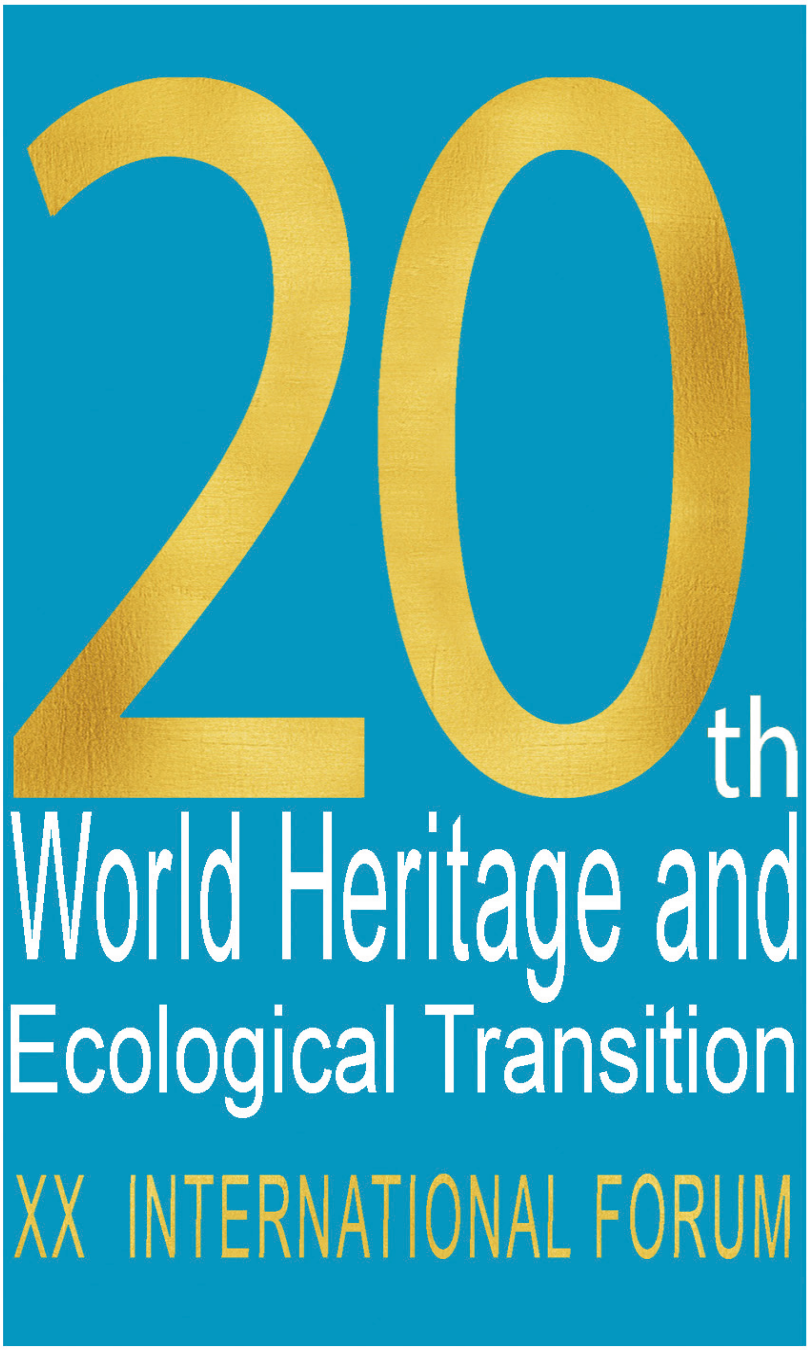
ARCHITECTURE HERITAGE and DESIGN

Carmine Gambardella

XX INTERNATIONAL FORUM

Le Vie dei Mercanti



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Le Vie dei Mercanti
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Le Vie dei Mercanti

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Conference report

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Material and immaterial culture of the internal minor centres. Studies and researches for the ecological transition of the Madonie inner mountain area in Sicily

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Abstract
Presently, the European Union strategies aim at strengthening the rural areas that are characterized by a deep depopulation, people aging, and a weak employment market. In these "marginalized" areas, the urban regeneration process may be assisted by the creation of smart villages, realities that will cooperate and create innovative small towns.
The Sicilian inner mountain area, in particular, consists of twenty-one villages - mostly dating back to the Middle Age - that present an attractive localization due to naturalistic, landscape and cultural features, also qualified by a well-preserved geographical area whose main building typological features were not altered during time.
This paper presents the results of a research finalized to an implementation of a sustainable technological design aimed at creating a network of smart villages able to enhance the urban centers and their cultural, anthropic, and natural heritage, also bringing them back to a contemporary well-being and smart life conditions. Moreover, transmitting to the future generations the material and immaterial values that must be preserved and reconsidered as regenerating sources for this territory is of fundamental importance, also to generate a novel green economy and boost, once again, the local performance. The proposed strategies of intervention will activate virtuous procedures and guidelines for a sustainable progress. Taking care of communication and technological design, it is advisable to improve the connection between all these urban centers, taking advantage of the whole natural and built environments. Finally, the proposed methodology could be intended as an efficient guideline that could be easily applied to other similar national and international contexts.

Keywords: smart villages, rehabilitation strategy, immaterial patrimony, ecological transition

1. Smart villages as a territorial connection system: from the green economy to the digital transition

Among the implications of the current global pandemic from SARS-CoV-2 and Covid-19, the rediscovery of the small towns has become extremely stimulating for human lives. The prolonged and forced lockdown that was experienced worldwide generated a “surprisingly” rediscovery of a forgotten diffuse built heritage that must be re-evaluated in its urban, naturalistic, cultural, historical and economic values [1]. After years of distancing and forced isolation, the deep contact with these places became an even stronger value, precisely in terms of rediscovering the naturalistic, constructive, and historical heritages. Moreover, also intangible values such as the culture of food and local traditions came to the fore [2]. Actually, we are experiencing a new "Renaissance" of the villages, that are often improperly defined as "minor", even if they are able of outlining the distinctive characteristics of a local country [3].
The inland areas of Sicily are also going through a period of recovery. The case of the Madonie Park, constituted of 21 villages, deeply different one from the other, is the protagonist of the current socio-economic inversion that, at the same time, is highlighting, however, the technological gap with the

increasingly developed smart cities. Those, indeed, made ICT the innovative core of management and public services provision, being – consequently - steps forward. These smaller realities, however, benefit by a better quality of life that is, actually, very different from the large and chaotic cities. The inner and marginal areas are the guardians of a well-preserved architectural and naturalistic heritage and, at the same time, witness to the history of the peoples who have crossed them. However, the technological backwardness tends to increase their state of isolation [4]. To achieve a predominant and more quality-oriented and sustainable role, in the regional – and national - context, they must become “smart”. That means enhancing the territorial differences that could make them protagonists of high standards of life through the experimentation of widespread and shared policies aimed at increasing the competitiveness and the territorial attractiveness. An initial possible approach is the green one [5]. Being a green community means, for instance, triggering a plurality of actions aimed at reducing carbon dioxide emissions: taking thoughtful actions to plan and implement good practices is fundamental to extend to the territorial governance, with specific attention to social cohesion, the dissemination of knowledge, innovation, creativity, accessibility, usability of the environment, and the quality of both the landscape and the life of citizens in a more sustainable way. That translates into the immediate improvement of the mobility among the urban and territorial use through the creation of a more sustainable mobility. This is probably the best way to achieve a real CO_2 reduction and efficient waste management, along with a greater dissemination of information, fundamental to create a virtuous network of connections among the various potentials of each place.

Currently, the opportunities offered by the digital transformation are oriented towards goods and services such as health and education; other processes are based, however, on the aim of strengthening the internal organization and the administrative performance, or for the local tourism development and the production system. Therefore, the first step to achieve the concept of green is embodied by a digitization that could embrace all these issues and make these territories real "smart villages". Among the green digital technologies, it is worth mentioning the Internet of Things (IoT) which allows to collect, spread, and interact with a large flow of data that, if properly processed, can be used to improve human life in such marginal areas. The process of digitization for an effective management of Information and Communication Technologies represents a decisive role in overcoming the difficulties of these marginalized territories [6]. The digitization of services, functions and procedures is a significant factor of growth, directly proportional to the ability of a territory to emerge and develop. Digitization directly means the possibility of increasing the spectrum of services along with improving the effectiveness that necessarily involves administrations, resident communities, and new citizens. Similarly, for connections, and therefore for mobility, digitization can support the individuation of alternative routes to the main and secondary roads which, even today, and particularly in the South, are greatly affected by an almost non-existent ordinary and extraordinary maintenance caused by an atavistic lack of funds.

The digitization process, in the Madonie mountain area, would allow to highlight the historical routes that traditionally connected the 21 villages. Among those, the ancient royal “trazzere” (Sicilian old routes that were used to connect inner rural areas), the “Francigene” and pilgrimage itineraries [7] as well as the bridleways, the geological routes, in respect, and guaranteeing, the requests of the European Union on decarbonization. The use of alternative and sustainable connections could facilitate the rediscovery of these areas that may become a virtuous green alternative and, at the same time, would allow the revaluation of long-forgotten historical routes. That would also mean a novel use of immense green areas, offering an opportunity for a deeper contact with nature in safety, quality, and environmental health, also favoring the fauna and flora typical of the variegated territory of the Madonie Park (Fig. 1). To date, if these places are not known in depth, it is almost impossible to identify them and their beauty as well as to reach them, precluding the possibility of improving their proper fruition. The large urban centers, proper smart cities, have built their importance and fame on digitization, allowing a wide-ranging knowledge of their intrinsic culture and territory, by promoting it worldwide through digital platforms which, even before being intelligent, are platforms of knowledge. If that was reversed on the internal marginalized areas also, the contribution for development would be of a considerable importance not only to attract new tourists, but - above all - new inhabitants eager for an innovative, dynamic, sustainable lifestyle in direct contact with nature, preferring the body, mind, and spirit. Therefore, the main goal of such a digitization will be generating smart rural areas, capable of communicating one with the others, networking, innovating and digitizing: combining green and technological aspects.

2. Knowing by crossing the paths of memory

The Madonie Park mountain areas express with their features the different typical and traditional characters of such territory: from historical to social memory, from naturalistic to immaterial memory [8]. All passes through architecture that is precisely the key to understand and interpret the society that has chosen, built and lived in, the natural result of intersections between different and inextricable components. Specificities of the places, stories that have left their deep marks, cultures that have grown autonomously, even immaterially as ideal paths that cross troughs, farms, streets of ancient memory and panoramas of stunning beauty with, often, uncontaminated nature.

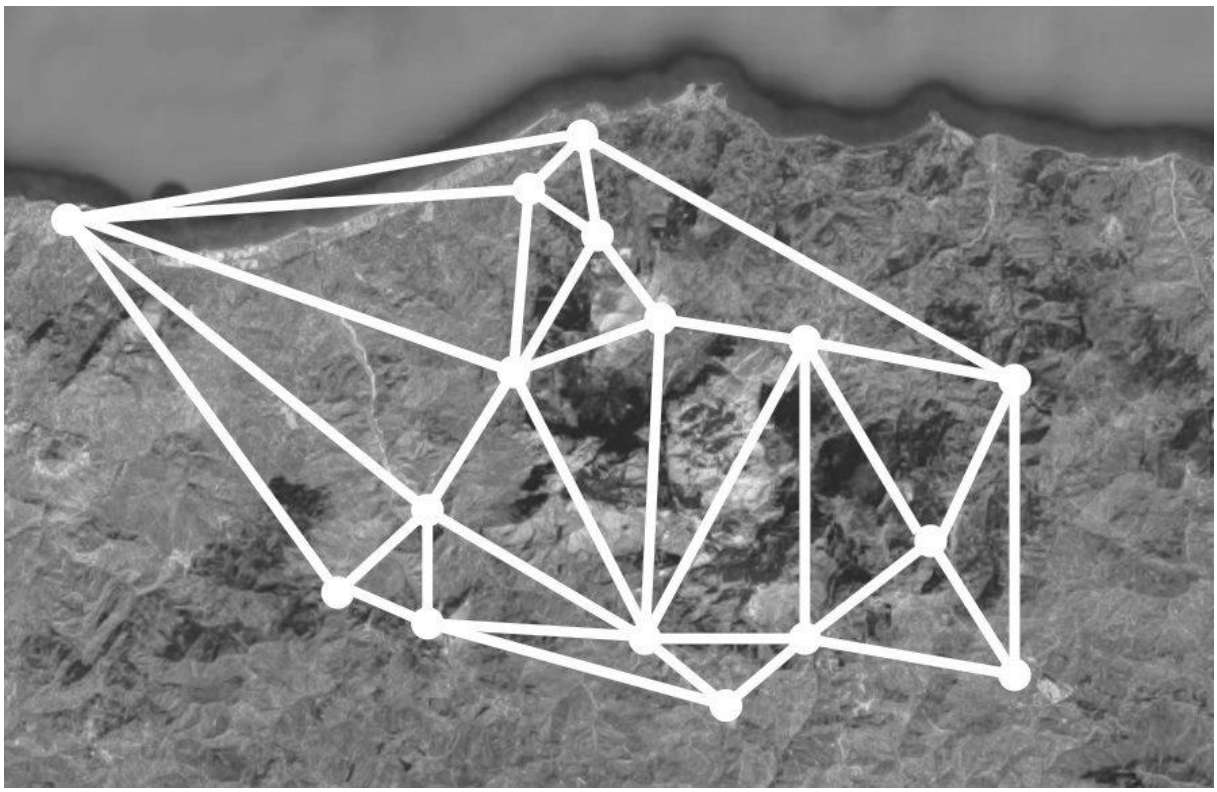
Fig. 1: Madonie inner mountain area in Sicily: potential system of spatial, social, and economic interconnections (© image by the authors).

"*Leaving not to die, walking to live every single second of life more deeply. After a long break, maybe this is the right moment to take back your backpack, put your boots on... get your pace back in motion*" (G. Librizzi - the mayor of Polizzi Generosa).

On the traces of the historic Via Francigena (Fig. 2-3) which, instead of following the sea, from Palermo to Messina zigzags up splendid reliefs, various local associations (in particular the Friends of the Francigeni Routes of Sicily) started meticulous historical research and "georeferenced" topographic mapping [9]. The ancient Royal Trazzera, nowaday renamed "Francigena route from Palermo to Messina among the mountains", represents an ideal and real fascinating itinerary that traces the ancient connection between the two Sicilian centers through the mountains edge of the Madonie, Nebrodi and Peloritani mountains. From the city of Palermo, a unique and continuous path winds its way for about 400 km, in almost 20 stages, connecting the snowy peaks of the Madonie to the mountainous landscapes of the Nebrodi, up to the peaks of the Peloritani, to finally reach the city of the Strait of Sicily, Messina. From the beauties of the Arab-Norman culture capital the to the beaches of Aspra, from some of the most beautiful villages in Italy, Gangi and Montalbano, to the Norman castles perched between the Madonie of Caccamo, Caltavuturo, Polizzi Generosa, and Petralia; from the villages immersed in the Nebrodi woods, such as Floresta, Capizzi and Cesarò, to the first capital of the Great Count Ruggero, Troina.

Indeed, from the pilgrims' point of view this road was a real Via Francigena, meaning that is a pilgrimage route as along its route, in addition to the aforementioned Carolingian toponyms that marked the itinerary, there were several *hospitalia* already present from the 12th century. These structures, as in the rest of Europe, were built exclusively to accommodate pilgrims, only later they were used as health shelters. Symbolically, the route bagins in Palermo close the Church of Santa Cristina la Vetere, along the "Pilgrims' Road" which, as the ancient toponym indicated, is a testimony of the pilgrimages culture in Sicily. Then, it runs up to Messina through an articulated path that can be divided into 22 stages. This route, equipped with adequate signs and posters, could also be viewed by contemporary pilgrims in a digital format, by downloading the GPS maps and accessing all the information with a mobile phone or tablet via Wikiloc, or by consulting the official website.

Similarly, there are many paths of sanctuaries in which, in August 2009, the Associazione Sicilia Jacopea, for the project "St James's Roads in Sicily", inaugurated the itinerary "Gratteri (PA) - Galati Mamertino (ME)" with a group pilgrimage on foot. During the five days of walking, in addition to the places of departure and arrival, the communities of Geraci Siculo (PA) and Capizzi (ME) were involved, also with a marked devotion for San Giacomo Maggiore, through visits to the Sanctuary of the Saint Spirit of Gangi (PA) and the passage along the Cerami river, site of the famous and decisive battle for the Normans victory, led by Count Ruggero, over the Saracens.

Fig. 2: Madonie inner mountain area in Sicily: potential system of spatial, social and economic interconnections. (© https://viafrancigena.madonieoutdoor.it/vie-francigene/via-francigena-montagne)

Fig. 3: Francigena route on the Madonie mountains, Palermo - Messina, Sicily (© Via Francigena, Madonie Outdoor).

Another stage was added to the aforementioned itinerary, again with the aim of creating a permanent link between the "Saint John communities", for the generation of a religious-cultural district: the Collesano - Gratteri route. That, called the "Route to the Stars", recalling an ideal embrace with the burial place of the Apostle, extends along the highest mountains in Sicily, with a well-defined historical reference: Pietro Lo Squilio baron of Galati (1628-1640), a nobleman from Collesano that is a town where the Apostle was already venerated, donated to the community the reliquary of Saint John, still in use today, giving a strong impetus to the development of the cult for that Saint.

The path extends along historic routes that were already described by the ancient geographers (i.e. the Arab Idrisi) and was also used by the Great Count Ruggero who crossed the Nebrodi mounts along the Byzantine way of Mangalaviti (according to the reconstruction of Malaterra). The Route to the Stars includes the municipalities of Galati Mamertino, Capizzi, Geraci Siculo, and Gratteri where St. James is always the patron - or protector - and is honored with solemn celebrations. Along the way, as evidence of the widespread diffusion of the cult for Saint John, there are two other churches dedicated to him, one private rocky sanctuary located in Gangi, the other in Nicosia.
The Route of the Stars, that is about 140 km long, can be walked in about 6 days by normally trained people and is characterized by the passage across villages included in the national association of the most beautiful villages in Italy (Gangi, Geraci Siculo, and Sperlinga) and for the enchanting naturalistic landscapes suspended between Etna, the Madonie, the Nebrodi and the sea with the horizon that is lost over the Aeolian Islands. The journey is configured as an experience of personal research and meditation, but is also a journey into uncontaminated places, with natural beauties yet undiscovered, as well as repositories of sacredness and mysticism [10].
Of greater naturalistic impact is the path of the Madonie sanctuaries that could be done in 4 days, for a total of about 65 km. It starts from the Sanctuary of the Holy Spirit in Gangi passing through the Madonna dell'Olio in Blufi, the Madonna dell'Alto in Petralia Sottana and it finally ends at the Madonna di Gibilmanna in Cefalù. Retracing, on foot, the ancient pilgrim paths that connected all the sanctuaries of the Madonie area, it crosses some of the most beautiful naturalistic and cultural Madonie landscapes: starting from the lowest altitudes of the southern Madonie area, a modern pilgrim would cross the countryside rich in crops, small livestock farms, drinking troughs, farms and underground archaeological settlements built more than 4000 years ago, tholos, villas and thermal baths of Roman origin, up to the highest Marian sanctuary in Europe, Tindari, and the high altitudes of the Madonie Park, from which it is possible to observe all the Sicilian mountains as well as the infinite sea. Then, it descends towards the north, to admire the last specimens of the *Abies Nebrodensis* (Fig. 4) and, in the heart of Piano Battaglia, some geo-sites, recognized as UNESCO Geopark Heritage, with the beech forest, the largest in Europe, up to the manna ash trees in the hilly areas close to Gibilmanna.
The numerous guided tours allow to discover these wonders of nature through many panoramic points: in Piano Pomo the particular microclimatic conditions allow the hollies to develop in an unusual way, creating real groves. The large hollies, some even reaching 20 meters in height, grow all around the basin of the plane, forming a sort of natural circle. Nature also provides the traveler with its fruits and, consequently, it is possible to taste the typical products of the different seasons ranging from mushrooms, hazelnuts, beans to the precious manna. Object of great market demand in ancient times – as well as today - for their healing properties.
These material and intangible peculiarities of the Madonie places, if systemized through a computerized network of communication, could become a real tourist flywheel of considerable importance, mostly because they could allow to activate sustainable, light touristic strategies that have, as a necessary corollary, the building system of the villages that are around and constitute the places useful to welcome and shelter customers, whether they are tourists or potential residents, according to criteria of livability and environmental comfort that require ever high levels of comfort and technological innovation [11].

Fig. 4: Left: a royal trazzera on the Madonie Mountains (Palermo-Messina, Sicily) (© F.I.V.E.). Right: an emblemathic exemplum of Abies Nebrodensis, Vallone della Madonna degli Angeli, Polizzi Generosa (© Eng. Luisa Lombardo).

Fig. 5: Fountain in the inner court of the masseria Gangivecchio in Gangi (© image of the authors).

3. Regeneration strategies and innovative technological solutions

Royal trazzere, sanctuaries, farms, drinking troughs, endemic flora and fauna, slow food presidia, etc., constitute a dot line of material and intangible events typical of the Madonie territory. The simplicity of the construction techniques, used to build them, allowed these architectures to resist hundreds of years, maintaining their original characteristics (Fig. 5). The most recent history has taught how the simple recognition of the values of the historical construction is a precondition to transmit their essence without being compromised. Poor, simple and cheap architectures have proved to be valid and current, capable of suggesting guidelines for a cultured and aware recovery project. The direct knowledge also becomes a useful tool for an effective economic revitalization [12]. The richness of the identified repertoire emerges and the innumerable potentialities offered by these artefacts which unfortunately, in many cases, are very little known today, often falling into conditions of abandonment and decay (Fig. 6).

Fig. 6: Masseria Regaleali (© Eng. Andrea D'Amore).

Forgotten by the community itself, however, they could constitute a resource that needs to be preserved and enhanced, artifacts in symbiosis with the natural landscape that has strongly desired them, produced and, despite everything, preserved. The knowledge of these architectures promotes a policy of improvement, supporting not only a sustainable relaunch of the material and immaterial function, intended for the local community strengthening and promotion of light tourism, but also for their protection. It is known, in fact, that the possibility of including these buildings in a touristic network, a project that is fortunately returning to the island, would make them the key elements as stopping and refreshment points in such itineraries and paths aimed at creating a rural system of farms, castles, mills, paper mills, monasteries/abbeys, spas and many other architectures of the Sicilian landscape [13].
The detailed analysis and the study of such rural architecture, that has recently brought the attention of the scientific community, has, in fact, triggered a new impulse to the Sicilian agriculture and tourism, providing renewed elements of analysis that could be intended as project and new frontiers for their recovery, that must always be compatible with the original characteristics of the buildings themselves. The objective of this larger study, that is under development, is the regeneration of these places [14] starting from the recovery of such architectures which, organized in a network of real and ideal connections, will constitute the connective tissue for the regeneration of the Madonie Park and the villages that, like precious jewels, are set in the rock of the inner mountains (Fig. 7).
The proposed strategies of intervention refer to a continuous dialogue between the Italian and the European smart villages, activating virtuous procedures for a sustainable development. Through technological development, and putting together a multitude of correlated actions, the improvement of the natural, social, and economic environment can be boosted. The digitization and dissemination of the information, together with an accurate sustainable technological requalification of the living environments, could improve the connection among these urban centers. Consequently, the entire natural and built environment will benefit from it. Smart and sustainable development means implementing useful services specifically for the weakest areas and establishing links to make societies inclusive: a configuration of cooperating and operational elements, hand in hand, where rural areas with their historical and architectural beauties could enhance the others with environmental qualities [15]. From this point of view, it is useful for the valorization that the network of villages returns to be smart. In this way, it is witnessing, through technology, a shared platform of knowledge that plays a fundamental role, both locally and in Europe, involving the population in a project that enhances its territory and stakeholders who bring out, and combine, their skills for the benefit of the project itself. A bottom up approach strongly pushed by the EU. This system will give new life to the economy of the villages and generate new opportunities also guaranteeing an active participation and involvement of technicians, companies, along with the third sector, strongly present in these areas and significantly compromised in the recent years [16]. All the system networks have the task of producing circular economy. With this in mind, it is necessary to have a continuous flow of users to develop the designed projects, but also to keep the reality of the place alive and make it more attractive. The network could guarantee, indeed, the rural communities' survival and prepare them for a technologically advanced future, thanks to a system of actions based on urban regeneration by making good sustainable development practices that favor culture, history, art, nature, material and immaterial tradition of the place. A challenge that can be applied by means of projects that combine tradition and innovation at the same time [17].
The study of the material and immaterial features of the built and natural environments is an unavoidable phase for the intimate knowledge of a territory and a subsequent proposal for preservation. Talking about traditional architecture, a rehabilitation project might be as more respectful as possible not only of the native architectural configuration and the original volumes, but also for the technological specificities – witness of the different constructive phases – that will enable the building valorization. Furthermore, a profound examination of the typological characters is fundamental to define a sort of regional code of practice intended as a valuable instrument to all the people working in architecture. Rural architecture is one of those symbols representing the immaterial features that must be preserved at the best and re-proposed as a guideline to improve the territory features, representing a uniqueness because of the different environmental and cultural background that itself involves as a mix between regional culture and traditional economy. To investigate the susceptibility to modification, and the subsequent compatibility of the proposed reuse, it is fundamental to distinguish whether the environmental quality is attributable to the vernacular architecture itself or to the surrounding natural landscape, passing through a compromise between the evaluation of the present conditions and the susceptibility to transformations. However, it often happens that high architectural or environmental quality contexts show a quite limited and rigid transformability; this condition is worsened when the anthropic presence has generated, or could generate, interference between humans and environment (restriction of visitors in sensitive environments) or in the need of a greater infrastructural network (transport and services). Therefore, the valorization of rural heritage, either architectural and natural, needs to pass through a choice of quality privileging a discreet and selected tourism rather than a mass one, certainly more remunerative but not always adequate to maintain the environmental sustainability and the real compatible preservation of the places.

Fig. 7. Madonie Villages, Palermo, Sicilia (© Eng. Luisa Lombardo)

The change of use is deeply influenced by many factors: farms are naturally suitable to be transformed into touristic structures, such as rural hotels or B&B, with the maintenance of landowner's house for the direction/management and control of the new structure, and the creation of tourist accommodation (rooms and apartments) in the accessory parts (ex-stables, warehouses, etc.) as they have a major susceptibility to changes. Moreover, the introduction of recreational activities should follow the criterion

of utilizing existing buildings or erecting new structures in a separate and distinguishable space avoiding aggregations to pre-existent structures: swimming pools, playgrounds and related accessory buildings are placed outside or in secondary and hidden spaces that would not visually and functionally conflict with the other activities [18]. A not secondary design aspect is represented by an appropriate rehabilitation to the most modern equipment and systems, such as the enlargement of water resources for the new residential functions, wellness centers and spa, recreational-sporting activities, irrigation of new green areas: from this matter derives the necessity of large water tanks in a region, Sicily, where this liquid is highly precious being often very little. Similarly, room air conditioning, lighting and artificial ventilation represent a priority, qualifying the design and making the complex more comfortable and appreciable in terms of receptiveness.
The evaluation of the susceptibility to transformation allows also the possibility to introduce greater modifications in order to maintain the residential use along with new functions including rehabilitation. In such cases, people should always be induced with a particular benefit in relation to the environmental condition: the amenity and health of places, the possibility to perform agricultural, breeding, or open-air activities. Rural structures could actually give hospitality to disabled people or drug addicts. Then, green transition passes also through the rehabilitation of people lives. Here, the contact with nature plays an important therapeutic function; thus, the design proposal must deal with long time residential pattern that shows different requirements from those related to tourism. Whereas possible, it is very important the re-discovery of primary environmental conditions and the presence of paths as a primal relationship between architectures, nature and surrounding territory. In such a way, it is possible to promote touristic routes and modern pilgrimages paths or take account of environmental resources: the identification of ancient roads, creation of picnic areas, bike paths, routes to neighboring towns and villages, horse trails, presence of streams for canoeing, exploitation of channels for kayakers.

4. Effects for the mountain area

These actions can generate, as a primary result, the creation of a communication network between public and private subjects, boosting their relationship, when already present, or even giving new light. An effective collaboration that leads into the realization of the proposals for innovative, almost dreamlike, projects. More particularly, that will boost the creation of useful guidelines intended to propose, plan and implement a development program in the Madonie area, in its various stages of development. A *modus operandi* that can be applied and implemented in the local reality, and that will be highly transposable in other situations characterized by similar features. The proposed strategies, as a whole, are extremally convenient also from an economic point of view, both in the medium and long-term perspective, especially in regard to the possibility of reusing properties that are currently in disuse, in need of energy or structural requalification interventions, or in a state of complete abandonment. Moreover, that will produce, as a direct consequence, a further strengthening of the receptive activity of the various villages, taking advantage of single events spread in the territory. That is the case of the solution already in place of the rural hotel which implies punctual interventions in the historical fabric. Specific energy and structural retrofit actions can, therefore, implement a virtuous induced not only for tourism but also for driven micro-activities related to management and communication. The example of the Regaleali farm (cf. fig. 6) is a valid example for all. That, from an old wine farm to a real industrial wine reality, has activated an induced activity into the rural tourist accommodation action in terms of strengthening the catering, maintenance of spaces (cleaning, technical repairs, etc.) as well as boosting communication (creation, strengthening and management of networks computerized for the circulation of information, social media, networks, etc.). This, as a diffusible example, and goal, to be achieved in the short term: systematize the already few but virtuous realities in the Madonie territory.

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