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A VIRTUAL RECONFIGURATION OF TWO DESTROYED NEIGHBORHOODS IN THE OLD TOWN OF PALERMO

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Abstract

The proposed contribution deals with the topic of virtual three-dimensional reconstructions on an urban scale. The choice was oriented on significant samples of city portions that over the centuries have undergone substantial transformations or distortions: the aim is to reconstruct their history backwards, starting from the current survey and using the tools of virtual representation to reconfigure the forms of the past and tell their events. From here comes the idea to create, for pieces, a hypertextual study of the urban image of Palermo: the theme of the transformation of the city, of change and of complexity, opens up differentiated research paths. The hypertext choice was almost obvious: in the description of the city and its use the different references (texts, maps, photos, three-dimensional models) can be used in multiple and dynamic aggregations. The report develops in a diachronic manner, using the overlapping of several information layers to set some remarkable dates on which to think about the urban image therein expressed.

Keywords

Virtual reconstruction, Urban fabrics, Digital Heritage, Graphic analysis of architecture

1. *Introduction*

The Old Town of Palermo presents a considerable density of stratifications, both architectural and urban: we believe that this can be interpreted, as a critical reading, by experiments of dynamic and multimedia representation that could interest not only scholars in the specific sector, but especially the most large audience given by users of the cultural tourism circuits. The tool of three-dimensional modeling, which lends itself well to the reconfiguration of artefacts and architectural or urban elements no longer legible in the current fabric, integrates with the interactive and multi-sensory information systems that allow the episodes represented to be transformed into a real experience through the possibility of interacting in a dynamic and personal way with the information contained in it or through the simulation of realistic walks in the described places. The ways to take advantage of these technologies can be done remotely (with dynamic visualizations similar to those used by *Google Art Project* for *Maps Street View*) or by direct use (through immersive virtual visualizations or applications for portable devices and tablets). Such experiments are now quite consolidated in the scientific research and in the so-called "edutainment", which collects and disseminates all the multimedia production related to the history of art and architecture in forms ranging from documentaries to videogames. We can mention here the examples given by *"Paris au Moyen Age*" by Grez Productions (2008), a detailed reconstruction of the sixteenth century city, or the virtual 3D trip to Lecce in Roman age proposed by the *DiCeT-Living Lab project* of Lecce MUST (2015), the historical city museum; other examples are given by the applications developed for virtual visits in the Rome of the past as "*Rome reborn"* (developed by a collaboration between Google Earth, the *Virtual World Heritage Laboratory* of the University of Virginia, California University and the *Reverse Engineering Lab* of the Milan Polytechnic, 2012) or "*Flaminia re-loaded"* (an application of multi-user virtual reality for the communication of the archaeological landscape along the Via Flaminia; CNR ITABC, 2008 and 2013), or even the reconstruction of the disappeared Jewish Ghetto

financed by the Rotschild Foundation and modeled almost entirely from the nineteenth century watercolors by Ettore Roesler Franz.

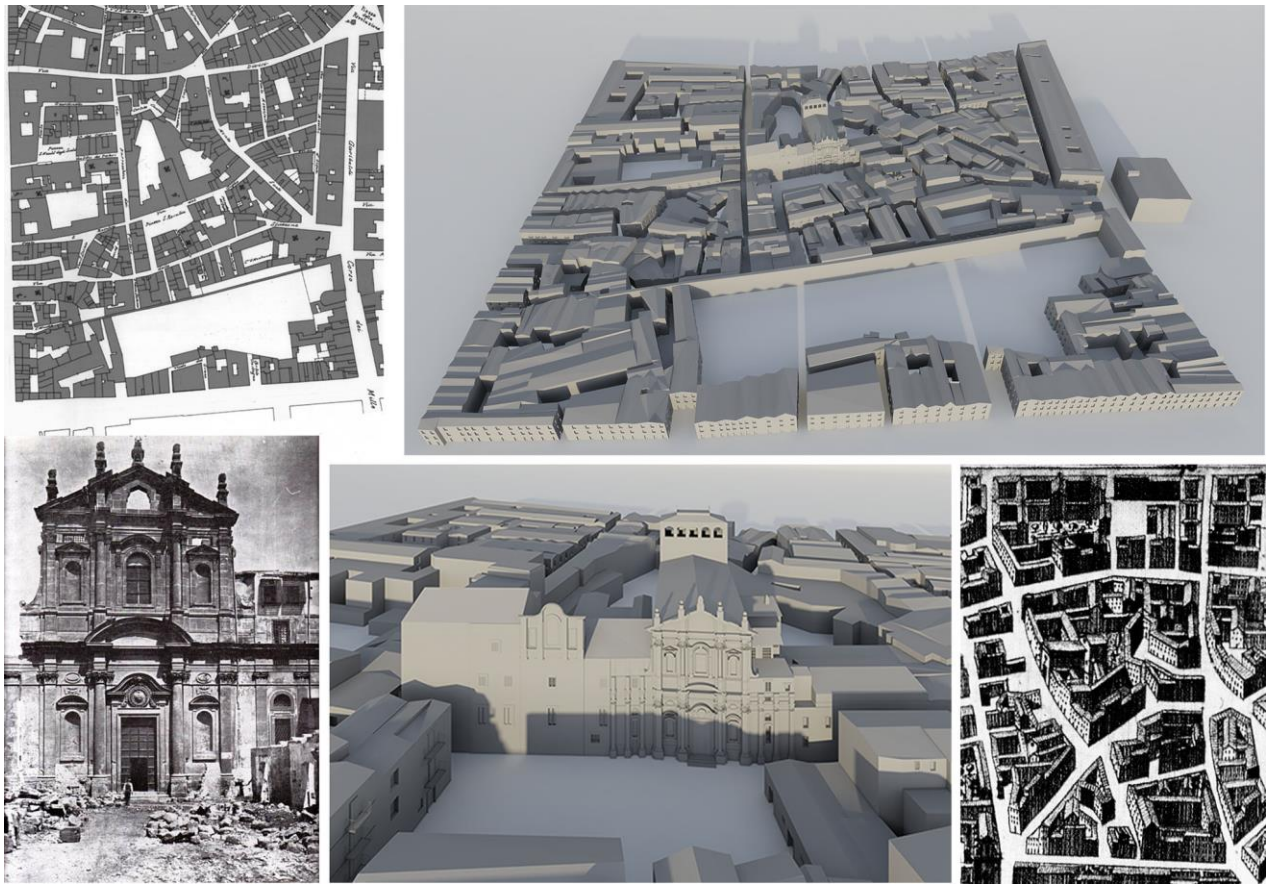

Fig. 1: Three-dimensional reconstruction of the Stazzone district with the square and the church of Santa Rosalia; the church is visible in the Cadastre of 1877 (1.a), in a vintage photo by E. Giannone (1898 ca., 1.c) and in the *Plano de la Ciudad de Palermo* by G. Lazzara (1703, 1.e)

2. *Three-dimensional urban reconstructions along the axis of Via Roma*

In this paper we summarize various experiences, carried out within the graduation laboratories of the courses belonging to the Architecture Department of Palermo University, where the unifying theme was the virtual reconstruction of the image of the Old Town before the considerable distortions made following the partial application of the "Piano Giarrusso" (1885), which included the opening of four large driveways within the “Quattro Mandamenti” of the walled city and the contemporary redevelopment and reconstruction of several ancient neighborhoods, mostly medieval with insertions of the Late Renaissance or Baroque period.

Only one of these roads was completed according to the project: the Via Roma, which served as a link between the Central Railway Station and the new quarters built to the north of the city along the expansion axis of Via Libertà. One of the two streets perpendicular to the Via Roma was only built on stretches, in the considerable demolitions and rebuilding that affected the Albergheria district (current via Mongitore) and the Stazzone neighborhood near the station (current via Torino and via Gorizia).

Along the route of Via Roma, in addition to the aforementioned operation of demolition and rebuilding on the Stazzone district, the reclamation and restoration project of the ancient Conceria district was also completed: this was the historical memory of the ancient medieval suburb of leather tanners between the Vucciria market and the Capo market.

The transformations affected the entire perimeter of the district, which was razed to the ground and rebuilt in the forms of multi-storey condominium buildings with two monumental presences given by the Teatro Biondo (facing

Via Roma) and the Galleria delle Vittorie (facing Via Maqueda).
The dense and minute urban fabric of the medieval city, together with interesting experiments of eighteenth-century urban planning (such as the "Piazza Nuova" defined by arcades, fountains and covered markets) was canceled and replaced by the current via Venezia, via Napoli and via Bari.
The demolition and definition of the new face of the city were documented by abundant photographic reports, now available in the publication of the complete catalog. Together with the cadastral surveys of the Bourbon age (1877), other vintage photos taken between the end of the 19th century and the beginning of the 1900s and other iconographic material, suitably ordered and cataloged, it is possible to make a good three-dimensional reconstruction of the lost city's image on an urban scale, which may also contain reconstructions of squares, monuments and lost urban places on an architectural scale.

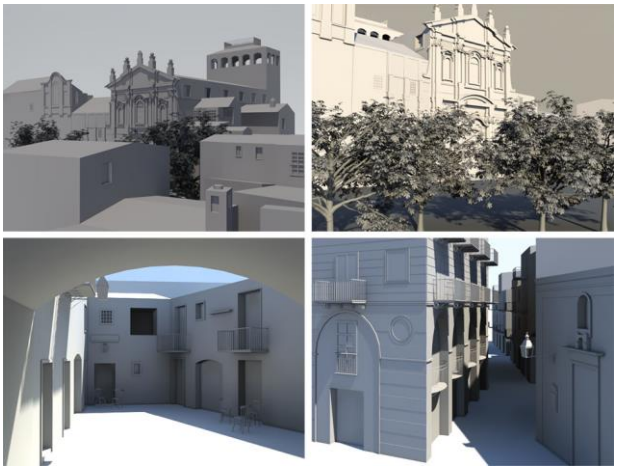

Fig. 2: Some perspectives of the 3D model on an architectural scale: views of Piazza Santa Rosalia, Cortile Santa Spina and Via Stazzone

We have focused particularly on two areas, corresponding to two districts that have now disappeared: the Stazzone district with the square and the church of Santa Rosalia (figg.1, 2) and the Conceria district on the edge of the Vucciria market up to the limit of Piazza San Domenico (figg.5, 6).
The two missing districts have been completely reconfigured as far as urban volumes are concerned; from the redesign of the nineteenth-century cadastral plans it was possible to insert the information related to the design of the ground floors; from the perspective reconstruction carried out on vintage photos of the examined areas, it was instead possible to make the transition from the urban scale to the architectural scale and describe the buildings that had disappeared together with the fabric they had originally entered. The methodology used for the three-dimensional reconfiguration of lost volumes relied mainly on the information gathered from the extensive catalog of vintage photographs taken before and during the demolition of both districts. On these we have worked with perspective reconstructions identifying for each of them the optical cone, the visual axis and the planimetric collocation of the framework and point of view; these were fixed on the land registry map of 1877, taken as a reference plan, which has been redesigned digitally to overlap the current site plan, in full scale and appropriately georeferenced. It was possible to find and redraw almost completely the surveys of the ground floors of all the buildings, as they were before demolitions, and overlap them, inserting them in an additional information layer, to the perimeters of the city blocks read from the historical cadastre.
We have thus created a first digital document in which all the volumetric data that can be viewed from photographs of the last century have been anchored to an overall planimetry; on this the altimetric dimensions of the ground have been reported: these have been corrected where the analysis has identified modifications of the sediment plan with reference to the current elevation, and a territorial mesh has been modeled on which to place the results of the 3D modelig process.

Fig. 3: A panoramic photo taken from the balcony of Santa Rosalia towards Monte Pellegrino (by E. Giannone, 1898-1900 ca.)

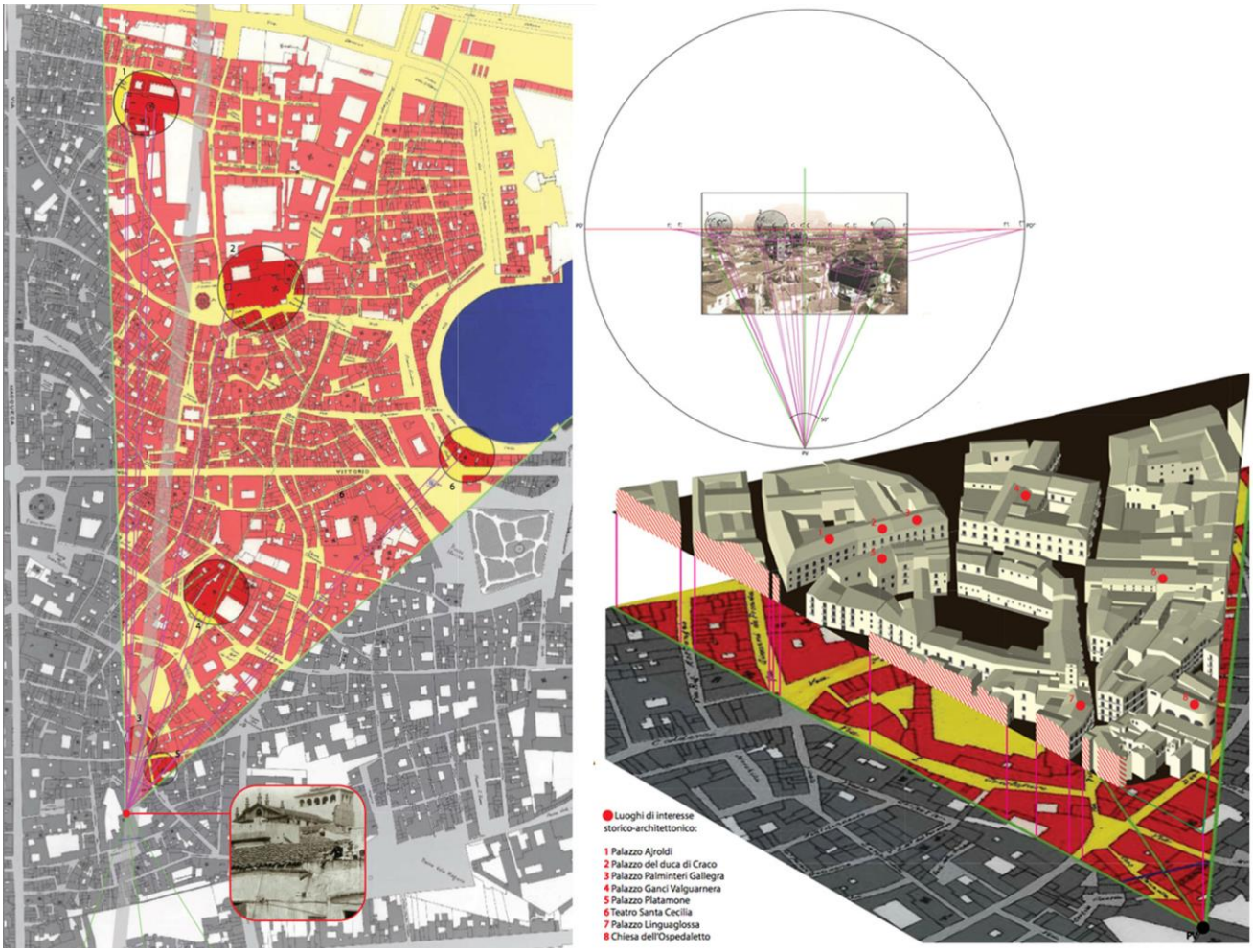

Fig. 4: The three-dimensional reconstruction process of the buildings shown in the photo

The heights of the buildings and the correlated measurements were mainly deduced from the photographic information after having put them in relation with the buildings depicted there and still existing.

The final result, although satisfactory in terms of virtual navigation thanks to the succession and intersections of the photographic shots, presented however various and inevitable gaps evident above all in the transition from a perspective display mode to another axonometric or planimetric mode on which to compose the entire urban system. These were filled with a reasoned comparison with other images, not photographic, coming from historical iconography related to the examined places. The most fitting reference appeared the *Plano de la Ciudad di Palermo*, a monometric military axonometry concerning the entire walled city executed by Gaetano Lazzara in 1703 on an urban planimetric survey geometrically and scientifically made (fig.7): in the tables related to the identified and analyzed urban portions the geometry of the shapes of each block is perfectly legible, as is appreciable the conventional enlargement made by the author on the gaps (streets and squares) to illustrate the fronts of the buildings with greater clarity. These one, when compared with the current fronts of still existing blocks, are described with a quite good precision as regards the number of openings on the façade and the number of elevations of each building unit, and with a good approximation as regards the identification of architectural elements of a certain importance (such as portals, balconies, decorative fastigios identified by a drawing made on an urban scale). The shape of the roofs (such as pitched roofs, terraces, domes and church bell towers) is also reported with extreme precision. Using the appropriate approximations (and also considering the chronology of further urban

transformations documented between 1703 and 1877, the interval between the two examined documents), it was possible to integrate the model obtained from the juxtaposition between the nineteenth-century cadastral map and vintage photos taken from the eighteenth-century axonometry, brought back to the current scale on the shapes of the blocks obtained from the cadastral surveys: we also verified and corrected the number of openings from the comparison between the axonometric drawing of the view and the survey of the ground floors. Further information was taken from other sources, mainly project drawings and printed views, compared with the data obtained from the photos and the redesign of the plans.

3. The Stazzone district with Piazza Santa Rosalia

The district called "Stazzone" was bounded by the south-east edge of the sixteenth-century walls (the current via Lincoln), from the two straight profiles of via Maqueda and via Garibaldi and the curvilinear profile of the via Divisi. Far from the major commercial arteries or main residential districts, it had mostly a character of popular residence with internal courtyards used as gardens or craft activities. The medieval structure of the district had already undergone heavy upheavals, due to the construction of the rectilinear rows of palaces facing via Garibaldi and via Maqueda (in 1500 and 1600).

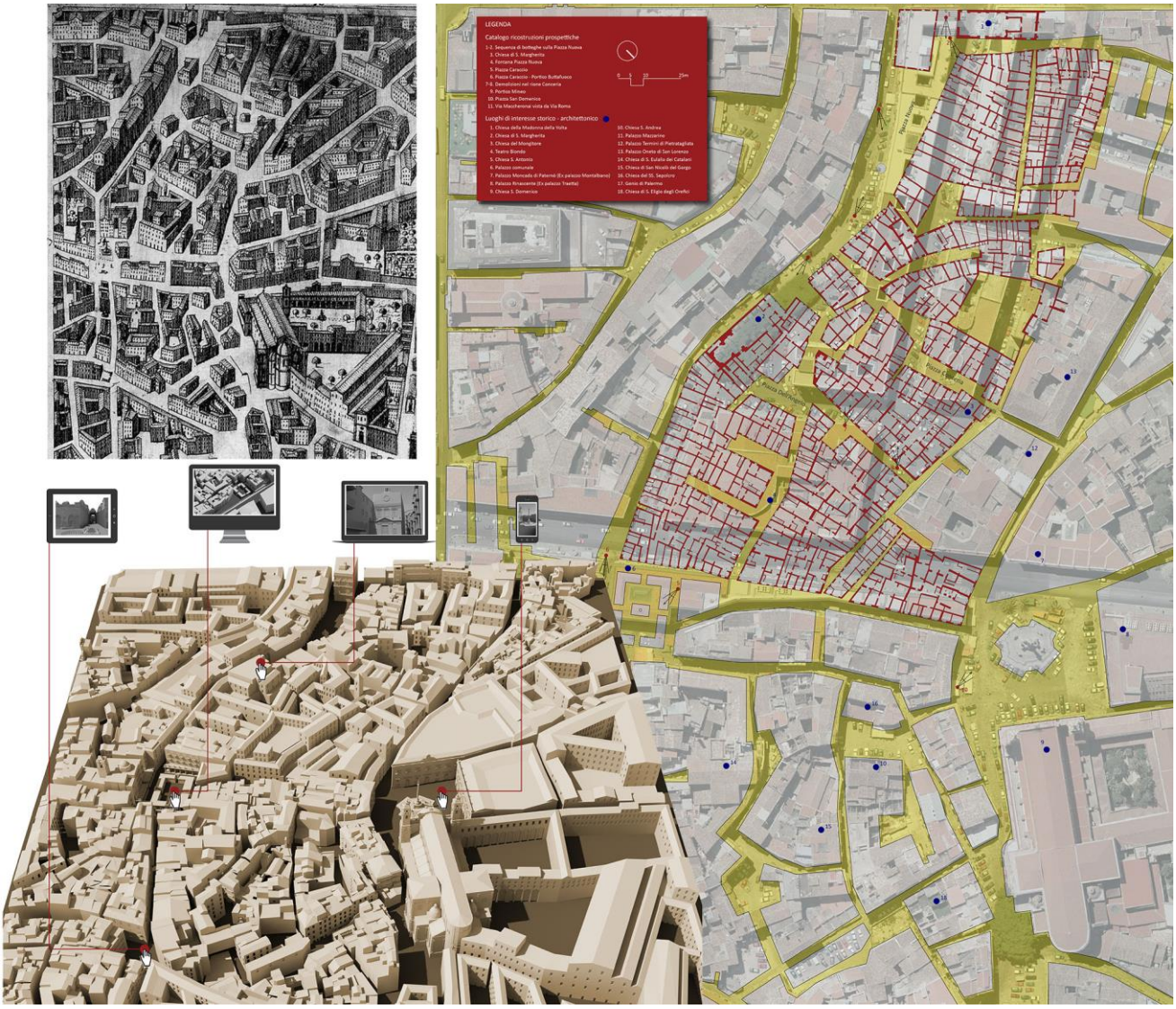

Fig. 5: Three-dimensional reconstruction of the Conceria district, with the redesign of the ground floors (from the cadastre of 1877); the same district is shown in the *Plano de la Ciudad de Palermo* by G. Lazzara (1703, 5.a)

It was thus to define a quadrilateral that found its urban arrangement with the opening of the Piazza Santa Rosalia and the construction of the homonymous church in 1637: the square and the church, dedicated to the new patron saint of the city (which in 1624 had replaced the previous four saints to whom the "Quattro Canti" had been dedicated) were planted in a central and predominant position in relation to the entire district, along the tangential connections of internal roads leading to the major axes of via Maqueda on one side and via Divisi on the other side. The first iconographic documentation of the new seventeenth-century space is found in the urban plan of the city elaborated by Francesco Negro in 1640. In 1700, on a project attributed to the architect Giacomo Amato, both the church and the square were enlarged, with the intention of underlining the character of monumentality and urban importance: the construction ended nine years later, on 31 August 1709.

Fig. 6: Perspectives of the 3D model on an architectural scale in relation to the reference photographic images

The urban axonometry drawn by Lazzara "photographs" the image of the place in 1703, in the seventeenth-century forms preceding Amato's project and with an area smaller than that which it subsequently assumed and with a roughly square perimeter instead of rectangular; it is the same configuration highlighted in the Negro's planimetry, executed at the same time as the first building of the monumental complex. In the maps of the following centuries and in the Bourbon cadastre of 1877 the definition of the baroque square is fully illustrated.

The axis of the Via Roma was traced in overlap to the church and in such a way as to slash and definitively cancel the square in front of it: the photographic documentation of the state of the places before the demolitions is punctual and abundant, as well as the surveys illustrating the internal elevations and the 18th

Fig. 7: Lazzara's work in its entirety (1703)

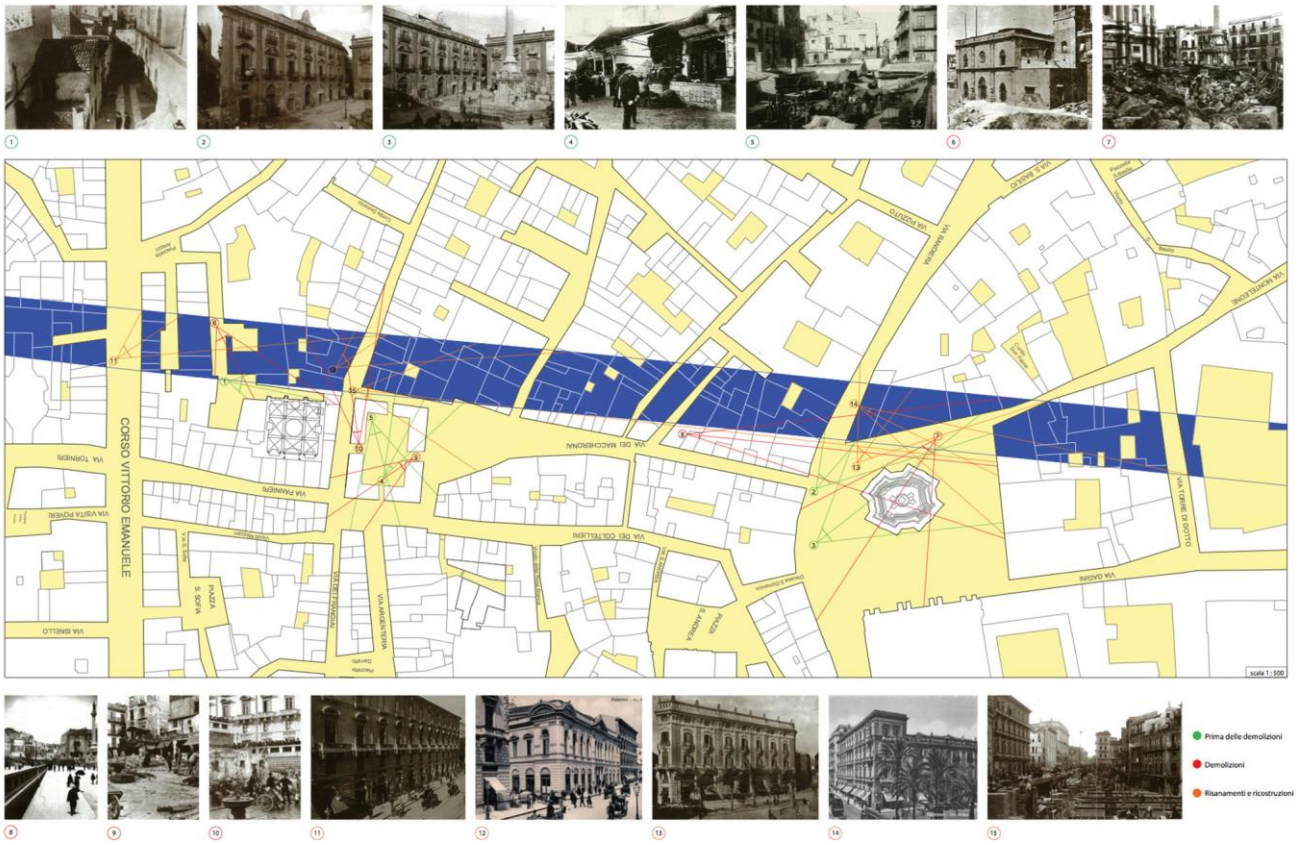

Fig. 8: The area where the Via Roma was cut between Corso Vittorio Emanuele and Piazza San Domenico: location of the perspective cones of the vintage photos taken before the demolition

century facade designed according to Amato's style; paintings and worship objects belonging to the parish have been translated to the Diocesan Museum, where some of them are currently shown. An exhibition hall in the Regional Gallery of Palazzo Abatellis is dedicated to the iconographic memory of the church: here there are graphic reconstructions and photographs that portray the monument in its entirety.

Among these, two panoramic shots, taken from the balcony of the church, are of particular interest: these one are showing two large views of the rooftops of the city; the first one is taken in a northerly direction to Monte Pellegrino (figg.3, 4), the other one in a southerly direction to the railway station. The perspective reconstruction of these two shots was of fundamental importance for the stitching of the voids resulting from the reconfiguration of the first and second neighborhood along the Via Roma route (which at the time of the shooting had yet to be realized).

But the urban image of the neighborhood (with the liveliness of its ordinary life) is mainly shown in the shots taken inside the courtyards and alleys nowadays no longer existing: these were spaces referable to an urban fabric erased by the nineteenth-century redevelopment operation together with the building types that characterized it.

4. *The Conceria district with Piazza San Domenico*

The Conceria district was bordered by the Via Maqueda to the west, by the Via Maccheronai to the east, by the profile of the ancient Cassaro walls to the south and by the long and sinuous commercial axis of Via Bandiera (which connected the Capo market to the Vucciria market joining the monastery of the Augustinians to the Dominican monastery) to the north. The plant of the district was derived from the early Middle Ages: it developed at the edge of the river bed of the Papireto, before it merged into the port basin.

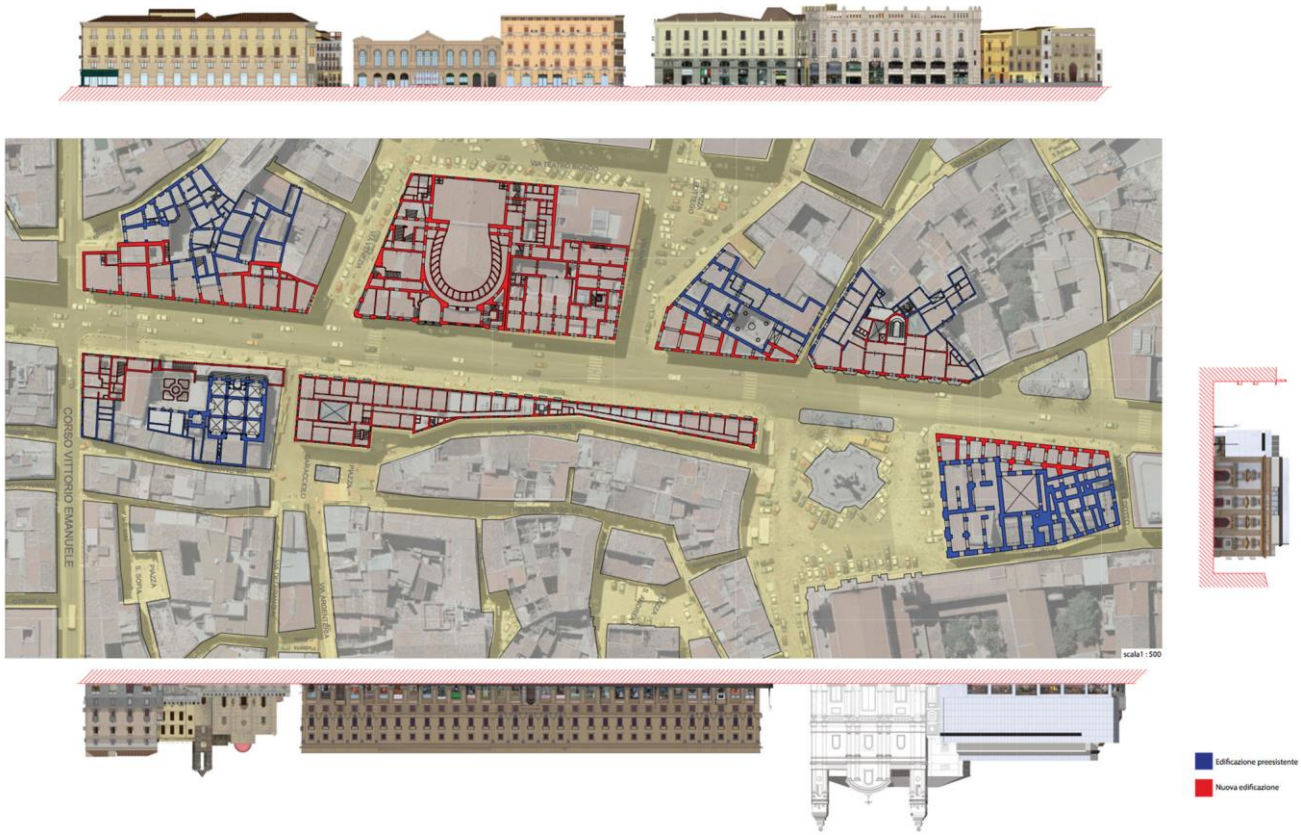

Fig. 9: Survey of the current situation: the new buildings of Via Roma in relation to the previous historical fabric

After the filling of the river bed, the empty spaces were saturated with small and poor buildings, in which there were still spaces of great scenography and urban value, mainly given by the system of small squares and courtyards and the presence of churches entrusted to the corporations (such as the church of Santa Margherita and the church of the Madonna della Volta, which mediated the steep gradient with the upper part of via Maqueda thanks to the proximity of a covered passage and a monumental staircase). The underground conduit in which the Papireto was channeled fed urban fountains that embellished the space of the little squares that opened up between the alleys and the courtyards. The descent of the Maccheronai was not a limit of the district, as this developed in continuity with the district of Sant'Agostino in the Mandamento Monte di Pietà and in close connection with the Vucciria, where there was the same system of squares, fountains, alleys and courtyards, which instead assumed more marked and considerable forms of urban monumentality.

The Via Bandiera instead delimited the northern border, distinguished not only by the development of the long linear urban market, but also by the architecture of the noble palaces that marked its fronts. The picturesque opening of the Piazza San Domenico, well calibrated on given perspectives and laid out organically on the sinuosity of the route, stood not only as a hinge with the residential quarters towards Olivella and Castellammare, but also as a real "monumental" entrance to the neighborhood in opposition to the other entrance located at the staircase on Via Maqueda.

A notable urban redevelopment project involved, in the first decades of the 1800s, the opening of a new square, called "Piazza Nuova" and characterized by articulated arcades leaning against the pre-existing palaces and crowned by a continuous and uninterrupted balcony.

After the dismantling of the district, which involved the total disappearance of all its ancient presences, the memory of the covered market was in a certain way maintained with the design of a large gallery covered with iron and glass windows; after a series of unrealized

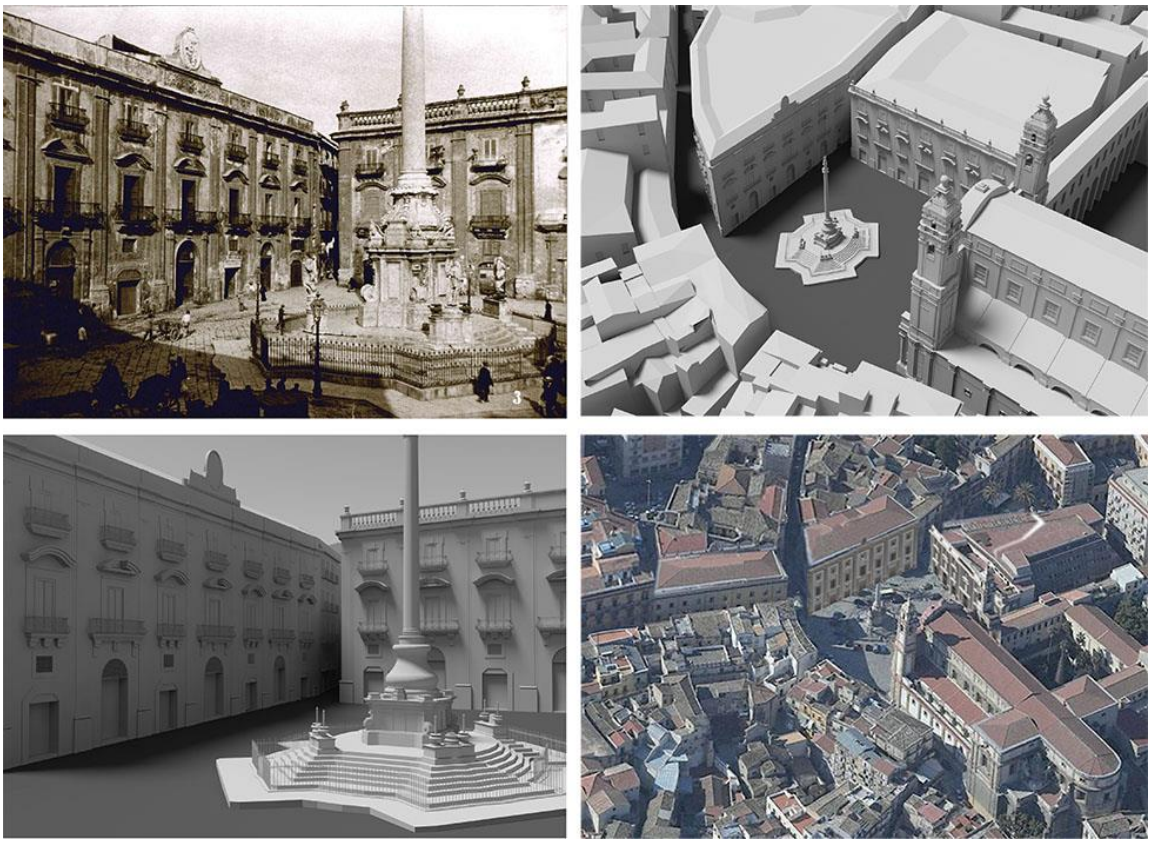

Fig. 10: Three-dimensional reconstruction of the original configuration of Piazza San Domenico

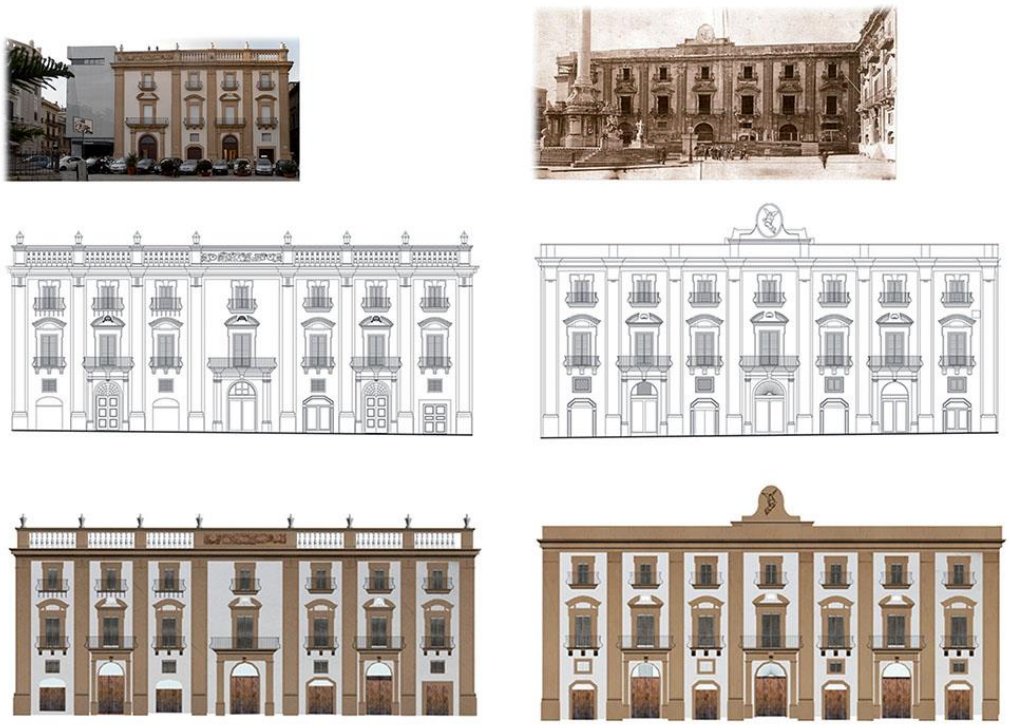

Fig. 11: Piazza San Domenico: the architectural fronts of Palazzo Traetta and Palazzo Montalbano (nowadays demolished)

elaborations, the Galleria delle Vittorie was completed on the project of the architect Paolo Bonci (1937). The same Piazza San Domenico was opened within the medieval fabric in the eighteenth century as a great operation of renewal and redefinition of the urban image: the axonometry of 1703 portrays the shape and elevations of the block that previously occupied the site where the square was opened in 1724: it was designed by Tommaso Maria Napoli and it was completed by Giovanni Amico.

The three-dimensional urban model, traced on the axonometric view of the Lazzara, considers the state of the places starting from 1703 and following its partial demolition caused by the cutting of Via Roma (fig.10).

The study of the reconstruction of urban space focuses on the analysis of the two architectural fronts jointly designed by the architect for the Palazzo Montalbano and the Palazzo Traetta (figg.11,12), the first replaced by the current Palazzo Paternò-Moncada and the second surviving only for half of the façade and integrated with the subsequent Palazzo Bonomolo (and also this has now disappeared).

5. Conclusions

The finished model therefore lends itself to multiple reading possibilities: the first and most immediate is the possibility of sewing all the historical images in a single three-dimensional virtual container, a direct and "cinematographic" immersion in the photographs coming from the past, focusing on the most important lost events on which information sheets concerning all historical-architectural news and events have been inserted; but the possibility of superimposing and managing further layers is offered as a tool to proceed to oriented thematic analyzes, or to insert other models referring to historical situations different from the moments considered for the reconfiguration, or projects designed for these areas that for various reasons remained unbuilt (such as the projects presented at the context for the monumental entrance of Via Roma or those designed for the redefinition of a covered shopping arcade in the area of the former Conceria district).

The thematic analyzes carried out concerned two fields of interest: the first proceeded to make a leap in scale from the territorial to the urban scale, from the quarter to the square, identifying the remarkable squares to be analyzed and illustrated in their history and in the history of their transformations. In the following field, instead, the jump from the urban to the architectural scale, from the square to the building, was carried out with a same attention towards monuments lost due to their demolition or remained unbuilt following the urban vicissitudes that affected the entire city.

Fig. 12: Immersive rendered image of the space of Piazza San Domenico before the cutting of Via Roma

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