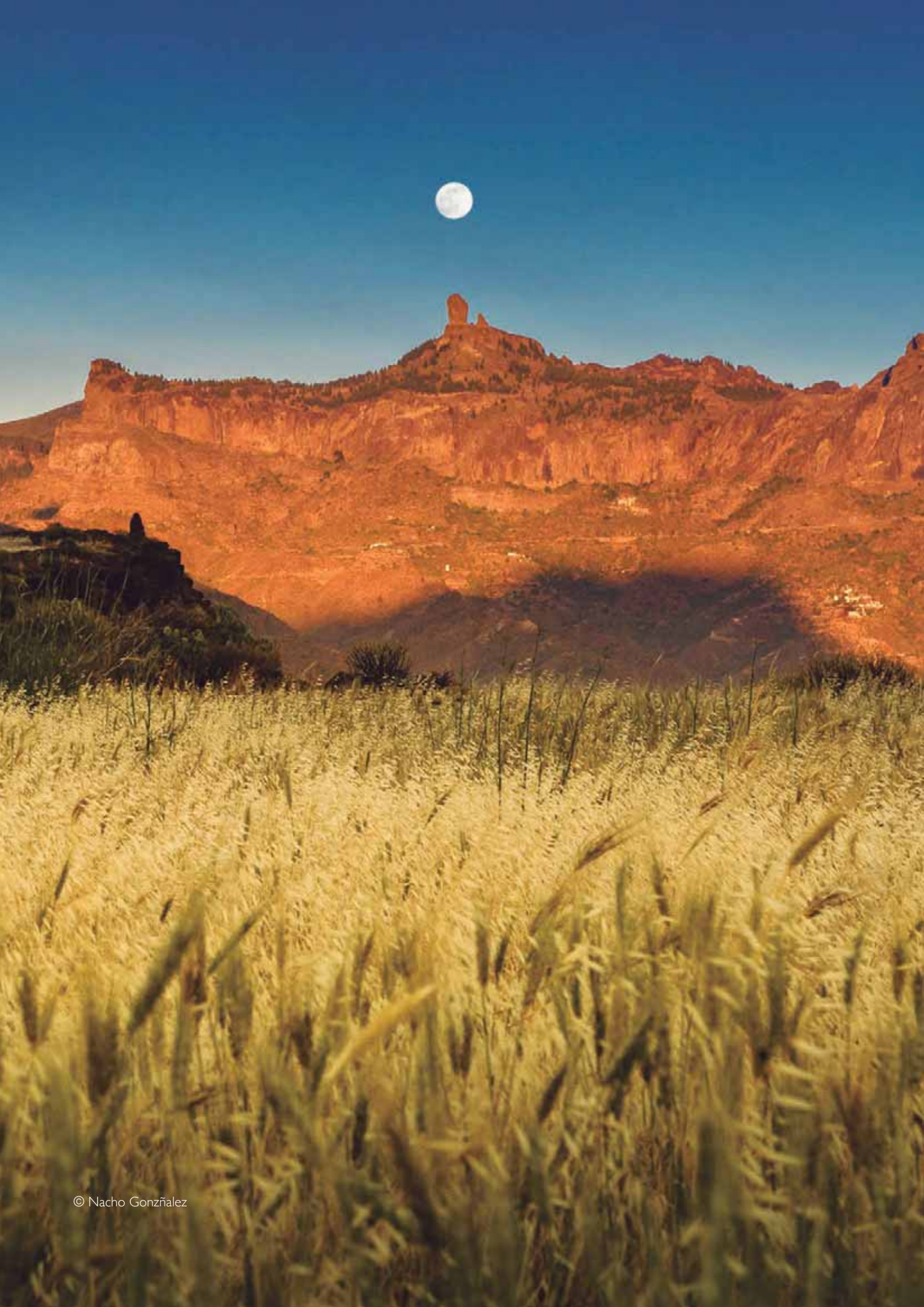
Convinced that these cultural and natural heritage sites are of exceptional interest that calls for their conservation as expressions of world heritage, representing the odyssey of an island culture unique on our planet, trapped between the sky and the earth, that emerged with its own identity from its Berber roots;

Considering the need to establish effective alliances between all parties, including those living in the area in question, the civil society of Gran Canaria and the scientific institutions and entities that work in the region, in order to forge a commitment to recover, enrich and guarantee the survival of this shared legacy for the benefit of all and for the local population in particular.

Agree,

1. Unanimously support the nomination of "Risco Caído and the Sacred Mountain Sites of Gran Canaria" and the process for its inscription on UNESCO's World Heritage List.
2. Commit to take all the actions required in order for the great value of this exceptional common heritage to be recognised and for it to be better conserved.
3. Help to promote the value and importance of our heritage within the region, starting in schools, neighbourhood associations, companies and other organisations working in the area.
4. Help to maintain living traditions and ancient knowledge that makes up the identity of this territory, expressing a model that is in harmony with nature and cultural heritage and that inspires the present and future generations on the island.
5. Encourage the active participation of the local people and organisations in the inscription process, making suggestions and proposals relative to the sustainable management of the components of the proposed cultural landscape.
6. Promote responsible use of the heritage in the area, aimed at education, research and knowledge and responsible tourism.
7. Make the effort required to promote the heritage value of our region both on a regional and an international level and establish appropriate partnerships with other sites in the common defence of expressions such as these.

On "Las Cumbres de Gran Canaria", 19th October 2016



5.j Staffing levels and expertise

As mentioned in Section 5.g, almost 20 people (with higher or intermediate qualifications) are currently involved in directly protecting and managing the cultural properties of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria. On top of this, there are the expert guides hired for guided tours of the emblematic sites like Risco Caído and Bentayga.

Then, there is a large contingent on the ground, deployed by the Regional Ministry of the Environment in tasks of environmental conservation and the prevention of risks such as fires. There is a total of 75 people for this work, including: environment agency personnel, supervisors, forepersons, officers, staff and special vehicle drivers. Some of them have seasonal contracts.

The process put in place to unify the public management system of the Cultural Landscape of Risco Caído and the Sacred Mountains of Gran Canaria Network of Interpretation Centres will require local staff suitably trained for this work, with the support of a high degree of the right know-how for the job. These same needs have also been considered for the future Cultural Landscape Management, Co-ordination and Guard Centre.

The nomination process has also set new objectives and, therefore, has brought to light new needs in this field. One example of this is the need for the right expertise in the area of landscape restitution, especially in the area around the most significant attributes of the property. This requires a high degree of knowledge of the original vegetation and paleo-landscapes.

The new management challenges however, give rise to other skill-building and training needs, especially in consolidating responsible and innovative tourism models for the area, and promoting sustainable local produce. Enhancing levels of training and expertise should not only affect action from the public sector, but also, and very particularly, local stakeholders, as this is a living cultural landscape. These new challenges that need addressing in the immediate future are synthesised in the following important sections:

- Arbitrate skill-building and training measures for local producers with respect to marketing and promoting their products and incorporating sustainability and authenticity criteria: cheeses, medicinal herbs, farm produce, crafts
- Need for advanced expertise and training for the new local guides specialising in interpreting archaeological and ethnographic heritage
- Rigorous, science-based training for Starlight guides
- Training and expertise for other tourism operators, like the owners of rural accommodation and providers of services aimed at promoting themed products and services and sustainability in their activities as a whole
- Training and expertise in new information technology

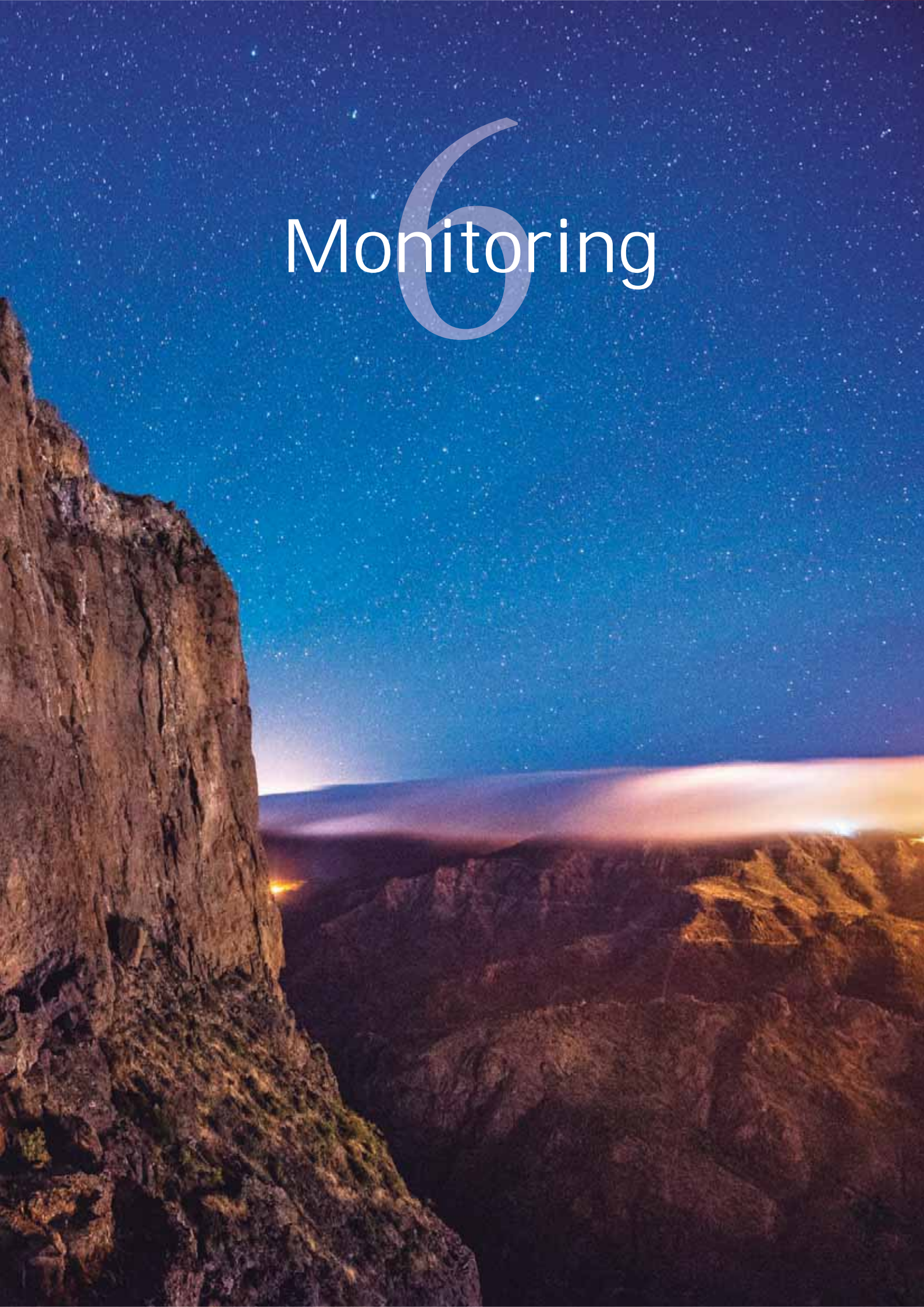


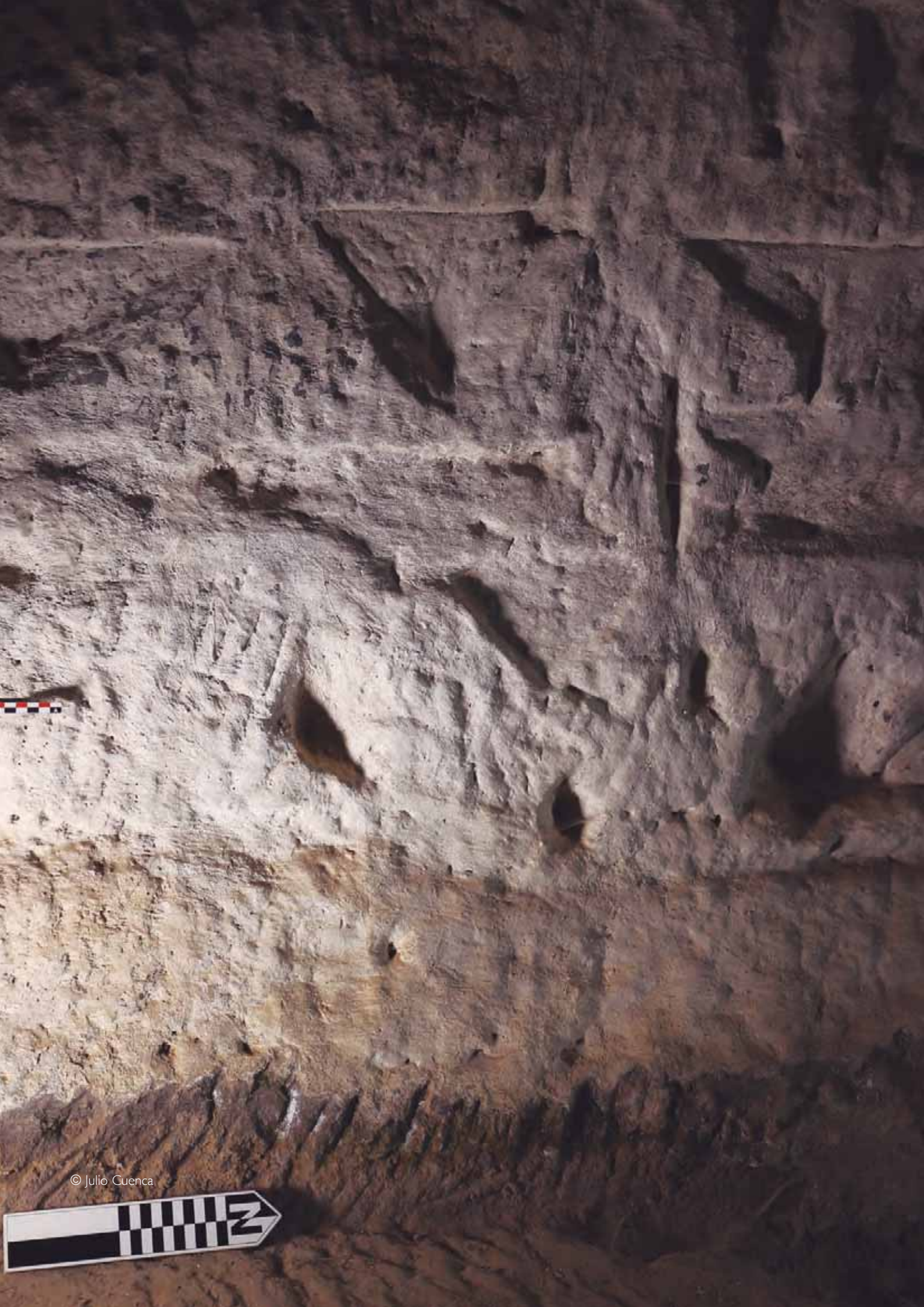
Figure 5.j.1. The integral management of the nominated property is guaranteed by the deployment of a large detachment of human resources for its conservation, management and supervision.
© FEDAC



Monitoring

6





© Julio Cuenca



6.a

Key indicators for measuring state of conservation

Monitoring is an important way of protecting the potential Outstanding Universal Value (OUV), authenticity and integrity of the nominated property. In the Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape, there are mainly three kinds of monitoring: (1) Monitoring the property's land and skylines (natural elements), (2) Monitoring the property's attributes, (3) Transmission of the Outstanding Universal Value.

The choice of indicators gives the same weight to the reliability of the sources, the availability of the data, their reliability and their frequency. Tables 6.a.1, 6.a.2 and 6.a.3 show the key performance indicators selected in accordance with the established categories.

Table 6.a.1 Monitoring the property's land and skylines – Natural elements

Categories	Indicator	Monitoring Cycle	Records kept by
Factors affecting the property and the surrounding environment			
Climate change	Temperature changes over time: Air temperatures	Continuous	AEMET / Meteorological Agency
	Co2 emissions [t-eq-Co2]	Every five years	Cabildo de Gran Canaria / ITC
Sky Quality	Darkness [mag/arcsec ²]	Every two years	Cabildo de Gran Canaria / IAC
	% adapted lamps [%]	Every two years	Cabildo de Gran Canaria / Town Councils
Natural disasters	Area of forest damaged by fires [ha]	Every year	Cabildo de Gran Canaria / Gobierno de Canarias
Impacts of urban infrastructure	Length of overhead lines (electricity and telephony) [m]	Every five years	Cabildo de Gran Canaria / Town Councils
	Length of new underground electricity lines [m]	Every year	Cabildo de Gran Canaria / Town Councils
	New buildings [n°]	Every year	Cabildo de Gran Canaria / Town Councils
Biodiversity changes	Biodiversity Losses (species) [n°]	Every five years	Jardín Botánico
	Number of habitat restoration projects and restored surfaces [n°]	Every two years	Cabildo de Gran Canaria
Water quality of dams and springs	pH, COD, harmful substances, etc.	Every five years	Cabildo de Gran Canaria
Views and landscapes	Number of visually obstructive elements at viewpoints [n°]	Every year	Cabildo de Gran Canaria
	Loss of terraced soil [ha]	Every five years	Cabildo de Gran Canaria

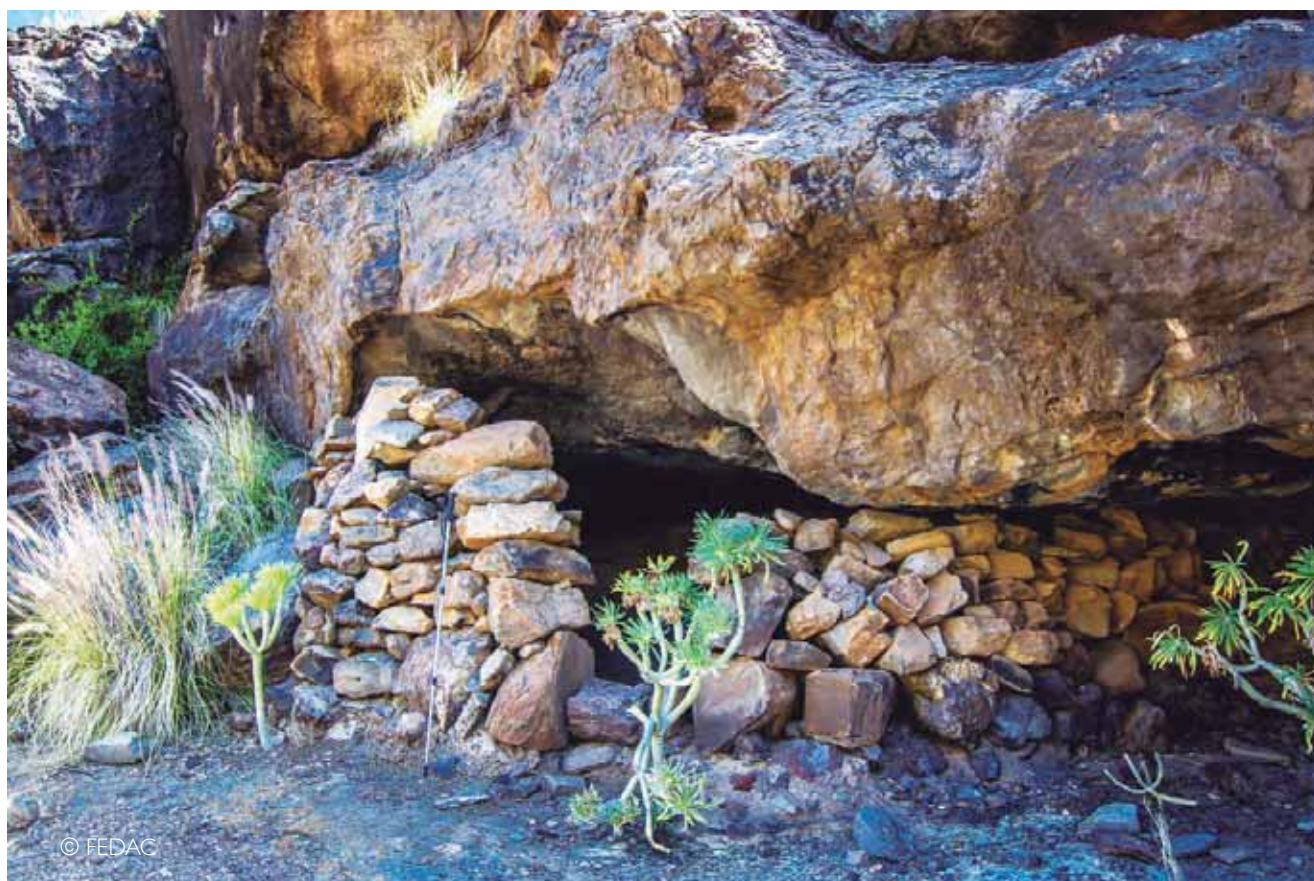
Categories	Indicator	Monitoring Cycle	Records kept by
Sustainable mobility	New roads [km]	Every year	Cabildo de Gran Canaria
	Enabled trails [n°] and [km]	Every year	Cabildo de Gran Canaria
	Traffic pressure (Aforos) [n°]	Every two years	Cabildo de Gran Canaria
	Congested points [n°]	Every year	Cabildo de Gran Canaria / Town Councils / Dirección General de Tráfico
	Visitors public transport [%]	Every year	Cabildo de Gran Canaria / Town Councils
Tourist and visitor pressures	Tourists by day and year [n°]	Every two years	Cabildo de Gran Canaria / Town Councils
	Weekend visitors	Every year	Cabildo de Gran Canaria / Town Councils

Table 6.a.2 Monitoring the property's attributes

Categories	Indicator	Monitoring Cycle	Records kept by
Factors affecting the the property's attributes			
Impacts on archaeological sites	Number of cultural property damage reports [n°]	Every year	Cabildo de Gran Canaria
	Registered infringements [n°]	Every year	Cabildo de Gran Canaria
Visitor Pressure by site	Sites with carrying capacity studies [%]	Every two years	Cabildo de Gran Canaria
	Number of visitors by site and sites exceeding carrying capacity [visitors / day / visitors / hrs] and [%]	Every year	Cabildo de Gran Canaria
Conservation and restoration	Restoration and conservation projects [n°]	Every year	Cabildo de Gran Canaria
	Restored elements out of the total number of elements that need work [%]	Every two years	Cabildo de Gran Canaria
Risks / Maintenance	Sites with structural problems [n°]	Every two years	Cabildo de Gran Canaria
	Stability of the cliff problems [n° sites]	Every year	Cabildo de Gran Canaria
	Actions of conditioning of the surroundings of the sites [n° projects]	Every year	Cabildo de Gran Canaria
Investments	Total investments in maintenance, restoration and conservation [€/year]	Every year	Cabildo de Gran Canaria

Table 6.a.3 Transmission of the Outstanding Universal Value

Categories	Indicator	Monitoring Cycle	Records kept by
Factors affecting the the property's attributes			
Local Satisfaction	Degree of the population's commitment to the conservation - poll [%]	Every three years	Town Councils
Outreach	Participants in seminars, conferences etc. concerning the nominated property [n°]	Every year	Cabildo de Gran Canaria
	Information provision sources by pamphlets [n°]	Every year	Cabildo de Gran Canaria
	Media Reviews [n°]	Every year	Cabildo de Gran Canaria
	Web Views [n°]	Every year	Cabildo de Gran Canaria
	Visitors to the Interpretation Centers [n°]	Every year	Cabildo de Gran Canaria
Partnership	Associations and local entities in the nominated property associated with the project [n°]	Every year	Cabildo de Gran Canaria
	Canrians, national and international institutions and entities associated with the initiative [n°]	Every year	Cabildo de Gran Canaria
Volunteers	Number of participants in environmental and heritage conservation activities [n°]	Every year	Cabildo de Gran Canaria
Science	Citations [n°]	Every two years	Cabildo de Gran Canaria



6.b

Administrative arrangements for monitoring property

Monitoring, including the periodical reports to be submitted to the World Heritage Committee, will be undertaken by the Cabildo of Gran Canaria as the entity responsible for the proposed nomination and for monitoring the property, in line with all its cultural, environmental, regional and scenic competences. In accordance with Chapter V of the “Operational Guidelines for the Implementation of the World Heritage Convention” (2015), information on the condition of the property will be collected and recorded every year and a periodic report will be compiled every six years, based on this information, assessing the state of conservation and management, which will be submitted (in English) to the World Heritage Committee via the UNESCO World Heritage Centre.

The Cabildo of Gran Canaria will be the entity responsible for gathering and filing all information gathered from monitoring the property and their Culture and Historic Heritage Service, which reports to the Department of Culture, is designated to safeguard, elaborate and gather

this information and to draft the mandatory periodic reports. This includes gathering the information from all the cultural heritage protection, urban planning and environmental inspections carried out.

This task involves co-ordinating with the municipal councils included in the nominated property, with the Canary Island Government and with other centres reporting to the Spanish central government that engage in permanent or periodic monitoring of the different environmental, geological, climatic and social aspects that affect the nominated property.

From a technical standpoint, in the immediate future, it will be the Cultural Landscape of Risco Caído and the sacred mountains of Gran Canaria Management Centre, located on the site itself and reporting to the Cabildo of Gran Canaria, that will, in practical terms, undertake the task of guarding the property on the ground, monitoring all the parameters and will draft the reports, with the human resources scheduled for the purpose.



6.c

Results of previous reporting exercises

In recent years many specific and general studies and reports on the attributes, components and elements of the nominated Cultural Landscape have been carried out in the area in which the nominated property is located.

The Archaeological Maps that Museo Canario commenced work on as part of the Cuenca de Tejeda Spatial Plan is of particular interest in terms of archaeological heritage. These laid the groundwork for the inventories and reports that were subsequently generated for the nomination and for the island generally. The Archaeological Maps were reviewed and updated between 2004 and 2005 by order of the Department of Culture and Historical Heritage of the Gran Canaria Island Council within the framework of the Patri-net project, which is included in Interreg Europe Programme III B Azores, Madeira, Canary Islands.

Also worthy of mention is that the Inventory of Rock Art Manifestations in the Caves of the ancient Canarians was finalised in 2007 by PROPAC at the request of the Gran Canaria Island Council and was coordinated by Julio Cuenca. The inventory specifically deals with the area in which the nominated property is located and offers abundant information not only on the details of each property, but also on any potential issues and conservation recommendations.

Ethnographic heritage, both tangible and intangible, has also been studied extensively and an inventory has been compiled using the Ethnographic Maps, the first versions of which were also drawn up in 1988. As with the Archaeological Maps these were reviewed in the 2004 and 2005 period by FEDAC (Foundation for Ethnography and Craft Development in the Canary Islands), an autonomous organisation that reports to the Gran Canaria Island Council. A further update was released in 2007 and reviewing an updating continues on an on-going basis. As is the case with archaeological maps a detailed inventory is available with files for each property.

This documentation work has intensified considerably since the Gran Canaria Island Council took over full responsibility for cultural heritage and the environment in 1992.

In terms of the environment, it is important to note that a large number of reports and extensive studies have been carried out in the process of developing legal concepts for protection of the area. When developing its planning system, each protected area (this affects practically the entire area) has access to environmental status reports that include landscape, biodiversity, geodiversity, cultural heritage, and the uses and tensions in each case. The same applies to the development of the SACs included in Natura 2000, although in this case the information is more environment-related.

As the Gran Canaria Island Management Plan (Plan Insular de Ordenación de Gran Canaria) develops – it is currently under review – a set of support reports is generated that, in this case, includes all the cultural and environmental dimensions of the property.

Alongside this, numerous specific studies have been developed by the two universities in the Canary Islands (ULPGC and ULL), the Museo Canario museum and institutions such as Jardín Canario. Also worthy of special mention are the specific reports drawn up by the respective Island Council Ministries in areas such as: agriculture and livestock rearing, water, public infrastructure, social environment, sustainable development and participation. In this latter case, of particular interest are the World Heritage nomination participatory process reports prepared by the Gran Canaria Island Council Citizen Participation Unit.

As most of the nominated property is included in the Gran Canaria Biosphere Reserve, the results of the mandatory reports apply here. As in all UNESCO Biosphere Reserves the ten year periodic review report applies, based on article 4 of the Statutory Framework.

The last report was issued in 2010, with the approval of the Spanish Scientific Advisory Committee of the MAB Programme dated 15/09/10. Questionnaires from 2013, 2014, 2015 and 2016 on Monitoring Spain's Biosphere Reserves are also available.

Innovative aspects of Cultural Heritage preservation that are worthy of special mention are two reports related to the quality of the night sky: the "Measuring the Quality of the Sky Report" compiled by the University of Las Palmas de Gran Canaria (2017) for the nominated property, and the Luminaire Inventory and Diagnostics and light pollution limitation, commissioned by Gran Canaria Island Council, which is currently being conducted by the Canary Island Technological Institute (ITC).

All of the aforementioned information is held in trust by Gran Canaria Island Council in its different departments.

During the nomination process for inclusion of Risco Caído and the Sacred Mountains of Gran Canaria in the World Heritage List, and particularly since 2012, great efforts have been made to increase awareness of the status of the property and to close information gaps in key or lesser known aspects through the generation of reports and specific studies. All of these reports and studies have been commissioned by the Gran Canaria Island Council and are outlined in the list below.

MAIN REPORTS AND SPECIFIC STUDIES FOR THE PERIOD 2012-2017

- 2012. Diagnostic study of pathology levels using georadar equipment inside the caves at the Risco Caído archaeological site. Preventive conservation research. Internacional Geophysical Technology, S.L.
- 2012. Georadar study of profiles in Risco Caído and El Candil caves. Preventive Conservation Research. Preconte S.L.
- 2012. Georadar study of profiles in Risco Caído and Los Candiles caves. Preventive Conservation Research. Preconte S.L.
- 2013. Geometric documentation (high definition) with land laser scans of Risco Caído, interior and exterior of the caves, surroundings and upper rock mass. Research Project. Geoavance.
- 2014. Topographical survey and technical report for caves no.5 and exterior parcel of land, in the Risco Caído archaeological complex. Research work. Carlos Gil Sarmiento.
- 2015. Study and report to design a shoring and reinforcement project on cave group no.5 at Risco Caído with geological support. Preventive conservation research. CSIC Eduardo Torroja Institute for Construction Science.
- 2015. Detailed study of Cave no. 6 at Risco Caído and complementary studies of Cave no.7 at Risco Caído, Cueva de los Candiles and Cueva de las Estrellas caves in the municipality of Artenara and Cueva del Guayre cave in the municipality of Tejeda. Research project. José Miguel Marquez de Zárate.
- 2015. Microclimatic study of the conservation conditions of the caves containing rock art in Gran Canaria in the area of Risco Caído and the sacred mountain sites. Research for preventive conservation. Kevin Soler Carracedo.
- 2015. Inventory, geolocalisation and reproduction of carvings on dolmens in the Los Cofritos site. Analysis and inventory of the archaeological heritage. Proyectos Patrimoniales Canarias, S.L.
- 2015. Geological tests at Risco Caído. Evaluation – Report on the structural safety of the caves at Risco Caído. Sonia Ruiz Cascajar.
- 2015. Topographical survey work (maps, sections, elevations etc) of the group of Caves at Risco Caído known as Caves no. 8. Research work. Carlos Gil Sarmiento.
- 2015. Evaluation– Report on the structural safety of the caves at Risco Caído. Preventive conservation research. CSIC - Instituto Eduardo Torroja.
- 2016. Microclimatic study of the conservation conditions of the caves containing rock art in Gran Canaria in the area of Risco Caído and the Sacred Mountain Sites. Municipality of Artenara. Year 2016. Kevin Soler Carracedo.

MAIN REPORTS AND SPECIFIC STUDIES FOR THE PERIOD 2012-2017

- 2016. 3D photogrammetric survey of the south wall of cave 5 (Risco Caído- Artenara) Historical Heritage Service. Carlos Jesús Gil Sarmiento.
- 2016. Detailed study of Cave no.6 at Risco Caído and complementary studies of Cave no. 7, Cueva de los Candiles cave and Cueva de las Estrellas cave in the municipality of Artenara and Cueva del Guayre cave in the municipality of Tejeda. José Miguel Martín Márquez Zárate.
- 2016. Demarcation and Zoning work on GIS media (shp) of the Risco Caído and Sacred Mountain Sites area (Gran Canaria). Pintadera Asesores Integrales, S.L.
- 2016. Archaeological surveys of the exterior of Cueva de la Paja cave and restoration – consolidation of interior walls, as well as interior clearing of moisture and lichens cave 7 Risco Caído. Proyectos Patrimoniales Canarias, S.L.
- 2016. Archaeoastronomical study of the most significant sites in the Risco Caído and Sacred Mountain Sites file (Gran Canaria). Juan Antonio Belmonte Avilés (IAC).
- 2016. Geophysical monitoring of Lajita-Risco Caído in the Municipality of Artenara. Kevin Soler Carracedo.
- Architectural study comparing caves 6 and 7 at Risco Caído and sites in the area. José Miguel Marquez Zárate.
- 2016. Historical reconstruction study of the Risco Caído and Sacred Mountain Sites area project (16th, 17th, 18th centuries and up to the middle of the 19th century). Pedro Carmelo Quintana Andrés.
- 2016. GIS study, analysing visibility, astronomical and statistical orientation of the sites at Caldera de Tejeda with possible astronomic significance and related spatial surroundings (Municipality of Tejeda and Artenara). José Carlos Gil Carreras.
- 2016. Photogrammetric survey of the interior of Cueva Candiles cave and diagnosis of the pathologies of the panels containing carvings (Municipality of Artenara) Proyectos Patrimoniales Canarias, S.L.
- 2016. Archaeomagnetic analysis of samples of archaeological soil, resulting from rubefaction, taken from cave no.6 at Risco Caído, coming from 6 blocks extracted from two archaeological houses. Universidad de Burgos.
- 2016. Study of pastoralism, transhumance and traditional agriculture in the area of the nominated property. Fundación Universitaria. Agustín Naranjo Cigala.
- 2016. Study of the uses of the wild flora of Gran Canaria. Jaime Gil González.
- 2017. Topographical survey from photogrammetry of the facade of the Risco Caído caves using the UAV system. (Unmanned aerial vehicles: drone and fixed-wing aircraft) Carlos Jesús Gil Sarmiento.
- 2017. Geological diagnosis of Acusa Seca, Solapón, Cuevas del Rey and Risco Caído. Técnicas mineras de Santa Marta S,L.
- 2017. Study of popular celestial religiosity for the dossier file on Risco Caído and Sacred Mountain Sites of Gran Canaria. Sarai Cruz Ventura.
- 2017. Study of the historical landscape of the water in Risco Caído and the Sacred Mountain Sites of Gran Canaria and its tangible and intangible expressions. Antonio Javier Domínguez Medina.
- 2017. Report on the planning status in the Risco Caído and Sacred Mountain Sites area and management plan to include in the UNESCO dossier. Carlos García García.
- 2017. Archaeological study of the fortified granary at Risco Chapín. University of Las Palmas de Gran Canaria (ULPGC)
- 2017. Report on participation process of the nomination of the Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape. Cabildo de Gran Canaria.
- 2017. Starlight Reserve certification report. INSULA, Cipriano Marín and Antonio Gallardo Campos.



Figure 7.1. Tamadaba © Orlando Torres



7 Documentation



Figure 7.11. Teleda Basin © Javier Gil

7.a

Photographs and audiovisual image inventory and authorization form

The inventory of photographs and audio-visual files is shown in the following table. Annex V on digital information attached to the nomination dossier includes all images that can be reproduced.

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Fig no	For.	Caption	Photographer	Contact	NCR
Figure 1.1.	jpg	Tejeda Basin	Javier Gil León	javiercardones@hotmail.com	yes
Figure 1.2.	jpg	View of Roque Nublo at night	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 2.a.1.	jpg	Solar hierophany in the Risco Caído	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.2.	jpg	Nominated property	Cipriano Marín	c.marin@unescocan.org	yes
Figure 2.a.3.	jpg	View of the Bentayga Highlands	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 2.a.5.	jpg	Matrix of attributes	Cipriano Marín	c.marin@unescocan.org	yes
Figure 2.a.6.	jpg	Partial view of the nominated property	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.a.7.	jpg	Panoramic view of the Tejeda basin	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.8.	jpg	Location of the main sanctuaries and caves	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.9.	jpg	Panoramic view of Roque Bentayga	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.10.	jpg	Summary table of the geological evolution	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.11.	jpg	Formation of the Miocene Tejeda Caldera	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.12.	jpg	TAS diagram	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.13.	jpg	The rim of La Caldera de Tejeda	Claudio Moreno	franciscojose.perez@ulpgc.es	yes
Figure 2.a.14.	jpg	Geometric diagram of the floor plan	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.15.	jpg	Panoramic view of the cone-sheet	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.a.16.	jpg	Panoramic view of the remains of the Roque Nublo	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.17.	jpg	Close up of Roque Nublo ignimbrites	Claudio Moreno	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.18.	jpg	Diagram of how the erosive process	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.19.	jpg	Mesa de Acusa - process of inverted relief	Francisco José Pérez Torrado	franciscojose.perez@ulpgc.es	(*)
Figure 2.a.20.	jpg	Canary Island pine (Pinus canariensis)	Javier Gil León	javiercardones@hotmail.com	yes
Figura 2.a.21.	jpg	Cliffs of Los Riscos de Chapin, between Artenara and Tejeda	Cabildo de Gran Canaria	jrosario@grancanaria.com	yes
Figure 2.a.22.	jpg	View of La Montaña de Faneque	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.23.	jpg	Paleontological impressions	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.24.	jpg	Dracaena tamaranae	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.25.	jpg	Tree heather (Erica arborea),	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.26.	jpg	Ptercephalus dumetorus	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.27.	jpg	Spectacular spurge (Euphorbia canariensis)	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.28.	jpg	Grove of Salix canariensis	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.29.	jpg	Process of recovery of the native vegetation	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.30.	jpg	Todaroa montana	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.31.	jpg	Gran Canaria blue chaffinch	Colectivo Ornitológico de GC	aguedomarrero@gmail.com	PD
Figure 2.a.32.	jpg	Canary Island pine forests	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.33.	jpg	Barranco de los Palos	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 2.a.34.	jpg	Hierophany from the Risco Caído cave	Julio Cuenca	juliocuenca@gmail.com	PD
Figure 2.a.35.	jpg	Montaña Tindaya	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.36.	jpg	Sunrise at the summer solstice in Cuatro Puertas	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.37.	jpg	Full moon observed from Mesa de Acusa	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.38.	jpg	The Milky Way over the Bentayga Highlands	Nacho González	fotonachogonzalez@yahoo.es	yes
Figura 2.a.39.	jpg	Roque de las Cuevas del Rey	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.40.	jpg	View of Roque Bentayga from the caves of Acusa	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 2.a.41.	jpg	Partial view of the group of caves on Mesa de Acusa	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.42.	jpg	Reused indigenous cave in Barranco Hondo	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.43.	jpg	Panoramic view of the interior of Los Candiles	Tasrek Ode	tarekode@hotmail.com	yes
Figure 2.a.44.	jpg	Qsar Nalut fortified collective granary	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.45.	jpg	Excavation work inside of El Álamo	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.46.	jpg	View of Roque Bentayga, troglodyte village	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.47.	jpg	Silo inside the El Álamo	Jacob Morales	jacobmoralesmateos@gmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.a.48.	jpg	Refuge Caves in Barranco de Viagroé ravine	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.49.	jpg	Photogrammetric survey of Cueva de La Paja	Carlos J. Gil Sarmiento	julioCuenca@gmail.com	yes
Figure 2.a.50.	jpg	Solapón de Barranco Hondo de Abajo	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.51.	jpg	End of the basin of Barranco Hondo	Cabildo de Gran Canaria	jrosario@grancanaria.com	yes
Figure 2.a.52	tif	Troglodyte dwellings in Barranco Hondo de Abajo	Cabildo de Gran Canaria	jrosario@grancanaria.com	yes
Figure 2.a.53.	jpg	Las Machas, Barranco Hondo.	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.54.	jpg	El Andén en Barranco	Ricardo Santana	ricardo.santana@ulpgc.es	yes
Figure 2.a.55.	jpg	Barranco Hondo.	Ricardo Santana	ricardo.santana@ulpgc.es	yes
Figure 2.a.56.	jpg	Barranco Hondo.	Ricardo Santana	ricardo.santana@ulpgc.es	yes
Figure 2.a.57.	jpg	Graphic composition El Anden	Ricardo Santana	ricardo.santana@ulpgc.es	yes
Figure 2.a.58.	jpg	Longitudinal Sections Barranco Hondo	Ricardo Santana	ricardo.santana@ulpgc.es	yes
Figure 2.a.59.	jpg	La Vecindad Troglodyte settlement	Ricardo Santana	ricardo.santana@ulpgc.es	yes
Figure 2.a.60.	jpg	Landscape of agricultural terraces	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.61.	jpg	General floor plan of Risco Caído	Carlos Gil Sarmiento	julioCuenca@gmail.com	yes
Figure 2.a.62.	jpg	General view of the Risco Caído	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.63.	jpg	Interior of cave C7	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.64.	jpg	View of the dome of Risco Caído	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.65.	jpg	Cloud of dots created by the laser scan	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.63.	jpg	Interior of cave C7	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.64.	jpg	View of the dome of Risco Caído	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.65.	jpg	Cloud of dots created by the laser scan	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.66.	jpg	Overview of the Complex of Sierra del Bentayga	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.67.	jpg	Interior view of La Cueva de la Paja	Julio Cuenca	julioCuenca@gmail.com	yes
Figura 2.a.68.	jpg	Roque Bentayga cave	Propac	julioCuenca@gmail.com	yes
Figure 2.a.69.	jpg	Bentayga algogaren	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.70..	tif	Collective granaries in Roque de Cuevas del Rey	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.71.	jpg	Cueva del Guayre cave	Propac	julioCuenca@gmail.com	yes
Figure 2.a.72.	jpg	Los Candiles sanctuary	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.73.	jpg	View of the interior of Cueva Candiles	Tarek Ode	tarekode@hotmail.com	yes
Figure 2.a.74.	jpg	Cave C2 of Cueva Caballero	Propac	julioCuenca@gmail.com	yes
Figure 2.a.75.	jpg	Exterior and entrance of Cueva del Cagarrutal	Propac	julioCuenca@gmail.com	yes
Figure 2.a.76.	jpg	Granary of the Artenara Mountain	Patrinet	pmperezs@grancanaria.com	yes
Figure 2.a.77.	jpg	Sea of clouds in the surroundings of Risco Chapín	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.78.	jpg	Mesa de Acusa (Acusa plateau)	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.79.	tif	Partial view of the Acusa Seca	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.80.	jpg	Cueva de las Estrellas (Cave of the Stars)	Julio Cuenca	julioCuenca@gmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.a.81.	jpg	View of the interior of cave C4	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.82.	jpg	Group of caves in Corrales de Acusa	PROPAC	juliocuenca@gmail.com	yes
Figure 2.a.83.	jpg	View of the spectacular El Álamo granary	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.84.	jpg	Fragment of laurel leaf (<i>Laurus novocanariensis</i>)	Jacob Morales	juliocuenca@gmail.com	yes
Figure 2.a.85.	jpg	View of Roque Bentayga from Altavista	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.86.	jpg	View of the troglodyte settlement of El Hornillo	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.87.	jpg	View of Cueva de las Brujas	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.88.	jpg	Reproduction of Andén de Tasarte.	Museo Canario	ortosafotos@gmail.com	yes
Figure 2.a.89.	jpg	View of Mesa del Junquillo	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.90.	jpg	View of Montaña del Humo	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.91.	jpg	Troglodyte settlement	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.92.	jpg	Location of the fortified troglodyte village	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.93.	jpg	Barranco Hondo de Abajo	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.94.	jpg	Cave dwelling	Ayuntamiento de Artenara	juliocuenca@gmail.com	yes
Figure 2.a.95.	jpg	Typical interior traditional cave dwelling. Barranco Hondo	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.96.	jpg	Virgen de la Cuevita	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.97.	jpg	Ermita de Fátima	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.98.	jpg	Caves reused	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.96.	jpg	Virgen de la Cuevita	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.97.	jpg	Ermita de Fátima	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.98.	jpg	Caves reused	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.96.	jpg	Virgen de la Cuevita	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.97.	jpg	Ermita de Fátima	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.98.	jpg	Caves reused	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.96.	jpg	Virgen de la Cuevita	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.97.	jpg	Ermita de Fátima	Cabildo de Gran Canaria	pmperezs@grancanaria.com	yes
Figure 2.a.98.	jpg	Caves reused	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.101.	jpg	Barranco Hondo de Abajo	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.102.	jpg	Indigenous cave reused	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.103.	jpg	View of the Roque Nublo	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.104.	jpg	Engravings of pubic triangles	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.105.	jpg	Painted cave in La Candelaria	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.106.	jpg	Cueva del Guayre	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.107.	jpg	Anthropomorphic representations in Majada Alta	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.108.	jpg	Spectroscopic analysis of the interior walls of Risco Caído	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.109.	jpg	View of Mesa del Junquillo	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.110.	jpg	Cueva de las Brujas	Julio Cuenca	juliocuenca@gmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.a.111.	jpg	Cave C04, Corrales de Acusa	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.112.	jpg	Piece of indigenous potter y	Museo Canario		yes
Figure 2.a.113.	jpg	Pintadera stamp with opposite triangles	Museo Canario		yes
Figure 2.a.114.	jpg	Panel of public triangle engravings	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.115.	jpg	Panel of pubic triangle engravings on Cueva Candiles	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.116.	jpg	Cueva de Las Machas	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.117.	jpg	Pubic triangles engravings Cave 6	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.118.	jpg	Distribution of the pubic car vings inside Cave 6	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2. a.119.	jpg	Engraving of a pubic triangle on cave C7	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.120.	jpg	Stele of engravings in Cueva de la Paja	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.121.	jpg	Lybic-Berber alphabet inscriptions	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.122.	jpg	Lybic-Berber carvings in Roque de Cuevas del Rey	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.123.	jpg	Roque de las Cuevas del Rey	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.124.	jpg	Lybic-Berber inscriptions in Visvique	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.125.	jpg	Barranco de Balos inscriptions	Antonia Perera	nonaperera@cabildodelanzarote.com	yes
Figure 2.a.126.	jpg	Lybic-Berber inscriptions	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.127.	jpg	Elephant frieze (High Atlas, Morocco)	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.128	jpg	Shimitu stela (Tunisia)	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.129.	jpg	Potter y piece of the head of a pig	Museo Canario		yes
Figure 2.a.130.	jpg	Tara idol	Museo Canario		yes
Figure 2.a.131.	jpg	View of Roque Bentaga at night	Nacho González	fotonachogonzalez@yahoo.es	yes
Figura 2.a.132.	jpg	Close up of La Cueva de las Estrellas	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.133	jpg	Light projected in the Risco Caído almogaren	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.134.	jpg	View of the inside of cave 6	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.135.	jpg	Exterior view of the archaeological site of Risco Caído	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.136.	pdf	Digital model of cave 6	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.134.	jpg	View of the interior of Cave 6	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.137.	jpg	Close-up of the series of the engravings of pubic triangles	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.138.	pdf	Photogrammetr y of the optical device of Cave 6	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.139.	jpg	Panoramic view of Cave 7	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.140.	jpg	Beam of light projected	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.141.	jpg	Risco Caído pubic triagles representation	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.142.	pdf	Angular aper ture range of the optical system	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.143.	jpg	Areas of declination of the panel of engravings	Jose Carlos Gil	josecarlosgilca@gmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.a.144.	jpg	The diagram shows the first image projected by the light	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.145.	jpg	Histograms of declinations	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.146.	jpg	Example of the path of the sunlight	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.147.	jpg	Diagram obtained from the consecutive images	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.148.	jpg	Sunlight interior of Cave 6	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.149.	jpg	View of the inside of the Tara Almogaren	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.150.	jpg	Three-dimensional survey of the Risco Caído caves	Propac	julioCuenca@gmail.com	yes
Figure 2.a.151.	jpg	General litho-stratigraphic column of the Risco Caído	ISCG Ismael Solaz Alpera		(*)
Figure 2.a.152.	jpg	Topographical survey of Risco Caído Cave 6	José Miguel Márquez Zárte	marquezzarate@hotmail.com	yes
Figure 2.a.153.	jpg	View of the inside of Cave 6	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.154.	jpg	Outline of the Risco Caído archaeological complex	José Miguel Márquez Zárte	marquezzarate@hotmail.com	yes
Figure 2.a.155.	jpg	A design governed by a standard of measurement	José Miguel Márquez Zárte	marquezzarate@hotmail.com	yes
Figure 2.a.156.	jpg	General view of Roque Bentayga	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.157.	tif	General view of the Roque Bentayga almogaren	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.a.158.	tif	Roque Bentayga (close up) and Roque Nublo	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.159.	tif	Image of the Eastern horizon	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.160.	jpg	Plan of the almogaren of Roque Bentayga	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.161.	jpg	Moonrise at the major southern lunastice	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.162./163	jpg	A close up of window V	Juan Antonio Belmonte	jba@iac.es	yes
Figure 2.a.164.	jpg	The astronomical potential of caves	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.165.	jpg	The astronomical potential of caves	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.166.	jpg	Visibility of caves oriented	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.a.167.	jpg	Supermoon 2017 and Roque Nublo	Daniel López / IAC	daniel.lopez@elcielodecanarias.com	yes
Figure 2.a.168.	jpg	Troglodyte potteries	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.169.	jpg	Wood cutters in the Inagua-Pajonales	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.a.170.	jpg	Partial view of the El Nublo	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.171.	jpg	Water as the main sculptor	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.a.172.	jpg	Photograph of a stretch of the Vigaróe	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.a.173.	jpg	View of Cueva Piletas	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.174.	jpg	Cave pond	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.a.175.	jpg	Hollow (albercon) in the proximities of El Juncal	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.176.	jpg	View of El Parralillo dam	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.a.177.	jpg	Conserved structure of El Molino de El Rincón	Javier Gil León	javiercardones@hotmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2. a.178.	jpg	Washerwoman in the bed of the Tejeda Ravine	FEDAC	mireles.paco@gmail.com	yes
Figure 2. a.179.	jpg	Water trough at El Hornillo	Orlando Torres	or tosafotos@gmail.com	yes
Figure 2. a.180.	jpg	Cave pool at Ventanieves	Orlando Torres	or tosafotos@gmail.com	yes
Figure 2.a.181.	jpg	Transhumant flock	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.182.	jpg	Transhumant sheep grazing on Mesa de Acusa	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.183.	jpg	Grassland in Altos de Gáldar	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.184.	jpg	Sheep pastures at the end of summer	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.185..	jpg	Goats of the Canaria majorera breed	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.186..	jpg	Canarian wool sheep	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.187.	jpg	Yokes of Canarian oxen	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.188.	jpg	Transhumant wool sheep	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.189.	jpg	Bells of José de la Cruz Mendoza	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.190.	jpg	Maximiano Moreno transhumant herdsman	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.191.	jpg	Different phases in the making of "queso de flor"	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.192.	jpg	Resting on the route to A tenara from Majada Alta	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.190.	jpg	Maximiano Moreno transhumant herdsman	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.193.	jpg	José Mayor, from Vega de San Mateo	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.194.	jpg	La Cañada de La Plata	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.a.195.	jpg	Corral in a cave in Las Casas de Cho Flores	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.196.	jpg	Shed in Hoya de Piedra Grande	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.197.	jpg	Bread oven of the Forest House of Pajonales	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.198.	jpg	Mosaic of agricultural terraces	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.199.	jpg	"Corral" cave on Nublo mountain	FEDAC	mireles.paco@gmail.com	yes
Figura 2.a.200.	jpg	Mosaic of agricultural terraces in Tejeda	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.201.	jpg	Pajonales threshing floor	Orlando Torres	or tosafotos@gmail.com	yes
Figure 2.a.202.	jpg	Harvesting barley in Gauyadeque	José Antonio González Navarro	cuevas@grancanaria.com	yes
Figure 2.a.203	jpg	The rural ecosystem	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.204.	jpg	View of the agro-cultural landscape	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.205.	jpg	Pine forests in the area of the nominated property	Javier Gil León	javiercardones@hotmail.com	yes
Figura 2.a.206.	jpg	The "serrote" - traditional tools	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 2.a.207.	jpg	Canary Island pines in Tamadaba forest	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.208.	jpg	Tar oven in La Montaña de los Hornos	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.210.	jpg	"Guisadero" in Lugarejo	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.211	jpg	"Guisadero" adjacent to a dwelling cave	FEDAC	mireles.paco@gmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.a.213.	jpg	Potters of the Gran Canaria highlands	FEDAC	mireles.paco@gmail.com	yes
Figure 2.a.214.	jpg	View of Roque Bentayga and Nublo from the Acusa caves	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.215.	jpg	Aerial view of the Tamadaba Highlands	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.217.	jpg	Roque Palmés	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.218.	jpg	Altavista Mountain	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.a.219.	jpg	Roque Nublo from El Tablón	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.b.1.	jpg	Sample of indigenous fabric	Museo Canario		yes
Figure 2.b.3.	jpg	View of Mesa de Acusa	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.b.4.	jpg	Sample of indigenous pottery	Museo Canario		yes
Figure 2.b.5.	jpg	Sacred Mountains	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.b.7.	jpg	Bentayga Highlands	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.b.8.	jpg	Fortified granary of Roque de las Cuevas del Rey.	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.b.9.	jpg	View of Roque Nublo amid the mist.	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.b.10.	jpg	Caves of Majada Alta	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.b.11.	jpg	View of the defensive wall of Roque Bentayga.	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 2.b.12.	jpg	Lunar standstill on Bentayga	Jose Carlos Gil	josecarlosgilca@gmail.com	yes
Figure 2.b.13.	jpg	Picture of the main panel of La Cueva Pintada	Tarek Ode	tarekode@hotmail.com	(*)
Figure 2.b.15.	jpg	South-west face of Risco Chimirique	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.b.16.	jpg	Stars on the sky of Roque Nublo	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 2.b.17.	jpg	The Perseids over Caldera de Tejada	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 2.b.23.	jpg	The Milky Way over Bentayga	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 2.b.34.	jpg	Female idol from La Fortaleza	José Guillen Medina	jjguillenm@grancanaria.com	yes
Figure 2.b.35.	jpg	Cave potters in the high mountains of Gran Canaria	FEDAC	mireles.paco@gmail.com	yes
Figure 2.b.36.	jpg	Zaragocita Cabrera from Lugarejo	FEDAC	mireles.paco@gmail.com	yes
Figure 2.b.37.	jpg	Risco del Mediodía	Sarai Cruz	saraicruzven@gmail.com	yes
Figure 2.b.38.	jpg	Cross at El Descansadero de los Muertos	Orlando Torres	ortosafotos@gmail.com	yes
Figure 2.b.41.	jpg	Mummy n° 5 of the Museo Canario from Acusa	José Guillen Medina	jjguillenm@grancanaria.com	yes
Figure 2.b.42.	jpg	Mummy n° 20 of the Museo Canario	José Guillen Medina	jjguillenm@grancanaria.com	yes
Figure 2.b.48.	jpg	Fiesta de la Rama in Juncalillo de Gáldar	FEDAC	mireles.paco@gmail.com	yes
Figure 2.b.49.	jpg	Troglodyte settlement of Acusa	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.b.50.	jpg	Carvings with Lybic-Berber characters at the Visbique site	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.b.53.	jpg	General view of the Tejada basin	Javier Gil León	javiercardones@hotmail.com	yes
Figure 2.b.55.	jpg	Ceramic piece with sun-like motifs	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 2.b.57.	jpg	Women and cave houses	FEDAC	mireles.paco@gmail.com	yes
Figure 2.b.60.	jpg	Grau Bassas - Bentayga	Museo Canario		yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 2.b.61.	jpg	Map of one of the indigenous caves at Bentayga	Museo Canario		yes
Figure 2.b.63.	jpg	View of Tejeda basin	Tarek Ode	tarekode@hotmail.com	(*)
Figure 2.b.64.	jpg	The atlante by the sculptor Tony Gallardo	Germán Gallardo	fuerteventurabiosfera@gmail.com	yes
Figure 2.b.79.	jpg	Reproduction of one of the works of Tony Gallardo	Germán Gallardo	fuerteventurabiosfera@gmail.com	yes
Figure 3.1.	jpg	Roque Nublo	Javier Gil León	javiercardones@hotmail.com	yes
Figure 3.1.1.	jpg	Roque Nublo from Acusa	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 3.1.2.	jpg	A cultural landscape interconnected with the sky	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 3.1.3.	jpg	The almogaren of Risco Caído	Tarek Ode	tarekode@hotmail.com	yes
Figure 3.1.4.	jpg	Waterfall El Caletón	Orlando Torres	ortosafotos@gmail.com	yes
Figure 3.1.5.	jpg	Photogrammetric survey of Cave 2	José Gil Sarmiento	julioCuenca@gmail.com	yes
Figure 3.2.1.	jpg	View of the main Cuatro Puertas cave	Tarek Ode	tarekode@hotmail.com	(*)
Figure 3.2.2.	jpg	Public triangle engraving in the Risco Caído	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 3.2.3.	jpg	Different phases of the solar hierophany	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 3.2.5.	jpg	The scientific mission to Cueva del Rey in 2016	Javier Gil León	javiercardones@hotmail.com	yes
Figure 3.2.6.	jpg	Tindaya mountain, Island of Fuerteventura	Tarek Ode	tarekode@hotmail.com	(*)
Figure 3.2.8.	jpg	Mnajdra South spring equinox sunrise	Reuben Grima	reuben.grima@um.edu.mt	yes
Figure 3.2.12.	jpg	The hierophany that occurs inside Cave 6	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 3.2.13.	jpg	Couple of burial mounds with skylight	Juan Antonio Belmonte	jba@iac.es	yes
Figure 3.2.14.	jpg	Main temple of Abu Simbel	Juan Antonio Belmonte	jba@iac.es	yes
Figure 3.2.21.	jpg	Close-up of the silos inside Cueva del Guayre	Javier Gil León	javiercardones@hotmail.com	yes
Figure 3.2.32.	jpg	View of the fortified granary of Ksar Nalut	Juan Antonio Belmonte	jba@iac.es	yes
Figure 3.2.33.	jpg	Anthropomorphic rock engravings	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 3.2.34.	jpg	View from inside the Cueva Candiles	Tarek Ode	tarekode@hotmail.com	yes
Figure 3.2.35.	jpg	Cattle on transhumance	Javier Gil León	javiercardones@hotmail.com	yes
Figure 3.2.36.	jpg	Singular cave pond evolved in Ventanieves	Javier Gil León	javiercardones@hotmail.com	yes
Figure 3.2.37.	jpg	Small water mine with filtering gallery in El Hornillo	FEDAC	mireles.paco@gmail.com	yes
Figure 3.2.48.	jpg	Altavista mountain	Orlando Torres	ortosafotos@gmail.com	yes
Figure 3.2.55.	jpg	Panoramic view of the Tejeda basin	Orlando Torres	ortosafotos@gmail.com	yes
Figure 3.2.62.	jpg	Altavista mountain	Orlando Torres	ortosafotos@gmail.com	yes
Figure 3.2.66.	jpg	Piece of pottery found on Gran Canaria	Museo Canario		yes
Figure 3.2.67.	jpg	Cenobio de Valerón granary	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 3.2.68.	jpg	Tara cave in Telde	Julio Cuenca	julioCuenca@gmail.com	yes
Figure 3.3.	jpg	Tejeda Basin	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 3.3.1.	jpg	Dome of the cave sanctuary of Risco Caído	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 3.3.2.	jpg	Partial view of the Tejeda Basin from the almogaren of Bentayga	Tarek Ode	tarekode@hotmail.com	yes
Figure 3.3.4.	jpg	Caldera de Tejeda	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.a.1.	jpg	Transhumance inherited from the ancient Canarians	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.a.2.	jpg	The restoration and conservation actions	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 4.a.3.	jpg	Partial view of the aboriginal cave settlement at Acusa	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.a.5.	jpg	Natural broom (retamar) covering in the highlands	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 4.a.7.	jpg	The relative fragility of the escarpments and volcanic tuff	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 4.a.8.	jpg	Section of the Camino de la Plata road	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 4.a.9.	jpg	View of Agaete valley from El Hornillo	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 4.b.1.	jpg	Farmlands in Caldera de Tejeda	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.b.4.	jpg	Light pollution is a factor to be controlled in the area	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 4.b.5.	jpg	Farming terraces	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.b.6.	jpg	Palm grove in Cuenca de Tejeda	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.b.7.	jpg	Abandoned terraces in the vicinity of the nominated property	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.b.8.	jpg	View of a chestnut grove in the buffer zone	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.b.9.	jpg	Work being carried out in Risco Caído caves	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 4.b.11.	jpg	View of the central area of the nominated property	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 4.b.13.	jpg	Roque Palmés	Javier Gil León	javiercardones@hotmail.com	yes
Figure 4.b.14.	jpg	View of "El Pino de Casandra"	Orlando Torres	ortosafotos@gmail.com	yes
Figure 4.b.15.	jpg	Guided tour of the Bentayga almogaren	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 4.b.16.	jpg	Transhumant herdsman in the mountains of Tejeda	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.	jpg	Roque Nublo	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 5.b	jpg	Roque Bentayga	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.1.	jpg	Pine groves and cliffs in the area of the nominated property	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.2.	jpg	El Aserrador Mountain	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.3.	jpg	Slopes of Tamadaba	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 5.b.4.	jpg	Allochthonous chestnut landscape	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.5.	jpg	Panoramic view of the Tejeda basin.	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.6.	jpg	View of the Roque Nublo Natural Monument	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.8.	jpg	View of the Tejeda basin from Roque Nublo	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.b.9.	jpg	Erysimum albescens.	Águedo Marrero	aguedomarrero@gmail.com	yes

Fig no	For.	Caption	Photographer	Contact	NCR
Figure 5.b.10.	jpg	Light projected onto the rock carvings inside Risco Caído	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 5.b.11.	jpg	Pubic triangle engravings in Cueva Candiles	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 5.c.1.	jpg	Partial view of the Caldera de Tejeda	Julio Cuenca	juliocuenca@gmail.com	yes
Figure 5.d.1.	jpg	Canary Island Pine in Inagua	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.d.2.	jpg	View of El Roque Nublo	Águedo Marrero	aguedomarrero@gmail.com	yes
Figure 5.e.1.	jpg	Guided tour of the troglodyte settlement of Acusa	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.e.2.	jpg	Steering Committee meetings held in 2016	Cabildo de Gran Canaria	jojedam@grancanaria.com	yes
Figure 5.e.4.	jpg	Plenary session of the Steering Committee	Cabildo de Gran Canaria	jojedam@grancanaria.com	yes
Figure 5.e.6.	jpg	Quality economies	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.e.7.	jpg	Cave dwelling in Barranco Hondo	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.g.1.	jpg	Caves and farming terraces	FEDAC	mireles.paco@gmail.com	yes
Figure 5.h.1.	jpg	Image of the museum sequence of the Risco Caído	GAIA	gaia@gaia.com.es	yes
Figure 5.h.2.	jpg	Tracks of the ancestral Canarians	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.h.3.	jpg	Degollada de Peraza Interpretation Centre	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.1.	jpg	Guided visit to the Mesa de Acusa	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.2.	jpg	Volunteer programme "estodotuyo."	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.8.	jpg	Speakers at the 2014 conference	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.9.	jpg	2017 plenary session of the Scientific Committee on Risco Caído	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.11.	jpg	Interpretive activities at Roque Bentayga	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.12.	jpg	Open Heritage Programme	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.13.	jpg	Members of the scientific mission 2015	Javier Gil León	javiercardones@hotmail.com	yes
Figure 5.i.15.	jpg	Guided tours to archaeoastronomic sites	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.17.	jpg	Inauguration of the Risco Caído stand	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.19.	jpg	Travelling stand	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.i.20.	jpg	Their Majesties, the King and Queen of Spain	Cabildo de Gran Canaria	jhernandez@grancanaria.com	yes
Figure 5.j.	jpg	Bentayga at night	Nacho González	fotonachogonzalez@yahoo.es	yes
Figure 7.1.	jpg	Tamadaba	Orlando Torres	ortosafotos@gmail.com	yes
Figure 7.2.	jpg	Tejeda basin	Javier Gil León	javiercardones@hotmail.com	yes
Figure 7.4.	jpg	Acusa Seca, Scientific mission	Javier Gil León	javiercardones@hotmail.com	yes
Figure 7.5.	jpg	Troglodyte settlement in Tejeda	FEDAC	mireles.paco@gmail.com	yes



7.b

Texts relating to protective designation

Legal texts and planning documents relating to the nominated property are included in the Annexes VII and VIII. They are listed according to the code in which they appear in each Annex:

I. Laws relating to the protection of the nominated property

- (7.b.L1) Spanish Constitution of 1978. (Official State Bulletin [BOE] n° 311, 29 December, 1978).
- (7.b.L2) Organic Law 19/1982, dated 10 August, on the Statute of Autonomy of the Canary Islands. (Official State Bulletin [BOE], 16 August, 1982).
- (7.b.L3) Royal Decree 3355/1983, dated 28 December, on the transfer of functions and services of the State to the Autonomous Community of the Canary Islands in the field of culture. (Official State Bulletin [BOE], n° 83, 27 January, 1984).
- (7.b.L4) Law 16/1985, dated 25 June, on the Spanish Historical Heritage. (Official State Bulletin [BOE], n° 155, 29 June, 1985).
- (7.b.L5) Law 42/2007, dated 13 December, on Natural Heritage and Biodiversity. (Official State Bulletin [BOE], n° 299, 14 December, 2007).
- (7.b.L6) Law 4/1999, dated 15 March, on Historical Heritage of the Canary Islands (Official Bulletin of the Canary Islands, [BOC] n° 36, 24 March, 1999).
- (7.b.L7) Law 11/2002, dated 21 November, modifying Law 4/1999, dated 15 March, on Historical Heritage of the Canary Islands (Official Bulletin of the Canary Islands, [BOC] n° 157, 27 November, 2002).
- (7.b.L8) Decree 152/1994, dated 21 July, transferring functions of the Public Administration of the Autonomous Community of the Canary Islands to the Cabildos Insulares in matters of culture, sports and historical and artistic heritage (Official Bulletin of the Canary Islands, [BOC] n° 92, 28 July, 1994).
- (7.b.L9) Law 12/1994, dated 19 December, on Natural Spaces of the Canary Islands. (Official Bulletin of the Canary Islands, [BOC] n° 157, 24 December, 1994).
- (7.b.L10) Legislative Decree 1/2000, dated 8 May, approving the Revised Text of the Management Laws of the Canary Islands Territory and Natural Areas. (Official Bulletin of the Canary Islands, [BOC] n° 60, 15 May, 2000).
- (7.b.L11) Law 14/2014, dated 26 December, on Harmonisation and Simplification of the Protection of the Territory and Natural Resources (Official Bulletin of the Canary Islands, [BOC] n° 2, 5 January, 2015).
- (7.b.L12) Decree 258/1993, dated 24 September, which declares the Barranco Hondo Abajo, located in the municipality of Gáldar, on the island of Gran Canaria, a Site of Cultural Interest, in the category of historic sites (Official Bulletin of the Canary Islands, [BOC] n° 137, 27 October, 1983).
- (7.b.L13) Decree 25/2010, dated 11 March, which declares La Mesa de Acusa, located in the municipality of Artenara, on the island of Gran Canaria, a Site of Cultural Interest, in the category of archaeological sites. (Official Bulletin of the Canary Islands, [BOC] n° 61, 26 March, 2010).
- (7.b.L14) Notification dated 22 March, 2017, announcing Decree CPH 58/2017, dated 8 March 2017, which provides for the opening of a delimitation file on the Site of Cultural Interest, Risco Chapín, located in the municipalities of Artenara and Tejeda, in the category of archaeological sites. (Official Bulletin of the Canary Islands, [BOC] n° 63, 30 March, 2017).
- (7.b.L15) Decree dated 22 May 2003, which opens a file declaring the Santuario de Tirma, located in the municipalities of Agaete, Artenara and San Nicolás de Tolentino, a Site of Cultural Interest, in the category

of archaeological sites. (Official Bulletin of the Canary Islands, [BOC] n° 153, 8 August, 2003).

(7.b.L16) Correction of errors in the Decree dated 22 May 2003, which opens a file favouring the declaration of Santuario de Tirma, located in the municipalities of Agaete, Artenara and San Nicolás de Tolentino as a Site of Cultural Interest, in the category of archaeological sites. (Official Bulletin of the Canary Islands, [BOC] n° 153, of 8.8.03 [Official Bulletin of the Canary Islands N° 216, 5 November 2003])

(7.b.L17) Notification dated 7 October 2016, announcing Decree CPH 186, dated 30 September, 2016, which provides for the modification of the Ruling of 18 December 1990 by the Directorate-General for Culture of the Canary Islands Government, which opens a file declaring Roque Bentayga, Roque de las Cuevas and Roque Narices, Sites of Cultural Interest, BIC 10/1998. (Official Bulletin of the Canary Islands, [BOC] n° 203, 19 October 2016).

(7.b.L18) Notification dated 10 September 2014, announcing the Decree PHI33/2014, dated 6 August, by the General Coordinator for Culture, Historic Heritage and Museums, in which a delimitation file is opened for the Site of Cultural Interest entitled 'Risco Caído Archaeological Site' and its surrounding buffer zone. (Official Bulletin of the Canary Islands, [BOC] n° 192, 3 October, 2014).

2. Legal provisions relating to property management plans

(7.b.LP1) Decree 149/2002, dated 16 October, approving the Master Plan for the Use and Management of the Nublo Rural Park, on the island of Gran Canaria (C-11). (Official Bulletin of the Canary Islands, [BOC] n° 160, 2 December).

(7.b.LP2) Directorate-General for Land Management. Correction of errors in the Resolution of 15 May, 2003, announcing the Agreement of the Commission of Land and Environmental Management of the Canary Islands of 2 April, 2003, to finally approve the Master Plan for Use and Management of the Tamadaba Nature Park (C-9), in the municipalities of Artenara, Agaete and San Nicolás de Tolentino (Gran Canaria). (Official Bulletin of the Canary Islands, [BOC] n° 196, 8 October).

(7.b.LP3) Directorate-General for Land Management.

Resolution of 18 December, 2009, announcing the Agreement of the Commission for Land and Environmental Management of the Canary Islands of 30 October, 2009, regarding the Environmental Report and final approval of the Conservation Rules for the municipality of Tejeda. File - Roque Nublo Natural Monument (Official Bulletin of the Canary Islands, [BOC] n° 4, 8 January).

(7.b.LP4) Directorate-General for Land Management. Resolution of 7 September, 2010, announcing the Agreement of the Commission of Land and Environmental Management of the Canary Islands of 26 April, 2010, to the final approval of the Special Plan for Las Cumbres Protected Landscape (C-25). (Official Bulletin of the Canary Islands, [BOC] n° 87, 22 September).

(7.b.LP5) Directorate-General for Spatial Planning. Resolution of 19 April 2010, announcing the Agreement of the Commission for Land and Environmental Management of the Canary Islands of 30 November 2009, to approve the Environmental Report and final approval of the Master Plan for the Inagua Integral Nature Reserve. (Official Bulletin of the Canary Islands, [BOC] n° 84, 30 April, 2009).

(7.b.LP6) Decree 174/2009, of 29 December, declaring Special Conservation Areas included in the Red Natura 2000 network in the Canary Islands and measures to maintain adequate conservation standards for these natural spaces. (Official Bulletin of the Canary Islands, [BOC] n° 7, 13 January, 2010).

(7.b.LP7) ZEC Management Plan ES7010019 Roque Nublo, approved by Order of the Councillor for Land-Use, Sustainability and Security, dated 7 March, 2016 (Official Bulletin of the Canary Islands, [BOC] n° 49, 11 March, 2016).

(7.b.LP8) ZEC Management Plan ES700000111 Tamadaba, approved by Order of the Councillor for Land-use, Sustainability and Security, dated 1 April, 2016 (Official Bulletin of the Canary Islands, [BOC] n° 68, 1 April, 2016).

(7.b.LP9) ZEC Management Plan ES7010039 The Nublo II, approved by Order of the Councillor for Land-use, Sustainability and Security, dated 1 April, 2016 (Official Bulletin of the Canary Islands, [BOC] n° 68, 11 April, 2016).

(7.b.LP10) Island Management Plan for Gran Canaria, approved by Decree 277/2003, dated 11 November and published in the Official Bulletin of the Canary Islands, (BOC) n° 234, 1 December 2003.

(7.b.LP11) Order dated 2 April, 2014, for the final approval of the Special Territorial Plan for Landscape Management of Gran Canaria, PTE-5, on behalf of the Cabildo Insular de Gran Canaria. Official Bulletin of the Canary Islands, (BOC) n° 96, 20 May.

3. Texts and maps relating to the plans for the nominated property

All documentation relating to the plans for the site, whether specific or those covering the whole territory of the Island, is included as follows:

(7.b.P1) Master Plan for Use and Management of Nublo Rural Park (PRUG).

(7.b.P2) Master Plan for Use and Management of Tamadaba Nature Park (PRUG).

(7.b.P3) El Nublo Natural Monument Standards

(7.b.P4) Inagua Strict Nature Reserve Master Plan

(7.b.P5) Inagua Strict Nature Reserve Master Plan

(7.b.P6) Special Plan for the Protection of Las Cumbres

(7.b.P7) SAC ES700000111 Tamadaba Management Plan

(7.b.P8) SAC ES7010019 Roque Nublo Management Plan

(7.b.P10) Special Territorial Plan for Landscape (PTE-5)

(7.b.P11) Special Territorial Plan for Landscape (PTE-5)

(7.b.P12) Special Territorial Plan for Historical Heritage (PTE-6)

(7.b.P13) Rural development plan for the area (PDR)

(7.b.P12) Special Territorial Plan for Historic Heritage (PTE-6)

(7.b.P13) Special Territorial Plan for Tourism (PTEOTI)

(7.b.P14) Gran Canaria Land-use Plan (PIO)

In the case of (7.b.P14) Gran Canaria Land-use Plan, given the complexity of the PIO and the amount of information, access to this is by way of the Gran Canaria GIS viewer (Visor 4.2 OL IDEGranCanaria) which was set up by the Cabildo de Gran Canaria. This is an interactive GIS viewer in Spanish which enables access to all relevant planning, sites, and decisions applicable to protection and planning. Mapping, planning and protection tools and texts are available on the website:

<http://visor.idegrancanaria.es/>

4. The Integrated Management Plan

The Integrated Management Plan of the nominated property are included in the Annex IV (Pdf digital format).



Figure 7.3. Tamadaba escarpments © FEDAC



Figure 7.4. Acusa Seca, Scientific mission © Javier Gil León

7.c

Form and date of most recent records or inventory of property

No.	Title	Form	Date
1	Archaeological Maps	in paper	1988
2	Ethnographic Maps	in paper	1988
3	Archaeological Maps	in paper or digital forms	2005
3	Ethnographic Maps	in paper or digital forms	2005
5	Inventory of Rock Art Manifestations in the Caves of the abcient Canarians	digital form	2007
6	Diagnostic study of pathology levels using georadar equipment inside the caves at the Risco Caído archaeological site. Preventive conservation research	in paper or digital forms	2012
7	Georadar study of profiles in Risco Caído and El Candil caves. Preventive Conservation Research	digital form	2012
8	Georadar study of profiles in Risco Caído and Los Candiles caves		2012
9	Geometric documentation (high definition) with land laser scans of Risco Caído, interior and exterior of the caves, surroundings and upper rock mass	in paper or digital forms	2013
10	Topographical survey and technical report for caves no.5 and exterior parcel of land, in the Risco Caído archaeological complex	in paper or digital forms	2014
11	Study and report to design a shoring and reinforcement project on cave group no.5 at Risco Caído with geological support. Preventive conservation research	in paper or digital forms	2015
12	Detailed study of Cave no. 6 at Risco Caído and complementary studies of Cave no.7 at Risco Caído, Cueva de los Candiles and Cueva de las Estrellas caves in the municipality of Artenara and Cueva del Guayre cave in the municipality of Tejeda. Research project	in paper or digital forms	2015
13	Microclimatic study of the conservation conditions of the caves containing rock art in Gran Canaria in the area of Risco Caído and the sacred mountain sites.	in paper or digital forms	2015
14	Inventory, geolocalisation and reproduction of carvings on dolmens in the Los Cofritos site. Analysis and inventory of the archaeological heritage	in paper or digital forms	2015
15	Geological tests at Risco Caído. Evaluation	in paper or digital forms	2015
16	Topographical survey work (maps, sections, elevations etc) of the group of Caves at Risco Caído known as Caves no. 8.	in paper or digital forms	2015
17	Evaluation– Report on the structural safety of the caves at Risco Caído. Preventive conservation research.	in paper or digital forms	2015
18	Microclimatic study of the conservation conditions of the caves containing rock art in Gran Canaria in the area of Risco Caído and the Sacred Mountain Sites	in paper or digital forms	2016
19	3D photogrammetric survey of the south wall of cave 5 (Risco Caído- Artenara)	in paper or digital forms	2016

No.	Title	Form	Date
20	Detailed study of Cave no.6 at Risco Caído and complementary studies of Cave no. 7, Cueva de los Candiles cave and Cueva de las Estrellas cave in the municipality of Artenara and Cueva del Guayre cave in the municipality of Tejeda	in paper or digital forms	2016
21	Demarcation and Zoning work on GIS media (shp) of the Risco Caído and Sacred Mountain Sites area	in paper or digital forms	2016
22	Archaeological surveys of the exterior of Cueva de la Paja cave and restoration – consolidation of interior walls, as well as interior clearing of moisture and lichens cave 7 Risco Caído	in paper or digital forms	2016
23	Archaeoastronomical study of the most significant sites in the Risco Caído and Sacred Mountain Sites	in paper or digital forms	2016
24	Geophysical monitoring of Lajita-Risco Caído in the Municipality of Artenara.	in paper or digital forms	2016
25	Architectural study comparing caves 6 and 7 at Risco Caído and sites in the area.	in paper or digital forms	2016
26	Historical reconstruction study of the Risco Caído and Sacred Mountain Sites area project (16th, 17th, 18th centuries and up to the middle of the 19th century).	in paper or digital forms	2016
27	GIS study, analysing visibility, astronomical and statistical orientation of the sites at Caldera de Tejeda with possible astronomic significance and related spatial surroundings	in paper or digital forms	2016
28	Photogrammetric survey of the interior of Cueva Candiles cave and diagnosis of the pathologies of the panels containing carvings (Municipality of Artenara)	in paper or digital forms	2016
29	Archaeomagnetic analysis of samples of archaeological soil, resulting from rubefaction, taken from cave no.6 at Risco Caído, coming from 6 blocks extracted from two archaeological houses	in paper or digital forms	2016
30	Study of pastoralism, transhumance and traditional agriculture in the area of the nominated property.	in paper or digital forms	2016
31	Study of the uses of the wild flora	in paper or digital forms	2016
32	Topographical survey from photogrammetry of the facade of the Risco Caído caves using the UAV system. (Unmanned aerial vehicles: drone and fixed-wing aircraft)	in paper or digital forms	2017
33	Geological diagnosis of Acusa Seca, Solapón, Cuevas del Rey and Risco Caído	in paper or digital forms	2017
34	Study of popular celestial religiosity for the dossier file on Risco Caído and Sacred Mountain Sites of Gran Canaria.	in paper or digital forms	2017
35	Study of the historical landscape of the water in Risco Caído and the Sacred Mountain Sites of Gran Canaria and its tangible and intangible expressions	in paper or digital forms	2017
36	Archaeological study of the fortified granary at Risco Chapín	in paper or digital forms	2017
37	Starlight certification proposal	in paper or digital forms	2017

7.c

Address where inventory, records and archives are held

Given the diversity of sources and origins of the studies, reports and inventories, the Cabildo of Gran Canaria has designated the Historical Heritage Service as the co-ordinator of all documentary material throughout the nomination process. Two people from the service are responsible for this task..

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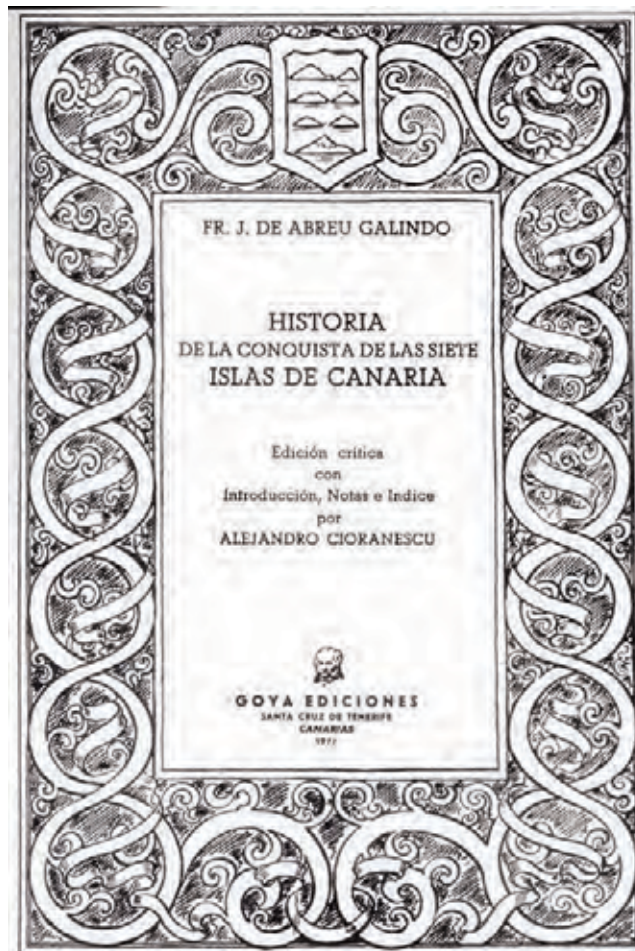
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7.e

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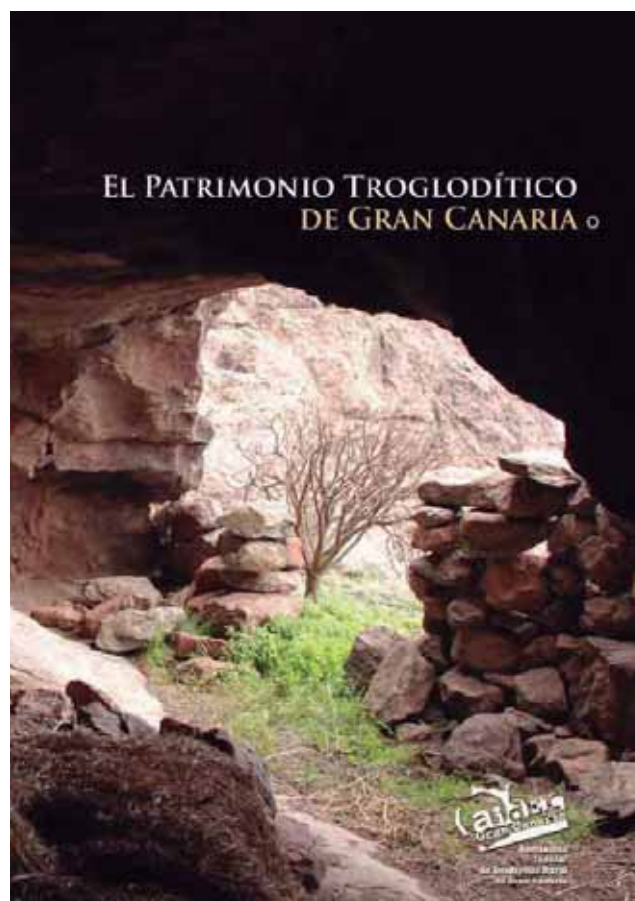
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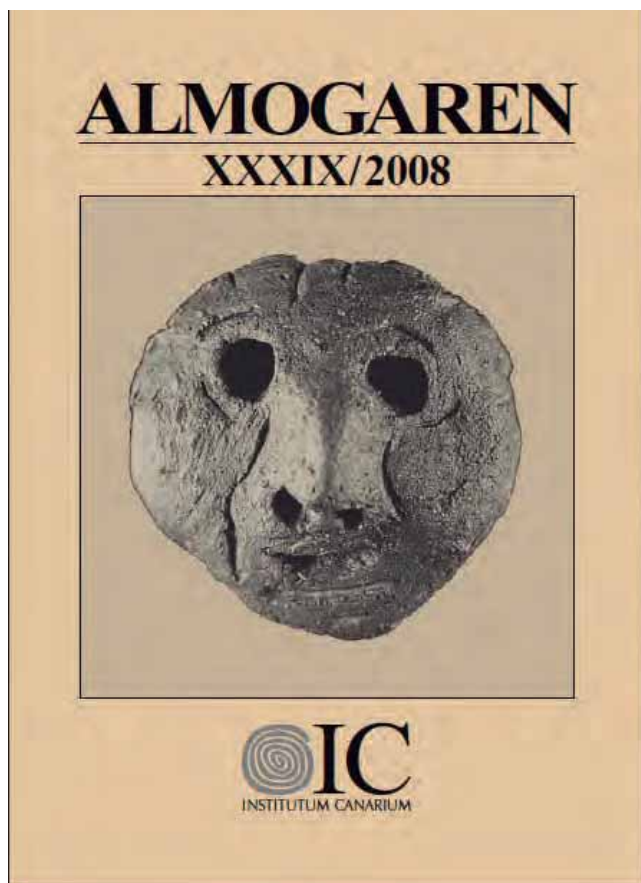
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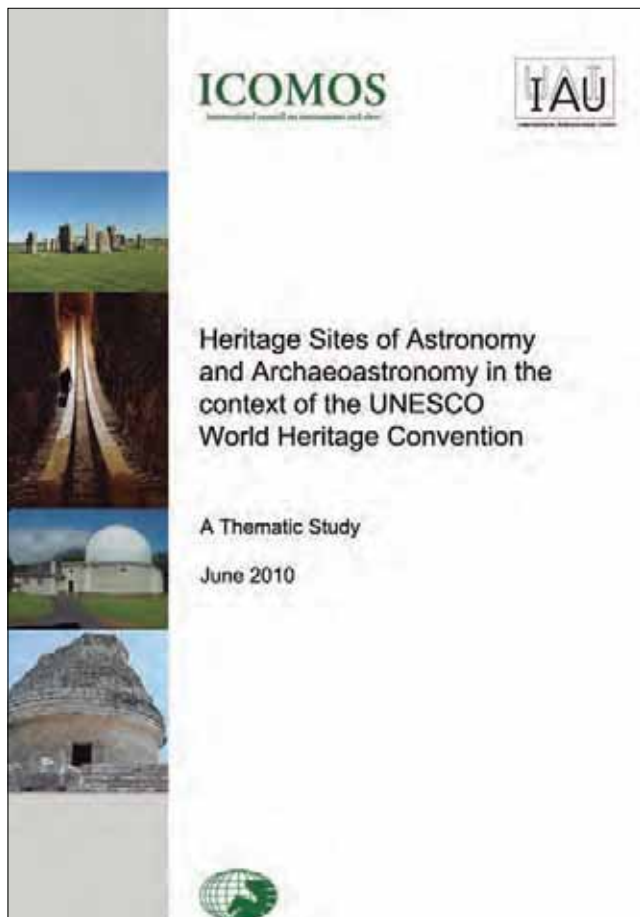
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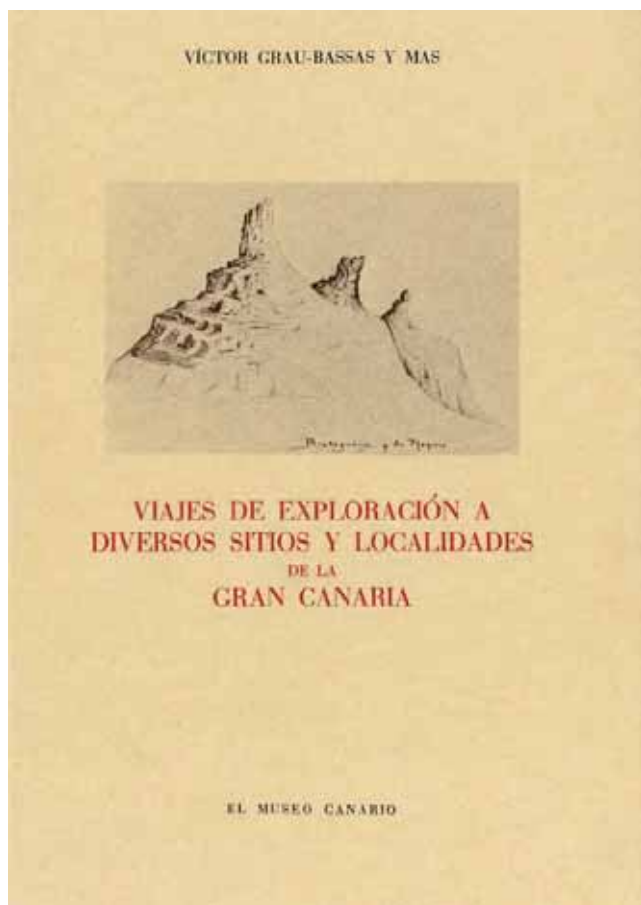
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Figure 7.5. Troglodyte settlement in the Tejeda Basin © FEDAC - 1925



Pinar de pino canario en el entorno de Morro Pajonales © Orlando Torres



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Patrimonio de Gran Canaria (Es Todo Tuyo)

Gran Canaria Heritage

<http://www.estodotuyo.com/>

An interactive web site is in the design phase. This contains all the information on the nomination, its attributes and actions regarding the nominated property. The website will include an interactive GIS viewer based on the BiosphereSmart platform.





Signature on behalf of the State Party



Signed on behalf of the Government of Spain

Risco Caído and the Sacred Mountains of Gran Canaria Cultural Landscape

Nomination to the World Heritage List

Director General of Fine Arts and Cultural Heritage
Ministry of Education, Culture and Sport

Luis Lafuente Batanero



10 Elaboration of the Proposal



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