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## Borgo Pantano: seeds for the future<sup>1</sup>

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### ABSTRACT

The recent history of Sicily has been characterised by a continuous depletion of the natural and historical landscape. The territorial memory of the rural areas has been mainly wiped out. Nevertheless, lots of villages, abandoned since the post-war era, are fairly restorable, but only some of these are coming back to life thanks to the devotion of a few men who are carrying out remarkable projects. One of these projects focuses on Borgo Pantano, a rural village in the Tyrrhenian-Peloritan region. This 15th century hamlet has been abandoned in the Sixties, and so remained until a descendant of one of the old inhabitants decided to bring it back to life. The project aims at recovering not only the buildings but also the culture of the village. In order to reach this aim, a trans-disciplinary study has been carried out in the present paper.

**Keywords:** integrated relational tourism, Sicily, sustainable development, agro-environmental sustainability, ecological footprint, post-modern society.

### INTRODUCTION

The present paper aims at showing by means of an integrated trans-disciplinary project that the traditional activities and lifestyle of Borgo Pantano's inhabitants can be considered an excellent example of sustainable development. For this reason the present study can be thought out as a base for the eco-compatible restoration planning of the village, which could become in a close future a natural laboratory where to recover the equilibrium between nature and man's activities within a harmonized project.

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To reach this aim, first of all, it was necessary to define the history of the territorial dynamics both of the village and of the region where the village itself is located.

This preliminary work was later integrated with an analytical study of the customs and eating habits of the village's residents, analyzing in particular the agricultural aspects of Pantano's territory, highlighting the possibility to reach an economic system in equilibrium with nature by means of a quantitative approach based on the balancing between potential productivity and average consumption per person per product. These data were finally used to calculate a partial ecological footprint, useful to understand the impact of man's activity on the village.

Data were then visualised using a Geographic Information System, able to emphasize, by means of thematic maps, the fundamental aspects which characterised the village in the Fifties.

### **POST-MODERNITY AND TOURISM: AN ANTHROPOLOGICAL APPROACH**

Providing a definition of tourism is not easy. Unless it can be accompanied by a qualifying attribute (such as bathing, cultural, religious, etc.), the concept is too vague and dispersive. In fact, the different features of tourism are combined with the idea of a population moving from their habitual place, for different reasons and periods that are not too short. Nevertheless, until a century ago, there was a very precise idea of tourism: it was a moment of cultural enrichment, something that often lasted several months and was considered, by the ruling classes in Europe as a crucial phase of an individual's educational process. In its highest form, it was called the "Grand Tour". Tourism was no longer the journey towards the unknown, as it was for Homer's Ulysses and the fifteenth-century explorers, but a journey towards the exotic. It was a moment of understanding of the world and its diversity, but more than this it was the rediscovery of one's being, a moment of self-definition. During the twentieth century, with the phenomenon of "the masses", in its most common form, tourism lost its deepest meaning. Only a few segments managed to maintain certain elements of originality. Generated by the growing demand, the market and globalization processes led to the flattening of places, the cancellation of those differences of which discovery was the phenomenal essence. From the second half of the twentieth century, tourists no longer travelled to discover but to confirm those exotic environments, advertised in brochures and offered by tour operators in packages, without losing the comforts and habits of daily life (which, on the contrary were emphasized).

Discovery turned into fiction, just as reality, after all, as required by the post-modern logic (or if you prefer over modern) theorized by contemporary authors such as Marc Auge, Jean Baudrillard and Zygmunt Bauman. Therefore, the twentieth century tourist ends up emphasizing those ethnocentric characteristics already present in the Modern Age travellers. Certainly, we cannot say that this was a sustainable tourism and that it did not leave scars on the ground. The big, multinational, leisure and entertainment companies obviously had a less devastating impact on the environment than the oil companies did, but they also destroyed coastal structures, compromised landscapes, promoted illegal building and modified the economic and social structure, the traditions and cultural values that make up the world's mosaic.

Of course, this was, and is, globalization, its harmful effects, from which we try to defend ourselves nowadays, forcing a change, creating a limit to unsustainable practices, particularly in the “dark times” - to quote Hannah Arendt, but “fortunately” only in terms of economic recession – in which humanity is living, in this early twenty-first century.

Today in this field, as in other economic areas, we need to aim at an economic re-territorialisation. This means reconnecting production activities with places, bringing out the local individuality, ensuring that the economic dynamics are not exclusively handled by the external centres of political and economic power. A different style of consumption regarding goods, services, and production methods must be imposed, a sobriety forced by a difficult economic period. And this also applies to the tourist division, by testing new models, such as the “hands-on tourism”, that aims to recreate a refined and authentic travel experience, or the “integrated relational tourism”, aimed at the redevelopment of rural villages and the replacement of inland areas, or the “heritage tourism”, that aims at recreating an authentic experience of those places and activities that represent the history of people and places, from both past and present. We are moving towards an environmental and cultural sustainability. Man is now starting to realize the abuses committed in the recent past. In his soul, he has always nourished a good sense of transgression, a sense of guilt over the loss of Eden, the end of natural status and the birth of civilization. This sense of guilt has gradually been growing since the industrial revolution, because the impact of human activity on the environment, on the natural and anthropic landscapes has been really quite devastating. A reconciliation between man and nature, the great mother that procreated him (Demeter or Isis in the ancient Mediterranean culture), is needed, as well as the rediscovery of cultural roots that, if not properly managed, are likely to be eradicated by globalization.

### **BORGO PANTANO, MODEL OF SUSTAINABILITY/LOCAL DEVELOPMENT**

The 1950's marked a sharp division in Sicilian history. The failure of the Agrarian Reform and the beginning of the industrialization program in Southern regions, supported by the Cassa di Sviluppo per il Mezzogiorno, opened the doors to profound changes in the area and upturned the urban hierarchy, in Sicily as well as in other Southern regions of Italy. In the space of twenty years the appearance of the South has drastically changed. As Giuseppe Giarrizzo (1989) reminds us, rather than migration to Northern Italy and Europe (the flow to the new worlds had already greatly decreased), it is the internal migration that rewrites the island's geography. The inland mountainous areas were suddenly abandoned, while many coastal centres reported a population growth that had never occurred in Sicily before. The image evoked by Bernardo Rossi-Doria is emblematic: “the meat opposed to the bone”, for Sicily and for all the South. But on the island, much more than for the rest of Southern Europe and the Mediterranean, the presence of substantial urban-demographic concentrations along the coasts is already a historical, long-term, characteristic. However, in those years, the weight of Palermo, Catania and Messina grew even further. Again in the coastal regions, the industrialization policy also created new centres.

In Priolo-Augusta, Gela, Milazzo and Termini Imerese, the development poles attracted the population and emptied the inland areas. Perhaps, the most important example in Sicily is Siracusa, where in three decades - from 1950 to 1980 - the population grew from seventy thousand to one hundred and twenty thousand. But Gela, Augusta, Milazzo and Barcellona were facing a hardly manageable demographic emergency as well. It is quite easy to understand just what these centres had to deal with: urban planning, service predisposition, traffic congestion. At the same time, mass tourism led to illegal building, the gradual cementing of coasts, while in the three main centres of the island, mafia and speculation were erecting one building after another. In Palermo building was not only restricted to peripheral areas: the Viale Libertà bore the brunt of it, having lost many of its valuable mansions, replaced by modern high-rise blocks of flats, that look all the same. Messina grew chaotically, without any town planning criteria, without any logic, torrents were buried and, at the cost of public safety, earthquake safety rules were ignored. Meanwhile, the cement culture spread for emulation and even in the inland areas, the small towns in demographic decline were no longer safe. There is a Sicily that is disappearing, Leonardo Sciascia (1982) wrote, "under the television aerials, the cars, the paroxysmal consumerism, the rural exodus, the disarmament of sulphur mines". Only a few were safe.

Among the victims of depopulation there is Pantano, a small rural village in the Tyrrhenian-Peloritan area. However, it is only a victim of abandonment and certainly not of overbuilding, if we consider that it was the absence of humans that has preserved Pantano from the disasters caused by "Sicilian modernity". This splendid rural archaeological example in Sicily lies in Rometta, a town in the province of Messina. Built on a Peloritan mountain depression, about 300 meters above the sea level, Pantano can be found among the villages of Rapano, Filari and Scarcelli - the latter spreading into the nearby town of Saponara. Its origins date back to the fifteenth century, thus before the age of establishment that is, perhaps, another hinge moment in Sicilian history together with the recent events described above. In fact, between 1573 and 1714, 113 new agro-towns were born on the island with the Viceroy's permission (the well-known "licentia populandi"). In less than a century, the towns doubled from 170 to 340. In 1693, the earthquake in Val di Noto gave further impetus to this period of territorial reorganization. With their perfect geometric plans - as modern standards imposed - the new centres started to stud the island, drawing new urban networks, establishing new hierarchies. So, in addition to the morphology of the area - the orographical aspect - that holds Pantano in a depression, thanks also to these events the village never experienced a significant population growth, which would have otherwise upset its system and architecture. With the Sicilian population increasing from 550,000 according to the 1505 census to 1,020,792 in 1583, the sixteenth century explosion would find an outlet in the recently founded centres, which the barons would then promote in the whole region (Ligresti, 2002). Therefore, it is probably due to the emergence of these new poles that the village has managed to keep its "Y-shaped" urban planning intact, as well as its typical medieval rural housing scheme (Figures 1; 2).

However, in spite of its small size, Pantano did not play a subordinate role in the political and economic dynamics of the Tyrrhenian-Peloritan territory. It was perfectly integrated in

an urban system of small rural centres interacting with each other. This is demonstrated by the fact that, built in the sixteenth century and dedicated to Our Lady of Grace, the village church is more ancient than the San Domenico church, situated in the upper Rapano village and built after 1604.

Therefore, before this date the little church of Pantano is supposed to have been the only place of worship in the district. Furthermore, even though the village has always been self-sufficient, with its own food and agricultural production, its economic relationship with the neighbouring towns has always been considerable. The last inhabitants of the village still remember some women from Saponara and Scarcelli who came to Pantano, singing ‘u ri-iddu, loaded with straw and hay. These women then took the road back or went on towards Spadafora, thus drawing the “roads of songs”. Pantano was also an important sericulture area.

The village was continuously inhabited until the early Sixties of the last century, when the previously mentioned demographic changes caused the site to be gradually abandoned. The industrial pole of Milazzo-Villafranca catalysed a demographic flow towards the coast and, with less than 77 people, Pantano was finally abandoned. This depopulation caused the end of production, business and life, but paradoxically ended up by preserving the village, making it an exceptional case of rural archaeology in Sicily. Today, Pantano is exactly as it was in the Sixties. Of course the state of abandonment led to the building’s decay (nothing that cannot be properly recovered), but not one sack of concrete nor one gram of asphalt have been poured onto Pantano. The absolute absence of man has saved the village from the horrors that have, elsewhere, spoiled the Sicilian landscape. Perhaps because of this, with its singularity and the scientific interest that it obviously excited, the situation of Pantano is without parallels in Sicily. In this small rural town it is possible - more than elsewhere - to understand a recently died world with its logic and its social and economic mechanisms.

Pantano has about forty houses, spread around the renovated church and its small square. The architectural building style is very poor but dignified. Today the village is no longer abandoned. A company called “Incanti & Memorie” has bought all the buildings in the village, with the aim of bringing a rigorous upgrading project to a close. The initiatives connected with Pantano started in 1994. Since then the village, already registered in the MOTRIS plan, has been the subject of various studies led by the University of Reggio Calabria – Department of Architecture. The OSETT (Observatory of Economic and Tourist Development in the Tyrrhenian Area) also contributes, along with “Incanti & Memorie”, to the supervising of the cultural aspects of the project. Moreover, for some years, OSETT has been promoting interesting initiatives such as “The roots of memory” , an annual cultural festival in which Pantano with its remarkable scenery and its traditions plays the main role. Providing a total investment of more than four million euros (partly supported by public and partly by private funds), the recovery plan for the village is a painstaking and unusual work in a difficult context as Sicily is. Starting from detailed study of materials, building techniques, farming organization, village land, water and tradition management, the goal set by this project is a full and rigorous upgrading of Pantano.

As previously said, to confirm the scientific character of the work, Universities in Sicily and Reggio Calabria have recently shown an interest in this project. Nothing has been left out, from technical to social aspects, the Project is trying really hard to recreate a lost world and its features that run the risk of disappearing from the collective memory. Everything must be faithfully reconstructed: even Pantano last inhabitants' 'nciurii (epithets) will be recovered, and this will define the new toponomastic. Ethical aspects will not be left out either. On the 26th of January 2006, the City Council in Rometta approved the Protocol of Ethics, that establishes the guidelines for the recovery activities of the village. Moreover, there is a pending Charter of Ecology and Ethics, a program where the principles of social and economic sustainability are established in order to regulate the village operations after the recovery. The final goal is to create a model of alternative accommodation, an evolution of the "common heritage village", a concept that is difficult to define, but that is becoming a reality in Pantano. As will be later explained, one of the project's basic principles is the sustainability of the environment, uses and traditions. The latter will be maintained and reintroduced. Staying in Pantano, in a typical Mediterranean rural landscape, travellers will be able to escape from a world that globalization has distorted, renew those roots that modernization has cut off, recover a sober and dignified way of living that consumerism has transformed and that now seems to be the only possible. The typical, traditional dishes of the country will be reproduced, the temporary guest will be invited to take part in the village's traditional activities and, most important, to satisfy his need for community. It doesn't matter if he is German, French or Piedmontese, the reconciliation with nature will take place anyway. In that case, it won't be a return to his roots, but a return to the discovery, to the satisfaction of the inner human need to wonder at the world.

In a region where the development patterns have always been imposed from above, where the power elites have been able to turn to their favour the consequences of every political change, even when apparently democratic and respectful of local identities, Sicilian people gave themselves up to a compulsory inaction, a vain evolutionism - subject of a relevant literature produced by the regional culture. Initiatives such as Pantano Project need therefore to be encouraged and supported not only for their value and quality, but also because they rise in the territory and for the territory and could be an example to emulate, so as to light a path, the only pervious at the moment, which is local development. Only by rediscovering our origins and emphasizing our differences we can live free, as Socrates said in Plato's *Phaedo*, referring to the Mediterranean: such as frogs and ants - with mutual differences - around our pond.

### **ENVIRONMENTAL SUSTAINABILITY AND ECOLOGICAL FOOTPRINT**

In order to carry out a reliable description of the village, emphasizing the important aspects of its social life as well as the traditional agriculture and the average consumptions activity of the inhabitants in the Fifties, a quantitative study on resources' production and consumption has been here carried out. Yielded results were essentially based on data from the degree thesis of Paolo Bisazza (2009). These data were collected in several years by means of direct research activities carried out by the administrator of "Incanti & Memorie", Orazio Bisazza.

Previous data integrated with new field investigations were then implemented within a GIS database, which allowed a more complete visualisation of the environmental aspects of Pantano territory, as well as contributing in the estimate of a partial ecological footprint based only on the food consumption in the Fifties.

### **DESCRIPTION OF PANTANO AND DAILY LIFE OF THE VILLAGE**

At present only 10% of the 40 buildings forming the village show a fairly good condition of preservation. 50% are in a very bad state and the remaining 40% are composed of ruins.

The Church, located in the centre of the village, is constituted by a central and symmetrical hall and by an annexed body. Inside, the choir is placed upon the entrance wall. Here the children used to gather to sing the Sunday hymns. The furnishing is simple and devoid of stylistic references, the holy furnishings and the only valuable picture, dating back to 1730, have been stolen. Typical of the houses of the village are the cisterns and the ovens for the baking of bread. Elements related to past dominations are not missing: an example of it is the dammus of Muslim origin in front of the Church, or a vaulted passage in which different architectural styles converge. The village was also provided with a collective millstone where the wine-pressing usually took place. The grape harvest was an aggregation feast: many hands were needed, and the workers used to gather for lunch. The women cooked 'u sugu and 'u piscis-toccu â ghiotta while Cinniredda, the itinerant musician, used to sing and play the accordion.

The working activities were always accompanied by songs, which performed the important task of easing the hard work. The capuani were a typically feminine repertoire, related to the working environment of the ghiummi, groups of six-seven women entrusted to the carrying of goods. A characteristic element of this song was 'u riiddu, which had a basical voice called back by others, and was often used to inform of one's arrival while on the other side of the valley other voices echoed an answer, until all of them harmonized in a common melody. As previously hinted, 'u riiddu was used by working women walking a path which will be soon restored, called «The path of songs». This path started from Saponara and took the women to Pantano's fields.

The most typical element in the village is however the Nurse's Tower. The network of baiulas, dating to the XIII century, held up at that time the administrative system. Justice was applied by a judge, who usually was the lord of the nearby city of Rometta. At the castle's tower the bailiff, together with jurors from Pantano, had the duty to solve issues related to the agricultural activities, especially those related to the cultivation of corn, linen and silk. As about this last activity, it is to be remembered that Rometta's silk market was very renowned in the area. It was connected with a small local entrepreneurial class headed by the Bosurgi family. This family gathered under its power the small farmers and organized the local weaving of the rough fibres, even entering the largest Messina market and getting to own in its port a commercial organization which exported silk drapes.



Part of the silk and linen was waived for the needs of local families, while the rest of it was delivered to Rometta's commercial organization for selling.

### **FOOD HABITS OF THE HAMLET**

Studying the eating habits and the consumption per person of Borgo Pantano's inhabitants it has emerged how, in the 1950-1960 decade, their diet was mainly based on vegetables. Cereals were the chief nourishment (Table 1). With an average value per year of 181 kg they constituted 54% of the food consumption, legumes and vegetables came second with 92.5 kg per year (27%), followed by fruit 36.6 kg (11%), meat and its derivatives with 23.3 kg (7%), and finally fish (nearly only stockfish) with 5 kg per year (1%). As about cereals, wheat flour was mostly used to make bread and pasta, and corn wheat was used for the preparation of polenta and baludde, the local corn bread.

Among legumes, broad beans, beans and peas were the most consumed, all of them securing a good protein contribution. Among vegetables the favourite were potatoes, onions, tomatoes, eggplants, peppers and artichokes. As for fruit, prickly pears, plums, cherries, apples, pears, pomegranates and grapes.

Cultivation, especially the arboreal ones, was based on the use of cultivars and local accessions, which today are at risk of extinction because of the widespread abandonment of the fields and the introduction of hybrids.

Finally, it should be highlighted that meat and fish represented only about 8% of the food consumption. People mostly ate chicken and rabbit meat, followed by pork, goat and bovine meat. All families at the village used to breed chickens, which guaranteed a production of eggs.

**Table 1: Pantano's Residents Food Consumption per person (average data from the decade 1950÷1960 )\***

Food/culture	consume (kg/year)	tot village (kg/year)	consume tot village consume (q)
wheat	165.0	12,705.0	127.05
maize	16.0	1,232.0	12.32
citrus	6.6	508.2	5.08
vegetables (legumes, eggplants, etc)	60.0	4,620.0	46.20
fresh fruit	30.0	2,310.0	23.10
potatoes	20.0	1,540.0	15.40
tomatoes	12.5	962.5	9.63
oil	5.0	385.0	3.85
wine	109.5	8,431.5	84.32
cheese and ricotta**	3.0	231.0	2.31
milk	36.5	2,810.5	28.11
other fat (lard )	0.5	38.5	0.39
goat meat	2.0	154.0	1.54
bovine meat	2.0	154.0	1.54
pork meat	5.0	385.0	3.85
chicken and rabbit meat	6.0	462.0	4.62
fish	1.0	77.0	0.77
stockfish	4.0	308.0	3.08
eggs (n.)	48.0	3,696.0	36.96
Water for feeding	730.0	56,210.0	562.00
Water for domestic use (20 l/day)	7,300.0	562,100.0	5,621.00

\* data obtained through the elaboration of information given by ancient people of the area, estimated, and derived from bibliographic sources.

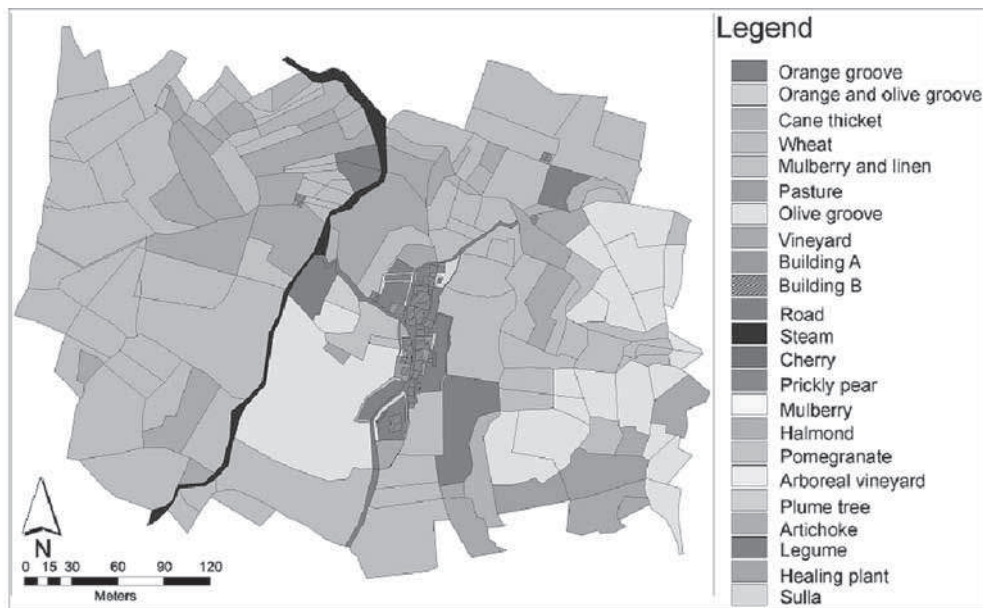
\*\* necessary about 15 l of milk to make 1 kg of cheese and ricotta

## AGRO-ALIMENTARY PRODUCTION

After the Second World War the agricultural productions of the village guaranteed sustenance to its 77 residents. In order to purpose the construction of a natural laboratory able to rebuild up the Pantano's traditional food system, a study on the agricultural productions has been carried out. This study took as a reference a surface of nearly nineteen ha (18.7852 ha) neighbouring the village, where the residents predominantly performed their agricultural activities during the 1950-1960 decade.

The present elaboration (Tab. 2) shows that on this area (18.7852 ha) the practised agricultural cultivations were the arboreal seeding with 7.3672 ha (39%), the seeding with 3.0954 (16%), the olive with 2.9569 ha (16%), the arboreal vineyard and the vineyard, respectively with 1.6470 ha (9%) and 1.5290 ha (8%), the pasture with 0.7530 ha (4%), the cane thicket with a surface of 0.6820 ha (4%) and the prickly pear with 0.0267 ha (less than 1%) (Figure 1).

**Figure 1: Use of the Soil Map**



The arboreal seeding was composed of herbaceous cultivations (corn, horticultural or leguminous such as broad bean, bean and pea) together with arboreal cultivations (grapevine, plum, cherry, medlar, pear, apple, apricot, mulberry and almond). The seedings were made of corn cultivations and in small part of maize. In the arboreal vineyard the grapevine trees, normally raised as small trees, were joined with fruit trees. The cane thicket was of primary importance because the canes were employed as support for the horticultural cultivations and to build partitions and ceilings for the houses.

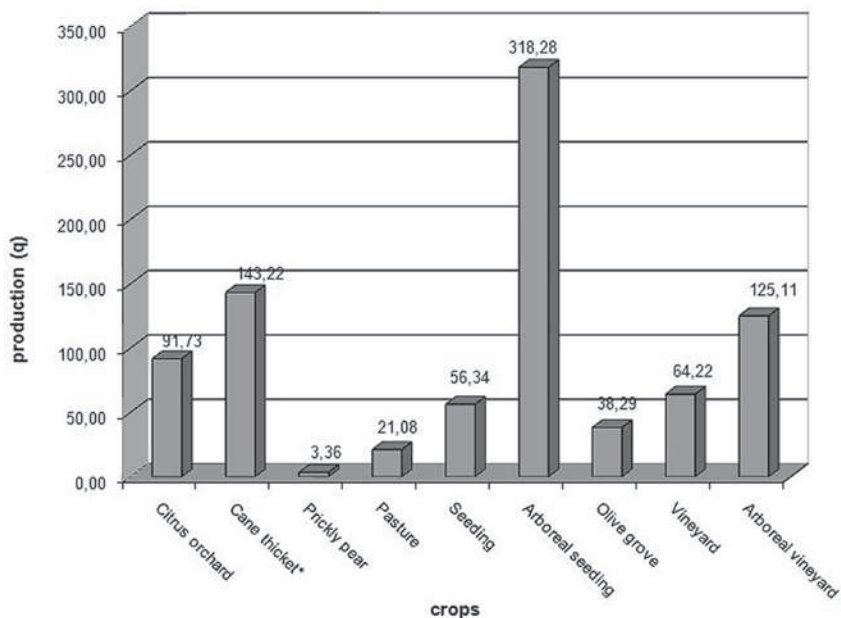
The cattle's feeding was guaranteed by areas destined to pasture and by the forage (mostly sulla), while the agricultural cultivations' remainings (legumes, broad beans, potatoes, etc.) were given to the animals (chickens, pigs and rabbits).

As for productivity, the main cultivation was the arboreal seeding with 318.28 quintals, followed by the cane thicket with 143.22 quintals, the arboreal vineyard with 125.11 quintals, the citrus orchard with 91.73, the vineyard with 64.22, the seeding with 56.34, the olive grove with 38.29, the pasture with 21.08 and the prickly pear with 3.36 quintals (Table 2 and Figure 2).

**Table 2: Agricultural area Farmed by Pantano's Residents, Cultivations and their Related Productions**

Cultivation	Cultivated surface m <sup>3</sup>	Average production q/ha	Total production (q)
Citrus orchard	7,280	126.00	91.73
Cane thicket*	6,820	210.00	143.22
Prickly pear	267	126.00	3.36
Pasture	7,530	28.00	21.08
Seeding	30,954	18.20	56.34
Arboreal seeding	73,672	43.20	318.28
Olive grove	29,569	12.95	38.29
Vineyard	15,290	42.00	64.22
Arboreal vineyard	16,470	75.96	125.11
tot	187,852		

\* estimated production

**Figure 2: Quantity of Production Obtained from the Farmed Surface Near the Village, Differentiated by Cultivation.**

## FOOD REQUIREMENTS

Considering data related to the consumption per capita and the areas farmed by Pantano's residents, we could further analyze and elaborate. We particularly want to highlight what was the necessary surface to satisfy the village's food requirements, and clarify whether the agricultural area was adequate to guarantee the production needed.

Comparing the villagers' food expenditure (in the considered period of time) and the average productions of the cultivations we got the value in ha of the surface necessary to supply food to Pantano's residents (Table 3). This calculation shows that to cover the food requirement of 127.05 quintals of wheat they needed a farmed surface of nearly 7 ha. Also, about 4.5 ha of grapevine surface, 2 ha of olive grove, 0.6 ha of vegetable garden and some hundred metres of citrus orchard, tomatoes, potatoes and corn were needed (Table 3).

About the meat and its derivatives (Table 4), the latest testimonies tell us that the breeding was mainly based on small animals and pigs. The village also owned two milkers, one of which was destined to the production of fresh milk, collected every morning by the Saponara milkman, 'u lattaru. The other one's milk instead was destined to the production of ricotta and cheese and sold in the surrounding villages. Moreover, the village had five sows, 25 goats, about 300 small animals and five calves fed stalling in the huts near the farmed fields. These calves, once fattened, were sold at Spadafora's fair.

So, the animal consistency in the village was of about ten units adult bovine (UBA). This calculation shows that the cattle load of about two UBA/ha was inadequate for the forage needs of the area under observation. The residents, in fact, got the missing forage from a neighbouring area called 'a valanca (the ravine) where no other cultivation was possible.

Analyzing the water expenditure for alimentary use it was verified that this came from the numerous wells of the village. Water for domestic use instead was collected from the roofs through waterspouts and then gathered in brick underground cisterns present in the houses, while another part of it came from the near wells and from springs. Multiplying the value of the roofs' surface for a coefficient of average outflow of the sloping roof (0.85), for the quantity in millimetres of average annual rain (about 800) and for a coefficient of 0.9 related to the losses that happen during the gathering (in cistern) we obtain a value of 293 m<sup>2</sup> of water gathered from the roofs. It is interesting to observe how this is approximately the volume of rain water collected from roofs, and covers more than 50% of the water requirement for domestic use.

The rain water carried by roofs to the waterspouts was gathered, as before said, in underground cisterns: their number was initially 32, and represents a distinguishing feature especially if related with the number of buildings, as it means that almost every house had its own water supply. In addition to the cisterns, there were two public wells of spring water in the village, which were also used as meeting points by the villagers. Of course the common problems in managing the local resources made this community very cohesive.

Summarizing, data related to the farmed surface necessary to the residents' food requirement show that they needed a surface of about fifteen ha, with five ha destined to pasture or forage. This means a surface approximately similar to the examined one. This analysis obviously doesn't want to assert that other economical and agro-alimentary exchange with the neighbouring towns didn't exist. Some of the village's residents in fact farmed fields in other areas and had commercial intercourses. The economic gains mainly came from the selling of calves and pigs, wine and processed goods (jams, dried fruit, tomatoes, dried figs) and from the supplying of linen and silk. Analyzing this survey's results it can be observed that the expenditure of natural resources was low and adequate to the regeneration ability of the renewable resources. Maximizing the efficiency in the use of resources also meant that eco-sustainable building techniques were applied. An example of this are the already mentioned systems for the gathering of rain waters, but also the terracing and the canalization works present along the village's slopes. The terracing was important for the territory's protection, because it made cultivable part of the land and it improved the stability of the slopes. The terraced landscapes, built to gain cultivable land from the slopes, protected the versants from hydro-geological hazard. Nature and man were then settled as a harmonic one. The drains for the gathering of water, called *saje*, were used to collect the meteoric waters and lead them to the near creeks. The resident was forced to keep clean the *saja* to avoid its occlusion and the consequent potential landslides and damages to his neighbours' parcels.

The importance of water in this area wasn't only related to its subsistence function for man and agriculture. For many centuries water was the essential propelling factor for the cereals' crushing system, through the complex network of water mills (now crumbling) diffused in the neighbouring area.

**Table 3: Average Production of Cultivations and Surface Necessary to the Villages' Food Requirements**

Food/cultivation	Tot village expenditure (q)	Average production q/ha	Necessary surface (ha)
wheat	127.05	18.20	6.9808
maize	12.32	200.0	0.0616
citrus	5.08	126.00	0.0403
vegetables (legumes, eggplants, etc)	46.20	73.85	0.6256
Fresh fruits	23.10	101.89	0.2267
potatoes	15.40	210.00	0.0733
tomatoes	9.63	210.00	0.0458
Olive oil	3.85	2.00	1.9250
wine	84.32	18.00	4.6842
			Tot 14.6633

**Table 4: Surfaces and Cattle Necessary to Satisfy the Meat and Derivatives' Requirement and the Water for Alimentary Use Requirement.**

Food/culture	Tot village expenditure (q)	Necessary surf (ha), cattle
Cheese and ricotta milk	2.31 28.11	n.1 milker and 25 goats
Other fats (lard)	0.39	pigs
Goat meat	1.54	about 25 goats
Bovine meat	1.54	1 calf
Pork meat	3.85	5 swines
Chicken and rabbit	4.62	about 310 hens, chickens and rabbits
Fish	0.77	bought
stockfish	3.08	bought
eggs (n.)	36.96	about 100 chickens guaranteed the production
Water for alimentary use	56.00	Springs and wells
Water for domestic use (20 l per day)	562.00	293 mc from roofs gathering 269 mc from springs and well
Pasture/forage necessary for the animals' feeding (about 10 UBA)		Considering a charge of 2 UBA/ha about 5 ha of pasture/forage are necessary

## ECOLOGICAL FOOTPRINT CALCULATION OF PANTANO

The above data can be used to calculate the food ecological footprint of Pantano in the 1950-1960 decade. The ecological footprint is a measure of human demand on the Earth's ecosystems. It compares human demand with the Earth's ecological capacity to regenerate. This index, nowadays, shows as the Western Countries, as well as the emergent ones, use ecological services two or three times as fast as their territories can renew them in order to maintain their present lifestyle. This alarming state could become irreversible and for this reason new patterns of development, based on energy conservation as well as on renewable energy, are required. This alarming state can become irreversible and then it is absolutely necessary to invoke a new model of development, based on the energy saving as well as on the renewable energy production.

In this view, Borgo Pantano's experience can become a natural laboratory for the experimentation of a life in equilibrium with the ecological footprint of its territory, recovering for instance the historical resource production of the village, following the equilibrium with the land and water resources necessary for an equilibrated consumption.

In order to calculate the ecological footprint in the 1950-1960 decade regarding vegetables consumption, the third column data of Tab. 3 have to be subdivided per 77 (the number of inhabitants). Differently, to calculate the hypothetic amount of productive land needed to produce meat, milk and derivatives required, we have to make use of several conversion factors available from literature data. Yielded results have to be added together (Tab. 5), so as to obtain the amount of land required to produce food resources.

In the Fifties the use of the car or of the electric energy was absolutely minimised. For this reason, their contribute to the final value of the ecological footprint of Pantano can be considered negligible.

In this view, the obtained result (i.e. 0.8652 –Tab.5) can be considered a reliable one, which can be compared to the reference equilibrium value of ecological footprint for Italy, available on-line. This value, of 1.78 ha/p, highlights as the Pantano's ecological footprint is significantly below the reference value of equilibrium, and then it is possible to affirm that the economy of Pantano in the Fifties not only was able to sustain 77 inhabitants, but can be considered a good example of sustainable development harmonized with nature.

**Table 5: Alimentary Ecological Footprint**

Food/cultivation	Village expenditure per person (Kg)	Necessary surface per person (ha)	
Wheat	165	0.09	
maize	16	0.0008	
citrus	6.60	0.0005	
vegetables (legumes, eggplants, etc)	6.0	0.0008	
Fresh fruits	30	0.003	
potatoes	20	0.0009	
tomatoes	12.50	0.006	
Olive oil	5.0	0.025	
wine	109.5	0.06	
		Literature conversion factor	
Cheese and ricotta	3	0.007	0.021
milk	36	0.0007	0.0252
Other fats (lard)	0.5	0.006	0.003
Goat meat	2	0.003	0.006
Bovine meat	2	0.017	0.034
Pork meat	5	0.006	0.03
Chicken and rabbit	6	0.003	0.0018
Fish	1	0.041	0.041
stockfish	4	0.041	0.164
eggs (n.)	48	0.007	0.336
Total			0.8652



## CONCLUSION

The paper discusses a model of integrated relational tourism planning based on a transdisciplinary approach, rising from the direct embryonic experience of a restoration recovery planning of an abandoned rural village in the north-eastern part of Sicily (i.e. Borgo Pantano).

The paper had the aim to investigate new methods for restoration planning, able to recover as much as possible of the existing elements, re-contextualising the territory to its original appearance and its ancient productive, agricultural, cultural and religious functions.

For the above reasons, the present paper was based on the development of a synergic investigation between the analysis of the main historical and geographical features of Pantano and the description and quantification of the historical agro-environmental development of the village.

These two aspects were integrated in parallel with the initial development of a Geographic Information System (GIS) project, able to emphasize, by means of thematic cartographies, the promotion of the natural environment conditions as well as the role of the sustainability of resource production in the recent past of the village. It was further demonstrated how in the Fifties the presence of man in Pantano Village was totally satisfied in his needs within a sober and equilibrated food economy, utterly integrated and harmonized with nature. This implies that a more sustainable and sober lifestyle is still possible.

In conclusion the restoration project of Borgo Pantano could actually represent a laboratory investigating different aspects and models of the integrated relational tourism theory. The project's high quality and the ethical principles of "Incanti & Memorie" are the basis for this development model, which could become a replicable model at Euro-Mediterranean level.

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