

Invisible modern residential heritage: spatial analyses in Turin real estate submarkets.

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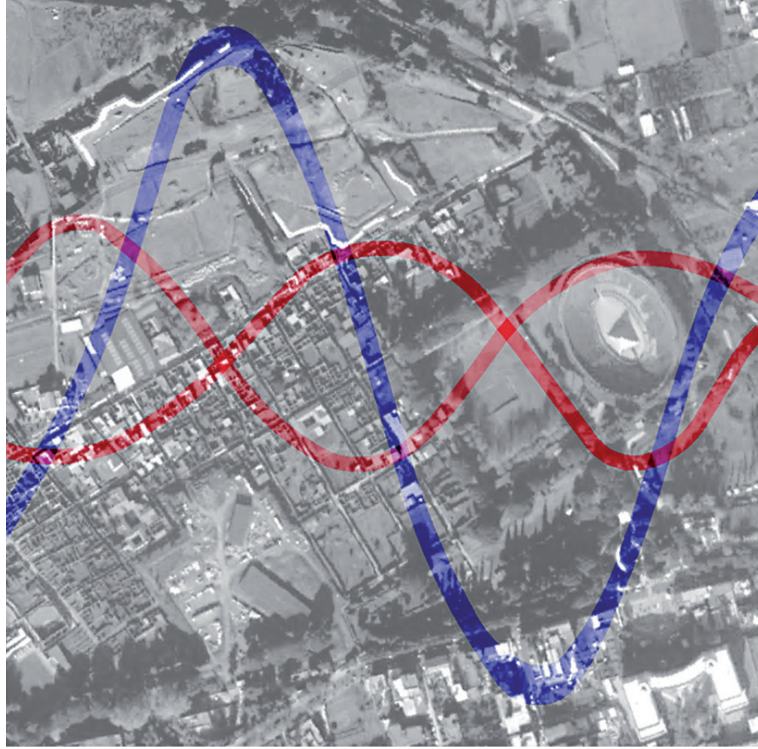
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ARCHITECTURE HERITAGE and DESIGN

Carmine Gambardella

XVII INTERNATIONAL FORUM

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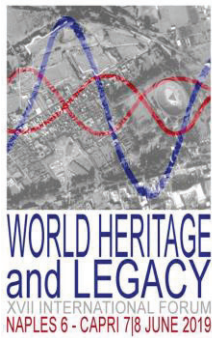
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Invisible modern residential heritage: spatial analyses in Turin real estate submarkets.

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Abstract

The post-industrial city is undergoing continuous transformations due to the new requirements of world socio-economic changes. Among the various phenomena linked to built heritage and to the socio-economic context, a focus on 20th century buildings was inspired by recent literature and changes in the Italian heritage protection regulations.

This paper aims to illustrate the characteristics and distribution of residential modern heritage in the city of Turin characterized by high architectural value and widely recognized authorship, whose value is not adequately commonly recognized. In particular, the study focused on the correlation between the modern residential buildings not properly perceived and their location, the presence or absence of vulnerable socio-economic and housing contexts and the concentration of high and low real estate values. Analyses were carried out by means of territorial segmentation and spatial statistics, comparing indicators and focusing on two modern heritage buildings sited in different areas of the city of Turin.

Results showed that not all modern residential buildings considered are adequately preserved and commonly known and all of them risk being undervalued, not being recognized either by citizens or by real estate market point of view. The construction of a geographical network of this "invisible" heritage, could promote their understanding, their enhancement, increase their market value, develop the attractiveness of their neighborhood and may start innovative social practices.

Keywords: Modern Residential Heritage, Spatial Analysis, GIS, Real Estate Market, Listing Prices

1. Introduction

Recent literature, and changes to the Italian heritage protection regulations in 2017, have contributed to a focus on residential buildings of the 20th Century and particularly post-World War II, among various layers of representation of the built environment and of economic dynamics.

In this work "invisible" modern residential heritage is intended as that part of the 20th century residential buildings in the city of Turin, which are not easily identifiable either from an urban landscape or a real estate market point of view, and whose value is not adequately commonly perceived.

We could divide the built heritage of 20th Century into two main categories: the big architectures such as industrial, commercial and services buildings, that with very diverse typologies' characteristics define the morphology of the city and the residential buildings that define the urban landscape. In the case of large buildings with "authorship" there are very important design differences due to different architects and designers of Modern Movement. These big architectures are energy inefficient and for this reason, in the reuse design projects, one of the most important aspects is to adopt energy retrofit solutions.

For the economic development of a city, former industrial buildings present various opportunities thanks to their convertibility to new uses due to their big dimension and non-structured spaces. However they also present some threats: often they are abandoned and unused buildings, without regular maintenance, and their real estate value further decreases over time; moreover, the cultural

and historical value of this kind of modern heritage is not commonly recognized, buildings are not entirely protected and therefore more at risk of radical transformation not coherent with their historic value [1].

On the other hand, in the residential sector, the architectures with “authorship” that are designed by architects influenced by the Modern Movement were built both for the public sector (affordable houses for worker immigration) and for the middle and upper classes (new bourgeoisie). Generally, authorship architectures present distinguished construction typologies, that in Turin are concentrated in the historical city center (in the empty spaces left by the bombing of the World War II), in some peripheral areas that were not yet built in that period (such as big tree-lined streets Corso Vittorio, Corso Massimo D’Azeglio, Corso Montevecchio, etc.) and the districts historically characterized by the presence of middle and upper classes (such as Crocetta and Collina).

In the urban landscape and in particular in the outskirts residential buildings with a high level of design and constructive quality are mixed with architectures without any quality value, often built quickly and at low cost [2, 3]. This distinction is not easily perceived by tourists, visitors and citizens and the real estate market itself, in the actual market situation, hardly recognizes the added value of “authorship” in listings prices. In fact, residential units belonging to buildings with “authorship” and units belonging to buildings of the same level without any innovation in terms of design, materials and technology, are offered on the market almost at the same listing price. This happens also as a consequence of the radical transformation of the real estate market segmentation and the changes occurring in prices relations.

In Italy, from the protection regulatory framework point of view, private residential buildings which are less than 70 years old are not subject to the “automatic” protection provisions (and, therefore, cannot be subjected to “automatic” verification of cultural interest). Even if modern heritage, intended as post Modern Movement heritage, is almost entirely studied and classified, it is still rather less present in the on-line official databases about urban heritage due to a lack of attention and interest.

Therefore, in this paper is illustrated the implementation of a new database about the modern residential building of Turin concerning the characteristics and spatial distribution of 20th century residential buildings, focusing on the analysis of two specific cases.

The paper proceeds as follows: Section 2 introduces the background of the analysis and Section 3 presents the case of modern heritage of Turin and the cross-referencing of existing databases. Implementation of the Turin Modern Residential Buildings database and first spatial analyses are introduced in Section 4, while Section 5 discusses the results. The final section presents conclusions.

2. Context definition and background

The residential building heritage, which makes up most of the buildings in post-industrial cities, defines the urban landscape in which we live without being properly known and considered. Neither the citizens who live in the city, nor the visitors and cultural tourists, in fact, are able to recognize the architectural and building value of this heritage and to distinguish it from the building that instead has no design quality or cultural value [4, 5]. The modern heritage is also “negatively” considered from citizens and visitors often confusing the absence of historical value of the building with its mediocre or bad level of conservation [4].

Importance is instead increasingly attributed to this type of heritage that defines the Historic Urban Landscape (HUL) of the city, which in turn defines the unique and recognizable image of the city, and that is put at greater risk by the policies of urban transformation and renewal [6]. Recognizing the intrinsic value of this type of architecture is not only useful for possible urban transformation and redevelopment policies, but it could suggest new way of knowledge, different pattern and connection useful for the real estate values definition [7, 8]. The UNESCO definition of HUL declared that is fundamental to integrate urban heritage values and their possible vulnerability status into a wider framework of city development, which shall provide indications of areas of heritage sensitivity that require careful attention to planning, design and implementation of development projects [6, 9].

In this work Modern Residential Buildings are defined as those deriving from the “Modern Movement” influence in terms of aim, typologies, technologies and functions for building design [10]. Compared with the international movement, in Italy the Modern Movement influence arrived later, nevertheless the revolution which that new way of thinking started continued also for some years after the World War II, mixing functionalism and minimalism ideas with necessities of the reconstruction.

Nowadays, the request for increasing attention to modern heritage can be seen in the publication of dedicated “unofficial” tourist guides, user-generated web-site and customized city tours in all the European cities [11]. Recent literature has also shown that the recognition of the historical and architectural value of modern heritage can help in redefining the value of the areas in which it is located, both from the point of view of real estate values [12]. Economic interventions on this type of

heritage and landscape made it possible to undertake comprehensive surveys and mapping the city's natural, cultural and human resources [12, 13].

Finally, to complete the reference framework, the private residence buildings are referred in the Italian cultural heritage regulation on different level of protection, thanks to a big modification of the law occurred in 2017 (art. 1, co. 175, lett. a), n. 2), L. 124/2017). The definition of the concept of cultural heritage underlined that for immovable objects belonging to any private owner, whether they are the work of a living author or whose execution dates back less than 70 years, as well as whether they are the work of a living author or whose execution dates back less than 50 years, are not subject to the provisions of protection and, therefore, cannot be the subject of a declaration of cultural interest [14]. Being without the "protection provision" implies that only if there is a clear request by the Region or some territorial body eventually some of these buildings could be listed.

3. Modern Residential Building heritage in Turin: cross-referencing existing databases

As a good example of a former industrial city, in Turin the numbers of citizens radically change between, before and after World War II. Thanks to the development of the large Fiat Company and its related smaller industries in the early post-War period, a wave of immigration changed the connotation of the city, with a high demand for low-cost housing. The phenomena of quantitative construction emerged in many other Italian and European cities as in Turin, but here, among the various interventions carried out in the public sector at low cost and with the maximum yield with the design of simple modules and simple plant to be easily repeated and the use of low-level materials, almost the same subjects are called to design high quality residence unit for the emerging middle and high classes [15]. Thus began between 1951 and 1961 a race to build new buildings concentrated in the areas of Pozzo Strada, Santa Rita and San Paolo for the middle classes and in Mirafiori, Madonna di Campagna and Borgo Vittoria for middle-low classes. These areas were located near the most important industrial complexes, where the land was not yet built or often where the owners of lots with a building built, wanted to sell or rent it with a huge profit [15]. In that period the new middle class was starting to occupy the historical center of the city, where were activated a lot of reconstruction and refurbishment processes, and to occupy some parts of new expansion of the city, closer to the city center than the workers' blocks, but in newly planned areas [16, 17]. The middle class (i.e. employees, self-employed workers, teachers, etc.) [11] required dwellings even in multi-story buildings and towers (67% of the entire residential building stock of the city), often with large dimension apartments, close to the essential services and commercial areas and facing the main axes of urban development. The upper class, mainly made up of freelancers (i.e. advocates, doctors, contractors, etc.) required villas and single-multiple family homes located on the hill of the city (31% of the entire residential building stock). This division "in classes" of the Turin area is still partially visible and is necessary for the correct understanding of the city real estate market [18]. Moreover, constructors were able to acquire land parcels, to build the new building with attention both to the demand and to the profitability of the transformation intervention and then to sell or rent residential units [16].

To analyses these phenomena not only from the historical point of view but in relation with the real estate market of the city, was necessary to reconstruct a "Turin Modern Residential Buildings" geographical database of Turin. Starting, in this early phase, from the on-line sources, and the open-access database, in the paper is drawn the "state of the art" framework of the presence and level of classification and categorization of this kind of heritage. A first phase of the survey of the major existing open-access databases, cartography and historical monographs, allowed to build the database used to make spatial elaborations presented below and to identify two specific cases.

To this preliminary work, however, in order to perform statistical analysis, it will be necessary to follow other stages of verification, validation and completion of the database variables and related attributes. Official open access databases were analyzed, such as:

- Vincoli in Rete (VIR - <http://vincoliinrete.beniculturali.it/>);
- Geoportale of the City of Turin (GEOCT - <http://geoportale.comune.torino.it/>);
- Docomomo Italia (DOCOMOMOIT - <https://www.docomomoitalia.it/>);
- Museo Torino (MT - <http://www.museotorino.it/>).

On the other hand also user-generated databases were analyzed such as:

- Mimoa.eu (MIMOA - <https://www.mimoa.eu/>);
- Architectour.net (ARCHT - <https://www.architectour.net/>).

The lack of interoperability between these sources, which from a regulatory point of view is been solving by the VIR platform, favors the fragmentation of information and often facilitates a loss of it. Geographical information, based on the research approach used in this study, has now been added or used in almost all the cited databases and this means a facilitating interoperability and management of

information from different sources. Despite all this patrimony of data and information, they defects on data of second post-war residential period that are much more difficult to find. The research must therefore be conducted by authors name and especially by construction companies' names, analyzing their private archives [19]. Therefore, very complete information is present in literature but is not yet put in a spatial network, enabling to analyze the architecture evolution in the time and space in relation with the social and real estate market trends. The impossibility to consult in a totally transparent way the information related to the architectures classified as cultural value goods, even if for the most part present in the MT platform, makes it still difficult to link them with each other and with the information deriving from the sites for the tourism, from the statistical information of the censuses (ISTAT) and those already present in the different digital technical maps of the city (GEOCT). For the purposes of the enhancement of the heritage, the knowledge phase is made necessary not only to define the dimensions and the consistencies but also to define distances, characteristics, and trends of the micro-surroundings, socio-economic and housing reference context [20].

4. The implementation of “Turin Modern Residential Building” database

In order to firstly collect and analyze data, classified by age of construction, authorship and by level of protection, in relation with real estate market of Turin, the segmentation of the territory in Statistical Zones (ISTAT) was adopted. This kind of segmentation used as basis of the analyses is suitable both to harmonize the territory in homogeneous sectors and to take into account the main urban factors (urban structure and road network, presence of main development axes and historical roads), the architectural fabric (morphology of the buildings plot and the distribution characteristics within each), the environmental characteristics (presence of rivers such as breaking limits of the city grid) and the correspondence with the administrative and statistical segmentations boundaries used at national level both at a larger and at a smaller scale [21].

The database of Turin Modern Residential Buildings (TMRB) is made up of 541 data related to multi-story buildings, villas and blocks of the 20th Century in Turin (Table 1).

Variable	Description	Fonte	Frequency
DCI	Declared of cultural interest	TMRB	3%
UNCV	Of unverified cultural interest	TMRB	2%
WCI	With an indication of cultural interest *	TMRB	20%
RES	Residential buildings	TMRB	85%
NRES	Non-residential buildings	TMRB	15%
HOU	Houses/Villas	TMRB	17%
LBU	Little Building (Single-double family b.)	TMRB	7%
BUI	Medium-large Building (Condominium)	TMRB	65%
TOW	Tower	TMRB	1%

* From MT open access API based on classification presented in “Beni culturali ambientali nel Comune di Torino” [24].

Table 1. Frequencies of principal variables in the TMRB database (Source: Author's elaboration)

The sample includes data about the architectures built in Turin from the early years to the end of the 20th Century reported in the on-line database MT, in the "Guide to modern architecture of Turin" [22, 23], in “Architects for the middle classes of Turin during the building boom: the buildings built by the Campiglia company” [19], and in some web-site archives of construction companies still active on the territory. Subsequently the database was verified and connected to the geographical databases of VIR.

Regarding the protection classification, connecting the TMRB database with the VIR one, only a little part of the buildings matched. From the total 1112 data about built heritage present in VIR, the residential heritage is 42% (471 data). This heritage is in part “Declared of cultural interest” (51%) and in part listed as “Of unverified cultural interest” (49%). Only a minimum part of these data are also referred to 20th Century post World War II period.

Some of the designer and the buildings considered in the database are reported in the table below, there are more than 200 buildings that are not listed, and some of them are presented and classified in “Beni culturali ambientali nel Comune di Torino” with a warning of documentary interest or cultural - historical value [24] (Table 2).

Architects	Title	Date	Listing/Warnings*	Presence in online dabases
Gualtiero	House G – Torre Solferino	1952	NA	MT
Casalegno	Villas Casalegno	1952	NA	MT
Nello Renacco, Aldo Rizzotti	Palaces «Condotte d'acqua»	1972	Urban core of documentary interest.	MT

	Block S1	1965-1966	Urban core of documentary interest.	MT
Pietro Derossi	Residential building - Corso Francia	1997	NA	NA
	Residential building - Corso Unione Sovietica	1962	NA	NA
	Residential building - collina di Torino	1998	NA	NA
	House - Centro storico	1993-1999	NA	NA
	Villa "Acutis" - Collina di Torino	1962	NA	NA
	Villa - Collina di Torino	1963	NA	NA
Roberto Gabetti, Aimaro Oreglia d'Isola	House - Corso Monte Grappa	1954-1957	Building of documentary interest.	MT
	House "Gustoza-Recchi"	1963-1964	NA	MT
	House	1980-1983	NA	MT
	Palace "Ajmone-Marsan"	1963-1966	Building of documentary interest.	MT
	Residential building "Bottega d'Erasmus"	1953-1956	Building with artistic-historical and documentary values	MT
Sergio Jaretti, Elio Luzi	Residential building "Casa dell'Obelisco"	1954-1959	Building with documentary significance.	MT
	House - Corso Orbassano	1960	Building of documentary interest.	MT
	Residential building "Torri Pitagora"	1964	Building of documentary interest.	MT
	Residential building "Torre Mirafiori"	1970-1974	Building of documentary interest.	MT

* From MT open access API based on classification presented in "Beni culturali ambientali nel Comune di Torino" [24].

Table 2. Extract of some Architects, architectures and levels protection of the database "TMRB" (Source: Author's elaboration)

Figure 1A shows the different position of residential blocks located in the outskirts of the city and the residential buildings, and their spatial relation with the main big non-residential interventions occurred in the 20th century. The building typologies of the residential heritage are closely linked to the different trends of construction in the time that Magnaghi et al. [22, 25] divides in four periods: 1900-1915 with the advent of the *Art Nuveau*, 1920-1940 after World War I with the economic crisis and the advent of modern movement and rationalist architecture, 1945-1960 after World War II with the reconstruction and the organic architecture and finally 1965-1982 period characterized by major structural problems, by the stop of population growth, immigration waves and the beginning of theories about the stop of land consumption and the reuse/enhancement of built heritage. For the purpose of this paper TMRB database is divided in two main categories: before and after World War II. Figure 1B shows how the database is unbalanced with the main presence of buildings belonging from the historical period before the end of World War II, this is due to the prevalent presence of historical heritage in the most common online sources.

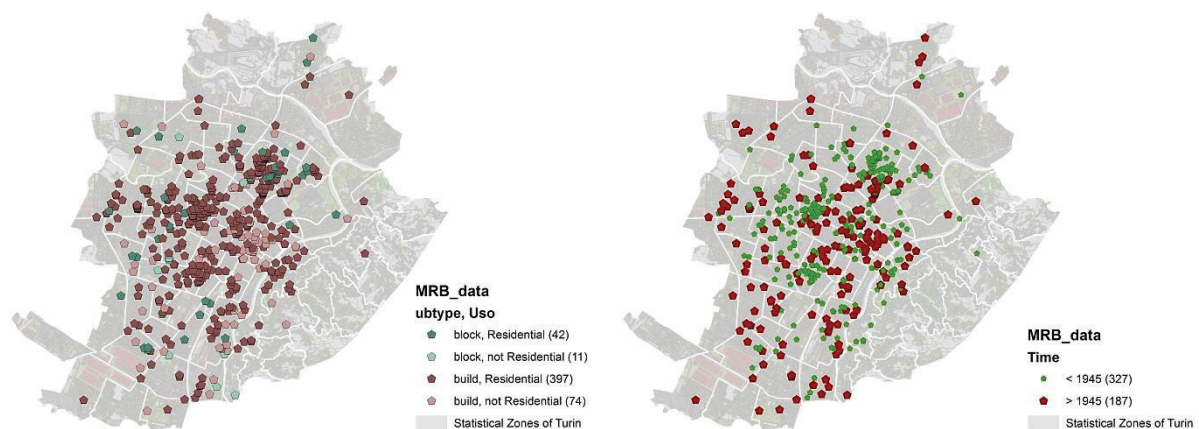


Fig. 1: A) TMRB database spatial distribution, divided in blocks and buildings and different uses; B) TMRB database spatial distribution divided in historical development periods before and after 1945. (Source: Elaboration by the Author)

To deepen the existence of an "authorship architectures effect" in the spatial densification of the construction of residential buildings, Figure 1 starts showing the different pattern of spatial distribution

of private and public sectors and of residential and non-residential uses. The public block distribution is obviously all around the city center and near the biggest industrial cluster of the city. Instead, it has to be still investigated the distribution of residential buildings in relation with the attractiveness of some areas of the city, probably due to the construction and the presence of great non-residential architectures (except for the case of Italia'61 cluster, that was an unique project of a part of a city).

5. First results, analyses on TRMB database and Turin Real Estate Submarkets

Some choropleth maps were elaborated to spatially analyze the TRMB database in relation with the main development periods of the city and changes of the real estate markets during time. Regarding the indicator of the real estate market (related also to social and building condition), given the known difficulty in obtaining purchase and sale data in the Italian real estate market, offer prices were analyzed, despite the limits related to them [26, 27], recorded and analyzed annually by the City of Turin Real Estate Market Observatory (TREMOMO) [28] presented in a previous research work [29, 30], which have been calculated for each Statistical Zone starting from a sample of 421 data collected in the year 2017 (Figure 2B). To make a comparison the buildings of 1946-1970 are also overlapped to a map of the real estate market values distribution of the year 1981 [16] (Figure 2A).

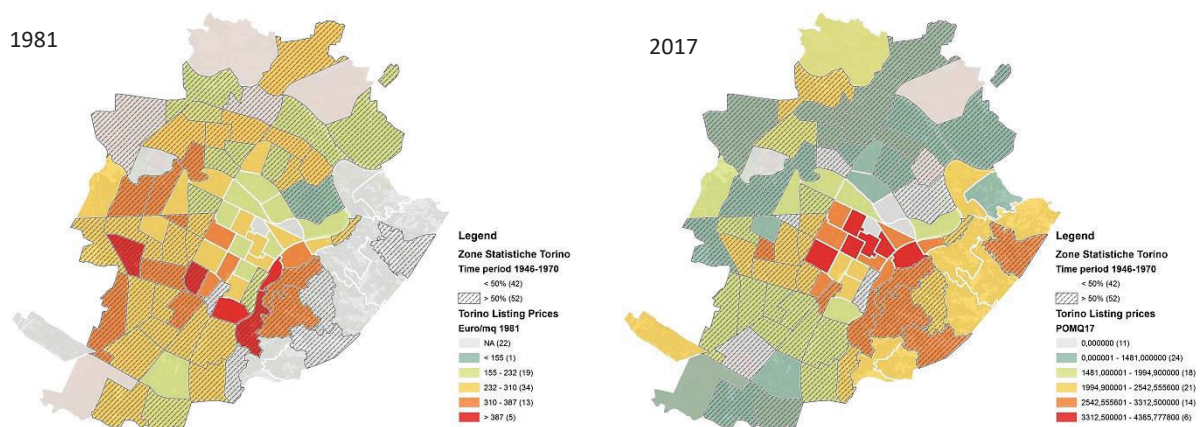


Fig 2: Choropleth map of listing prices (Euro/ m²) and concentration of buildings of the time period 1946-1970. A) Real estate listing prices of the year 1981 (Source: Author elaboration on Figure at p.208 [16], B) Real estate listing prices of the year 2017 (Source: Author elaboration on TREMO data)

From the comparison of the average price distributions in 1981 and 2017 there is a picture of the change in the real estate market in the city. In 1981 prices are less clustered among the various Statistical Zones and some of the zones with the highest values (> 380,00 Euro/m² – original value was in Italian Lira), now have low prices compared to the city listings average (2.211,00 Euro/m²). For the 2017 Figure 2B shows that there are three main clustered areas: the city center and the hills with the highest real estate values (> 3.300,00 Euro/m²), the south west and south area with the medium prices and the northern area with the lowest prices (< 1.500,00 Euro/m²). Spatial distribution of buildings of 1946-1970 confirm that that kind of heritage is not clustered in high or low real estate market value of the city, but it covers mainly the medium level of listing prices.

As shown in the analyses above, there are some discrepancies between databases analyzed. The new TMRB database is not able to completely collect all the high quality residential building in Turin, mainly due to the absence of this heritage on open sources on-line. It could signify that to complete this task it will be necessary to digitize several materials, at the moment present in analogical cartography and in analogical archives. Figure 3A leads us to observe that the modern residential buildings follow a not clustered distribution and, starting from the city center are located along main roadway axles. The first historical axes of development are from the center to the South along Via Nizza and Corso Unione Sovietica, westward along Corso Francia, northward along Corso Giulio Cesare and Eastward around Corso Giovanni Lanza. The modern building distribution shown in Figure 3A the choropleth maps concerning the average listing prices of 2017 and in Figure 3B is overlapped on the concentration of building stock built during 1946 and 1970 in the Statistical Zones.

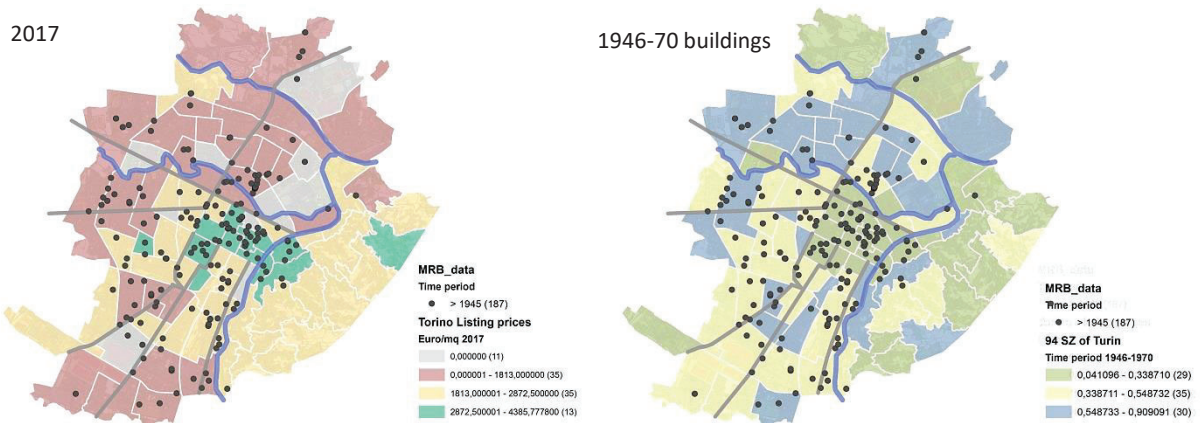


Fig. 3: Spatial distribution of Residential Building selected for the “MRB” database on the distribution in ZS of A) listing price of 2017 and B) concentration of building belonging to the time period 1946/1970 (Source: Author elaboration).

The location of the classified 20th century architectures is therefore both in urban areas that are structurally vulnerable and that presents low listing values (< 1.813,00 Euro/m²) and in the city center, with lower presence of social vulnerability and higher real estate values (> 2.872,00 Euro/m²). The concentration of the TRMB data in the city center doesn't correspond to the real distribution and concentration of the built heritage of 1946-1970 construction time period. This is due to the lack of information already present on the analyzed sources of modern residential architecture. The most known architectures, in fact are in the historical city center, where are located the most important and representative listed ancient and modern buildings.

5.1 Two borderline cases: modern residential buildings in different real estate submarkets

To investigate the differences showed in the modern residential building stock and its link with different classes demand, two specific cases are analyzed. “Pitagora Towers” is a 3 tower building located in the South area of Turin [31, 32, 33], and “Casa dell’Obelisco” that is a multi-story building on the hill of the city [34, 35, 36] (Figure 4).

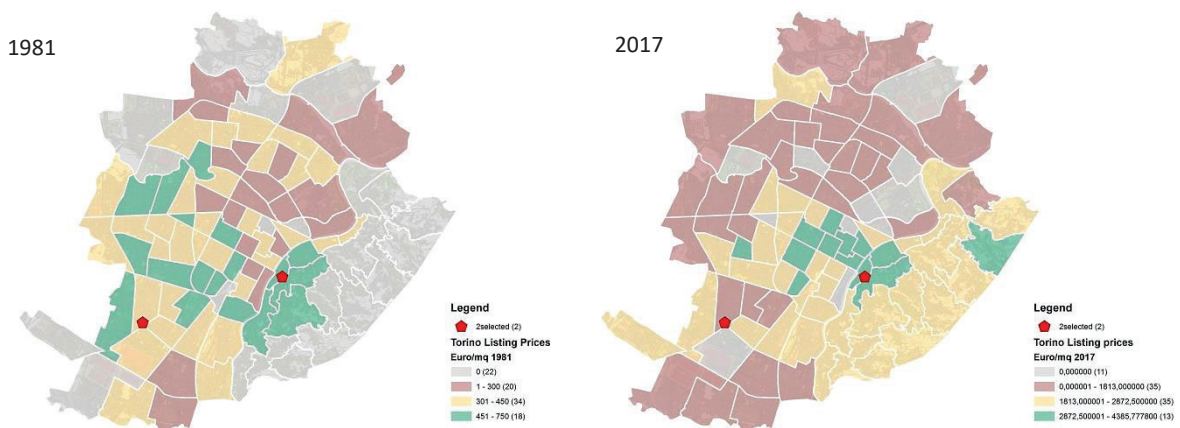


Fig. 4: Selection of the “Torri Pitagora” and “Casa dell’Obelisco” buildings in the real estate markets of years 1981 (A) and 2017 (B) represented by a spatial distribution of real estate mean listing prices (Source: Author elaboration).

Pitagora towers are located in a Statistical Zone that in 1981 presented a medium level of real estate listings, and that in 2017 have one of the lowest listing price values in the city. These towers residential buildings are classified as "Building of documentary interest. Interesting examples of contemporary residential architecture". They were built starting in 1964 by Manolino Company on a project by Sergio Jaretti (1928) and Elio Luzi (1927-2006) [37, 38, 39, 40]. The area of the construction, predominantly residential, was a fast saturation area after the second post-war period and the architects Sergio Jaretti and Elio Luzi designed a complex of buildings for residences for the Manolino construction company, owner of the area. Thanks to the cubic meters available, two towers of ten floors are designed on a portico base where shops are located. Some compositional and

decorative elements of buildings are used, such as large terraces, decorative use of the joints between the bricks used as external cladding, use of glass for the parapets of the balconies. Therefore, they become a hallmark for this area in a context that is mostly lacking in system coherence [24] (Figure 5).



Fig 5: “Torri Pitagora” buildings, designed by Sergio Jaretti and Elio Luzi, in 1963-65 by Manolino company, Corso Siracusa 152, 154, 158, Piazza Pitagora, Torino. (Source: Photos by the Author).

The second case is “Casa dell’Obelisco” built in 1954 – 1959 by the same company on a design by the same architects. The completely different solution adopted corresponded to a different level of the demand and the higher values of real estate market of the area of construction. A “richer” house was distinguished from one less by the different choice of materials, of marble, the widest entrances. In the design quality there was no substantial changes, it regards only a greater or lesser cost. When a house was built, if contractors couldn’t sell it at all, they rented the remaining units. This was a business capital for the company, until rented houses were sold, perhaps after some years [19]. Turin hills have maintained the highest listing during the time and the area is traditionally inhabited by the middle and upper classes. The two architects designed a 5 floors building covered with curved elements in artificial stone, which refers to some works by the Catalan architect Antoni Gaudí or those of the American Frank Lloyd Wright. The clear detachment from the linguistic registers used in the 1950s in Turin and compared to the surrounding neighborhood is clear. Inside, the five above-ground floors house apartments (some over several levels) and offices have completely straight internal walls. The designers’ will to give to the demand a different and unique place to live correspond to the need of “power” and class representation (social status) of the upper classes [18] (Figure 5).



Fig 6: “Casa dell’Obelisco” building, designed by Sergio Jaretti and Elio Luzi, built in 1954–1959, Via Bicocca 2, Torino. (Source: Photos by the Author).

6. Conclusions and further research

In this paper, the first phase of research was presented as part of the development of a research project on the spatial analysis of modern residential building stock, with high architectural and construction quality not easily recognized by users and citizens.

The aim of the research requires interdisciplinary knowledge and competencies, and new databases must interoperate with the existing ones, which belong to diverse sources. Built heritage analyses should be also quantitative and include different competencies such as historical, informatic and economical, since it is necessary to link the socio-economical dimension with the physical-architectonical and spatial one.

By means of a survey of the Modern Residential buildings stock classified in different sources and in the main online platforms a new geographical database (TMRB) was defined. Overlapping TMRB data on the spatial distribution of indicators of listing price in different time periods and the concentration of 1946-1970 buildings, made it possible to link the different patterns of spatial distribution in the urban plan of Turin. To define the value and the different demands for the construction of this heritage it has been compared with its location in high and medium level urban areas.

From the first results obtained it can be said that not all the heritage belonging to this category can be considered invisible: even if few buildings are already protected by law, in some cases they are in areas of the city that already have high real estate values, services and proximity to the best-known tourist routes, and this could facilitate increasing their visibility. Heritage that falls into more peripheral or degraded areas must instead have itself a role as a driving force for the development of real estate values, for this part of the heritage further insights should be developed and a particular focus should be placed on the abandoned villas on the Turin hills. First results show also that the same architects and construction companies proposed very different solutions for residential buildings on the basis of the social class of the demand and the area of the city in which they are located.

Future research can be directed in order to verify which architectures may already have ongoing processes of transformation and enhancement and how they are perceived online by local, national and international users. Furthermore, by strengthening the sample presented, it will be possible to verify if and how such assets are related to the formation of real estate prices in the various areas of the city and how they can modify their possible influence (positive or negative) on the real estate market.

Bibliographical References

- [1] MARINO' P. (2015), Crowdfunding for the co-financing of projects to enhance complexes of great historical and architectural value: the case of "Torino Esposizioni", *Territorio Italia*, 2/2015: 95-119.
- [2] SOWIŃSKA-ŚWIERSKOSZ, Barbara. Review of cultural heritage indicators related to landscape: Types, categorisation schemes and their usefulness in quality assessment. *Ecological Indicators*, 2017, 81: 526-542.
- [3] DÜMCKE, Cornelia; GNEDOVSKY, Mikhail. The social and economic value of cultural heritage: literature review. *EENC paper*, 2013, 1-114.
- [4] RIEGL, Alois. Il culto moderno dei monumenti. In: *Chiesa, città, campagna. Il patrimonio artistico e storico della chiesa e l'organizzazione del territorio*. 1985. p. 132-185.
- [5] COSTA, Pedro. Creativity, innovation and territorial agglomeration in cultural activities: the roots of the creative city. *Creative cities, cultural clusters and local economic development*, 2008, 183-210.
- [6] BANDARIN, Francesco and VAN OERS, Ron. *The historic urban landscape: managing heritage in an urban century*. John Wiley & Sons, 2012.
- [7] COULSON, N. E., & Leichenko, R. M. (2001). The internal and external impact of historical designation on property values. *The Journal of Real Estate Finance and Economics*, 23(1), 113-124.
- [8] FRANCO, Sofia F.; MACDONALD, Jacob L. The effects of cultural heritage on residential property values: Evidence from Lisbon, Portugal. *Regional Science and Urban Economics*, 2018, 70: 35-56.
- [9] ALBERT, Marie-Theres; BERNECKER, Roland; RUDOLFF, Britta (ed.). *Understanding heritage: Perspectives in heritage studies*. Walter de Gruyter, 2013.
- [10] CUNNINGHAM, Allen (ed.). *Modern movement heritage*. Taylor & Francis, 2013.
- [11] MINUCCIANI, Valeria, Elio Luzi, in *26 Itinerari di architettura a Torino / Architectural walks in Turin*, Società degli architetti e degli ingegneri in Torino, Torino 2000, p. 259
- [12] TENGBERG, Anna, et al. Cultural ecosystem services provided by landscapes: Assessment of heritage values and identity. *Ecosystem Services*, 2012, 2: 14-26.
- [13] OST, Christian. Mapping heritage economics for spatial analysis in historic city cores. *The Economics of Uniqueness. Investing in Historic City Cores and Cultural Heritage Assets for*

- Sustainable Development. Washington, DC: The World Bank, 2012, 245-283.*
- [14] LEGGE 4 agosto 2017, n. 124, Legge annuale per il mercato e la concorrenza. (17G00140) (GU n.189 del 14-8-2017)
- [15] CASTRONOVO Valerio, GABETTI Roberto e ISOLA Aimaro (a cura di), *L'impresa Rosso, note sul settore edilizio a Torino negli ultimi cinquant'anni*, Pluriverso, Torino, 1995
- [16] CURTO, Rocco Antonio, (a cura di), *La casa scambiata*, Stige Editore, Torino, 1988
- [17] CURTO Rocco, "Un mercato che si frammenta: regole economiche e fattori culturali 1950-1990", in Carlo Olmo, *Cantieri e disegni. Architettura e piani per Torino 1945/1990*, Umberto Allemandi & C., 1992.
- [18] VEBLEN, Thorstein. *The theory of the leisure class*. Routledge, 2017.
- [19] GIUSTA, Francesca and MAIORANA, Maria Laura. *Architetture per i ceti medi di Torino negli anni del boom edilizio: gli edifici costruiti dall'impresa Campiglia*. 2014. PhD Thesis. Politecnico di Torino.
- [20] BOERI A., GASPARI J., GIANFRATE V., LONGO D., PUSSETTI C. Il riuso adattivo dei centri storici. Bologna e Lisbona: soluzioni per la rigenerazione urbana. *Techne. Journal of Technology for Architecture and Environment*, 2016, 12: 230-237.
- [21] Web page: <https://www.istat.it/it/metodi-e-strumenti/classificazioni>
- [22] MAGNAGHI A., TOSONI P., *La città smentita: Torino: ricerca tipologica in ambiti urbani di interesse storico*, Designers Riuniti, Torino 1988.
- [23] MAGNAGHI, Agostino, MONGE, Mariolina, & RE, Luciano, *Guida all'architettura moderna di Torino*. Celid, Torino, 2005
- [24] Dipartimento Casa Città, *Beni culturali ambientali nel Comune di Torino*, Vol. 1, Società degli ingegneri e degli architetti in Torino, Torino, 1984.
- [25] BARTOLOMUCCI C., Cacace C. *La Carta del rischio del patrimonio culturale: normalizzazione delle tipologie degli edifici nella banca dati del Sistema informativo territoriale*. 2009, Bollettino ICR 16: 69-77.
- [26] CURTO Rocco, FREGONARA Elena, Semeraro Patrizia Prezzi di offerta vs prezzi di mercato: un'analisi empirica / Asking Prices vs Market Prices: An Empirical Analysis, 2012, *Territorio Italia*, Roma, Agenzia del territorio, Vol. XII, n.1, pp. 53-72.
- [27] HOROWITZ, Joel L. The role of the list price in housing markets: theory and an econometric model. *Journal of Applied Econometrics*, 1992, 7.2: 115-129.
- [28] CURTO, Rocco; FREGONARA, Elena; SEMERARO, Patrizia. Listing behavior in the Italian real estate market. *International Journal of Housing Markets and Analysis*, 2015, 8.1: 97-117.
- [29] BARRECA, Alice; CURTO, Rocco; ROLANDO, Diana. Housing Vulnerability and Property Prices: Spatial Analyses in the Turin Real Estate Market. *Sustainability*, 2018, 10.9: 3068.
- [30] BARRECA, Alice; CURTO, Rocco; ROLANDO, Diana. Assessing social and territorial vulnerability on real estate submarkets. *Buildings*, 2017, 7.4: 94.
- [31] Red., *Le torri Pitagora a Torino*, in «L'architettura. Cronache e storia», 131, Settembre, 1966, pp. 286-291 Politecnico di Torino.
- [32] MAGNAGHI, Agostino, *Le Torri Pitagora*, in Magnaghi, Agostino - Monge, Mariolina - Re, Luciano, Guida all'architettura moderna di Torino, Lindau, Torino 1995, p. 235
- [33] BARELLO, Luca - Luzi, Andrea (a cura di), *Le case Manolino: storia di una famiglia di costruttori e due architetti*, Il Tipografo, Buttigliera d'Asti 1996
- [34] MAGNAGHI, Agostino, *Edificio per appartamenti*, in Magnaghi, Agostino - Monge, Mariolina - Re, Luciano, Guida all'architettura moderna di Torino, Lindau, Torino 1995, p. 200
- [35] PACE, Sergio, *Casa dell'Obelisco*, in Comoli Mandracci, Vera - Olmo, Carlo (a cura di), Guida di Torino. Architettura, U. Allemandi, Torino 1999, p. 206
- [36] SCRIVANO, Paolo, Luzi, Elio, in Olmo, Carlo (a cura di), *Dizionario dell'architettura del XX secolo*, Vol. II, Istituto della Enciclopedia italiana, Roma 2003, p. 1510
- [37] CROSET, PIERRE ALAIN. *Architettura degli anni'80 in Piemonte*. Electa, 1990.
- [38] AMBROSINI Gustavo, DURBIANO Giovanni, *Architetture di Jaretti e Luzi. 1955-74, 1975-95*, in «Edilizia Popolare», 242, novembre-dicembre, 1995, pp. 34-64
- [39] GIUSTI, Maria Adriana and TAMBORRINO, Rosa, *Guida all'architettura del Novecento in Piemonte (1902-2006)*, Allemandi, Torino 2008
- [40] BARELLO Luca, LUZI Andrea, LUZI Elio (ad vocem), in "Ordine degli Architetti pianificatori, paesaggisti e conservatori della Provincia di Torino" (a cura di), Albo d'onore del Novecento. Architetti a Torino, Celid, Torino 2008