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in

Camarda D. (ed.), Grassini L. (ed.).
Local resources and global trades: Environments and agriculture in the Mediterranean region

Bari : CIHEAM
Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 57

2003
pages 369-377

TOWARDS A "PRESCRIPTIVE DESCRIPTION" FOR A NATURAL PROTECTED AREA IN PUGLIA

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ABSTRACT

In land-use planning and management, problems of "identity", "community" and "multi-culturalism", emerging when analysing the relationship between "local" and "global", are topical issues. However, the need to recover and recognise local identities can often lead to review and recycle old concepts of comunitarism. Instead in this paper communities are regarded as unstable entities which continuously change and reshape themselves and which can be described only through their changing processes.

In the case study of Gravina in Puglia (a preliminary study for the plan of a small natural protected area in Southern Italy), the territory has been represented in terms of "space of relationships", historically stratified and functioning like a network of "nodes" and "flows".

It is a territory of the Mediterranean area where the natural and human landscapes are strictly related to the management of water resources. In Mediterranean areas, more than elsewhere, water represents the natural resource shaping the modalities of human environmental management; diversities in cultures, settlements, land uses, landscapes, economies, knowledge, and communities' practices have all been generated by different water management approaches.

Starting from these preliminary remarks, the present paper, tries to identify some of the multiple local contexts in the Gravina area by using maps which illustrate some dynamic historical mechanisms of land use. These maps have been produced while studying and identifying the different historical approaches in water management and control in the area of Gravina.

1. INTRODUCTION

In reviewing the images of the territory produced, it is very often obvious that these images are ineffective in supporting the construction of strategies for action because of the use of descriptive categories. It is easy to comprehend that an "objective", taxonomic and mono-discipline-oriented observation of the territory is not able to give back an image of the complexity of the analysed subject, in a problematic way. The territory needs a selective, oriented and interpretative observation able to access multiple-disciplinary and local-communities knowledge.

In order to answer such a need, the work presented in this paper focuses on the construction of a *prescriptive description*, that is a description based mainly on a cognitive base with a prescriptive orientation. Such an orientation can be derived substantially from the contents of the description and from its structure. Contents and structure should move essentially around two basic factors: diagnostic and forecasting factors. These factors do not simply require a larger information content, with regards to traditional descriptions, but require an effort in making domain knowledge explicit, in order to add diagnostic and forecasting value to the description.

During the work carried out for the establishment of the natural protected area of the "*gravina*" (a geological gully) in Gravina in Puglia, both analysis and plan have been developed in mutual reciprocity, thus producing a *prescriptive description*. The plan is intended as a procedural means: not a virtual place where rules, prescriptions and indications are established, but the place where it is possible to define the behavioural rules necessary to produce the territory. In this perspective, we have tried to structure the analytical observation of the territory so that it could return one image of its identity, containing dynamical aspects of relationships shaping the image itself.

At his extreme, urban planning culture tries to oppose the application of external development models on local contexts. Likewise, the need for local identities can risk the revival of ancient principles of "communitarism" and closures, thus evidencing differences rather than the exchangeability with the

external environment. On the other hand, if we consider the settled communities as changeable entities which continuously rewrite their relational frames, an idea of multiculturalism emerges as a continuous re-proposition of an unstable structure, therefore continuous attention is required to the processes by which the unstable structure is produced.

The *prescriptive description* produced an informed prescription where information concerns diagnostic and forecasting judgements. These judgements are expressed within a dynamic vision of processes which produce different identities. In order to make their dynamic dimension explicit, these identities have been expressed through their *variance* and *invariance* features which connote the geological gully as both a unique element within the Murgia hinterland and a hinge located on the border of the Bradano river watershed.

Two possible prescriptive orientations have been defined through *variance* and *invariance* elements and from two different starting observations of identity dynamics. The first orientations refer to the transformations of settlement relationships (their structure and feature) which are oriented to adaptation to the environmental context. On the contrary, the second refers to the structure of ecological/environmental relationships which adapt themselves to anthropic transformations.

While defining the characteristics of the first prescriptive orientation, a remarkable role was recognized of the water resource with regards to the process of territory production.

2. TOWARDS A PRESCRIPTIVE DESCRIPTION

The most recent environmental planning literature suggests approaches focusing on perceptive and physical dimensions for the analysis of landscape and its interaction with the settlement system.

These approaches are distant from the crucial theme of environmental resources whose meanings, values, and reciprocal connections need to be spelled out (Clementi, DeMatteis, Palermo, 1996; Radicchio, 1973; Rossi, 1974). Moreover, literature on ecosystems defines a region as “being characterized by specific relational systems which are able to give them a recognisable identity, while working among heterogeneous landscape components”. This latter literature pays little attention to factors of anthropic processes. These are simply considered as transformation agents with a dissipating nature as far as environmental resources are concerned (Clementi, DeMatteis, Palermo, 1996; Sigismondi e Tedesco, 1990).

Both approaches appeared to be reductive when trying to make the image of the region of Gravina in Puglia explicit: in fact this region is made up of complex relationships between the anthropic and the natural systems. The *"gravina"* physical and biological environments represent the result of both natural agents and very long lasting human activities. Nature and history are here fused together, and produce environment and landscape by breaking and balancing processes which give rise to the local complexity: “as well as water has sculpted limestone, human beings have contributed to the transformation of this particular environment; in fact each economic activity has induced continuous modifications of the original natural landscape” (Castoro, Creanza, Perrone, 1997, p.25).

Therefore, protecting the *"gravina"* requires observation that considers it both as a fragile element with an inner balance, and as a strong element considering to the strong identity it gives the territory. It was necessary to go beyond the simple geological crack for the identification of the *"gravina"* environmental system, in order to build an image of the relationships and the functioning mechanisms characterising the geological gully and its region.

With regards to the strategic orientation of recent planning frameworks for natural protected areas, it has been necessary to explore the *"gravina"* system identity in order to understand its role in the regional context and the way it is related to it. The idea of overcoming the preservation of “environmental islands” has been considered by taking into account the connections between the protected area and other different parts of the region, since biotic, a-biotic and anthropic connections represent structural parts of the system. Therefore the descriptions produced have been developed considering the hinge role played by the *"gravina"* within its wide context.

Some initial questions, related to the definition of the preservation approach (Celino et al. 2001), made eco-diversity, water resource, the self-production of the territory the central lens for the observation of *variance* and *invariance* elements.

	invariance elements	variance elements
quantitative value	spread	rare
qualitative value	uniform	diverse
time value	persistent	Mutant

Fig. 1. Selection and orientation criteria.

It has been observed that the priority function of the environmental system at hand is carried out through the recognition of eco-diversity and self-reproduction aspects which, being linked to the water theme, characterize relationships between the gully and its region. In particular, the *variance* and *invariance* dichotomy of shapes and functions has appeared as a constitutive aspect and has been studied in terms both quali-quantitative and temporal: the quantitative spread/rare values, the qualitative uniform/diverse values, and the temporal persistent/mutant values (fig.1) have been used.

Starting from the *variance*/*invariance* elements, *prescriptive descriptions* have been developed referring to emergences, criticalities, and potentials of the *"gravina"* system. Therefore, the main goal has been to interpret the structure and the relationships of "environmental dominants" (Maciocco, 1995, p.88). Environmental dominants are considered as "noteworthy and emergent spaces", areas of natural, cultural, semantic linkages between "noteworthy spaces" and "spatial projections of relationships which are no longer immutable but invariant with regards to the real dynamics … of the settlement process" (Maciocco, 1999).

The term "emergence" has been used in order to explain two meanings, apparently contradictory:
the meaning of "exceptionality";
the meaning of "risk" and thus of "fragility".

The features of exceptionality and fragility are often complementary and have represented guide themes for settled communities in recognizing territorial resources and assigning them a value.

Criticality, fragility, and degradation factors put in evidence places (not only physical) where the territorial system shows steps, cuts and lacerations. These are places of hardships for a-biotic, biotic and anthropic systems, where the connection of the territorial system becomes fragile, and where the plan is required to produce new hinges (nodes or merges useful to build or re-build the territorial system). The plan is required to produce key places where the production of the territory connotes itself.

In conclusion, when developing a *prescriptive description* (Fig. 2), the themes of eco-diversity and self-production of territory have suggested two prescriptive descriptions: *fragments network*, and *resources integration*.

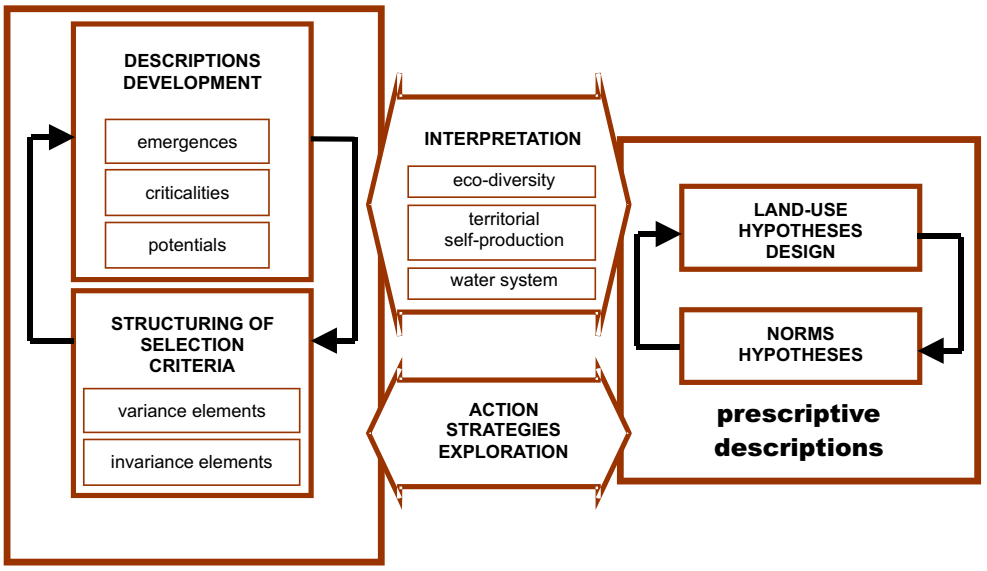

Fig. 2. Framework of the process for building the *prescriptive description*

The first prescriptive description, *fragments network*, is basically related to the need of re-connecting fragments of resources which, being spread around in the surroundings of the geological gully (and not only in the close surroundings), represent real natural survivors of the complex environmental system which the *"gravina"* system belongs to. Sometimes they are elements which are historically and/or symbolically significant for it. The potentials of this territory are linked to the ability to recuperate traditional competence (the competence of integrating its own resources), in a perspective of territorial self-production and of eco-diversity. In these perspectives, interventions can be designed which add value to resources, as if they were witnesses of historical production processes.

The second prescriptive description, *resources integration*, aims at adding value to the territory, focusing on its being able to integrate different resources (geo-morphological, agricultural, natural, anthropic, economic and typical of the *"gravina"* region, of the inner land and of the coast); around the *"gravina"* system, as if it really were a hinge, different economies merge and follow each other in a continuous search of balance with the environmental system.

The first description is more focused on the recognition of the natural environmental system by the use of natural fragments. Looking for mechanisms of re-balance needed after anthropic interventions, the *"gravina"* environmental system shows potentials for functional reintegration in the process of territory production.The second description aims at understanding the way in which the anthropic settlement recognized the plurality of “environmental frameworks” in the region as a resource, and gave value to it. The former aims, in a sense, at making explicit the necessity of empowering the natural system’s ability to better absorb modifications from the settlement processes; the latter is oriented to capturing the ability of the anthropic system in interaction with the natural/environmental system.

The natural water system has been considered a fundamental element of ecological connectivity and a relevant factor in the historical production of the territory; it has been used as a matrix through which both prescriptions could be built. This is because water represents the element connecting the flora and fauna systems to historical frameworks of settlement, to land use practices, to mobility infrastructures, and, finally, to all the territorial relationships.

3. OWARDS THE “RESOURCES INTEGRATION”

3.1. Water resource in the "gravina" system

During the pre-modern period processes of anthropic settlement and territory transformation in the Mediterranean basin, water represented the primary resource, and its use determined the approaches to the “environmental conquest”. In the production of territory, the “water system” becomes the guide for the anthropic settlement. The natural “water system” is so important in the process of territory production that it can be considered its constitutive matrix. In fact, the natural “water system” has been modified over time by both natural events and indirect anthropic actions, and has been integrated and made valuable for human settlements, through the infrastructures of water captation, collection, deposit, and distribution. Infrastructuring, together with engineering interventions on the “water system”, represents the main tool of regional management for both productive and residential activities. Consequently, a profound local specificity has emerged, related to the characteristics of local natural resources, to the abilities, competencies and cultures which have been produced by the established communities over time. This has added value to environmental resources and shaped the anthropic landscape.

Moreover, the theme of water resource and its related system concernes current and crucial issues for the Gravina region management: this is particularly true in a period, like the present one, that has to deal with recent but wide heavy water wasting processes and the fast growing gap between consumption time and time for resource reproduction.

The possibility to access the water resource modifies the concept of the resource management itself. This is especially true for the communities which are not located in the proximity of the resource, thus profoundly changing the relationship between the established community and the place.

The system related to the water resource and spatially defined by the watershed of the *"gravina"* stream, represents a geographic space crossed by many border lines (administrative, of pertinence, ambit, ownership, management, maintenance, use); it is a place where multiple interests are expressed, thus requiring concerted actions able to satisfy different actors and users. It is evident that many conflicts often arise among different communities and public and private economic actors for use, management,

costs support, and resources conservation. This evidence makes this ambit a problematic one, and through it we can measure the systemic co-operation of the territory at a super-local scale.

The most recent and still ongoing modifications can be defined through another Foucault category, the one of “dislocation space”: it is a relational space where individuals and objects meet and exchange each other within a reciprocal interference that is able to connect local and global issues.

What does it mean, for us and nowadays, to build a “dislocation space” in a conscious way? What does it imply with regards to the problem of the- use of resources– especially water?

Maps representing the pre-modern functioning mechanism of the *"gravina"* region have been defined to describe the territory as a “relational space”: such relational feature has been observed underlining the primary role played by the water resource.

In this work we refer to a *variance* time and to an *invariance* time avoiding the use of “space” and “time” dimensions as a priori co-ordinates, and therefore avoiding the use of an overlapping sequence of growths (of built environment, paths, deforestation, cultivation, etc.).

By the use of these maps, we have been able to identify some elements which are important in order to recognize the components of *invariance* in the long pre-modern period. These components refer to a dynamic vision that shows how the region works and, consequently, how the region is transformed, rather than to a vision linked to what the region is at present times.

Toponyms are used in order to build these maps. Each of the toponyms refers to a peculiar feature of a place, or better, to the relationship between all the features which are contemporarily in that place (humidity of soil, crops, size of farms, etc.).

The *"gravina"* region can be represented as a space crossed by large “flows” (e.g., flows generated by the economy of forestry, grazing land, and cereals; the networks of *tratturi*[1]; the rocky civilization[2]; etc.); therefore the peculiarities of each place is defined as the way in which some flows meet each other and interact in a specific territory.

Using this representation, the identity of the region is the result of large scale relationships (the flows mentioned above), between different objects (river, forest, town, …) which are expressions of relationships between more elementary entities (water, air, vegetation, …). The qualities of the region are not simple additions of the qualities of the objects included in the region (the peculiar and positional qualities like the historical urban center, the forest, the “*gravina*”, etc.); they are combinations of local resources with practices, that characterize the “environmental conquest” during the long historical phases.

Each toponym refers, briefly, to one single quality of the place, selected as a priority quality (e.g. the quality related to the presence of water and to its use, or to the morphology of the watershed, or to the effects produced by water on geographical and human contexts). Moreover, each toponym is the expression of some relational qualities of a place even if it expresses just one quality of it. A toponym suggests the relationships between several peculiarities and specific qualities of a place. From time to time, the toponym privileges relationships in which the reference to natural phenomena (water, geological, morphological) or to anthropic processes (use of resources, ownership, genius loci, infrastructuring) prevails.

3.2. The “resource integration” prescriptive description

Historically, the *"gravina"* region is rich in water resource: the ways in which the humans have settled gives evidence of the complexity of the natural/anthropic “water system”. The potentials of the region have allowed great traditional diversification of: (i) the approaches to the “environmental conquest”, carried out through a variety of resources' exploitations, and (ii) the infrastructures and practices used for water collection and distribution.

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[1] Tratturi: sheep migration tracks.

[2] During the Middle Ages, the so called *Rocky Civilization* flourished in Apulian grottoes, with whole villages dug into the tufa, and holy crypts painted with frescoes.

The great variety of historical water infrastructures testifies their richness and specificity; infrastructures are related to each local situation, and are designed for energetic saving and for minimal waste of the resource.

This “resource integration” prescriptive description is based on the persistent features of the *"gravina"* system identity in the long period before the modern caesura. Consequently we have focused on:

lines of caesura, as borders between different landscapes;

places of connection, as lands of matching and integration of different resources (agricultural/pastoral, urban/rural, anthropic /naturalistic);

places of physical links, such as lands in the system of natural routes from the Adriatic Sea to the Tyrrhenian Sea (within the system of the gullies, from the Ofanto river to the Taranto Gulf), of ecological corridors between the hinterland and the sea side, of roads and *tratturi* of the transhumance[3].

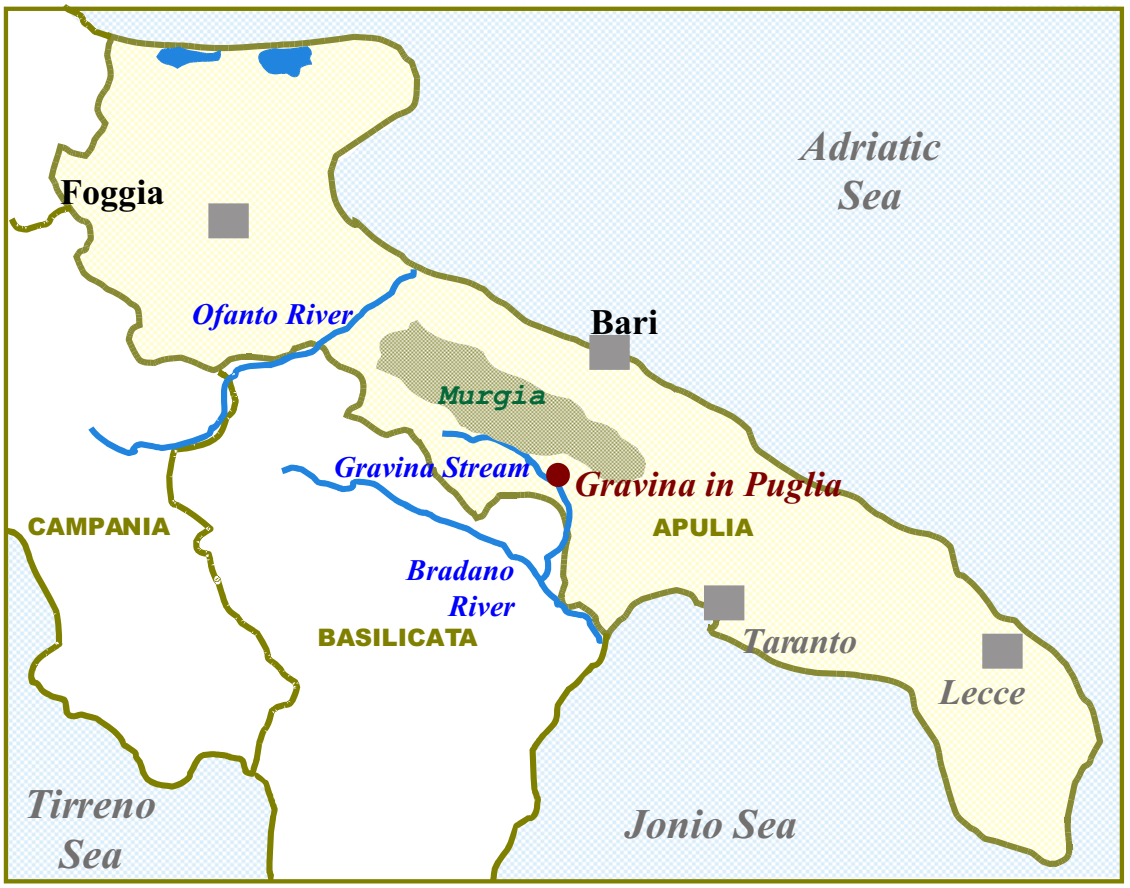

Fig. 3. The "gravina" region and its system

Consequently, the *"gravina"* stream (whose watershed is part of watershed of the Bradano river) becomes the main element of both the “water system” and the regional system of Gravina in Puglia. This stream could be considered a point in which different territorial situations are connected: the territorial system of the Murgia and that of the foredeep of the Bradano river, the territorial system of the region of Bari between the Adriatic coast and the hinterland, the Pietramagna area (45.000 hectares between the “Murgia” region and the “Bradano deep”), the system of the gullies of the Apulia and Lucania region on the Ionic sea, the system of the Protected Areas in the district of Bari, the system of *tratturi* and of the “transhumance” economy, the agriculture/pastoral system, the urban system (see fig.3).

[3] Transhumance represented a deep-rooted rural tradition characterising the regions in which the contrast between mountain areas and plains is stark. Our territory too was involved in this activity when, from October to May, shepherds led cattle from Abruzzo, Molise, Campania to Apulia.

All the toponyms and their geographical distribution show an image of the *"gravina"* region partially different from the current one, but able to explain some of its features. This image shows the relationships and the networks between the huge variety of different environmental units shaping this land. Even if modified, the emerging general structure is still understandable either in the contemporary structure of the landscape or in all the traces of the ancient landscape.

On the border between the “Murgia” and the “Bradano deep”, the region of Gravina in Puglia is structured as a hinge between two different landscapes: the landscape of the “Murgia” region and that of the “Bradano deep”; at a lower scale, the gully is a hinge itself, since it posses features of both landscapes. This peculiarity is a useful tool to evaluate the historical anthropic processes of the area. In fact, (a) the urban and “proto-urban” settlements are concentrated along the gully, in close relationship with the diffuse settlement on the land; (b) the hinge role between landscapes becomes a connective one for the anthropic issues, at the regional scale; (c) the eco-environmental connective of the *"gravina"* becomes the link between people and cultures, hinterland and landing places (Ionic, Adriatic, Tyrrhenian).

The permanence of the anthropic settlement from remote periods to nowadays, is the sign of an uninterrupted recognition of the hospitable feature of the place towards human activities, due to the great variety of natural landscapes. Therefore, the current structure is the result of these historical phases that have developed over a very long time and without gaps in anthropic processes.

In the settlement forms preceding modern changes, this land was characterised by: (i) abundance of superficial water, with lakes and quagmires, which have disappeared today but still remain in memory because of toponyms like *Maricello* (small sea), *Pantano* (quagmire), *Pescara* (weir), and *Terra dei laghi* (lakes land); (ii) large expanse of forests, defences[4], and *macchia*[5], which have been progressively reduced up to becoming residual parts or simply traces; (iii) the prevailing of an extensive agriculture, especially cereal culture, with large allotments (*masserie*[6] and large estates).

Historic sources describe the area as a surface widely covered with forests and undergrowth and characterised by quite a large quantity of superficial water because of the presence of gullies and of impermeable clayey soil. For example, the lake of the Pescara (weir) was a perfect habitat for storks, swans, royal mallard, and other species that live in humid environments. Uncultivated land, used for grazing (especially for sheep), were progressively reduced by the growing cultivations of wheat and vine.

Finally, we can conclude that the *"gravina"* system can be regarded as a place of integration of resources. In fact, due to its particular position (as a hinge), the *"gravina"* system, manages two complementary resources, grazing and farming lands. At a lower scale, the *"gravina"* system recognises other functions of resource integration on the border between urban and rural areas; starting from the urban centre of Gravina in Puglia we can find, one after another, the *ristretto*[7] with vineyards and the land between cultivated and “nude fields”.

The Gravina region is a Mediterranean region in which it is possible to find, with evidence, features of the “environmental conquest” that show a creative, permanent effort to add value to the water resources considered the main source of life and of local economy.

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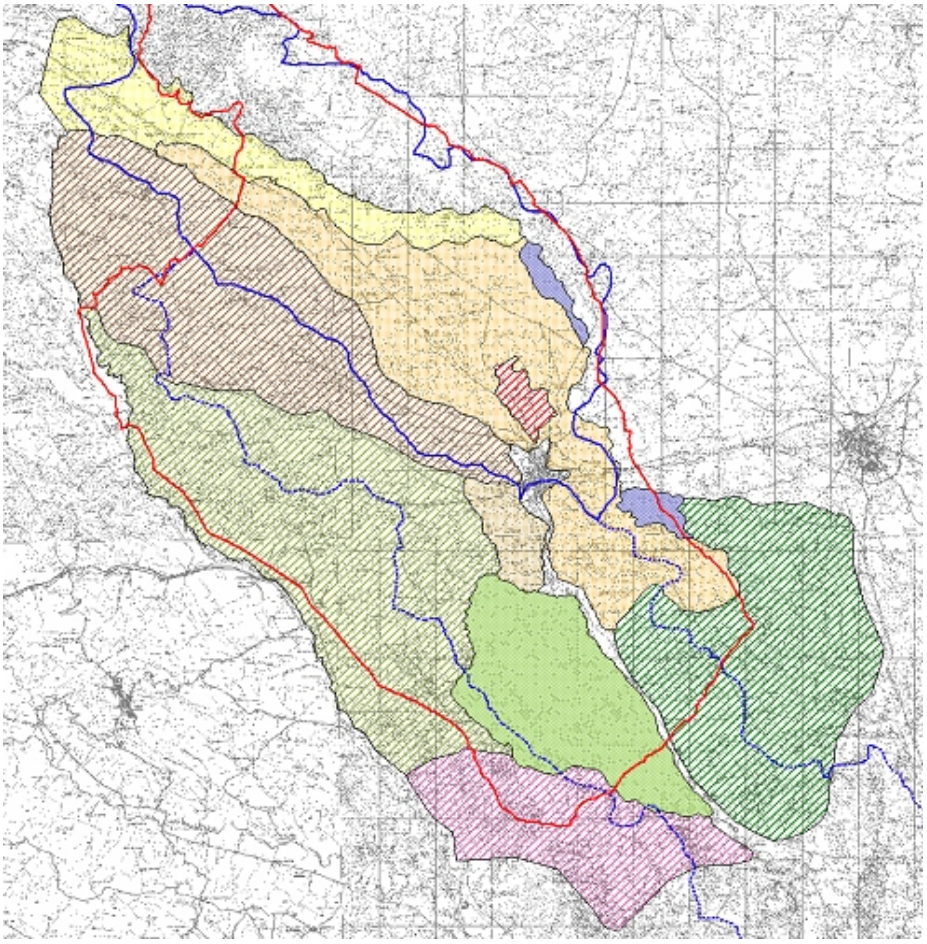
[4] Places where the access is forbidden to shepherds.

[5] The Mediterranean environment is evident in the widespread growth of *macchia* along almost the entire coast, derived from the spoiliation of ancient ilex groves. The Mediterranean *macchia* in the Gravina region includes: maritime pine and domestic pine, olives, carob, cypress, juniper, lentisc, strawberry tree, dewberry, broom, thyme, rosemary, laurel and lavender.

[6] In the Puglia region, the "masserie" were large agricultural centres for farming the land and preserving farm produces.

[7] “Ristretto” in Italian means restricted. In the Gravina region, ristretti are small semi-urban areas devoted to agriculture.



Fertile areas, humid but with no stagnation of surfacing water. Dense historical agricultural settlements.

Tuffaceous area; humid, with no historical settlements.

Areas with stagnation tendency of superficial water; land has been reclaimed for agriculture.

Humid areas with stagnation of superficial water; land has been reclaimed for agriculture

Filter zone of the watershed. Permeable land and water available at low depth through artesian wells. Fertile land with ancient anthropic settlements.

Area of debris cones deposited by water streams. Highly clayey soils used for mining and not suitable for agriculture.

Wood area in the current extension. Ancient hunting area used for wood production.

Deforested areas used for agriculture. Very fertile land with rich agriculture farm settlements.

Reclaimed area used for agriculture in ancient times, with small farms (“pezze”).

Swain farming area benefiting from the wood proximity, with “jazzi” (shepherd and animal shelters).

Fig. 4. Historical land use map.

4. CONCLUSIONS

Competences described in the “resources integration” prescriptive description are the ones that the region could recover as strategical, in order to face the present global processes of desertification, draw on the articulated heritage of knowledge and practices (which are produced locally and full of richness and differences), and assure resources' access to everyone in a global perspective.

Some strategic actions could be adoption of policies based on the diversification of water supply networks with reference to uses. For this purpose, the rehabilitation and reuse of the historical infrastructures which are still available in the region (rural aqueducts, rural and urban wells and cisterns, troughs, wells that draw from ground water table) might also be useful.

More generally, looking at the many regions of the Mediterranean area, we could analyse and critically re-examine the traditional ways pre-modern rural society competed, cooperated, compensated, coexisted and complemented each other; these traditions could be the starting points for elaborating their own way to integrate resources. By interpreting these regions (using the concept of limits) we could re-examine and think over new compatible strategies of territory production which stimulate worthy processes of re-balancing and regenerating exploited resources and their integration. These competencies, which were essential in the relationship between the territory and the established community in the pre-modern age, could become a heritage for improving practical abilities of present communities (considered inhabitants of many places and of the whole globe).

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