RE-USE STRATEGIES FOR CULTURAL HERITAGE MANAGEMENT: 
THE CASE OF CASA LI MELILLI DI SOPRA

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ABSTRACT

This study developed a method for the verification of re-use interventions, testing this method on a Sicilian manor farm, Casa Li Melilli di Sopra. The proposed methodology is based on two consecutive phases. The first phase establishes an order of preference among alternative use allocations while the second phase verifies the compatibility between the selected intervention solutions and the transformation constraints imposed by the building.

INTRODUCTION

Sicily is a region with a high number of cultural and environmental assets: five of the forty-three Italian sites appearing on the UNESCO List of World Heritage are located in Sicily. Beginning in the 1500’s the Sicilian economy was based on agricultural activities: the symbol of such economic organization were manor farms, settlements which controlled and organized the territory. Manor farms, in Sicily, can be considered as the evolution of a typology of rural settlement which followed the main steps of the island’s history, from the “late Roman villas”, to the Byzantine “country houses”, to the Norman “bagli”, up to the present architectural complex which constitutes the historical memory of the land belonging to it. Manor farms are a symbol of the control and of the organization of large landed estates, dating back to the 15th and 16th century. At the origin of their birth is a specific functional value which is linked to the historically dominant economic activities in Sicily: the growing of wheat, principally, and the keeping of livestock. Manor farms rose up in the middle of large properties of land, in a dominant position, mostly on rocky crags, in order to avoid the dangers of malaria and in order not to occupy terrains that could otherwise be used for agricultural purposes. Designed over the course of the centuries in accordance with the rhythms of agricultural production and of the raising of livestock, manor farms have distinct and easily recognizable groups of buildings: the residential nucleus, and the service and storage rooms organized around one or more paved courtyards. The end of large landed estates, which began gradually at the beginning of the 1800’s, set off the process of disuse of such settlements, being closely linked to economic and social forms which were slowly left behind. The use conditions were modified, being adapted to new economic and social demands: in the 1900’s the residential function of the estates was discontinued, conserving the use of the storehouses, of the “millstones” for wine-making and of the “olive-presses” for the production of oil. Today, as a result of socio-economic development and of the evolution of agricultural systems, manor farms in Sicily no longer constitute centres of agricultural activity: this is in fact what brought about their disuse. Manor farms represent an important piece of cultural heritage, being the fruit of human ingenuity and a step in the technological evolution, but also a testimony of the life of a society whose history is linked to that of agricultural activities. In recent years in Sicily there has been an increase in tourism, in particular in a cultural tourism linked to the territory and to its historical-artistic, environmental and landscape values. This has required an increase in the accommodation offered, transforming manor farms - architectural
complexes without any function but still an integral part of the rural landscape - into touristic-hotel structures. This requires the control of the transformation process which regards historical rural architecture.

In such a domain, the management of heritage buildings such as manor farms requires re-use strategies able to guarantee the continued use of the structure. This ensures the lengthening of the building’s life cycle, favouring its conservation over time. However the necessity to, on the one hand, preserve the testimonies of an agricultural life style and of the local material culture and, on the other hand, to institute new touristic-hotel functions requires intervention choices compatible with the recognized values of buildings that are highly characterized by their original use [1]. In many cases, re-use interventions have led to a loss of identity, deeply modifying the constructive characteristics of the manor farms and erasing the traces of the material culture of which the buildings are a testimony.

For this reason, the present study proposes a method for the governing of the decision-making process. The proposed method is able to verify a priori the results of re-use interventions on rural architecture, guaranteeing a compatible use of the building without erasing its identity and thereby avoiding unchecked removals of material and imbalances in the structural system.

THE CASE STUDY: CASA LI MELILLI DI SOPRA

The proposed method was tested in order to verify the intervention choices for the re-use of “Casa Li Melilli di Sopra”, a manor farm located in the South-Eastern part of Sicily, in a strategic point for meeting the flows of tourists on the island. The architectural complex (described in the table of data reproduced in Figure 1) is a manor farm that fell into disuse in the 1970’s, nearby to the city of Palazzolo Acreide. The manor farm is composed of an articulate system of several groups of buildings, arranged around two rectangular courtyards. The Western courtyard is bordered by, along the long sides, groups of raised buildings, intended for use as a barn and as living quarters for the farmers. On the Eastern side of the Western courtyard one has access, through a passageway with a barrel vault, to the Eastern courtyard, bordered on the Northern and Eastern sides by elevated buildings, intended for use as service rooms, and on the Southern and Western sides by buildings that are two or three-times elevated and which contain the proprietor’s residence. The proprietor’s residence, which housed the land-owner and his family during the harvest times of the year, is distinguished by a few special features: the building is positioned on the entrance side of the Eastern courtyard, elevated with respect to the other buildings, and equipped with windows, balconies and terraces. The seigneurial house presents characteristics more common to urban architecture than to rural architecture, displaying the social and economic importance of the family. The fact that more attention was given to the making of the architectural elements is proof of this: the openings of the windows show frames with moulded profiles and have friezes of floral decorations above (Figure 2).

“Casa Li Melilli di Sopra” not only represented a site of intense production and economic activity, but also a centre for social gathering, in which the presence of the Chapel guaranteed, throughout the year, the celebration of religious services. The land-owner, with the foundation of the Chapel, worked to set aside a sufficient amount from his annual income for the maintenance of the Church furnishings and to pay the Priest for the celebration of Mass and for the ministration of the sacraments.

METHODOLOGY

The methodology developed constitutes a tool able to control and predict the results of the transformation process to which the majority of the manor farms in disuse are submitted, and this
THE MANOR FARM

Construction age
 XVII - XVIII Century

Primal function
 Farm and house

Present function
 Unused since 1970’s

Owner
 Private owners

BUILDING CHARACTERISTICS

Dimensional data
 Area of buildings: ..........................1.650 mq
 Area of courtyards: ...........................930 mq
 Volume of buildings: ........................10.400 mc
 Area of surrounding land: .................45.600 mq
 House: .........................................31 units, 586 mq
 Farm: ............................................13 units, 1.016 mq
 Church (Chapel): ...............................1 unit, 48 mq

Constructive information
 Bearing structure: ............ load-bearing masonry
 Vertical closures: .. wooden doors and windows
 Horizontal partitions: .................stone vaults,
 ..............................................wooden floors
 Inclined partitions: ...........................stone staircases
is done in order to avoid the possible loss of characteristics inherent to the identity of rural buildings. The possibility of having control parameters for the intervention choices not only guarantees the preservation of the building over time, but also the increase of its useable life cycle.

The proposed methodology allows, in the first phase, for the definition of the use allocation having the highest level of compatibility with the pre-existing building, identifying an order of preference among alternative touristic-hotel accommodation structures based on their compatibility with the building. This allows for the minimizing of the transformations to the building, thus conserving its values.

The compatibility check requires the acquisition of a large amount of data related to both the building and to the use allocations to be instituted. In the first case, the research is aimed at the identification of the performances that the building is able to offer and of the constraints that exist to its transformation. In the second case, the analyses are directed at the identification of the requirements of each of the alternative functions.

Once the preferred use allocation has been selected, in the second phase the project choices are verified with respect to the transformation constraints (Figure 3).

**Phase I: the re-use compatibility check**

The first phase of the adopted methodology is aimed at verifying the compatibility of alternative functions with the building. The compatibility assessment was formulated on the basis of control procedures which took into consideration information related to the building, on the one hand, and the variables related to the functions to be instituted on the other.

The collection of data is structured according to ensuing levels of depth in the analyses performed. This allows for the exclusion, already during the course of the process, of use allocations which are not able to respect the constraints imposed by the building. Such a survey, conducted during the phase which precedes the development of the re-use project, allows for a preliminary compatibility check to be carried out, a verification related only to the need of Usability. This delays more in-depth surveys until subsequent phases of the intervention solution definition process [2].

The comparison system is divided into five different steps which enable one to verify, for each class of requirements imposed by the alternative use allocations, the correspondence of these requirements with the performances offered by the building (Figure 4). Based on the outcome of each step, this verification allows one to proceed towards subsequent phases or requires that adjustments be made to the use allocation (for example, a reduction in the number of expected users, in the activities to be instituted in the building, in the relations between activities, etc.). This means that unchecked transformations to the building can be avoided, having selected a priori a function which requires limited modification interventions.

For the case in question, within the domain of the accommodation use category, two use allocations were examined: a holiday farm and a health centre, both dictated by the demands of
local tourists. For each allocation two alternative hypotheses were developed for the distribution of the activities. The requirements of the use allocations were established based on the rules dictated by mandatory Italian laws and on advised technical norms.

The first phase of comparison verified the correspondence between the area and volume of the spaces of the manor farm and the minimal dimensions required by the use allocations. The analysis of the building was carried out by surveying the configuration of the rooms, highlighting the degree to which they could be divided or combined, based on their form, proportions, dimensional associations and building techniques. Based on this information, the available spaces were put into homogeneous groups according to dimensional and morphological ranges. The analysis of the use allocations was carried out by defining the minimum dimensions required for the implementation of the anticipated activities for each use allocation.

The second phase of comparison evaluated the compatibility necessary between the system of connections among spaces of the farm and the system of relations among activities in order to allow each of the use allocations to function well. The analysis conducted on the manor farm identified the links and the distances of the paths between spaces, defining the following relationships: adjoining rooms, adjacent rooms, rooms with side or front entrances, and rooms with entrances connected by a path. In addition, the analysis of the building techniques and of the structural system allowed for the verification of the possibility of making further connections between spaces. Parallelly, the survey conducted on the use allocations was based on the study of the flow chart of the relations which must be guaranteed between activities, highlighting the relations of an invariable nature (activities which impose a direct link) and those of a variable nature.

The third phase compared the access conditions to the building and the accessibility required by the
Figure 4: Flowchart of the comparison process

use allocations, taking into account maximum simultaneous user flows. The analysis identified both the entrances to the farm as a whole and to the single rooms of the architectural complex, based on the areas available for parking, on the entrance paths (roads and footpaths) and on the entranceways. In order to identify the accessibility requirements imposed by the use allocations.
the expected maximum simultaneous user flows for each system of functions were quantified. Accessibility was also evaluated based on the conditions required in order to guarantee that the building and all of its floors may be reached by emergency support services.

The fourth phase compared the connection system, both horizontal and vertical, of the manor farm with the flexibility in movement required by the activities to be instituted. The flexibility in movement required by the two use allocations was defined based on the examination of the centres of activity present in the functional flowcharts developed. For each centre of activity one or more systems of paths reserved for the different categories of users was anticipated. In addition, the types of pathways (horizontal and vertical) able to guarantee the evacuation of the building in case of emergency were indicated.

The last phase of comparison examined the privacy conditions offered by the building, relating them to the privacy factors relative to the tranquility and the reserve required by some of the activities to be instituted. This comparison was carried out with the aim of highlighting the conditions of acoustic insulation and the limits to visual privacy guaranteed by the building.

Once the compatibility of the four distributive hypotheses (two for each use allocation) was verified, an order of preference among the alternatives was defined. A multicriteria evaluation was carried out with this goal in mind, applying the Regime method (a discrete method based on a widespread kind of concordance analysis) [3], which takes into account several evaluation criteria simultaneously, in order to define a priority order among alternative choices. The Regime method allows for the use of quantitative and qualitative synthetic indicators, assigning an ordinal weight to the different evaluation criteria. Such a method required the development of an evaluation matrix, which lists the four distributive hypotheses in the columns and the evaluation criteria on the lines. The latter derive from the phases of comparison between the performances offered by the building and the use allocation requirements. The terms of comparison were based on percentage rates or on judgements (positive or negative) which constitute the values to be placed inside the evaluation matrix. The generic element of the matrix therefore identifies the way in which a certain alternative satisfies a given criterion. In the case of Casa Li Melilli di Sopra six evaluation criteria were identified, criteria to which different weights were assigned. The outcome of the application of the Regime method indicated that the distributive alternative B1 was preferable, favouring the use allocation of a health centre and spa. This solution for the project guarantees an optimum usage of the available areas and volumes and a better match of the connection system between spaces in the building to the demands of the new function.

Phase II: compatibility check of the intervention solutions

Besides restoring the table of the performances still offered by the architectural complex, the analysis carried out on the manor farm encouraged the identification of characteristics that are exemplary of the building’s identity, characteristics which are necessary for the comprehension of its values (historical, aesthetic, psychological and technological values). The need to conserve such values required the definition of transformational constraints, conditions to be respected in order that the intervention choices not compromise the preservation of the identity of the architectural complex. The constraints were classified according to three categories:

- **perceptive-cultural constraints**: pertaining to the conservation of historical and psychological characteristics, which define the users’ perception of the image of the manor farm. Out of respect for such constraints, the re-use intervention must pursue the following objectives: conservation of the connotative architectural characteristics of the building, recognisability of the transformations, and acceptability of the transformations;

- **morphological-dimensional constraints**: pertaining to the conservation of the characteristics regarding the geometric and stereometric configuration of the building. Out of respect for such
constraints, the re-use intervention must pursue the following objective: conservation of the legibility of the dimensions, forms and proportions of the building and of its parts;

- **material-constructive constraints**: pertaining to the conservation of the behaviour of the materials and of the structural techniques of the building. Out of respect for such constraints, the re-use intervention must pursue the following objectives: conservation of the connotative material and structural techniques of the building, compatibility of the materials and of the adopted technologies with those present, reversibility and durability of the transformations, as well as the ability to maintain those transformations.

With the goal of creating a tool for the verification of intervention solutions, thus allowing for the adaptation of the performances to be integrated into the building, the study considered the subject of the project solution compatibility check (Figure 5) [4]. The main criticalities that emerged from the first phase of verification are in regards to the meeting of the requirements of tranquility and reserve called for by the use allocation selected and the necessity to divide some of the rooms, in order to separate activities that cannot take place in one common space.

Based on the analysis of the transformational constraints, a compatibility check was carried out using control parameters relative to:

- the constructive and material characteristics of the pre-existing technical elements and of the project solutions,
- the dimensional and morphological characteristics of the pre-existing technical elements and of the project solutions,
- the characteristics of the materials and of the surface finishings of the pre-existing technical elements and of the project solutions,
- the dimensional and morphological characteristics of the spaces.

In order to integrate the performances of tranquility and reserve one of the rooms located on the ground floor, intended for use as a bedroom, was examined. The main problems encountered regard the sound-proofing of the windows and visual privacy: in consequence, two alternative project solutions were developed in order to modify window frames and openings (Figure 6). The first solution calls for the substitution of the existing windows with new frames that, while respecting the typology of the original frames, are equipped with profiles of greater dimensions, in order to allow for the insertion of an infill composed of double-glazing, the external pane of which is made of reflective glass. This material has, on its external surface, a finish made through a process involving metallic deposits, which produces a selective reflection of the irradiation from the surroundings, a reflection that is less illuminated. With this system, privacy is ensured exclusively during daylight hours: the artificial lighting of the internal environment nullifies the darkening effect. For this reason the project requires the addition of internal wooden shutters, hinged to the movable window framework. The second solution under examination also calls for the substitution of the existing window frames in preparation for the installation of double-glazing, but pursues the objective of privacy through the installation of a system of wooden slats which slide along an adjustable vertical axis. The arrangement of these wooden slats allows for the control of the amount of natural light that enters the room and, at the same time, prevents people outside of the room from seeing in. This system involves the removal of the window grating, proposing a re-working of the space and re-using the anchoring holes for the linking of the slats to the wall space. The installation of a wooden staff in the intrados of the opening allows, moreover, for the freeing up of the space, hiding the slats from view. Figure 6 contains the results of the compatibility check, conducted based on the control parameters previously identified, of the two intervention solutions on the windows.

For the choice of intervention solutions aimed at the splitting up of spaces, one of the vaulted
rooms was examined, it being necessary to institute several activities in that space. The need to preserve the legibility of the unitary space and to guarantee visual comfort, allowing for the diffusion of natural light, led to the development of two project alternatives using transparent partitions. The first solution calls for the installation of fixed partitions, composed of a steel profiles and infills of glass panes. These allow for dry installation through fastenings in a number of points, limiting the loss of the pre-existing material of the building and encouraging the reversibility of the intervention. The second solution is composed of a system of sliding glass panels, mounted on a steel frame. In this case the installation of a track on the floor is necessary in order to ensure the stability of the structure in the handling phases. This choice has the advantage of ensuring flexibility in the use of the spaces, but involves a more substantial loss of material, requiring the partial substitution of the flooring in order to allow for the installation of the embedded track. Figure 7 summarizes the compatibility check of these two intervention solutions.

It is also possible to carry out a multicriteria evaluation in the second phase of the decision-making process described, evaluating the project solutions based on their respect of the transformational constraints.

RESULTS AND DISCUSSION

The proposed methodology constitutes a guide for the definition of choices in the re-use process. It allows, in the first phase, for the verification of the compatibility between the building in question and two alternative use allocations and for the establishment of an order of preference among these allocations, based on the system of values attributed to the building. In the second phase, alternative intervention solutions are compared, verifying their respect of the transformational constraints through control parameters. The adopted procedure is based on ensuing levels of depth in the surveys performed, allowing for the exclusion, already during the course of the verification, of use allocations which are non-compatible and for the limitation of the data to be collected to only those functions which pass the steps of verification.

The re-use compatibility assessment allows, therefore, for the identification of use allocations
Figure 6: Intervention solutions on the windows
Figure 7: Intervention solutions aimed at the splitting up of spaces
whose institution in the building guarantees the respect of the constraints imposed by the pre-existing structure, preserving the latter and encouraging intervention solutions which enable the protection of the cultural asset. In addition, it guarantees a precautionary evaluation of the adaptational work to be performed on the building, essential in order to ensure that the new activities to be instituted are carried out correctly. In these cases, it is necessary to identify the technological solutions that correspond with the required conditions which ensure their effectiveness, but also with the conservation criteria of the structural system, of the constructive elements and of the material, criteria that are essential in order to guarantee the reversibility of the intervention.

The design and the use of methodologies for re-use compatibility checks enable the governing of intervention choices affecting heritage buildings, re-establishing a balance between conservation and transformation. In many cases, in fact, the absence of preliminary analyses invalidates the protection and conservation of such buildings, allowing for the institution of use allocations which are non-compatible with the pre-existing structure. In such cases the conservation of the cultural asset is entrusted only to the designer’s own awareness and sensitivity. The study that was conducted therefore proposes a tool for the control of intervention choices, a tool that can be used both in the preliminary phase of the selection of functions to be instituted in the building, and in the definition phase of the intervention solutions necessary to the performance adaptations required by new uses.

**CONCLUSIONS**

The selection of new use allocations for buildings in disuse is an occasion for the conservation of existing cultural heritage buildings, understood as a resource, as well as for the development of installation systems. Re-use constitutes a tool which enables the valorization of cultural heritage buildings on an urban and territorial level, having repercussions on the contextual conditions. In addition, when the building to be re-used carries cultural values and through the traces of prior use it acts as a testimony of socio-economic evolution, the re-use intervention becomes an opportunity to preserve and narrate the history of the local community.

The compatibility check of the new activities to be instituted with the characteristics of the pre-existing structure represents a necessary tool in order to guarantee the continuity of the narrative, verifying the outcomes of the transformational interventions to be carried out. Through the application of this method it is possible to analyze each hypothesis for the adaptation of the building to a new function and to compare this hypothesis with the transformational constraints of the building, constraints which are established based on the recognized values of the cultural asset. This allows for the verification of the quality of the results of each transformational action, ensuring the constancy of the values that the building is able to transmit to the community.

**REFERENCES**


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