Metadesign strategies for compatible reuse: the case of the single hall churches in Catania

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Highlights

Briefly summarizing the most recent studies about scientific approaches to the theme of building reuse. We propose a metadesign strategy applied to the single hall churches in Catania’s historic centre. We have performed a census and analyses on them from a morphological, technical and thermo-physical point of view. We also conducted an analysis of the urban settlement system in which these historic buildings are located, in order to verify compatibility with the “new” potential uses. However, a critical issue emerges regarding the possibility to standardize the decision-making processes involving historic buildings with a high cultural relevance.

Abstract

This study proposes a meta-approach to the problem of compatible reuse, applied in Catania to the brotherhoods single hall churches, often underused or disused. After making a cataloguing and expeditious anamnesis, we have analysed a framework of needs that would consider the settlement needs in the urban context. Having inserted the data collection in the system, we performed an assessment of compatibility of reuse that satisfies the historic building protection, the reversibility of possible action, and the requirements of the new undertaken functions.

Keywords

Compatible reuse, Conservation strategy, Single hall churches, Traditional building techniques, Eastern Sicily

1. INTRODUCTION

In our historical context, which is very sensitive to the sustainable development and the revitalization of the old European urban fabric at least theoretically, the existence of many historic religious buildings underused or disused in our historic centres represents an exciting opportunity of reflection on the compatible reuse and recovery of the buildings. This research, being carried out and whose programmatic results obtained so far will be briefly explained below, starts from these considerations. In association with other similar studies carried out in different geographical areas, we analyse a particular case study such as the single hall churches in Catania’s historic centre. We propose a systematic methodological design approach to support recovery and reuse. These metadesign strategies shall pursue only minimal, specific and
compatible actions with geometrical, typological and technological aspects of the buildings taken into consideration, without ignoring the improvement of energy performance. Since the decay processes of these buildings help to accentuate their urban and social fabric degradation phenomena, this approach can only be multidisciplinary and must, therefore, involve many actors within the decision-making process. Thus, recovery and reuse must be complementary. A new function that respects the historical and artistic character of the pre-existence on the one hand will contribute to the protection and survival of the building and on the other will represent an opportunity to raise the historic districts, catalysing several activities related to trade, tourism, education, training and leisure [1].

2. STATE OF THE ART

One of the recurring literature themes of the last twenty years is the compatible reuse of specialized buildings with a high cultural value, in order to make a reasoned choice about the new function to be undertaken. One of the first researchers emphasizing the concept of systematic conscious reuse was Valerio Di Battista [2]. In his study, he confirms the substantial difference between the practice of reuse and those of rehabilitation and restoration. In the definition of reuse design considering the cultural and economic value of the buildings, he argues that it is necessary to bring into play two interrelated conditions simultaneously: the evaluation of the actual performance compatibility and the reuse processes in relation to the opportunities suggested by the quantitative dimensions of the potentially involved heritage. For this purpose, the compatibility use control should start from pre-diagnosis through a prefeasibility study aimed to ascertain:

• the possibility to operate with minimum structural interventions;
• the compatibility with the socio-environmental context;
• the existing environmental system required by the new use and the level of the adjustments required in terms of deterioration and comfort.

These considerations (implemented already in the nineties during the Master Plan of Parma revision) are the basis of a methodological approach that has also been followed and refined by other researchers. This method consists of several phases. The phases shall require: a detailed survey of settlement demand of socio-cultural context, the analysis in the field and the pre-diagnosis of buildings for reallocation, the elaboration of the hypothetical destination uses emerged from the settlement demand and the assessment of the compatibility reuse of each building, comparing the services offered by the building and the requirements of the settlement demand. According to the

1. INTRODUZIONE

La presenza all’interno dei centri storici di numerosi edifici di culto sottoutilizzati o in disuso, in un contesto storico come quello attuale molto attento, almeno in via teorica, alle tematiche di sviluppo sostenibile e al rilancio degli antichi tessuti urbani delle città europee, rappresenta una stimolante opportunità di riflessione sulle tematiche di recupero e riuso compatibile del costruito storico esistente. La presente ricerca, ancora in fiori ed i cui risultati programmatici ottenuti fino a questo momento saranno sinteticamente illustrati di seguito, prende le mosse proprio da queste considerazioni.

In linea con altri studi condotti in ambiti territoriali differenti, attraverso l’analisi di un particolare caso d’applicazione come le chiese ad aula unica del centro storico di Catania, si vuole proporre un approccio metodologico di tipo sistematico e di supporto ad una forma di progettazione finalizzata al recupero e al riuso che contengano esclusivamente interventi a carattere minimale, specifico e compatibile con gli aspetti geometrici, tipologici e tecnologici dei manufatti presi in considerazione, senza però trascurare anche il miglioramento delle prestazioni energetiche. Poiché i processi di decadimento di queste fabbriche contribuiscono ad accentuare fenomeni di degrado sia del tessuto urbano sia del tessuto sociale in cui esse sono inserite, tale approccio non potrà che essere pluridisciplinare e dovrà pertanto coinvolgere più soggetti all’interno del processo decisionale. In quest’ottica, il recupero ed il riuso devono quindi risultare complementari poiché proprio la nuova funzione rispettosa dei caratteri storico-artistici della preesistenza da una parte contribuisce alla tutela e alla sopravvivenza del bene e dall’altra rappresenta un’occasione di rilancio per gli antichi quartieri della città catalizzando diverse attività, legate al commercio, al turismo, all’educazione, alla formazione nonché allo svago [1].

2. STATO DELL’ARTE

Il riuso compatibile di edifici specialistici sull’elevata istanza culturale, legato ad una scelta ragionata sulla nuova funzione da ospitare, è una delle tematiche ricorrenti della letteratura degli ultimi venti anni. Uno dei primi studi di Valerio Di Battista [2]; il quale, ribadendo la differenza sostanziale che intercorre tra la pratica del riuso e quella della riqualificazione e del restauuro, sostiene che nella definizione del progetto di riuso, per considerare sia la valenza culturale sia quella economica dell’oggetto edilizio, occorre mettere contemporaneamente in gioco due condizioni interdipendenti: la valutazione della effettiva compatibilità prestazionale ed i processi di riuso gestibili in relazione alle opportunità suggerite dalle dimensioni quantitative del patrimonio potenzialmente interessato. A tale scopo, il controllo della compatibilità d’uso deve iniziare sin dalla fase di preindividuazione attraverso una verifica...
already mentioned researchers, the settlement application must be analysed by interviewing selected interlocutors in accordance with their skills and their ability to listen to the social needs of its sector, such as associations or public administrations. Through these interviews, we can identify the settlement needs and the new hypothetical uses, defining the functional layout of each of them on the assumption of new expected users in terms of dimensions, the characteristics of the access paths, the requirements of static safety, usability and visual and hygrothermal wellness comfort. The analysis in the field allows us to define a knowledge framework of each building through a real anamnesis of its clinical history, and geometrical aspects of the space distribution, in addition to the necessary description of the technological system that characterizes it. According to these investigations, the authors emphasize the need for a prediagnosis to be conducted through the analysis of the conditions of pertinent areas and the plot, as well as of the structural, hygrothermal, lighting, acoustic and usability conditions offered by each building. The final compatibility evaluation is carried out by comparison at different levels; at the first instance, the authors refer to an essential dimensional global compatibility, which enables the selection or discarding of some use destinations for surplus or shortage of space made available by the building. Later, the studies must analyse dimensional disaggregated compatibility involving the comparison between the area of each floor, or each space, in the building and the required area for various activities under the envisaged use. The performance compatibility is finally checked by comparing the performance offered by the building and the necessary requirements demanded by new hypothesized uses. A contribution to the exposed methodology finds full application in the case study of the monumental Real Albergo de’ Poveri in Napoli [3]. In this historic building, all these considerations result in a systemic performance examination that defines two models of design support to be correlated between them. These models are: the pre-existing model (which involves the reading of the building performance) and the model represented by the general structure schemes of new uses. Preparatory to the compatibility check is then the definition of “congruence indices” between the pre-existing and proposed destination use. The assessment of the “congruence indices” is based on dimensional, distribution, environmental and design data. Comparing these indices and proceeding to cataloguing the possible technological actions, we can arrive at a conscious design choice, which denies any a priori assessment and highlights a range of possible and compatible actions. The reuse action must respond to a strategy that is able to locate a driving function in the building, able to ensure the economic and
financial sustainability of the project, and at the same a drawn function related to activities aimed at the satisfaction of social needs that would not be able to support themselves financially. In this perspective, the reuse action cannot be the prerogative of the only building activity but is the result of a multi-disciplinary strategy which must involve public and private actors at different levels. To this end, to define the new functions to be accommodated inside the considered historic container, the analysis of social needs and development dynamics of the concerned area is developed through a prior investigation of the requirements imposed by the existing planning instruments and through a statistical analysis to identify what the institutions and existing activities in the area are. Only at the end of these, interviews are performed with key informants, representatives of all the social groups involved, such as local communities, urban and regional companies and potential users attracted to the new possible uses.

Another recent study [4] underlines the value of reuse as a strategic opportunity to trigger exploitation mechanisms that involve not only the building but also the settlement context in which it is inserted. In order to identify the most suitable use destinations, this study breaks down the settlement system in its physical, social and economic components through indirect analysis, assessing again the statistical data and the requirements dictated by the existing planning instruments. As for the physical system, the local context is examined describing the climate, the presence of protected areas, archaeological and monumental sites, the transport system, as well as the expired constraints of the current PRG and the guidelines of the new planning instrument in the process of being approved. The social system is examined through the study of demographic indicators relating to population growth and its average age, the percentage of foreigners, their integration, and coexistence requirements, the flow of tourists and accommodation choices. For the economic system, the leading economic sector is identified, the unemployment rate, the wealth distribution of the resident population, the existing cultural events and related necessary support structures. From these analyses, which are only indirect, it is possible to recognize the attraction factors of the area and of use destinations that can be accommodated by the considered buildings.

3. METHODOLOGY

In the light of these well-established experiences in literature, this research is gradually proceeding to identify the areas of study to compare them for compatibility assessments so as to direct the design choices. The identified areas are:

Poveri di Napoli [3], in cui tutte le precedenti riflessioni si traducono in un esame prestazionale sistematico che definisce due modelli di supporto alla progettazione da correlare tra di loro. Si determinano così il modello della preesistenza, che traduce nella lettura delle prestazioni dell’edificio, e il modello rappresentato dagli schemi generali di funzionamento delle nuove destinazioni d’uso. Propedeutica alla verifica di compatibilità è poi la definizione di indici di congruenza tra preesistenza e destinazione d’uso proposta. La valutazione degli indici di congruenza è basata su dati dimensionali, distributivi, ambientali ed impiantistici. Ponendo a confronto questi indici e procedendo alla catalogazione delle tecnologie d’intervento possibili si giunge ad una scelta progettuale consapevole che nega qualsiasi valutazione a prioristica ed evidenzia un ventaglio di possibili interventi compatibili. L’intervento di riuso deve rispondere ad una strategia che riuscì a collocare nel manufatto edilizio una funzione trainante, capace di assicurare la sostenibilità economica e finanziaria del progetto, e contemporaneamente una funzione trainata, legata ad attività volte al soddisfacimento delle istanze sociali che non sarebbero coinvolte nel quadro della sola attività edilizia ma rappresentano il risultato di una strategia pluridisciplinare che deve coinvolgere a diversi livelli i soggetti pubblici e privati. A tal fine, per la definizione delle nuove funzioni da ospitare all’interno del contenitore storico considerato, l’analisi del fabbisogno sociale e delle dinamiche di sviluppo dell’intervento si sviluppa attraverso una preventiva indagine delle prescrizioni imposte dagli strumenti urbanistici vigenti e un’analisi statistica volta ad individuare quali siano le istituzioni e le attività presenti sul territorio. Solo a questo punto e quando si sono esaurite le indagini preliminari e si sono acquisiti debiutti e informazioni di base, si eseguono interviste a testimoni privilegiati, rappresentanti di tutti i gruppi sociali coinvolti come le comunità locali, le comunità urbane e territoriale e l’utenza potenziale attratta dalle nuove destinazioni d’uso possibili, in un autre recente studio [4] si sottolinea il valore del riuso come occasione strategica per innescare meccanismi di valorizzazione che non coinvolgono solo l’edificio ma anche il contesto insediativo nel quale esso è inserito. Allo scopo di individuare un modello rappresentato dagli schemi espressi in un esame prestazionale sistematico che traduce nella lettura delle prestazioni dell’edificio, e contemporaneamente alla determinazione di possibili interventi compatibili. In un altro recente studio [4] si sottolinea il valore del riuso come occasione strategica per innescare meccanismi di valorizzazione che non coinvolgono solo l’edificio ma anche il contesto insediativo nel quale esso è inserito. Allo scopo di individuare le destinazioni d’uso più adatte, l’intervento di riuso è stato mirato attraverso una preventiva indagine delle prescrizioni imposte dagli strumenti urbanistici vigenti. Per quanto riguarda il sistema fisico, il contesto territoriale viene esaminato descrivendone il clima, la presenza di aree protette, siti archeologici e monumentali, lo stato del sistema dei trasporti, nonché i vincoli decaduti del PRG vigente e le linee guida del nuovo strumento urbanistico in fase di approvazione. Il sistema sociale è stato invece esaminato attraverso uno studio di indicatori demografici inerenti la crescita della popolazione e della sua età media, la percentuale di stranieri presenti e le relative esigenze di
1. Physical system: the historic buildings to be recovered;
2. Urban settlement system and possible uses.

As already mentioned, with regard to the historical built study, the case object of interest is made up of twenty-three single hall churches that belonged to the brotherhoods and are distributed in Catania’s historic centre, in an area of about fifty hectares. For each of them, we have drawn up an anagraphic tab in phase of expedient anamnesis that has allowed us to reconstruct information about dimensional, typological and structural aspects [5]. At this stage, we also collected information on the current use of each church, identifying four different categories: open to worship, occasional use, already been converted to other uses, in disuse. We investigated the presence or lack of local service annexes and aspects linking the building to the urban context, such as access roads, public transport and parking nearby. The expedient analysis also divided the data into two different subsets. On the one hand the geometrical and typological information allows us to study the orientation, the shape factor, the position of the building compared to the block; on the other hand, the investigation into the building techniques employed has provided the opportunity to consider the technical and thermophysical characteristics calculated in static mode [6] [7] [8]. The urban settlement system characterization was subsequently necessary to understand the context in which these buildings are inserted and then to evaluate the settlement demand. In the specific case of Catania’s historic centre, the study of the requirements of the existing planning instruments is, however, unsuccessful because of the obsolescence of the General Plan of L. Piccinato (1964) and because of the different approved variants, none of which involved the historic fabric of the city. At this stage, due to the lack of specific urban studies, this report can hypothesize possible local needs through the elaboration of statistics, taken from the ISTAT data base, and through theoretical reflections justified by national and regional regulatory instruments of general validity such as Interministerial decree no. 1444 of 1968 and Regional law no. 71 of 1978 [9] [10]. Once a plausible range of new functions to be accommodated within the examined churches is identified, for each destination of use we studied the distribution and dimensional minimum requirements and safety and usability aspects required by the new proposed activities. Putting all the data collected into the system, we will make the compatibility assessment, which will take place by comparing the requirements of the new functions and the buildings performance according to the Classes of Requirement defined by European regulations UNI 8289:1981 and UNI 11277:2008 [11] [12]. The discriminant integratio e coesistenza, i flussi turistici e l’offerta ricettiva. Per il sistema economico si individua il settore economico trainante, il tasso di disoccupazione, la distribuzione della ricchezza della popolazione residente, le manifestazioni culturali esistenti e le relative strutture di supporto necessarie. Da queste analisi, che sono solitamente di tipo indiretto, è possibile riconoscere i fattori di attrazione del territorio e le funzioni d’uso che possono essere ospitate dai manufatti edilizi presi in considerazione.

3. METODOLOGIA

Sulla scorta di queste esperienze e conoscenze, la ricerca sta progressivamente procedendo ad individuare gli ambiti di studio da mettere poi a confronto per le valutazioni di compatibilità e per indirizzare così le scelte progettuali. Gli ambiti identificati sono rappresentati da:
1) Sistema fisico: il costruito storico da recuperare;
2) Sistema insediativo urbano e le possibili destinazioni d’uso.

Come già accennato, per quanto concerne l’ambito di studio del costruito storico il caso specifico oggetto di interesse è costituito dalle ventitré chiese ad una unica cupola appartenute alle confinanze e distribuite nel centro storico della città di Catania in un’area di circa cinquantacinque ettari. Per ciascuna di esse è stata redatta una scheda anagrafica speditiva che in fase di anamnesi ha permesso di ricostruire un quadro informativo sui caratteri dimensionali, tipologici e tecnico-costruttivi [5]. In questa fase sono state raccolte anche indicazioni sull’attuale fruizione di ogni tempio (distinguendo quattro diverse categorie di templi: ancora aperti al culto, con uso saltuario, già convertiti ad altri usi, in disuso), sulla presenza o meno di locali di servizio annessi e sugli aspetti che mettono in relazione l’edificio col contesto urbano, come le vie di accesso, la presenza di trasporti pubblici e di aree destinate a parcheggio nelle vicinanze. L’analisi speditiva ha anche posto le basi per una futura valutazione energetica di questi manufatti [6], distinguendo i dati raccolti in due sottoinsiemi differenti. Da un lato le informazioni geometriche e tipologiche hanno permesso di studiare l’orientamento, il rapporto di forma, la posizione della fabbrica rispetto all’isolato, dall’altro lato l’indagine sulle tecniche costruttive impiegate è dato la possibilità di considerare i caratteri termofisici di ogni elemento costruttivo della fabbrica, calcolati in regime stazionario [8] [7] [8]. La caratterizzazione del sistema insediativo urbano è stata poi necessaria per comprendere il contesto nel quale tali fabbriche sono inserite e per valutare quindi la domanda insediativa. Nel caso specifico del centro storico di Catania, lo studio delle prescrizioni degli strumenti urbanistici vigenti risulta tuttavia infruttuoso a causa dell’obsolescenza del Piano Regolatore Generale di L. Piccinato (1964), trascinatosi fino ad oggi attraverso diverse varianti approvate, nessuna delle quali ha...
requirement class for the first evaluation of compatibility will be usability, defined as the set of conditions relating to the attitude of the building system to be properly used by people in the activities.

4. RESULTS

4.1. PHYSICAL SYSTEM

As already mentioned, the object of this study is represented by twenty-three confraternal churches of Catania’s historic centre. Until the late nineteenth century and the establishment of public cemeteries in Sicily, these churches responded mainly to the needs of the people to bury their dead, but now are largely underused or abandoned. For this reason, the current use of the examined churches manages to give an idea of the conservation state in which they are found.

During preliminary investigation, it was found that only 25% of the churches is open for worship, because they are linked to the cult of the patron saint of the city or even managed by the homonymous brotherhoods, while 40% of the temples is used only occasionally. The churches in complete disuse are two, one of which, the church of Ss. Elena e Constantino, hosted the workshop of a blacksmith for many years and now is in a state of disrepair. There are also cases of a successful reuse, such as the provincial library-art gallery of the church of San Michele Minore, or less successful (for design and building techniques employed) such as the theatre accommodated in the church of Santa Maria della Palma and the dance school in the ex-church of Sant’Antonio Abate. We should also mention the church of Santa Maria della Rotonda, archaeological site, and two cases in which the temples were reassigned to another group of worship: the Orthodox one for the local Romanian community at the church of San Cristoforo Minore and the Catholic one for the Sinhalese community in the church of Santa Maria dell’Ogninella [5]. As for the typological aspects, these traditional buildings have similar characteristics. The single nave, crowned by a barrel vault with lunettes, usually ends with a semi-circular apse closed at the top by a hemispherical bowl. The nave’s useful area varies between 85 and 280 square meters, to which are added small surfaces formed by the service areas present in most of the analysed churches. For the recognition of technical and structural characteristics, we performed a specific survey of all building elements. The vertical envelope is formed by bearing masonry in shapeless basalt blocks or square basalt blocks and lime mortar with volcanic aggregates. They are coated with several layers of plaster or with an elaborate brickwork formed by

4.1. IL SISTEMA FISICO

Come già accennato, il costruito storico oggetto di studio è rappresentato dalle ventitré chiese confraternali del centro storico della città etnea. Fino alla fine dell’ottocento ed all’avvento di nuovi antichi templi pubblici in Sicilia, questi templi rispondevano soprattutto alla necessità della popolazione di seppellire i propri defunti, mentre oggi sono in gran parte sottoutilizzati o in stato di abbandono. Per questo motivo, la frazione attuale delle chiese in esame riesce a dare un’idea dello stato di conservazione in cui esse si trovano.

In fase di indagine preliminare si è riscontrato che solo il 25% delle chiese è aperto al culto e da più di una parte storia, perché legate al culto della Santa Patrona della città o ancora gestite dalle omomuni confraternali, mentre il 40% dei templi è utilizzato in modo salutario. Le chiese in completo disuso sono due, una delle quali, la chiesa dei SS. Elena e Costantino, si trova in stato di totale abbandono dopo aver ospitato per anni l’officina di un fabbro. Non mancano poi casi di un fruttuoso riuso, come la biblioteca-pinacoteca provinciale della chiesa di S. Michele Minore, o meno riusciti (per scelte progettuali e tecniche costruttive impiegate) come il teatro ospitato nella chiesa di S. Maria della Palma e la scuola di danza nell’ex chiesa di S. Antonio Abate. In aggiunta a questi, si devono anche citare la chiesa di S. Maria della Rotonda, sito archeologico e parte integrante del
stone slabs and blocks in tender or compact limestone in the most significant cases. The overall thickness of these vertical load-bearing structures ranges from 60 to 160 cm. The horizontal envelope is characterized by concrete vaults in pumice stone and gypsum mortar, with a thickness ranging between 20 and 50 cm, or vaults made of a wooden frame that supports reed mats on which a layer of gypsum mortar is spanned, or by reinforced concrete and hollow tile mixed plan floor, in rare cases. The roofs are pitched and there are gable or pavilion roofs. Sicilian tiles always form the discontinuous surface of the roof. The main structure used in these roofs follows a constructive procedure to purlins on trusses. In many cases, in correspondence with the second roof frame, the presence of a wooden plank and/or corrugated metal under-tile is also found. We have defined the ratio between these buildings and the urban context in which are located, detecting the orientation and the nave position.

within the block, also taking note of the presence of secondary entrances and the main and side road overlooking. As for the environmental aspects [6], the survey shows that the single hall churches of Catania’s historic centre have no high gross dispersing floor areas and no S/V high shape factors. The nave location within the block has a strong influence on shape factors for the same heated volume. The calculation of the L/H ratio, between the road section and the building fronts, and the orientation of the churches have instead allowed us to evaluate the cases in which the presence or lack of shading is convenient for the dispersing surface, but without achieving considerable critical issues.

The thermal insulation properties of the vertical envelope and concrete vaults worsens with the increase of transmittance and with decreasing thickness, because the values of the calculated transmittance are predictably high and larger than the limit prescribed under current Italian law for the climate zone B [6]. To help the comparison of all the collected data, we calculated the weighted average of the found transmittances, in order to have a unique value to be compared with other thermophysical quantities. This comparison showed the critical issues related to exposure, shading and dispersing the surface of some churches such as San Sebastiano e SS. Crocifisso Majorana (see Figure 2, lines 18 and 20). This first analysis has highlighted the lack of critical issues in absolute terms. This is because the mutual influence of the different parameters examined often generates compensatory conditions. This is only an apparent compensation, because the preliminary assessment carried out so far is based on the simplifying assumption of static mode. We have not yet calculated the primary energy needs in a dynamic system, which will be taken into consideration once we have defined the new use in the planning stages for the performance improvement of the external envelope transmittance.

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Figure 2. The physical system. Summary table. Vr = heated volume; S= Heated surface; S/Vr = Shape factor; L/H = Ratio between road section and height of the church facade; Lp, Hp for principle facade; Llt, Hlt for side facade; CO, CV: Horizontal and Vertical envelope; Um = Average transmittance.
4.2. URBAN SETTLEMENT SYSTEM AND NEW POSSIBLE USES

Without urban planning tools that give concrete guidelines to use of the examined churches, we can first refer to Interministerial decree no. 1444/1968, which defines the minimum provision of required public spaces in the extent of eighteen square meters for each settled and soon-to-be settled inhabitant, for each homogeneous area. Two square meters of these eighteen are intended for equipment of religious, cultural, social, welfare, health care or administrative collective interest. In the historic centres, in areas “A”, in the absence of necessary areas to ensure the urban standard per inhabitant, decree 1444 allows us to compute the effective size available in double measure, or to find it in close proximity of the prescribed minimum quantities. In this perspective, to take advantage of the confraternal churches to recover needed public spaces without saturating the few unbuilt areas of neighbouring homogeneous zones becomes a possibility to be reckoned with in a sustainable land management.

In Catania’s historic centre there are also typical issues of the historic centres of other Italian cities. To these factors, we must add the effects of the progressive social degradation, related largely to the economic crisis, with rising unemployment and crime phenomena. We must also emphasize that in the last twenty years, Catania’s historic centre has represented the portion of territory that has suffered most from the effects of globalization [13]. There was the gradual replacement of the local population of Catania with that of non-EU immigrants in degraded housing, such as decaying buildings or unhealthy housing [14]. More than twelve thousand foreign “regular” residents (ISTAT data in January 2015), to which is added the presence of constantly increasing irregular migrants, reside there. Institutions that take care of these emergencies are few and most of the activities are managed by Caritas or by the Sant’Egidio Community to the best of their ability. Caritas manages a Support Centre with a canteen near the Central Station, a dormitory in Via Vittorio Emanuele and another made available by the Jesuits in Via Umberto. The Sant’Egidio Community, among other activities, every year at Christmas time organizes a canteen in the church of S. Chiara.

There is also a shortage of cultural facilities even more paradoxical when you consider the great historic artistic value of the historic centre (UNESCO heritage site). Large spaces for culture are only concentrated in a few sites (around the Port, Piazza Duomo and Ursino Castle), leaving the rest of the studied area completely inactive. The result is a set of requirements that highlights the need for activities that are compatible with the development...
dynamics of the context that increase social cohesion and that are also able to raise the identity and sense of belonging to the urban centre. For all the reasons explained so far, some potential uses for the single hall churches in the Catania’s historic centre could be district libraries, exhibition spaces, social canteens with administration of transported meals and halls for district councils. For each of these activities, a general cognitive data sheet is being prepared, which highlights the dimensional minimum requirements and the distribution-function layouts, as well as the specific rules to be respected. The catchment area considered for each intended use amounts to less than 100 users, given the small size of the buildings examined, conceiving these churches as a true network of interdependent facilities.

A first use here proposed is a district library. The design guidelines to follow are those suggested by the technical literature [15] [16] and the specific legislation. The prescriptive rules are general and they leave the final choice of the most appropriate actions to the planning stage. As an example, for fire safety, the rule imposes exit pathways dimensioned according to a capacity of outflow of not more than 60 users per module, with a width of not less than 0.90 m. The paths do not exceed 30 m and the openings for the exit ways must be at least 0.90 m. These halls must be equipped with fire-fighting equipment such as the automatic detection system, with speakers for emergency announcements, portable fire extinguishers, fire water mains UNI 45 inside the building and the network UNI 70 outside the building, pump delivery port near the main entrance. The shelves must be made of metal and new pieces of furniture made of combustible material must be approved [17] [18].

It must also comply with the rules concerning the overcoming architectural barriers, including through the simple installation of temporary and removable works that enable accessibility and visitability of the building [19]. Given the geometry of the studied churches, the separation between the different functions performed within the church-library will necessarily be assigned only to the furnishing and, in the absence of adequate service spaces, these libraries will be designed with the books kept in the reading room, for direct consultation. We will certainly respect the formal character of the church acting in a minimal and reversible way.

5. CONCLUSIONS

Defined areas of interest, the research wants to conduct a careful assessment of compatibility in order to better address the design choices. However, this does not mean to find a new compatible use for each of these small churches at any cost, especially if they are core to the inhabitants’ sense of belonging.
to the places or if the brotherhood that runs it is still operating. For these cases, the proposed anamnesis sets the stage for drafting a conservation and restoration plan that restores equal dignity to these historic temples, drawing an upgradeable knowledge framework. A recent example is the Pastoral Community of Vimercate and Burago di Molgora, in the province of Monza Brianza. For twelve churches of the Diocese, the community has planned a detailed plan of checks and cyclic actions of preventive maintenance with the involvement of the population. The ultimate aim is not limited to the preservation of the churches but also provides for the training of workers and professionals rooted in the territory [20].

The construction of a full knowledge framework about every aspect of the building being studied will allow one to define the degrees of freedom and the constraints that are opposed to the transformation. These constraints represent a system of rules and a guarantee and protection of the building. They suggest the building techniques to be followed or the performance levels that are reachable based on the historical, aesthetic, technical and structural values of the historic buildings [21]. However, in conducting this research a critical issue emerges, which is still not a complete answer to the objective.

<table>
<thead>
<tr>
<th>USE 1: DISTRICT LIBRARY with the books kept in the reading room</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVED RESIDENTS</td>
</tr>
<tr>
<td>RADIUS OF INFLUENCE IN THE URBAN AREA</td>
</tr>
<tr>
<td>FUNCTIONAL AREAS</td>
</tr>
<tr>
<td>Reading room: storage</td>
</tr>
<tr>
<td>Reading room: reading and consultation area</td>
</tr>
<tr>
<td>Toilet</td>
</tr>
<tr>
<td>MINIMUM SIZES</td>
</tr>
<tr>
<td>Width of the exits in a safe place</td>
</tr>
<tr>
<td>Width of the escape routes</td>
</tr>
</tbody>
</table>

**Figure 3. Identification sheet of a new possible use.**
difficulty to standardize and translate into universal rules the decision-making processes that involve the study and recovery of specialized buildings through their high historic and aesthetic relevance because of various parameters to be considered. Moreover, the lack of adequate implementation plans for the historic centre does not facilitate the design choices behind any action. Over the years, this has led to punctual and unplanned actions and results that are incoherent with the historical and artistic contexts of the buildings, denying their original morphological characters with the creation of superfetations or new horizontal structures which prevent us from perceiving the spatiality of the pre-existing structure [22].

6. REFERENCES

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