

Based on progressive debate around intervention and weighing up the preservation experiences, in 1990, Charter of Gubbio, defined:

Historical territory: a global expression of cultural identity and the subject in all its parts (existing city and periphery, built landscapes) of an organic action strategy.

Delimited and classified as a zone which should be involved into the interactive relationship with the other urban components, historic center has become an internal need of the urban network. And its value is one of the identities of the living community which should be recognized and preserved to guarantee the environment quality²⁴⁶.

Moreover, the immaterial sense of the heritage is promoted. In 1994, Charter of Megaride advanced the place memory, which is seen as one of the quality factor. While in 2000, Charter of Krakow held a flexible and dialectic definition and preferred flexible interventions, because the heritage values change over time and the identification must be associated with different historic periods and with different social-cultural settings. So heritage cannot be defined in a fixed way. It can be only defined in the way in which a particular heritage can be identified.”

Plurality in society implies also a great variability in the ways that ideas of heritage may be formulated by an entire community. Monuments, as single elements of heritage, are bearers of values that can change over time, at different moments of history”.

Historic heritage is a unit value of history, art, social, technique and culture. The term of “Historic” is too narrow and unilateral to show its multidimensional qualities. As a result, the intervention complies with these multi-characters. As a fixed area, its former walled area, whether historic town center or historic village, provides an integrated platform for conservation. Numerous historic center selected as World Heritage. In historic center, numerous historic being intervention should be delimited into a conservative way.



Figure 2-13: up-left, Turin historic center; up-right, Rome historic center; below-left, Milan historic center, below-right, Florence historic center.

²⁴⁶ Ibid.

2.4.2 Historic centers conservation problems

“Urban disaster of our country is of such magnitude that the violation and destruction of the special urban characteristics is a bitter experience in our very recent history”²⁴⁷. Some historic centers have lost vital monumental feature and festive atmosphere because of seismic, war devastation and reconstruction wreck. Let’s take the example of Senigallia. Here, the 1930 earthquake brought great destroy to cityscape of Senigallia, many monuments collapsed. Later, in its aberrant conservation it suffered secondary disasters. Anonymous bands of cement replaced the decorations, and the original was covered up. They preferred to demolish what was left and rebuild; they preferred to replace the wood and the stone with cement, performing innovation rather than restoration. The traffic modification also gave a passive destruction to the morphology. A more serious phenomenon is that the population decreases. 70% of the inhabitants have left from historic center, most are bourgeoisie, which makes it less vital. Furthermore, population decrease accelerates: a quarter of the population has left in last 20 year. There are only 2000 residents left, as a result, the commercial and social life decline, see figure 2-14.

SENIGALLIA					
ABITANTI NEL CENTRO STORICO					
1951	1961	1971	1981	1991	2001
	5353	4447	3563	2855	2635

Figure 2-14: the population change in Senigallia.

The main problems in historic center’s conservation work include: Firstly, conservation plan sometimes is one-sided about physical compensation and neglects community public needs. The living conditions in historic center are often obsolete Warm system is lacking and the hygienic situation is not good²⁴⁸. No enough parking places and public transport make the traffic more congested and the life less convenient. As a result the exodus of inhabitants from historic centres becomes much more serious, the traditional social relationship collapse and the vitality becomes weak. In Venice historic center, inhabitants mostly move to suburb while the whole island remains mainly for tourists. But the tourism fluctuates by the economic status and seasonally. In slack season, it comes a great waste of public facilities, not fully enjoyed by the inhabitants.

Also, most of Italian historic centers are developing organically within the whole city, but there are some difficulties faced by the administrative bodies, professionals and citizens. In general, a lack a cultural heritage protection strategy depends on the scarcity of the allocated resource²⁴⁹. Threatened by neglect, insufficient funds, inappropriate development or cuts to preservation funding, to the policy of conservation in 1970s and 1980s was in big trouble.

²⁴⁷ Clementi A., Piroddi E., *Le città nel stroia d’Italia*. Editori Laterza, 1986.

²⁴⁸ In the sixth zone of Turin, until 1990s, at least of the residents were lack sanitation facilities, and other facilities, such as educational, green areas were short, especially the parking area.

²⁴⁹ Lambert S., *Italy and the history of preventive conservation*. CeROArt , 18 November 2010.

There are countless historic buildings and heritages in historic centers, which cost a great deal of resources to intervene. Daily repair, regular maintenance as well as plan compiling and information collecting needs great human-resource and time. Not to mention the seismic disasters: the earthquakes of 1930 and 1972 displaced 90 percent of residents in the historic center of Ancona. Inhabitants of Ancona prefer moving away from the center to more spacious suburbs. The commune owns too many public buildings to potential needs. The investment on regular maintenance and conservation is too heavy for the public budget. Facing such an overt burden, national and regional governments have officially half-heartedness in meeting the aims of the code of culture and landscape heritage and PPCSs²⁵⁰. Then, a project often takes decades or more, so the efficiency of plan needs to accelerate.

Inevitably some conservationists always wish the conservation system to be further developed. Always there are issues which are not yet satisfactorily resolved. For example, adequate conservation skills and political support for maintaining the cultural built heritage do not exist uniformly in all local authorities.

Also, there is uncertainty about the appropriate architectural form of new buildings in historic areas and the role of the general public in conservation planning. There is little systematic evidence for this and the system is in many ways flexible. Change is embedded in the concept of conservation, generally taken as means of protection key qualities. As the extent of the culturally valued heritage has grown, so a new thinking about the management of this resource is developing. Applying strict conservation principles to over dozen of thousands of listed buildings in one city is in many ways impractical.

How to trigger development potentiality in historic center is an extra but critical task for conservation plan in historic center. Italian historic conservation delimits the areas for real estate developments, focusing on the areas in which maintaining the authentic historic beings, embellishing surrounding environments, optimizing communications and rehabilitating its vitality in a very conservative but scientific way.

Lastly, the conservation work faces to new conflicts and uncertainties. There is no doubt that conservation in Italy has enjoyed popular and political support in the 20th century. However, the public's mood can swing and governments change. Furthermore, there are perhaps two particular areas that need more recognition. First, the emergence of the sustainability agenda has had a fairly marginal impact on conservation practice to date. A comprehensive and sustainable approach way should be more clear and operable. Second, the great extent of the historic environments, and the pluralistic society now living in them, means that the planning and implementation modes experienced in the recent past, is no longer adequate. There is a need to ensure attention to the new communities rather than merely to fabric, and to do this involves a better engagement of those people who use these places.

²⁵⁰ Settis S., *Un patto per la tutela del paesaggio*, La Repubblica, 18, Nov. 2008.

2.5 Historic conservation and local participants

According to the Article 10-2-d, annex A of the Code of the Cultural and Landscape Heritage of 2004, the conservation of cultural and environment assets, is deeply based on the participation of Regions, Communes, communities, local bodies, bank foundations, private and public associations. Exploiting modalities for collect the maximum public and private resources in historic conservation; every player can equally be involved and play a unique role. Italian conservation system has gained a “Procedure Justice”, making good use of technocracy strength, public authority, legislation power and active market actors.

2.5.1 Social issue

Regulated by the law and encouraged by social consensus, various levels of government bodies, private entities, academics and professionals are involved into historic center conservation procedures. Public bodies in charge guarantee the intervention under their jurisdiction²⁵¹, conforming to principles of justices of procedure, freedom of participation, plurality of participants, continuity of activity, equality of treatment, feasibility of economic interests and transparency of management.

2.5.1.1 Public actors

As historic built environment represents a collective cultural property and the government, standing for public interests, organizes its conservation work. In Italy, the Regional Directions in charge for heritage and planning in each Region, are committed for historic conservation, cooperating with provinces and municipalities, as well as with various ministries, such as the Ministry of Cultural Heritage, Cultural Activities and Tourism (Beni e Attività Culturali e Turismo) and the Ministry of Education.

The ministers shall, with the collaboration of the Regions, identify and define common methodologies for gathering, exchanging, accessing and processing data at the national and regional level, and establish databank based on computerised tools. Professional institutions, committees and universities favour official bodies to work together for the definition of programmes concerning the related studies, research initiatives about cataloguing and inventory methodologies, intervention methods, evaluating and experience conclusion. They establish standard levels of quality for intervention and eventually a periodical monitoring. At the level of Ministries and Regions, each one for specific charges, there is a control of the management of the intervention. The management is carried out by means of dedicated structures within the administrations, which are endowed with suitable scientific, organisational, financial and accounting autonomy, and provided with proper technical staff.

The Soprintendenza (superintendence office) is an operational branch of the Ministry of Cultural Heritage, Cultural Activities and Tourism, which offices are distributed all over the country. It plays a relevant regulatory role in declaration of cultural heritage and granting consensus for interventions in designated assets. The superintendence office proceeds to

²⁵¹ Ministero per i beni e le attività culturali, *Code of the Cultural and Landscape Heritage*, article 112, paragraph 5. 2004.

carry out inspections for the conservation and ascertaining. Its main professional work covers several sections, such as historic buildings and archaeology, landscape and ethnography.

As an example, the Superintendence of Abruzzo Region manages historic sites, buildings and landscapes throughout the region or provincial Commissions which include six members, such as the regional director, the superintendent for architectonic property and the landscape, the superintendent for archaeological property and the professional expertise appointed by the Region governor. The average age of staff is between 50 and 55²⁵², and for the lack of recourses the retired employees are not all replaced. The task of the commission is to propose doable recommendations for historic centres, including prescriptions, measures of interventions, criteria for management and specific regulations to peculiar elements.

The State Property Agency in Italian is responsible for public properties. Most of the historic properties are belonging to the State, in charge by Property Agency. It identifies and allocates general management through diversification between structures with functions. Their periodical monitoring and maintenance are a way to keep the great many historic properties healthy. Then it involves or it is involved in some projects to aid some public policies, like in Bologna. Some types of historic buildings are reused for public houses; the Property Agency gives a great financial support for this end.

A great many academic institutions, such as ANCSA, professional associations, as well as Ministry commissions have greatly contributed to the conservation formation of theory, methods, exploitation modes, practices and public participation. Without this support the conservation work would have not arrived so far.

The academic organizations are the backbone of Italian technical-oriented conservation system. Their advice has constructively shaped the power structure, the intervention methods, and more importantly has triggered the recognition of the importance of historic goods. Then they cultivated successfully the public enthusiasm in saving their collective memory.

Several Non-government-organizations (NGOs) and foundations actively participate in the work of conservation. For example in Verona, Cariverona and other foundations had funded a series of repair contracts to the great Romanesque church of San Zeno. The €18 million conversion of the Scaligeri Palace in the 1990s had also been funded by NGO. Taking Cariverona Foundation for an example, it is the charitable branch of local savings banks, funding buildings conservation schemes among a number of other socially and economically beneficial projects.

Positive and effective public participation is another vital actor in conservation. Regions encourage agreements which establish the modalities of participation. Information plays

²⁵² Settis S., *Settis, Luci e ombri nella tutela dei beni culturali*, La Repubblica, 18 Feb. 2006.

also a relevant role: public enquiry after nation-wide published newspaper, web-sites, notice board, official Gazette of the Italian Republic, official Bulletin of the Region, they all participation. In article 144 of the Code of the Cultural and Landscape Heritage of 2004, participation of interested parties and of associations should be ensured into the intervention process for the protection of common public interests. On one hand, the public keenness can attract powerful private-owners investment. And on the other, this kind of public supervision confirms careful implementation and accurate allocation of the resources.

2.5.1.2 Private actors

To maintain and repair the physical materials and the immaterial social relationships costs a great deal of financial investment. A Jesuit house by Sanmicheli which was converted to a library built in Napoleon period cost 16 million Euros. The strong business sector has close link with heritage sector. In L'Aquila, the local savings bank owns many important historic buildings and extensive art collections, designated as national heritage, and open them to public each year in special days. In Venice, the display of giant advertising posters to screen restoration works has been attributed to private operators in order to raise cultural funding for heritage conservation: just one hoarding in St Mark's square yields € 3.6 million.

Schools for specialised training and study at very high scientific level include the Istituto Centrale di Restauro (Central Institute for Restoration), Opificio delle pietre dure (Semiprecious Stone Workshop), and Istituto per la patologia del libro (Central Institute for Books pathology).

The restorers of cultural properties are required to attend a diploma from a state school of restoration, with a programme of studies lasting not less than four years, or a specialised university degree in the conservation and restoration of historical-artistic heritage. Other related practitioners are required not less than two years state school education. The education of skilled professionals is the embodiment of the Italian technical-oriented conservation.

Finally, planning mechanism encourages public participation in conservation, including not only the interested parties but also private citizens. In conformity with the laws in force, they may present petitions and observations to express their comments during the planning process.

2.5.2 Economic issue

2.5.2.1 Public operators

Public use is one of the important adaptive use and positive factor in conservation. A number of ambitious schemes have been implemented. For example, in Verona, a former Austrian barrack complex accommodated university use, the Scaligeri Palace was converted into an exhibition gallery, and the Granguardia, a building of 16th century, later used by the Austrians as a military drill hall, was modified by the commune in the late

1990s to a conference centre. Also, most of historic residence are used for commercial at the ground floor while the upper ones are rent, sometime even for low class people. Some of them are used also for social housing in Bologna.

The engagement of various organizations enhances conservation in various ways. The Sport Credit Institute (ICS, Istituto per il credito sportivo), which was established by Act No. 1295 of 24 December 1957, was reorganized expanding its business sphere in the cultural business. It has established a system indicates its aims, implementation tools, banks to offer public funding to the cultural conservation activities, not only to public subjects, but also giving funding instruments to private subjects (Statuto dell'Istituto per il Credito Sportivo, article 2-a). It is a share-holding bank; whereby different bank takes account a fit per cent of the capital, such as San Paolo has 10,811% accounts. As an interesting investment, historic building, and more in general historic goods, offer good opportunity for financial choices.

Fiscal budget is an important resource for the conservation. As historic conservation is one responsibility of government, the conservation shall be included into the 'base budget'. The public budget investment has decreased because Italy has too many heritage to conserve. The conservation investment from the Minister of Culture had drop form 51% in 2000 of its overall budget to 30% in 2008, but the payment of the officials and workers raised from 4% to 24%. Then, the shortage of financial investment is one of the factors of the conservation deficiency. This explains, among other reasons, why a part of Pompei walls collapsed in 2010.

2.5.2.2 Private operators

Despite the above introduction cited great engagement of the Italian governmental machine, at all levels, in the conservation, we can say that the cultural wealth has not been adequately brought out and protected. This is depending on many reasons, like the excessive bureaucratic influence, that imposes too much time and too tight obligations for adaptation interventions, fostering unauthorised interventions, with the result of an alteration of the nature of historic goods²⁵³. The republic shall foster and sustain private subjects, be they single individuals or associations. They are the positive supplementation for the public budget deficiency.

With regards to the performers, there are concrete and strict requirement for the practitioners and restorers according to laws. The restorers of cultural properties have more than eight years' experience in related practice with regular execution, certified by the authority. Furthermore, the practitioner are required to attain a diploma from a state or regional school of restoration lasting not less than two years or to have carried out restoration work on movable properties or decorated surfaces for a period equalling at least four years.

²⁵³ Mollica E., *Le sree interne della Calabria*. Rubbettino, Soveria Mannelli, 1996, p.70-134.

2.6 Methods of surveys

2.6.1 Typo-morphology based analysis²⁵⁴

Since the inception, for the archaeological areas or isolated buildings, most of the information which is needed for the conservation are referred to a small scale area. When it comes to the 20th century, especially after promulgating of the Charter of Venice and Washington Charter (1987) which states large-scale urban areas as historic subject, the conservation faces to a new big difficulty: to gather information. In the first place, it is a burdensome task to collect all the information including different periods. There are numerous houses, monuments and constructs scattering at a large area. Secondly, most importantly, the city is a lived three-dimensional material world, not just a two-dimensional plane one. Thirdly, techniques based on computer triggers effective intuitionistic imitating and reemerging work. Last but not least, the historic graphics and pictures which were drawn in different periods can be translated into the modern expression to make recognition, used as the reference point in the further intervention.

Authenticity is a basic aspect for weighing whether the conservation is successful. To know what is the original object and which part was destroyed or changed profoundly during its evolution is a vital issue for evaluation. As references to conservation of historic center, historic documents including maps, pictures, drawings or sketches. They can provide us with ample information requested in the protection. Drawings convey emotional tone as well as objective representation, just as actual speech does. The information which is hidden in historic graphs and documents can be abstracted and represented by modern techniques including GIS, 3D and other computer based tools. Owing to the morphologic method, the information can be then classified and probed. So the typo-morphology approach can be a feasible way to guide the work of historic conservation. Sure, each method may express only a part of the field of study, and that may be distorted as well as partial.

This part firstly introduces western typology and morphology theories through theories explanation. Secondly, an Italian case study tries to elaborate its application. It sets the foundation for further suggestions for professionals to produce feasible and applicable conservation analysis methods in other contexts.

2.6.1.1 Concept

Most of the fabric of the city, especially the historic center, shaped according to its former construction logics, are brittle and often needs stability more than innovation. Therefore, after the modern movement lesson, designers always try to compel themselves to innovate, following their education experience, ideas, self-discovery, and avoiding to follow the exemplary precedent form. Actually, not all part of the city is equally appropriate for experimentation, especially the modernist experiment in the historic centers.

Studying from the existing form, identifying the extant prior construction logics, the

²⁵⁴ Giambanco F., *Analisi e recupero dei centri storici, il caso Palermo, 2.1 sul "tipo" e "tipologia"*, Palermo, 2007, p.23-26.

precedent form is vital in conservation. The identity of a place, which is closely linked to the personal and social identity of inhabitants, is recorded and embodied in the traditional built forms, and reflects the choices of specific culture²⁵⁵. This embodiment may have its similarity which can be seen as a space type. During such a long spontaneous or intended construction, the building activity produced several basic space types, which can be abstracted. The bulk of the fabric can be recognized and analyzed based on a rational typology way.

The typology and morphology methods provide analysis perspective of the physical components. According to the idiosyncrasy of different urban fabric, we can check the application of typology in public space or bulks of architecture, housing, green areas and communication space. This abstracting process is a scientific way to recognize the space and architecture; hence we can point carry out some intervention strategies.

2.6.1.2 The 'type' and its role

Type was firstly proposed and defined by France Quatremere de Quincy when he compared type and model in 1825²⁵⁶. It was advocated by rationalists in their academic fields for almost two hundred years. In terms of the use of form, techniques, materials, time period, region and other stylistic influences, architecture can be classified and recognized according to special spatial organizations.

Seen as the archetype, with its purest or most exemplary expression, designers can follow types as a framework to carry out their work, within which flexibility of detailed designs is allowed. "Type" is the origin, essence, and characteristics, structural and idiosyncratic principle of forms and it is a norm, an abstraction, not an actual building. Type is rooted in the commonplace, the unselfconscious, even the unconscious²⁵⁷. As the typical representation of the archetype, it cannot be exactly copied as a model, but the template can be copied over and over in endless variations. It is not usually the kind of abstraction that is ordained from high or that springs whole from a single designer or builder. Like the basic words, type can be seen as an element of grammar possessing some flexibility.

When we face to a bulk of fabric, the mastering of the main contradictions, maintaining main features of the environments and conserving the original space components, is the key to solve the problem. Type focuses on the restructuring of major enterprises and leave minor ones to fend for themselves. According to the analysis of architecture and urban space characteristics, they can be taxonomically classified by certain criteria or association with different categories, such as intensity of development, degrees of formality, and school of thought. Through the type, the main character of the space can be identified and we can know what should be conserved firstly and which is secondary. The conservation is the reverse of the recognition of the type.

²⁵⁵ Watson G.B., Bentley I., *Identity by Design*. Oxford, UK: Elsevier, 2007.

²⁵⁶ Quatremere de Quincy, *Type*. 1825. In: K. Hays (ed.) *Oppositions Reader: Selected Readings from a Journal for Ideas and Criticism in Architecture 1973–1984*. New York: Princeton Architectural Press, p.616–620.

²⁵⁷ Kelbaugh D., 'Typology: an architecture of limits', in Douglas Kelbaugh. *Reading the American Metropolis*, University of Washington Press, Seattle, 2002.

As the existing building forms, type has been neglected by the modern functionalism. In the first place, on account of lifestyle change, there has emerged a numerous of new space needs, such as gas station, parking building and etc., which have no example in the history. Secondly, modern architecture education encourages complete “innovation”. Modernist architectural education teaches architecture of ideas and self-expression, rather than learning from the past. The functionalist designers always compelled to make innovation with every commission. In modernity’s eye, the inventive use of both functionalist architectural language and technology was far more valued than adapting or transforming an existing architectural type²⁵⁸.

There are three basic morphological types: centroidal, linear, and field or scattered, which are objective and abstract diagrams. These three morphological types are the orientation of prefigures analysis of architectures and space. Function is more important than the form which is accepted and advocated vehemently by the Modernists. And the physical material does not changed, but the function adopted by the physical form changes. And the form of the palazzo can be rebuilt or copied for the other functions. Form and function are loosely matched so as to prove such versatile and lasting types. In this way, “type” employed loosely to refer to a functional building type rather than with standard morphology or configuration, such as an office building or apartment house. Actually, standard morphology and configuration is referred to the type, such as the Italian palazzo, Chinese palace, or Japanese garden.

Douglas Kelbaugh uses Italian palazzo as an example to show the difference between the morphology, configuration type and a template:

In its ideal or archetypal configuration, the palazzo is a four-sided, three-story urban domicile with other buildings abutting on either side and with a squarish courtyard. A front portal is the entrance medium, which provides light and air to a rusticated ground floor, a piano nobile (second floor), top floor, and possible attic. There are many inflections, distortions, and variations: the footprint might be rectangular or trapezoidal, the courtyard circular, skewed, or multiple, the site might be a corner or midblock, and the piano nobile may be repeated on the third floor. Moreover, function can change and has changed over time. This basic configuration has been adapted or built anew to house offices, institutions, or apartments, among other things. Functional flexibility—the fact that different uses can be poured into its immutable form— is what makes the palazzo an architectural type rather than a building.

Historic center, as Luis Mumford describes: circular walls, large doors, a fortified citadel, palace and towers with strong vertical leaps, spontaneous fabric and around country, forming a wrapping pattern, is also a space type. The basic configuration evolves, is adapted to and embraces different functions units. During the time the type evolves, its idiosyncrasy is mounting the feature of the city, as the epitome of the city. Whatever the function of the space unit change or regenerate, the historic center can adapt and foster

²⁵⁸ Ibid.

all kinds of space functions but it keeps its value and configuration which is proved in Italian numerous communes. Based on distinguishing and mastering its own space types, the style helps professionals to deal with and bring order to the daunting number of variables that we will undoubtedly face. The work of identifying the existing types is the necessity for its existing. The neglect of the historic centers' flesh component definitely causes great destruction.

2.6.1.3 Typology

Since the inception of 1950s, a group of Italian architects who actively made application of type theory in urban morphology and architectural space study, had further developed the typology theory, named as Typological School. Muratori in 1950s and Caniggia in 1970s contributed to the maturation of this theory, called "Operational Typology."

In their opinion, there is a connection between the traditional and the new based on the fact that planning and design are deeply rooted in history. The existing type is a prior synthesis in builders' minds before the actual building has been built. It can emerge in certain periods of time in some form, and or it may not. Its representation is a progress of typological one.

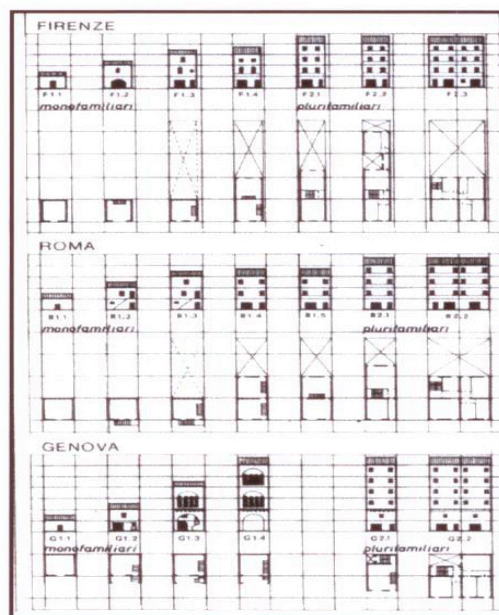


Figure 2-15: Typology of some

A typological process is the progressive transformation of a series of related synchronic types on a particular scale in the same cultural context over time, and outlines the continuity and interrelation between types²⁵⁹. Types can be abstracted from the existing fabric and can be applied into the conservation to make the space consistency, see figure 2-15²⁶⁰.

How does a type become a building or a space? It is often referred to a model or a

²⁵⁹ Chen F., Romice O., *Preserving the cultural identity of Chinese cities in urban design through a typo-morphological approach*. Urban Design International (2009) 14, p.3–54.

²⁶⁰ Giambanco F., *Analisi e recupero dei centri storici, il caso Palermo, 2.1 sul "tipo" e "tipologia"*, Palermo, 2007, p.23-26.

modeling. Modeling of types is a process; the designer and builder express and accommodate the site condition with inflections and idiosyncrasies along the origin type. It is not a directly clone, which lost individuality and just the mechanical product of a prototype. The most obvious example is the modern industry which produces standard production with random difference with the origin model. A typological point of departure is an act of efficient and economy for the conservation. It ends up the near-infinite possibilities which overtakes the fee and exhausts the designers. And it is the most intuitionistic method to show the differences and idiosyncratic of the built environment. It can be used to an analysis way applied into the conservation.

2.6.1.4 Typo-morphology

Dated back to 1960s, morphology was firstly developed by European geographers in morphogenetic research. Until now, the framework of morphology can be classified into four areas: town plan, building form, land use and furthermore, morphological region, referring to the structure relationship between various urban units²⁶¹. Until 1990s, typo-morphology emerged firstly as Korf introduced typology into the morphology to search for the intellectual differences and similarities of morphology models. Though a clear definition of 'typo-morphology' is still absent, it has been discussed as a unit by several scholars, such as Castex and Panerai, Moudon, Hwang, Samuels.

Typology is seen as the basic space unit. Besides the distinguishing of the key space main abstraction, typo-morphology provides a feasible perspective to identify the medium-scale space components, like the block organization way and communication mechanism. From the morphology evolution, as the background, the main change mechanism can serve for maintaining main physical components and feature. Like A. Rossi claims, the city is a types aggregation of types²⁶². The space dimension and relationship can be understood in this typo-morphology analysis.

2.6.1.5 A conservation based on typo-morphology

The western realistic painting uses perspective very early, which can be used as documentary files, like historical maps of Bologna in the last 500 years, see figure 2-16, 17, 18. As useful reference, the information transferred from these documents supplement to the abandoned three-dimensional representation tradition preferring zenithal projections. We carried out representation and reinterpretation of the space form based on abstraction from these pictures, establishing a database. Isometric projection is used in the representation which can show immediate space geometric relationship and size while abandoning the perspective projection which tends to favor some parts than other. Here, we use a case to introduce how to represent fundamental features of historic center.

²⁶¹ Conzen M.R.G., *Alnwick, Northumberland: A Study in Town-Plan Analysis*. London: Institute of British Geographers. 1969. M.R.G. Conzen. *The Plan Analysis of an English City*. 1981. And Conzen, M.R.G., *The Plan Analysis of an English City Centre*. In: J.W.R. Whitehand (ed.) *The Urban Landscape: Historical Development and Management Papers by Conzen M.R.G.*, London: Academic Press, 1981. And Conzen M.R.G., *Morphogenesis, Morphogenetic Regions, and Secular Human Agency*. 1988. In: D. Denecke and G. Shaw (eds.) *The Historic Townscape: As Exemplified by Ludlow*, in *Urban Historical Geography*. Cambridge: Cambridge University Press, p. 253–272.

²⁶² Rossi, A., *The Architecture of the City*. The MIT Press, 1984.

Corresponding to different representation scales' needs, it is divided into 4 ratios in 4 steps, in which land use, roads, and façade elements can be analyzed accordingly. Firstly, historic center is divided into 4 districts, and several sub-districts according to avenues and vital blocks' evolution, caring for keeping correspondence with maps, see figure 2-19. Then to establish raw space bulks based on various dimension, see figure 2-20.



Top left, Figure 2-16: Bononia docet mater studiorum, Pianta scenografica dedicata al Senato bolognese, Blaeu, J., 1663, incisione (acquaforte)

Top right, Figure 2-17: Vero ritratto della Città de Bologna, Pianta scenografica, Duchet, C., 1582, incisione (acquaforte), 39x47, Roma. Palazzi Vaticani was taken as a reference for the orientation

Bottom, Figure 2-18: Pianta prospettica di Bologna, scenografia, Alberti, C. e G., Dattili, S., Sabatini, L., Tibaldi, D., 1575, 380x510, pittura murale, Palazzi Vaticani, Roma.

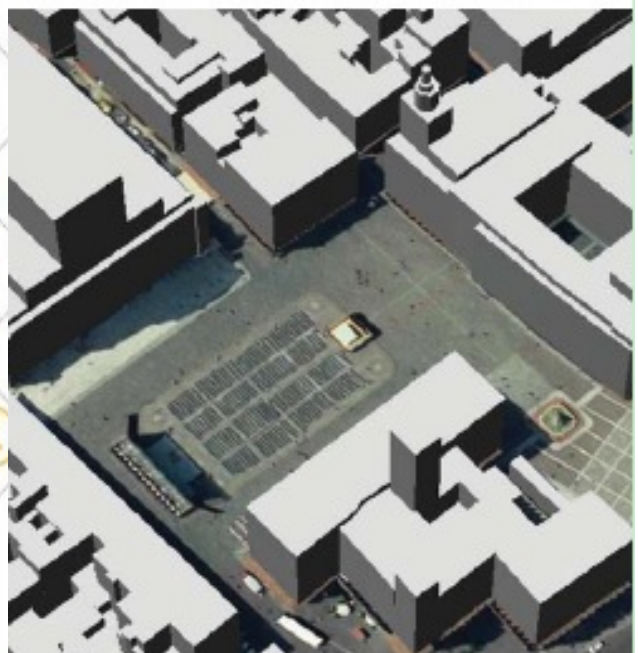
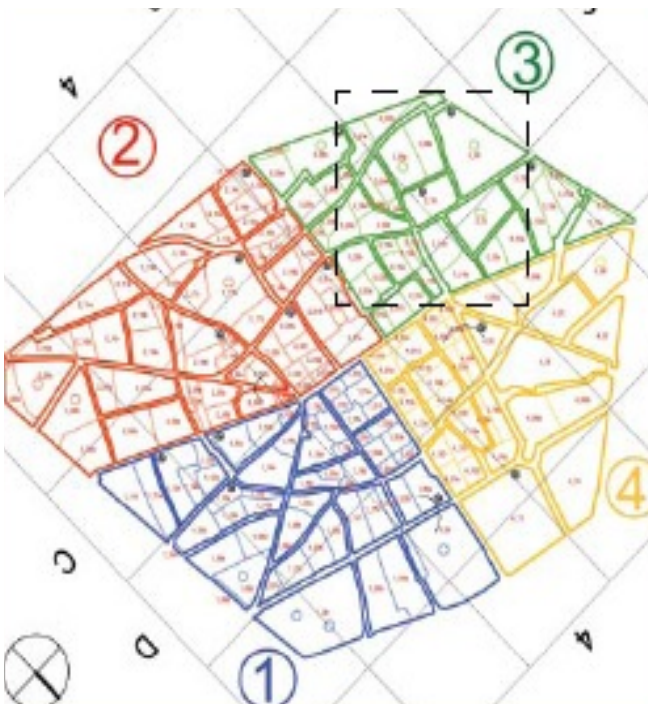
The information got from the transferring is tested by field survey, like photograph, aerial photo and document. The elements of buildings are checked by measurement and comparison between the graphic buildings which can recur to confirm. By coding and synthetic method, the bulk can be fit in detail with some known porches, overhangs, roofs, windows, decorative materials, see figure 2-21. These elements come from material database which were built in advance. We can get a vivid urban scene of every part. Last, we add the precise data width and length collecting from strict measurement. With exact laments attachment, the detail can reach 1:10 or 1:5, see figure 2-22.



Figure 1-19: zoning and subdistricts.



Figure 1-20: Space bulk.



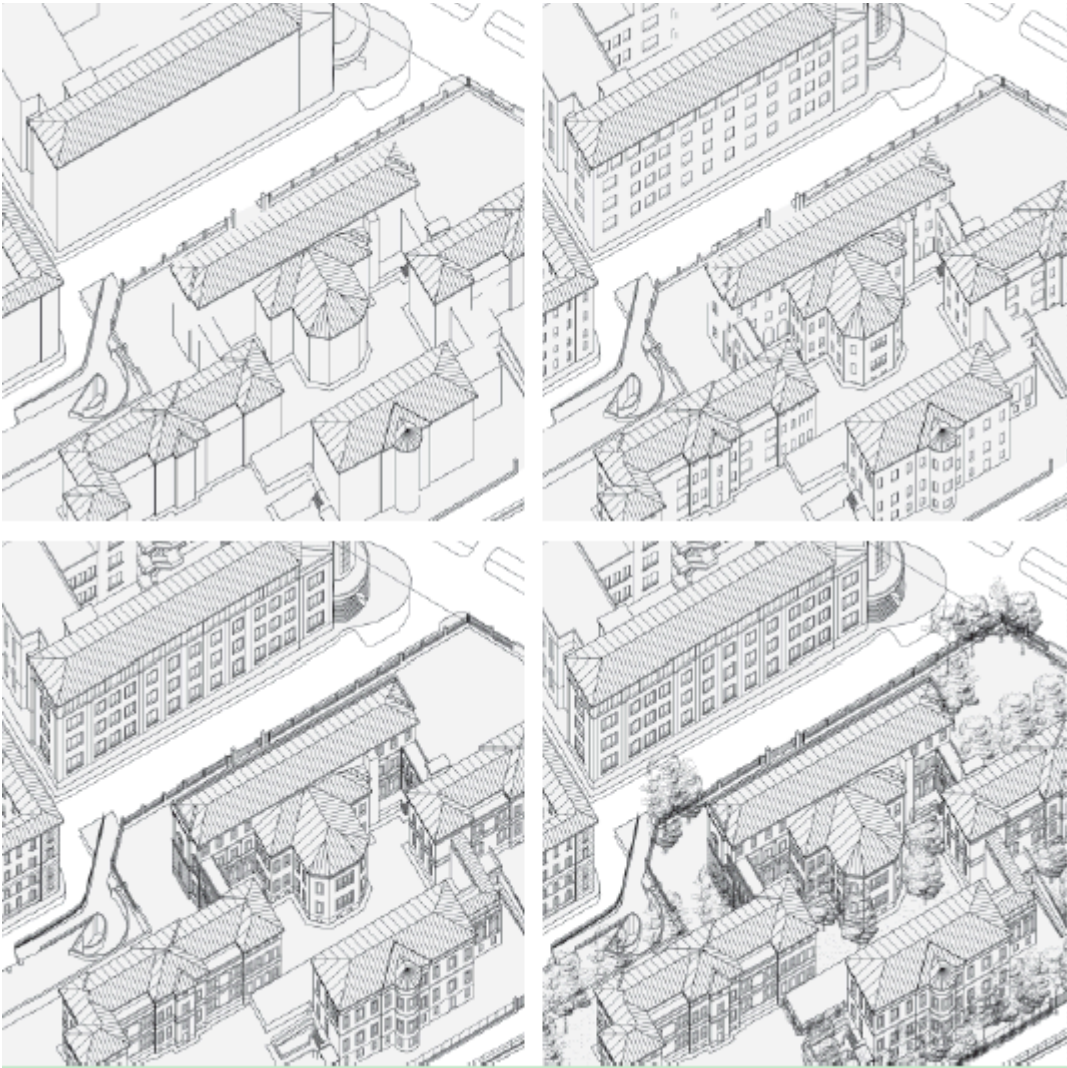


Figure 2-21: raw match elements.

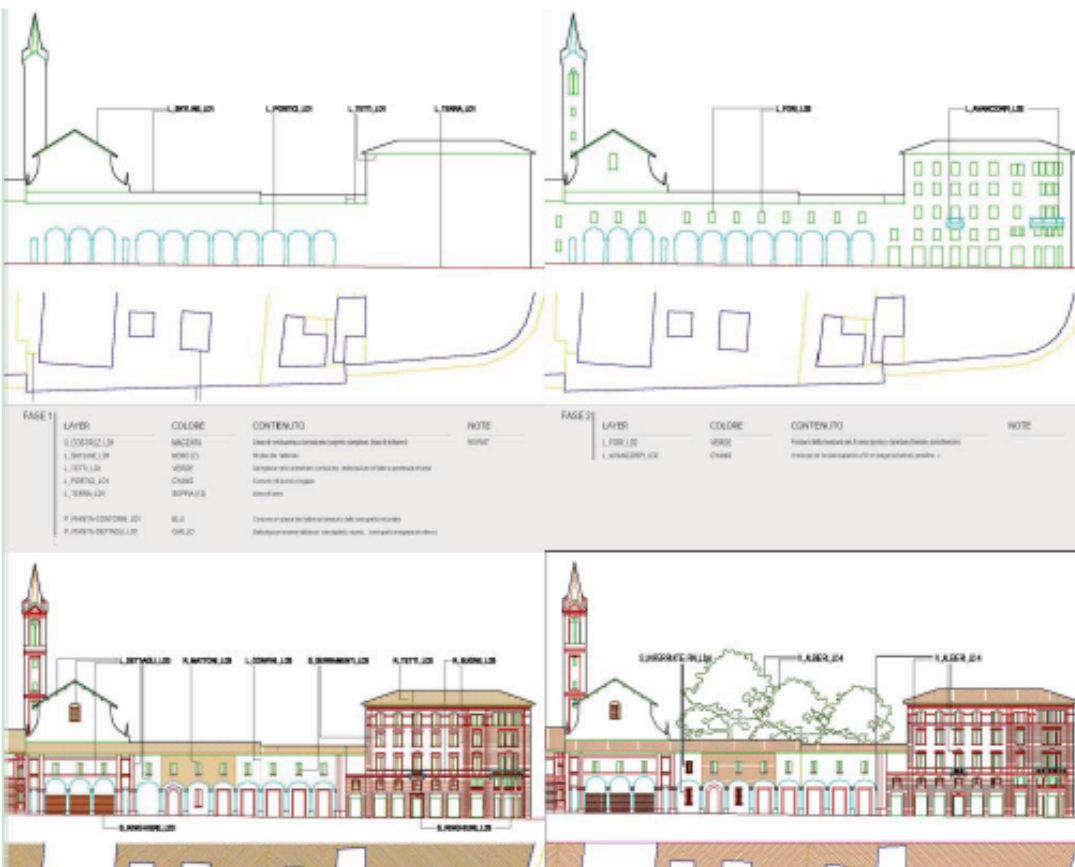


Figure 2-22: detail match elements.

2.6.2 Morphology Evolution analysis

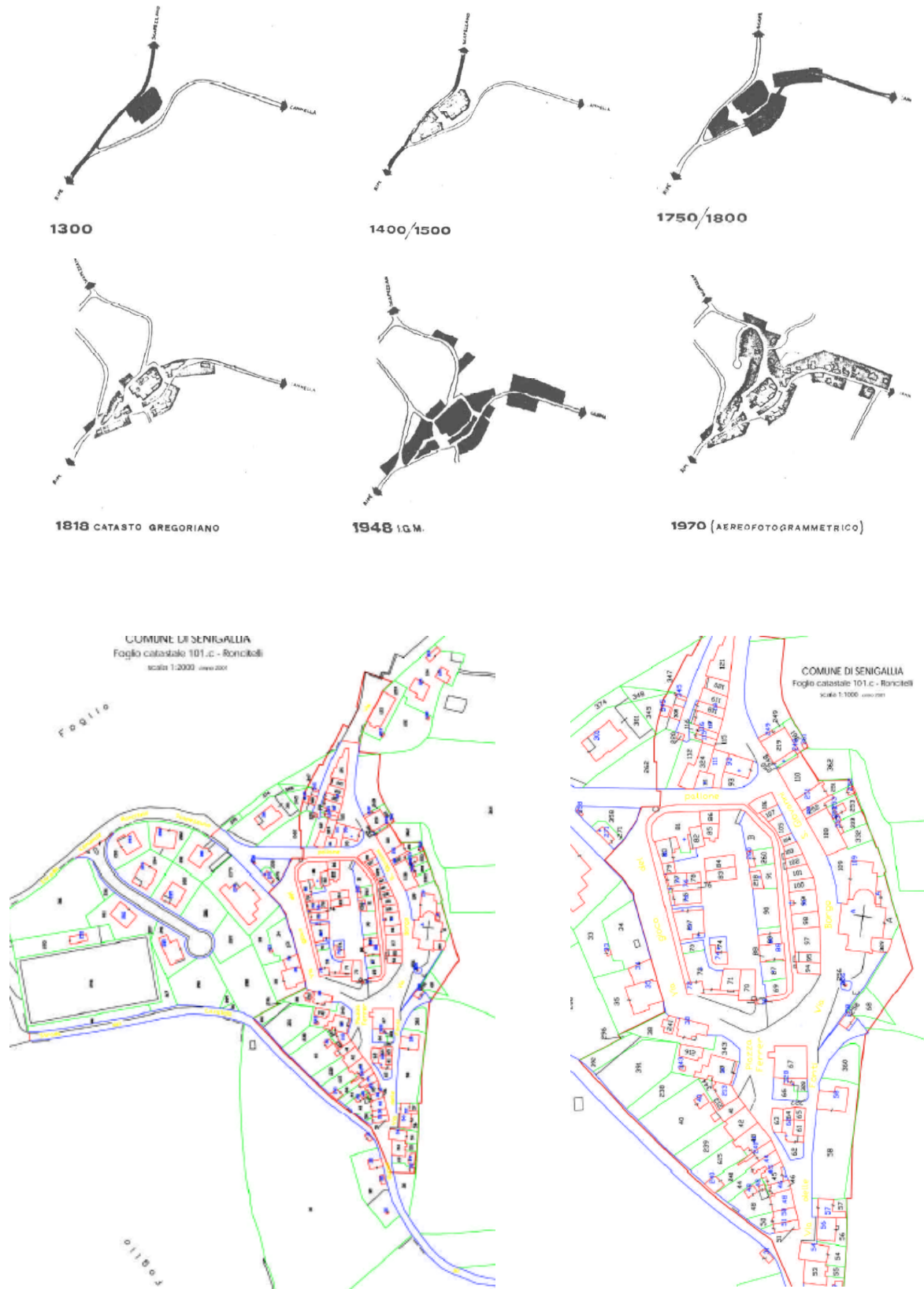


Figure 2- 23: The morphology evolution of the historic center, Roncitelli.

Morphology evolution consists on space construction logic, indicating space main feature, various values, and intervention subjects. The analysis of its morphology evolution is a process to recognize and identify forms, context and functions of the material aggregation, social factors, such as the industrial constitution and social organization, cadaster etc. There exist a necessity, for local administrations, associations and experts to be involved in space transformation processes in act, to distinguish the evolutions and to prepare practical interventions. In this way, panoramic characteristics and problems will be the base for the future “darning” intervention.

In this part, taking Roncitelli, in Comune di Senigallia as an example, it aids to learn how to carry out evolution analysis, see figure 2-23. It is dated back to 1300, as a small village initially and established fortification later, supported by jacent agricultural activities. During the Renaissance, large-scale construction emerged. Around 1700, after the construction of civic wall, urban life became prosperous. Then the center expanded along the road from Ripe to Cinnamon with decent buildings. In the following century, it extended to the north. Known from the evolution of the context, historic center can be divided into four parts: the castle, 15th century districts, 18th century districts and 19th century districts. Based on morphology and history analysis, space component, architectural style, function, activities and problems are known.

With regards to evolution of Senigallia, it gained its monumental Istria character during papal devolution (1631), like buildings’ height and style, lithoidal architectural and decorative elements, and orthogonal streets pattern, see figure 2-24 and 2-25. After Napoleonic occupation, there emerged another period of remarkable economic growth under the governance of Papal States. Consequently, substantial enrichment in the urban area had brought large expansion. Since 1823, Senigallia had a favorable economic situation once more. New construction reached a crescendo and the population rose to 16,500, half of which inhabited within the wall, see figure 2-26. This period sets the conservation reference point, as the cadaster is complete while main constructions are finished. During 19th century, it embodied several great buildings and decorated with sumptuousness for flourishing tourism and great economic growth. In 1930’s great earthquake, it suffered great destroy, leading it to loose almost all its significant identification and buildings. Later, it suffered a secondary destruction. Whereby constructors preferred demolished what was left standing replacing wood and the stone with cement. More seriously, the 1944’s bomb in the World War II destroyed it completely. Accompany with the damage and reconstruction of the war, the railway line location and the station it had a irreversible and devastating damage to the morphology.

Accordingly, the space morphology evolution of the historic center can be divided into 4 main periods, see figure 2-28. It was endowed with and gained its characteristics and identification in these different periods; problems and difficulties also are distinguished. In this way, physical relics in a scientific and feasible prescription based on character analysis can be rehabilitated. Besides the population change and social problems, this analysis delimits the priority in physical intervention.

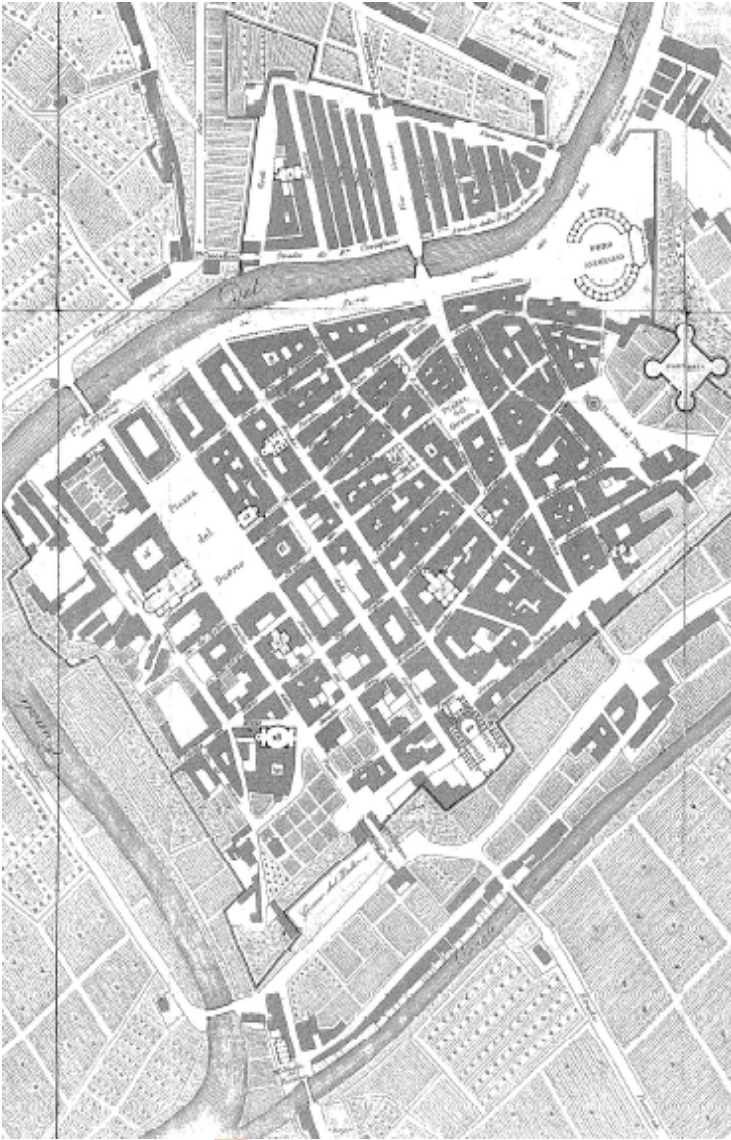


Figure 2-24: The plant change of Senigallia, 1847



Figure 2-25: Plan change of Senigallia, 17th century

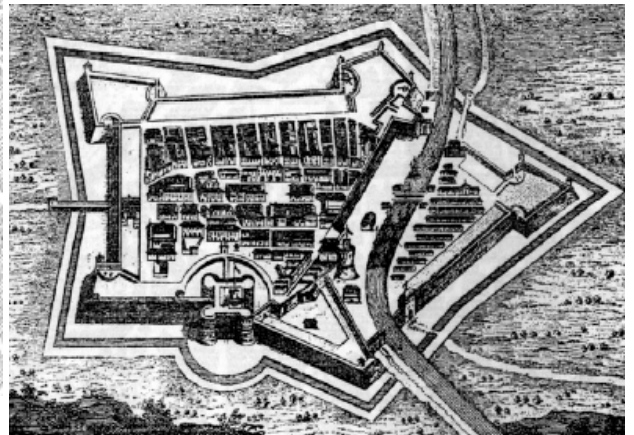


Figure 2-26: The bird view of Senigallia, 18th century



Figure 2-27: The Cadastre, before the enlargement, 1818

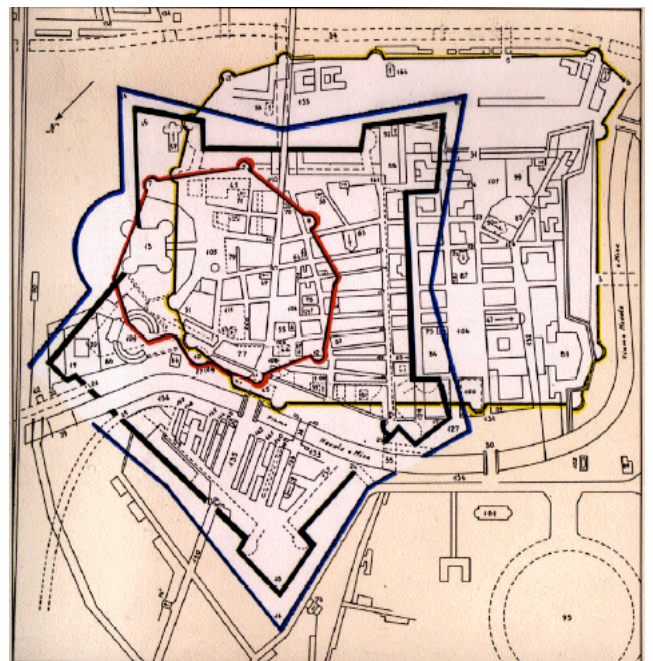


Figure 2-28: The change of the center, 1985

More in detail, the change of the context with certain time can be visualized from the map, see figure 2-29. The historic context almost unchanged even suffered the earthquake and the bomb disaster, whereby main context form is kept, see figure 2-30. Hence, from the evolution and components identifying, conservation subjects were identified, see figure 2-31. Further more, several space types, such as special religious, special cavils, main vital buildings, residents, are listed. The quality of the buildings, such as the change of their internal structure is also detected Pointedly, interventions to prevent damage construction, to restore original space form have a concrete foundation.

Figure 2-29: the change of the context



Figure 2-31: the identified monuments



Figure 2-30: space morphology in historic center

2.7 Experiences and Case Study

2.7.1 Bologna

Since the 1970s, Bologna's conservation case is a successful Italian example in historic conservation world widely known. After experienced serious wreck at the end of the 19th century in large-scale demolition as well as in wars, Bologna people made recognition that historic center is not only a collective cultural embodiment, but also the inhabitants' long time work of art. Diverse social classes are integrated into urban structure organically through the common use and the physical space consumption.

In this conservation case, there were several innovations besides the ideal result. In sum, the first important novelty, from mere technician prospective, is the application of typology and morphology in space analysis, adaptive reuses and policies that made conservation operational. It established a technical-oriented conservation system, which successfully saving the original historic beings, fulfill morphology pattern and cultivate adaptive reuses. Then secondly, another fundamental innovation is the social re-appropriation of the city²⁶³. Conservation is beyond mere technical way in the preservation of the physical environments, it becomes a comprehensive public policy to restrain the social problems and coordinate development imbalance. Based on the idea that the growth of the city should be controlled by authorities on the premise of using legislation and planning regulation to the fullest, conservation tries to equilibrate private and public sources with respects to public democracy and participation. Furthermore, it integrated historic houses with public housing policy in a creative way. So we can elaborate its gains in the following items:

2.7.1.1 Background

Bologna is a notable historic city with outstanding cultural, economic and political reputation. It was entitled as European Capital of Culture in 2000, and "city of music" by UNESCO in 2006, as well as one of the most impressive trade fair hosts in Europe. In Italy, Bologna is an important transportation hub for the roads and trains, and also is the heart of Emilia-Romagna Region. It is one of the top cities in terms of life quality. In terms of urban feature, its integrated historic center is a homogenous mixture of monuments and buildings, including medieval towers, antique residential buildings, churches and continuous vestibule porticoes.

Briefly, Bologna has a fabulous history, which embodies in its physical space formation. It has a long history of inhabitants living around Bologna; the Colonia of Bononia was founded in 189 BC. Bologna became an important center owing to it gains communication hub between north Italy and south Italy since 187 BC. In 88 BC, the city became a self-governing town. It had and performed a rectilinear street plan with intersecting streets, which are still discernible. The Roman Emperor Nero ordered to rebuild it in the 1st century AD after serious fire damage. In recent times, after the industrial innovation, the city center experienced several expansion and modification and reformed the basic morphology until the early 20th century. Based on first master plan of 1889, the urban

²⁶³ Accame, conoscenza e coscienza della città.