

Re-discover the social function of a terraced landscape

Keywords for the forthcoming plan of Pantelleria Island National Park

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Abstract

Pantelleria island is situated in the middle of Mediterranean sea, on the reef separating the African and European continents. It is 83 sq km, and morphologically characterized by mountains and hills developing a quite uneven landscape with steep slopes and rare sub-flat areas at some volcanic calderic depressions.

Approximately 71% of the island surface is covered by terraced fields [Barbera, Cullotta, Rossi-Doria, Ruhl, 2010]: 5,899 hectares which testify to the human activity transformation of the island's landscape. The history of agricultural use of the land dates back the 2nd millennium B.C. A small permanent community cleared land through cutting and controlled fire, along with stone clearance to shape the slope with terraces.

Terraced landscape in Pantelleria shows some technical solutions giving the island a strong identity: lava stones is the main feature for the human refuge (*dammuso*), for the citrus trees (*giardino*) and for the biodiversity (terraces).

Today, this cultural landscape is undergoing a process of abandonment that concerns both the land and the artifacts related to the production activity. This is due to the shift away from agriculture resulting from the loss of economic profitability over the past thirty years. Agriculture was previously the leading industry on this island,

However, the tools for the protection of the territory have allowed a direct safeguard in the perpetuation of the original construction typology of the artifacts and indirectly in the maintenance of the landscape which, still shows the original arrangement. Since November 2014, the local grapevine growing technique has been granted UNESCO World Heritage status, since October 2016 Pantelleria became a National Park and since February 2018 the Dry Stone Landscape of Pantelleria is in the National Register of Rural Landscapes.

The aim of the paper is to show how to preserve the social function of the terrace landscape in Pantelleria, with some recommended actions and focus to lead the National Park Plan which the local community will produce, along with discussing recent research about the assessment of value features across the Monastero Plain.

Geographies of a complex landscape

Pantelleria Island (36°44' N, 11°57' E) is located in the Sicily Channel, approximately 95 km from the Sicilian coast (Capo Granitola) and 67 km from the Tunisian coast (Ras el-Mustafà). The island is elliptical, with a maximum length of approximately 14 km along the NW-SE orientation, and a maximum width of approximately 8 km [Agnesi, Federico, 1995].

The origin dates back to the last periods of the Tertiary [Foerstner, 1881]. In a geological sense, it is a relatively young island, created by volcanic activities, previously underwater, and subsequently subaerial, of submarine outbreaks in the south-western volcanic district of the Sicilian group [Imbò, 1957].

The island covers an area of 8,453 hectares. It is located on the rift that divides the African and the European continents. Terraces cover 71.1%, or 5,899 hectares, of the total area of the island. The terraces have been shaped by the long history of human activity and imprint on the otherwise hostile landscape: dominated by volcanic activities, with a lack of water sources and the almost constant presence of the wind. [Barbera, Cullotta, Rossi-Doria, Ruhl, 2010].

The island is covered by three different kinds of natural vegetation:

- ✧ *Evergreen forests* which are 1,500 ha wide. These forests occur across the slopes of the Montagna Grande, the top of Gibeles Mount and on the higher levels of the south east side of the island. *Pinus pinaster*, *Quercus ilex* are the most frequent species;
- ✧ *Mediterranean scrub* is made up of herbaceous and shrubby vegetation. This vegetation is most frequently found along the coast and in the inner deteriorated soils, like at Arenella and Tre pietre point. Some of the plants (*Euphorbia dendroides* and *Erica* spp.) complete their vegetative cycle before summer, giving the environment a steppic appearance.
- ✧ *Coastal garrigues* are typical bushy discontinuous formations that extend over uneven ground, which is rich in outcropping or sandy rock, in an environment characterized by high brightness, temperature and aridity. It consists of low, fruit bearing shrubs, which generally reach less than 50 cm, and not more than 1.0-1.5 meters *Rosmarinum officinalis* and *Thymus vulgaris* feature in this category, and are found frequently in Sataria Bay and around Formaggio point.

The rural landscape, is one of the most impressive and iconic feature of Pantelleria. This landscape is the central feature of this paper, along with the wider expression of island vegetation.

Agriculture is mainly based on the production of olives, capers and grapes.

Olive trees are pruned low to direct the branches rest on the ground. This maximizes the protection afforded by dry-stone walls from the wind and sea air. Capers are grown, exceptionally, as monocultures on often imposing terraces.

Grape- *moscato* or *passito*- is the most widespread crop on the island today. The low grapevine, typical of the Phoenician and Greek colonies of Sicily, is grown in hollows that gather rainwater and protect the grapes from the wind.

The dense network of terraces and dry-stone boundary walls is interspersed with *dammusi*, vaulted buildings with several rooms used as homes or shelters. Typical elements of the local landscape are the so-called *gardens*: dry-stone circular buildings up to 4 meters tall and walls about 1 meter thick, used as shelters for fruit - usually a single citrus – trees, which could not be grown otherwise due to their vulnerability to the wind and high-water requirements.

The use and nature of the Pantelleria rural landscape has developed since the colonization of the island during the 15th century B.C.. Until the mid-nineteenth century the land was wooded with a limited cultural concentration to the parts closest to the town.

The development of agriculture and the spread of the rural landscape as it appears to us today, began 1845, with the dissolution of the “diritti promiscui” and the establishment of rights of private use and development of the land. . These political changes created the necessary conditions for access to land for small owners. [M. Agnoletti, 2012]. Since this time, the agricultural use has significantly modified the geomorphology and the land's edaphic conditions.

This is because the agricultural use required considerable amounts of stone removal, the construction of terraces and sedimentation of the available sediment. It was only after this transformation could the agricultural production system start to provide for the needs of the island community such as the substantial village of Mursia. The control of the territory and the exploitation of the environmental resources continued to extend to the pastoral lands in the morphological depressions, where the herbaceous vegetation was allowed for the useful for the production of cattle, goats and sheep [Cattani, Tusa, 2012].

The Bourbon Land Cadastre of 1833 records that 69% of the total area of the island is cultivated, with vineyards comprising 12.7% (1,054 ha) of the island.

The island's crops from the end of the 19th century to the early 1900's were varied in order to provide the necessary requirements for each family's food subsistence.

After the first twenty years of the 20th century, wine production grew to play a strategic role in the island's economy, which was maintained until the early 1970's. The viticulture production covered approximately 4,000 ha at that time. However, the following decades have been characterized by an agricultural crisis, which has resulted in the abandonment of terraced fields. The causes of this crisis are common to other terraced areas: the fragmentation and the pulverization of agricultural areas, droughts and the lack of irrigation water and systems, and the loss of economic profitability of these agricultural activities. No single reason is more or less important than others.

The story of this decline is highlighted by the fact that the utilized agricultural area of the island was 81.6% in 1929 but has today decreased to 16.1% [G.Barbera].

Planning, protection, restrictions

In order to address this change, and to protect the landscape, a number of different steps have been taken and implemented by the national, regional and local governments. These measures are summarized below.

The primary tool introduced by the regional authority for the protection of the landscape of the island of Pantelleria is the Territorial Landscape Plan (PTP). The PTP was adopted in 1997 and modified in 2000. The PTP built on the pre-existing (since 1976) landscape restrictions across the whole island is under landscape pursuant to Law 1497/39 since 1976, with the ambition to address the protection of different landscape areas achieve the "conservation of the agricultural landscape and its traditional elements". The PTP has a process for the survey of the terraced landscape a wide survey which identifies those portions of terraced landscape previously occupied by agricultural cultivation and now colonized by steppic vegetation.

From the operational perspective, the PTP identifies six programmatic categories of protection for the terraced landscape, depending on the degree that the degradation. The most relevant categories for this paper are:

- ⤴ *Maintenance* in those areas with high landscape sensitivity but low criticality with "interventions aimed at maintaining the characteristics of the existing landscape but also to increase its role and meaning";
- ⤴ *Restoration* for those "traditional human systems" where there was abandonment of agricultural crops with corresponding degradation processes and spontaneous re-naturalization;
- ⤴ *Environmental and landscape recovery* in areas or elements of the landscape that have low sensitivity but high criticality, including areas or elements whose landscape values have been altered or compromised.

The PTP recommends for terraced areas, regardless of the category or circumstances, the maintenance of the elements that characterize the organization of the territory and the historical agricultural settlement (including rural pattern with closed fields, rural buildings, dry stone walls, terracing, rural roads, paths), with the broad vision protecting and preserving of the landscape, its components and its activities.

Regarding the natural habitat protection, the island of Pantelleria hosts some Sites of Community Importance:

- ⤴ cod. ITA 010019 "Montagna Grande and Monte Giblele"; and
- ⤴ cod. ITA 010020 "Coastal area, cliffs and Bagno dell'Acqua ".

There is also a Special Protection Zone:

- ⤴ cod. ITA 010030 "Pantelleria Island and surrounding marine area".

The terraced landscape is within all the zones mentioned above.

In addition to the above, since November 2014, the local vine growing technique has been granted UNESCO World Heritage status, when the traditional agricultural practice of cultivating the *vite ad alberello* (head-trained bush vines) of the community of Pantelleria was added to the Representative List of the Intangible Cultural Heritage of Humanity. This provides an interesting example of the relationship and identification between the food product with the landscape of its production. The wine combines the scenic values the Pantelleria terraced landscapes with their visual impact.

One further example of the the restrictions and protections of the terraced landscapes on the island is the establishment of the National Park of Pantelleria, decree of the President of the Republic issued on July 28, 2016.

The territory of the National Park is divided in three zones:

- ⤴ *Zone 1* with significant natural features, or landscape, agricultural use and / or historical-cultural interest with zero or minimal degree of anthropization;
- ⤴ *Zone 2* with significant natural features or landscapes, agricultural use and / or historical-cultural interest with limited degree of anthropization; or
- ⤴ *Zone 3* of landscapes and / or historical cultural value, with a high degree of anthropization.

The portion of territory holding terraced crops is transversal to these three areas, with a greater presence within zone 2 and zone 3. Among the measures of protection and sustainable development identified in the establishing Decree, there are two primarily relevant to the terraced areas, relating to:

- ✧ the preservation and enhancement of the landscape values of the territory, of archaeological, historical, cultural and architectural, ethno-anthropological and anthropological evidence, of rural settlement artefacts and systems, of landscapes (art.2, paragraph b); and
- ✧ conservation, restoration and enhancement of the historic agricultural landscape, *dammusi*, centers and rural and coastal areas (art.2, paragraph f).

A survey across the Monastero valley

In order to identify some key contents, useful for drafting of the future plan of the National Park, reference should be taken from recent research¹ on the sample territory of the Monastero Plain, which was conducted by the Department of Engineering and Architecture of the University of Parma.

The Monastero plain is an agricultural sector in the inner, south-west side of the island, with a flat course (altitude varies from +205 m to +250 m a.s.l.) inside a large volcanic caldera with a dense plot of dry walls that design an extremely complex mosaic. This plain extends over an area of approximately 3 sq. km.

The research has progressed on a double track:

- ✧ on the one hand, applying the experienced Landscape Character Visual Assessment approach, it has defined the contours of the image of the place from the perceptual point of view; and
- ✧ on the other hand, an analytical investigation was carried out on the individual components of the landscape in Monastero (viability, land uses, vegetation, dry stone walls, *dammusi*, gardens) creating a conceptual model, a GIS database and a data sheet for each element.

This research is of interest because it defines the operating principles and recovery/safeguard actions and highlights the diachronic comparison of the processes that took place in the plain in the last twenty years (1997-2017).

The comparative analysis of land use has revealed a slight increase in the vineyard production but a drastic reduction of horticultural and arable crops, as the cappereto has undergone a sharp contraction and the olive grove has reduced its surface area by 30%.

The comparative analysis of natural vegetation has highlighted the strong expansion of the low scrub as the first colonization of areas where cultivation was abandoned. A perimeter crown has been consolidated on the plain which covers the terraced sides of the caldera.

Finally, the research has highlighted the transformation of the road network, where there has been a loss of some minor inter-estate routes, due to the growth of brambles and infesting vegetation, along with the collapse of dry stone walls, which have sometimes been badly integrated with incongruous materials (concrete blocks) and often left in state of debris.

State of neglect as the new landscape

The change in use and neglect of the land has generated a new physical landscape across the Pantelleria island.

¹ The survey is a topic of a Master degree dissertation at the school of Architecture “Pantelleria un paesaggio da tutelare. Linee guida per il piano paesaggistico nella piana di Monastero” by S. Fazzino and L. Ferrata, supervisor prof. Marco Cillis, Accademic Year 20015-2016.

Since the late 1970's, two main factors have driven the abandonment of crops:

- ✧ a notable fragmentation of the properties and production areas combined with the challenge of using modern mechanized farming techniques which results in high costs of production with low economic profitability; and
- ✧ social changes caused by the growth in tourism.

This has resulted in a generational shift in the 1980's and 1990's away from agriculture into construction and other developments that service tourism and similar activities.

Additionally, the secondary vegetational colonization with species of the bush and by the collapse of the retaining walls of the terraces has caused a further change to the landscape. The abandonment of cultivation has favored the formation of particular herbaceous aspects and in which, together with numerous species characteristic of the communities referring to the *Thero-Brachypodietea*, scattered elements typical of the Mediterranean scrub are found on the island (*Oleo-Ceratonion*, *Quercetia ilicis*).

As with many other terraced landscapes over Italy, one of the most critical vulnerabilities in Pantelleria is the colonization of abandoned plots by shrubs and tree vegetation.

Moreover, recent national research promoted by the Ministry of Agriculture and aimed at the recognition of historical rural landscapes, has provided data that shows the impact of abandonment and consequential vegetation expansion in these abandoned areas gains a special significance when this area is also covered by the various legal protections. Among historical rural Italian landscapes, a significant percentage lie within in parks or Sites of Community importance (60%). Of these, 51% lie within SCIs of Natura 2000 network and 37% in parks or reservations. Furthermore, 64% are under landscape restrictions under National Acts 1497 of 1939 and 431 of 1985. [M. Agnoletti, 2013].

Existing ordinary legislation in areas under environmental restrictions cannot guarantee the conservation of historical rural landscape: in protected areas the trend is often to help renaturalization to improve biodiversity and wildlife preservation, rather than agricultural activities and the existing terraced landscape. Indeed, all over Europe, the most commonly accepted interpretation of biodiversity is the promotion and spread of natural tree and shrub vegetation over previously cultivated areas. An important observation regarding the frequency of occurrence of historical landscapes in protected areas is that, considering the remarkable increase of protected areas over the recent past, it was easy to foresee that they would be established in economically more marginal zones.

It is within these zones that the most interesting historical landscapes, including from interesting from an aesthetic standpoint, are often found.

This demonstrates a relationship between the preservation of the rural landscape and protected area management. [Agnoletti, 2010]. In those areas under landscape restrictions the threat of abandonment is higher (81%) than in protected areas, and so is the threat from encroaching vegetation (83%). The result is that while natural features were included long time ago among categories eligible for protection, agricultural features, which still make up most of the Italian landscape, are still excluded from them.

An example of this is what has happened over the terraced crops in Pantelleria island, radically changing the former rural landscape within few decades.

Keywords for the future (conclusions)

The maintenance of the traditional landscape on Pantelleria is possible. This must start with the maintenance and revitalization of the agricultural and silvopastoral activities without neglecting the quality and typicality of production and of multifunctional valorization of the rural system.

Therefore, the rural landscape of the island of Pantelleria must necessarily re-establish economic profitability in order for it to be maintained.

Paradoxically, this may be a return to the past where the agricultural system is the driving activity of the whole island economy, but utilizing ‘modernity’ and other industries. And how can this be? An example is for the island to develop where agricultural profitability does not come exclusively from the fruit of the earth, but also from all that can be connected to it, for example, the promotion of tourism.

The measures of protection and international recognition can only converge towards this scenario. This paper argues that in relation to the terraced areas of Pantelleria future drafting of the Plan of the Park², should take account of the analysis carried out, in order to make a contribution, identifying useful addresses for the protection and active conservation of the rural territory.

The key concepts of this vision include:

- ✧ the definition of quality, local, certified *sustainable chains* able to put farmers, restaurants, accommodations providers and farmhouses into a network, overcoming the single owner’s vision of his agricultural fund and in order to arrive at a vision of the economic system that sinks its reason into traditional agricultural practices;
- ✧ the enhancement of forms of sustainable agriculture, including the re-introduction of historic species previously cultivated on the island (lentils, oats, etc) intended as an element of ecological connectivity in the perspective of *multi-functionality*.
- ✧ the *landscape transcalarity* from the architectures to the territorial systems, through the application of an approach to the landscape according to which there is a correspondence of values between the single components and the network of relations (visual, symbolic, ecological ..) established in a systemic vision at the territorial scale.
- ✧ *Accessibility* as a form of maintenance: the opportunity of using historical tracks as itineraries for landscape practices, to prevent them from being overrun and their re-functionalization for slow tourism and related activities.
- ✧ *Communication and transmission of knowledge* in a dual direction: outward as a popular factor and towards the resident population to raise awareness of identity values. This approach was utilized in the Cinque Terre Plan adopted in 2002, and so the Plan should act

2 The Plan for the Park is the tool provided for by law 394/1991 to protect the natural and environmental values as well as the historical, cultural and anthropological values of the territory of the national parks. The Plan is drafted by the Park Authority on the basis of the criteria and purposes of the law.

Article. 12 of the law provides that the protection of natural and environmental values entrusted to the Park Authority is pursued through the instrument of the Park Plan which must, in particular, regulate the following contents:

- a) general organization of the territory through different forms of use, enjoyment and protection;
- b) restrictions, destinations for public or private use;
- c) vehicular and pedestrian accessibility systems;
- d) systems of equipment and services for the management and social function of the park;
- e) addresses and criteria for interventions on flora, fauna and the natural environment.

as an active planning tool, implementing a process of "sustainable development based on the relationship between community and territory, considering living as a relationship capable of mending the network of the continece between men and places "[I. Vinci, 2007].

The aim is recovering an original idea of the structure of a place, which is not only the sum of factors or elements, but the expression of the relationship between man and nature and "the lifestyle of a society, whose the agricultural landscape is expression".(Cazzola, 2009) Through a reading that proceeds by different levels of signification.

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