6. Zamość, historical and conservation notes

Calogero Bellanca

In Poland, in the seventh decade of 16th century, while the aim of the diplomatic activity and the military politic of the sovereigns is the maintenance of good reports with the German emperor, the initiative of foundation of new cities in the oriental territory of the country is intensified, reinvigorating without many changes the praxis used in the Middle Ages (1).

These are the years when an architect with Paduan origins, Bernardo Morando, starts his activity, and he deserves an important position in the History of Architecture in Poland.
From 1569 he was in Warsaw. There are indeed some news of this period about his participation on the enlargement of the Royal Castle of the city (1569-1573) (2).
His presence in Warsaw finds an explanation in the favorable moment for the construction in the city, chosen by the royal family to stay.

After the death of Sigismondo Augusto, Morando left the city as he couldn't find more working chances. He went to Lwow (3), where he met for the first time the Chancellor of the Kingdom, Jan Zamoyski, in July 1578. From this date and for twenty-five years, an ideal relationship was born between the artist and the patron. The assignment of building a whole city confirms the hypothesis of the quality of the precedent works (4).

However, we shouldn't forget that the Paduan origins of Morando influenced the Jan Zamoyski's choices. When he was young he had studied in Padova and he had been elected as the Head of the Legal Department, for being one of the principal scholars of the Classical Antiquity and one of the most relevant figures of the history of culture in Poland, representing the model of the "universal man" of the Cinquecento.
Giovanni Zamoyski had written a treatise of the History of the juridical and constitutional doctrines "*De Senatu Romano libri*", edited in Venice in 1563; in a letter to the Doge Aloisio Mocenigo reiterate his Paduan education, "*Patavium Virum me fecit!*" (5).
From Italy he had acquired some pieces of art, from some paintings of Domenico Tintoretto, to the engravings of G.B. Cavalieri and Jacopo Lauro (6).

In his library there were some civil architecture treatises; in addition to the Vitruvio in different editions, he possessed some works of Daniele Barbaro and Guglielmo Philander, and some works of the theorists, Pietro Cattaneo, Vignola, Sebastiano Serlio.
Morando therefore had the luck of working with Zamoyski, that could be considered as the "Polish Lorenzo dei Medici"(7).

In 1587 Bonaiuto Lorini sent to the Chancellor the "*De fortificazioni*" just published, asking for a judgement (8). Zamość, the made city, confirms the not common combination constituted by the founder and the architect.

Located in Roxolonia, along the direction Warsaw-Leopoli, it was chosen as headquarter of the vast latifundium of the Chancellor, "*Dominio Zamoscensis*" (*Ordynacja Zamojska*), a true independent princedom according to the Italian political theories of the Cinquecento (9) (Fig. 1).
The decision of founding a new residence and a new city had place, after the marriage with Krystyna of the princes Radzwill and his designation as the great chancellor of the Crown (1 March 1578) (10).

The city was built close to a small castle belonging to the Chancellor's family in Skokowka. The new Zamość, headquarter of the princedom, became the center of the property, and in 1589 the chancellor assigned the Feudal Estate.
The whole territory, that had 6 cities and 149 villages, can be identified as one of the most numerous existent princedoms of those years in Italy and Germany. The city became an important cultural, commercial and military presence for the territory in a short time. The construction stage started with the decree of foundation on the 10th April 1580, and continued until the disappearance of the couple Morando-Zamoyski (11).

In 1594 the Chancellor tried to obtain from Clemente VII, the university degree for the school and the transfer of the episcopal seat from Chelm to Zamość (12). The city, with an accurate geometrical principle, constitutes one of the most significant exemplifications of the diffusion of the Italian treatises, that is, of the relations of the Renaissance urban planning of the whole Europe.

Even if the city maintains some medieval characters as the entrance of the streets on the corners of the central square, it shows direct connections with the drawings of fortress-city by Pietro Cattaneo (1554) and with the drawings inside the treatise of Francesco di Giorgio Martini (1482).

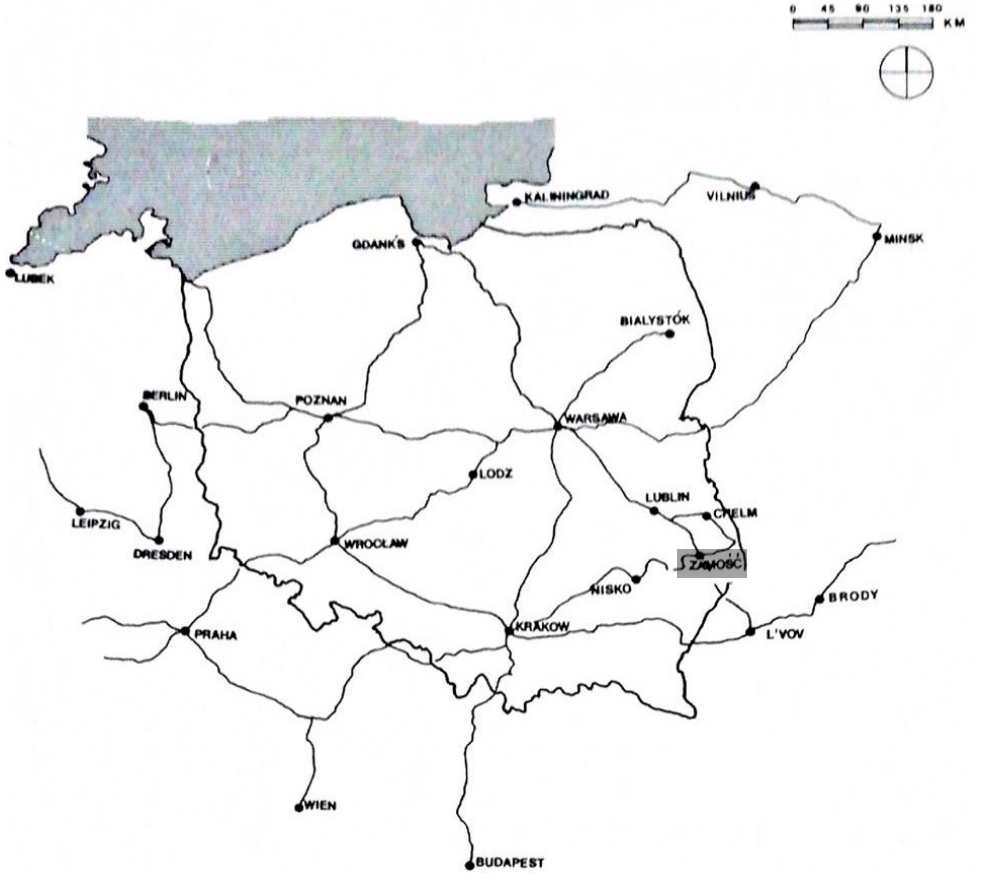

Fig. 1. Map of Poland with Zamość, situated in south-oriental area. Diagram by A., 1986.

Without considering the more or less direct connections with some Italian fortification systems, as Peschiera del Garda, Orzinuovi and with the Piazza di Vigevano, designed by Bramante (13).
All of these indications had been already filtered by Poland in some precedent urban events, Sandomierz (1539), Lubortów (1537), Glogów (1570) (14).

Teresa Zarebska holds that the city had been designed together with the fortifications, hexagonal shaped, and with the big central square, previously of the translated model of Pietro Cattaneo and of the city of *Nowe Zamki* (New Castles) in Hungary, designed by Gattinara (15).
Wojciech Kalinowski holds that the fortifications were designed on a second moment in relation to the ideal square city.
He also believes that the city had been designed from the beginning with the residence, and because of that the transversal axis didn't pass initially through the city center but it was close to the residence (16).

The founder made an effort to build at its own expense the church and the fortifications designing in addition to the plots to build, the lands destined to gardens. On the model of the royal cities, he stablished that the city should be governed by the Decree of Magdeburgo.
The Chancellor obtained the confirm of the foundation of the city with a Royal Decree on 12th June 1580 issued by Stefano Batory, after the request to the sovereign to achieve that some farmers moved for the construction of the Residence (17).

The symbol of the city reproduced San Tommaso Apostle, patron of the Zamoyski with the lance and the shield, on this one there was the emblem of the Casata (three crossed swords).

In the field of the planning program, the "measurement" and territory division works, done by Franciszek Porowski in addition to the exchanges between the different owners, were made in the first four years to be completed on 9th August 1583 (18).

To delineate the streets, the squares and the plots, they use the measurement of "*corde e pertiche*" (a "*corda"* was more or less 45.5 metres and it was divided in 10 *pertiche*). The whole system started in the city center while the position of the Residence was decided before. At the same time the territory outside the walls was measured. In the initial stage of construction, "in the suburb of Lwowskie (Leopoli); it was built the first wooden church, consecrated to the Holy Cross; in the adjacent spaces a school was arranged in 1581" (19). (Figs 2, 3).

The Chancellor asked his counselor, Maciej Topornicki, to have in Vilnius the project of the city "*mi mandi Bernardo il disegno della disposizione del terreno della cittadina*", as he had found some artisans that wanted to transfer to his properties and to tempt them he wanted to show them their plots. In this letter of 3rd October 1589 there is also the confirm of Morando as designer.

("*Niech mi melawnie rozmierzenia placu na miasteckk, posle Bernardo*") (20).
The plan of Zamość had to approach a square of 370x355 metres, with 272 plots and public buildings. On the implementing stage the project is modified with the location of the Residence.

Fig. 2. View of Zamość, from G. Braun, *Theatri praecipuarum totius mundi urbium*, Colonia 1617.

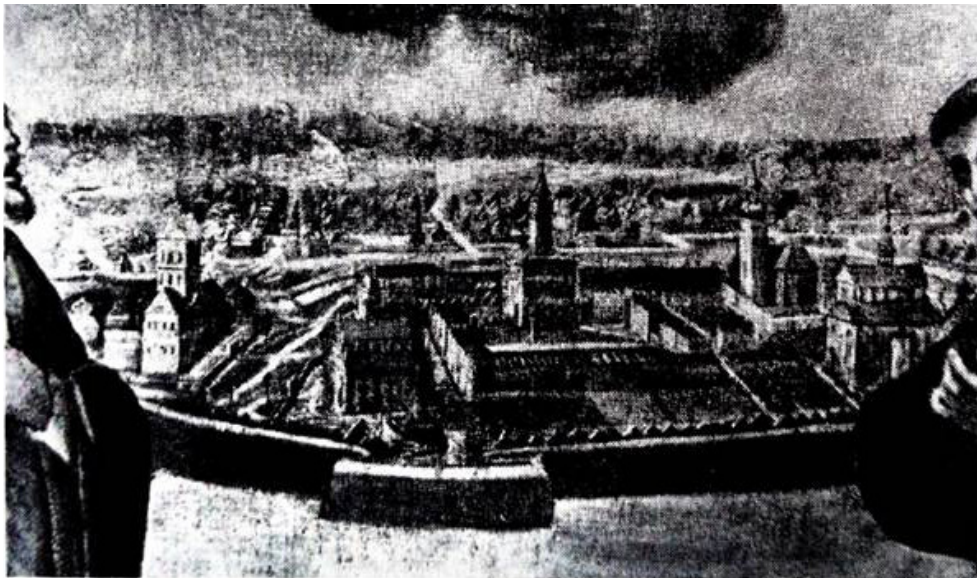

Fig. 3. View of Zamość, preserved in Bukowina Church; begining of 17th century (P.K.Z., Warsaw).

As T. Zarebska writes, the city had to be an irregular polygon delimited by the fortifications. The four vertex of this composition were destined to the public or religious buildings, as the Accademia, the Collegiata, the Church of the Francescani and the Church of the Armeni.

The city is 450 meters/10 corde long, with the Residence that is almost 600 metres, that is, 16 corde.
Between 1579 and 1585 the Residence was built with its own defensive system and the arsenal (1528-83).
From 1579 the Chancellor started all the procedures for the construction of the first houses, so they could be a reference for the others. Initially, they were all wooden houses (21) with a masonry portico. Following the ideal city principles, some plots are assigned to the artisans grouping them according to arts and crafts.

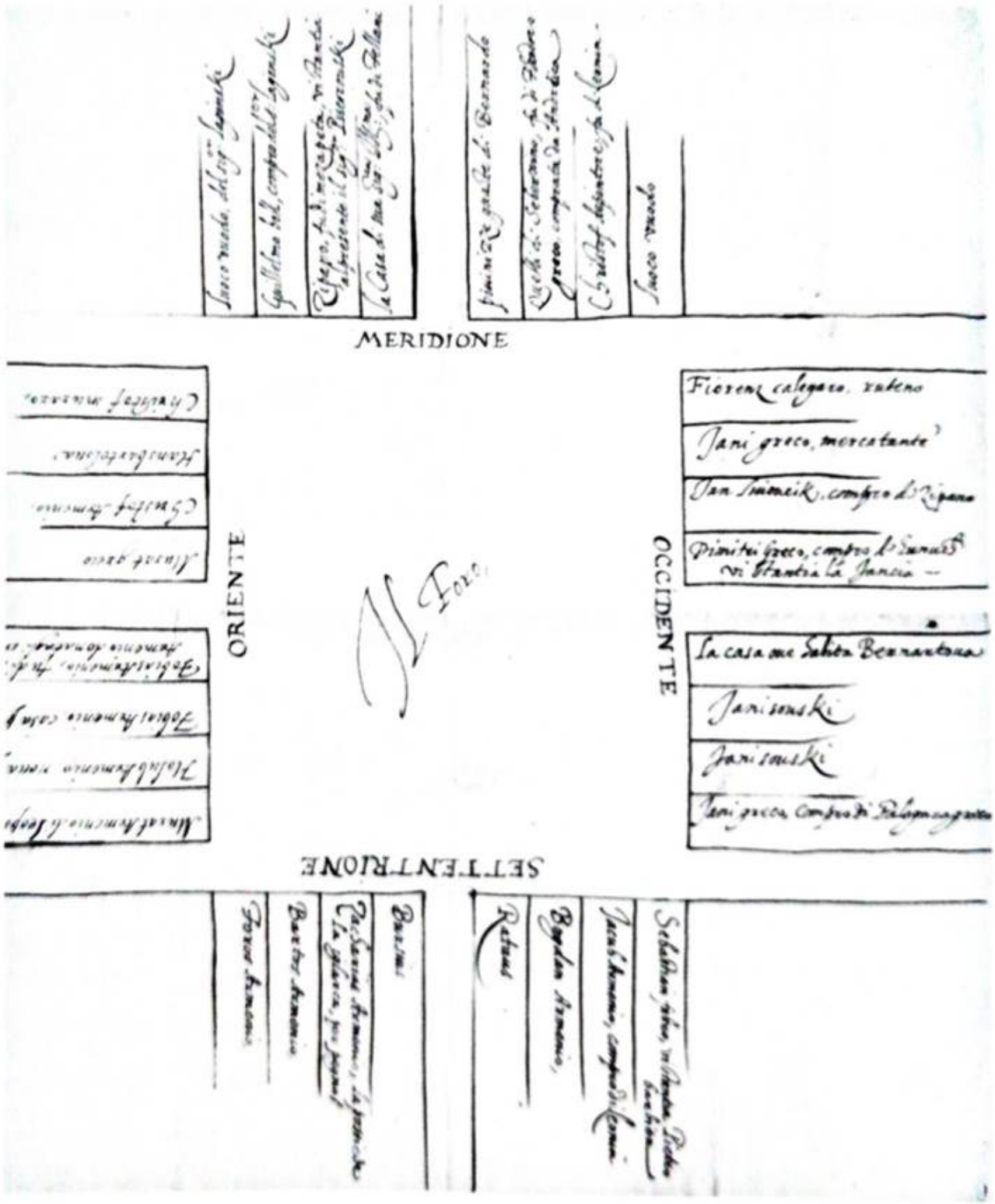

Fig. 4. Map of Zamość square, unkown author, drew on the early 17th century. The nouns of the plots'owners are readable. (Art Institute, Polish Academy of Sciences).

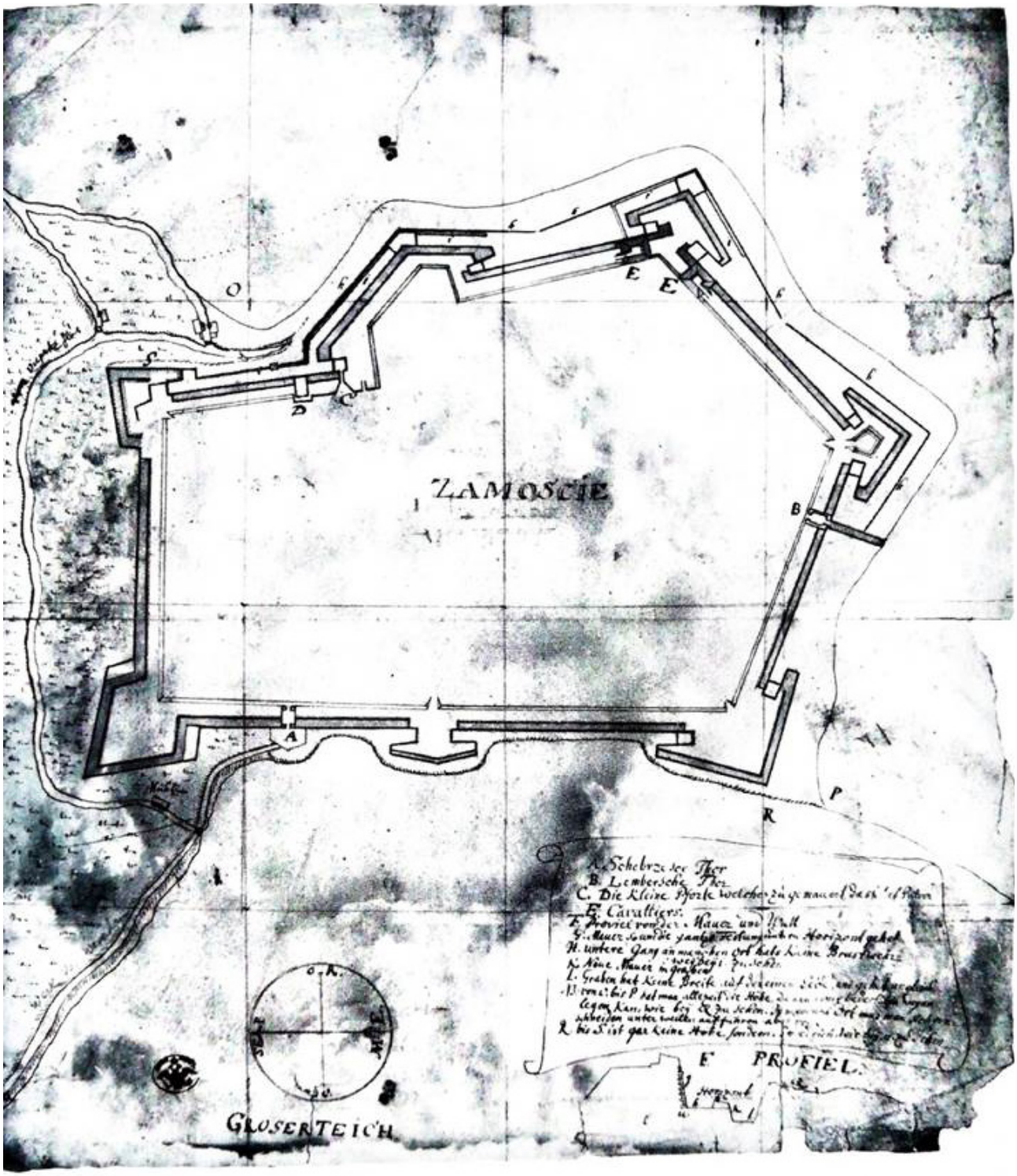

Fig. 5. Scheme of the fortress city of Zamość; in the bottom, there is a section of a bastion.

The second moment of the construction of the city could be identified when different ethnical groups from various nations took up residence in the urban community.

A privilege emanated from the Chancellor gave them the guarantee of celebrating their own religious rites; therefore they could build their own buildings for the cult, modifying the initial statute that wanted a catholic city, in favor of a

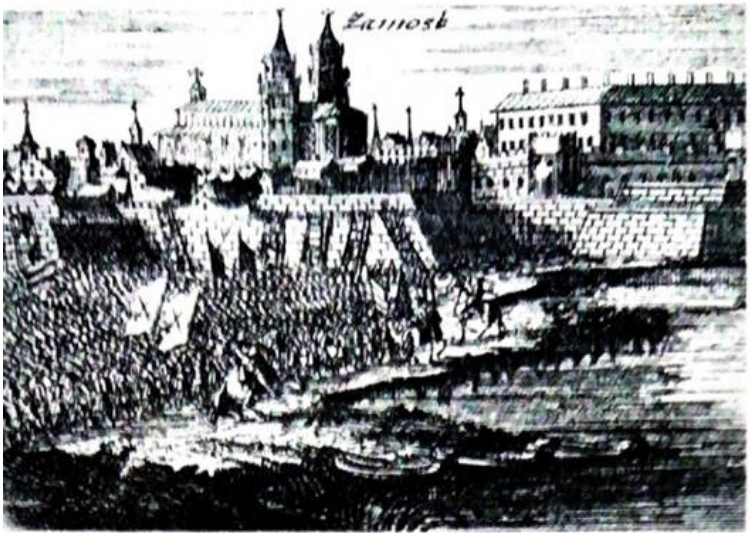

Fig. 6. View of the siege of Zamość in 1657; in this picture bastions and the rest of the architecture have an approximate representation, from S. Herbst., J. Zachwatowicz, *Twierdza Zamość*, Warszawa 1935, p. 41.

Fig. 7. View of Zamość in 1707-1709; the authentic is preserved in the Royal Library of Stockholm.

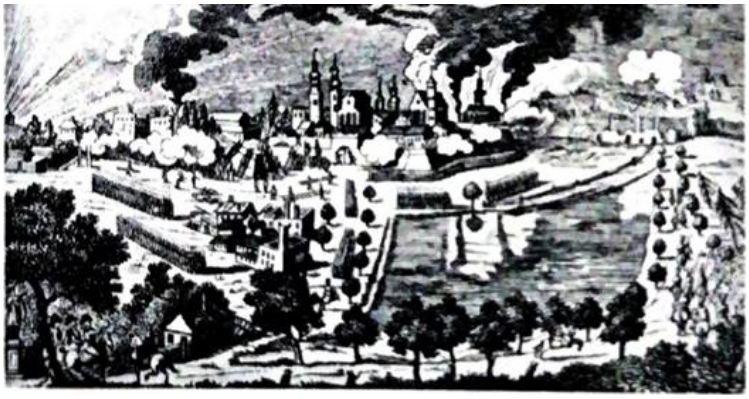

Fig. 8. View of the siege of Zamość from 20th May 1809, from S. Herbst., J. Zachwatowicz 1935.

community where more ethnical groups could live as it happened in the other cities of the oriental territory of the country.
The Armeni took up residence in 1585 (22), therefore the Sephardi Hebrew from 1588 (23), and then the Greeks in 1589 (24).
The first census in 1591, registered 217 houses in the internal space of the walls and 26 plots to build (25).

The third period includes the years from 1593 to 1605, coinciding with the Chancellor's death (Morando had already dead on 1601), were accomplished the Collegiata, the fortifications, the three Porte, and the Academy. The Library was hosted in the Chancellor's Palace (26).
The inhabitants received the order of completing their houses within the San Giovanni day on 1601 (27).

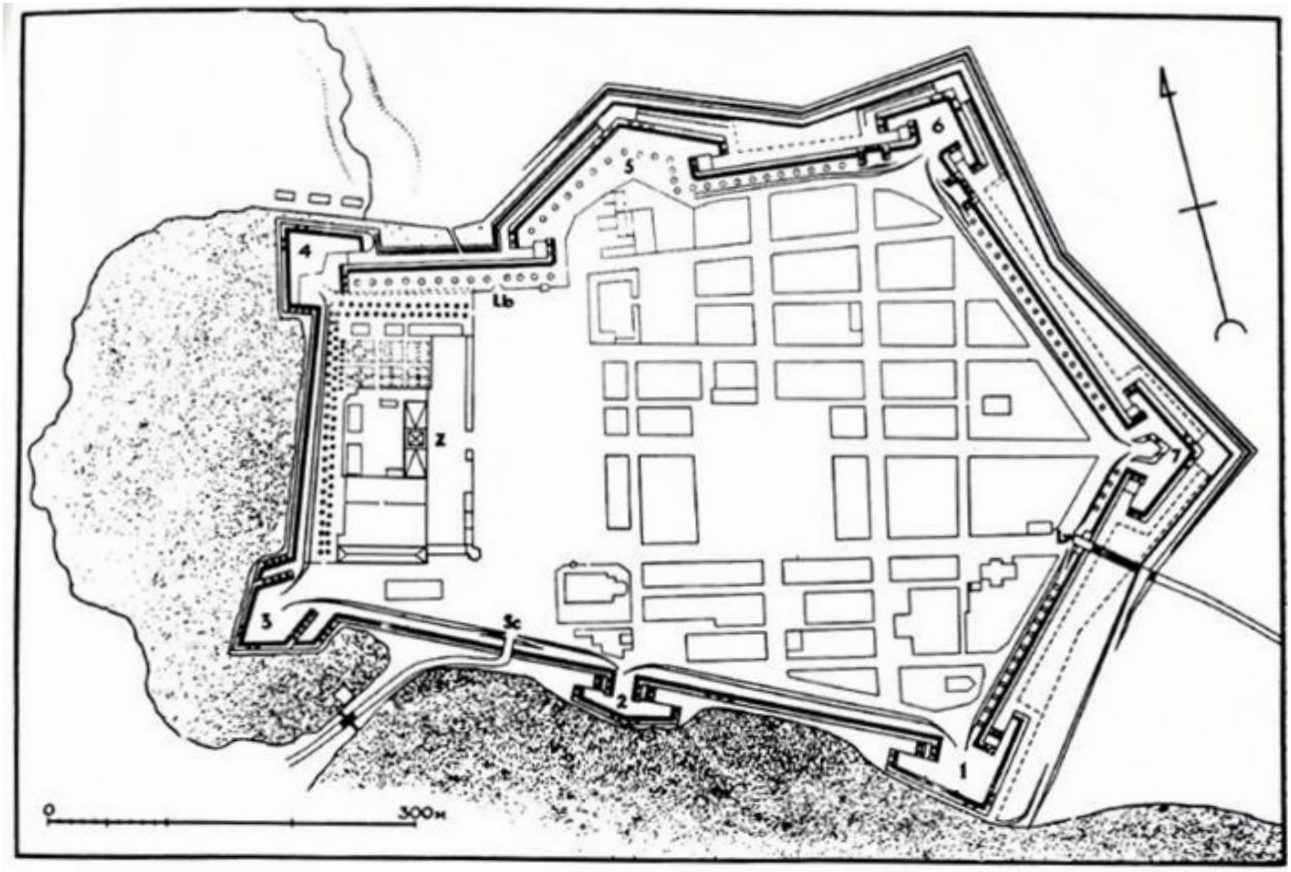

Fig. 9. Zamość plan from 1704; the authentic is preserved in the Royal Museum of Stockholm.

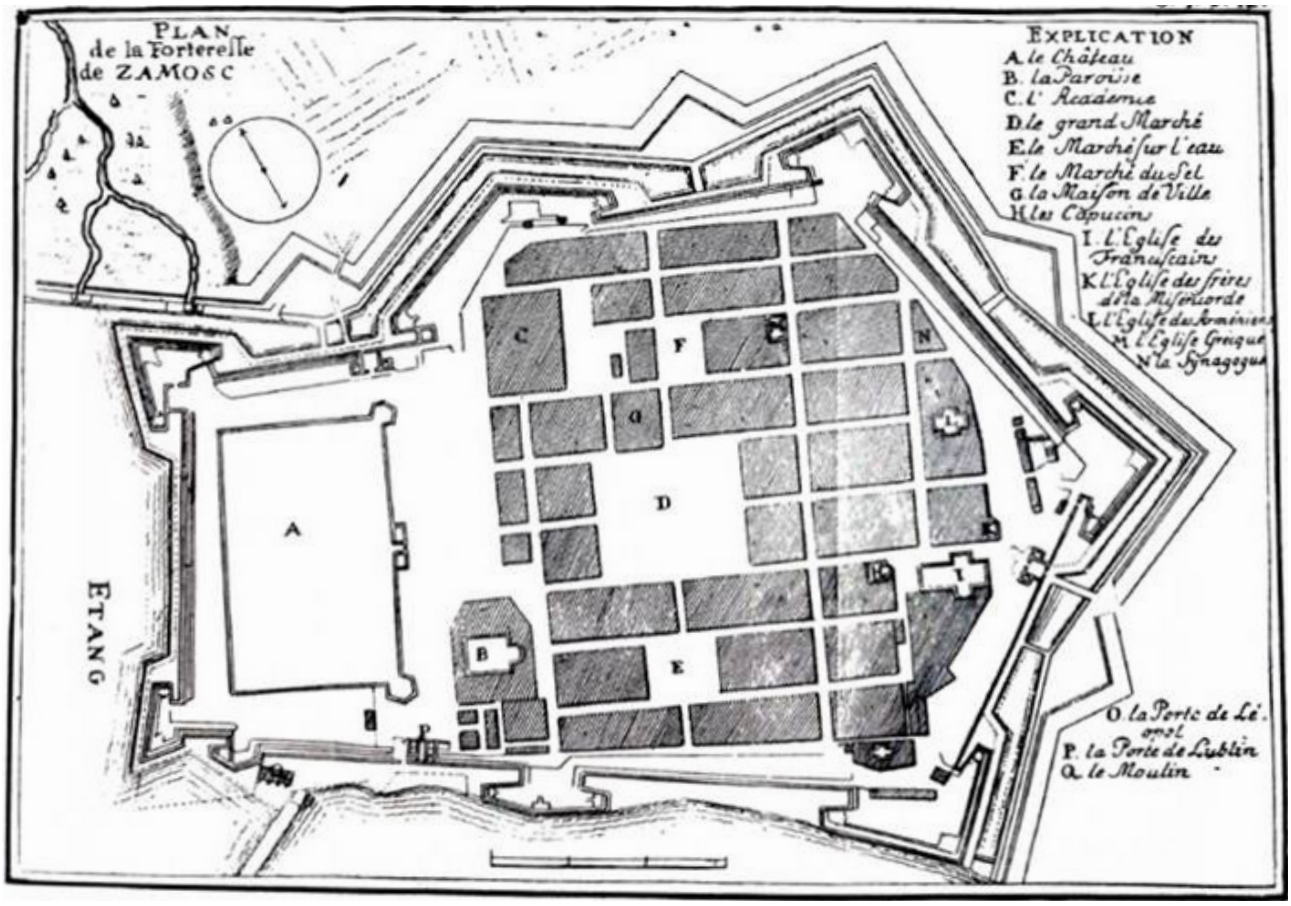

Fig. 10. Zamość, fortress plan, from 1774, Lipsia.

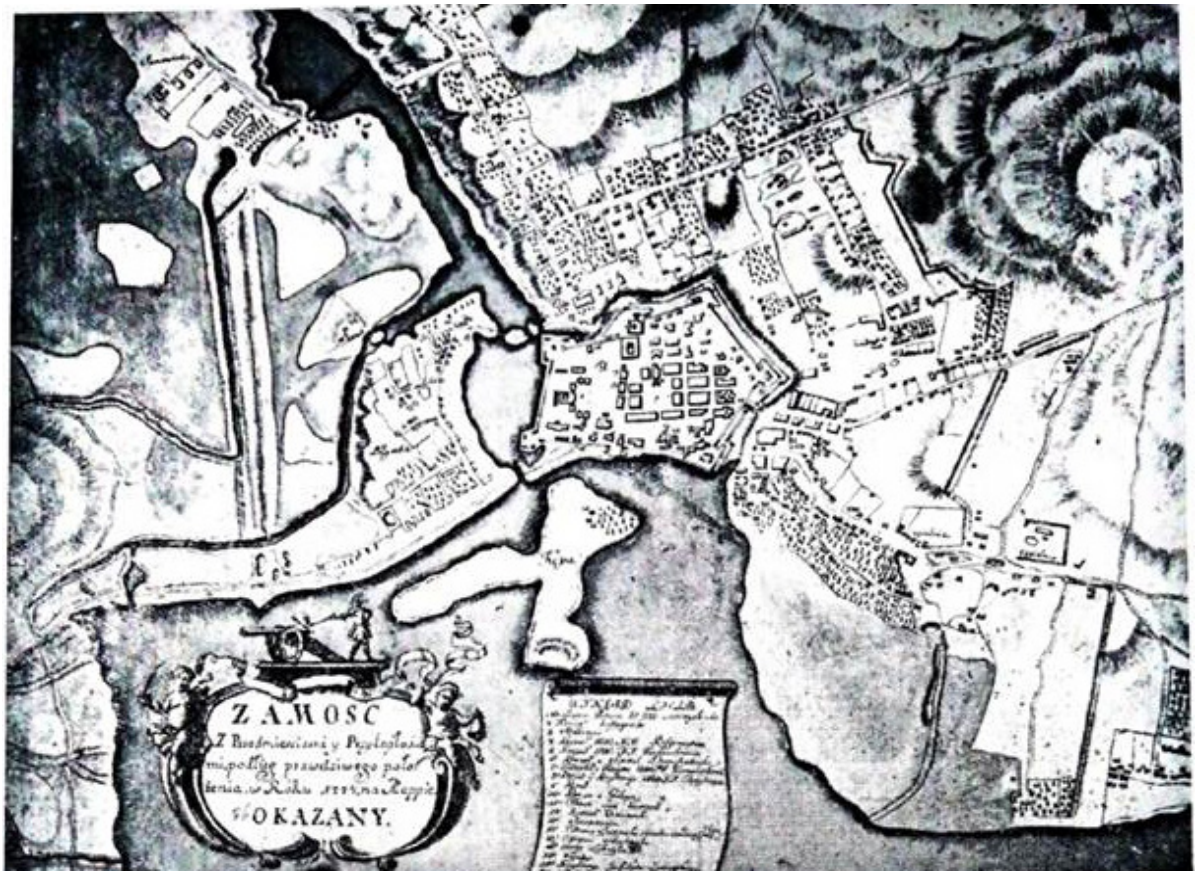

Fig. 11. Zamość city in the partially urbanised territory, 1774, from S.Herbst., J.Zachwatowicz 1935.

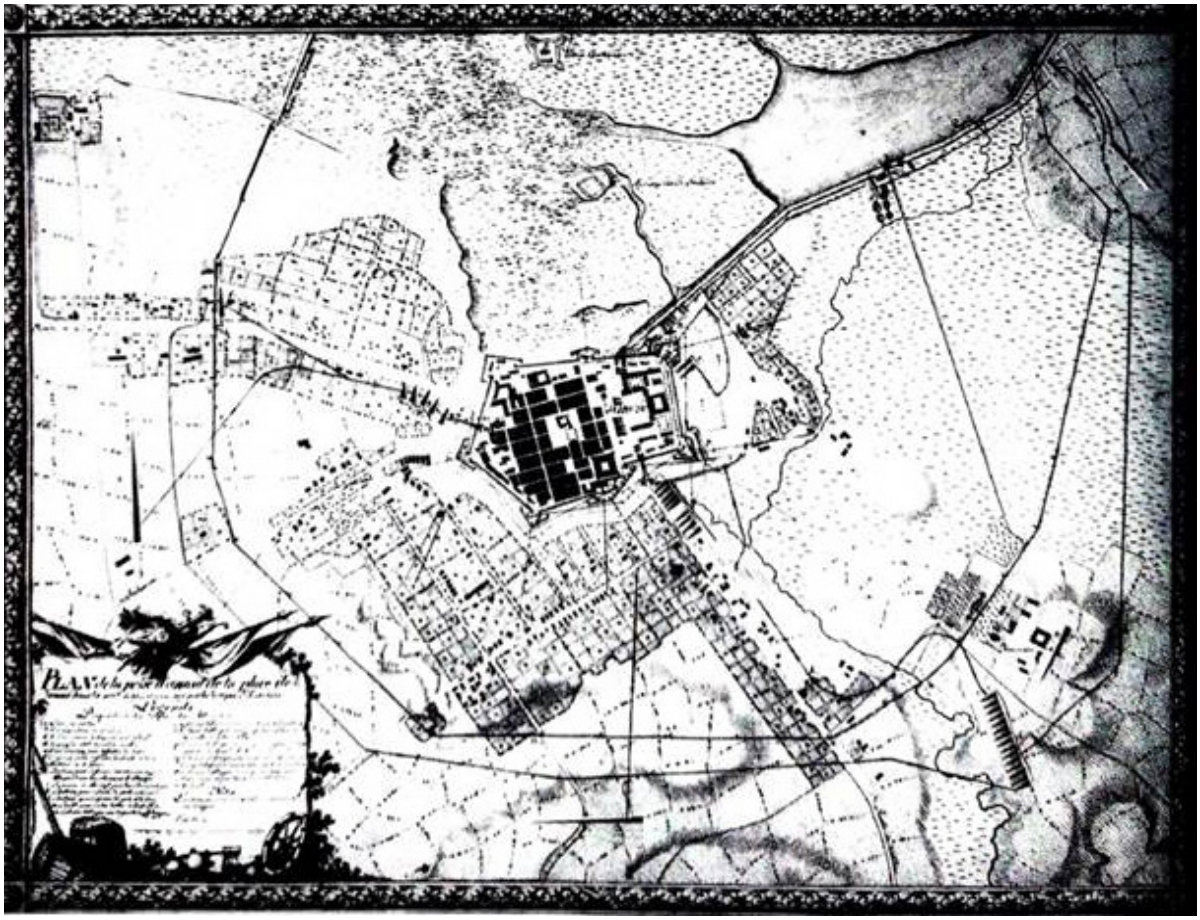

Fig. 12. Plan of Zamość and surrounding territory during the french army siege in 1809 (P.K.Z., Warsaw).

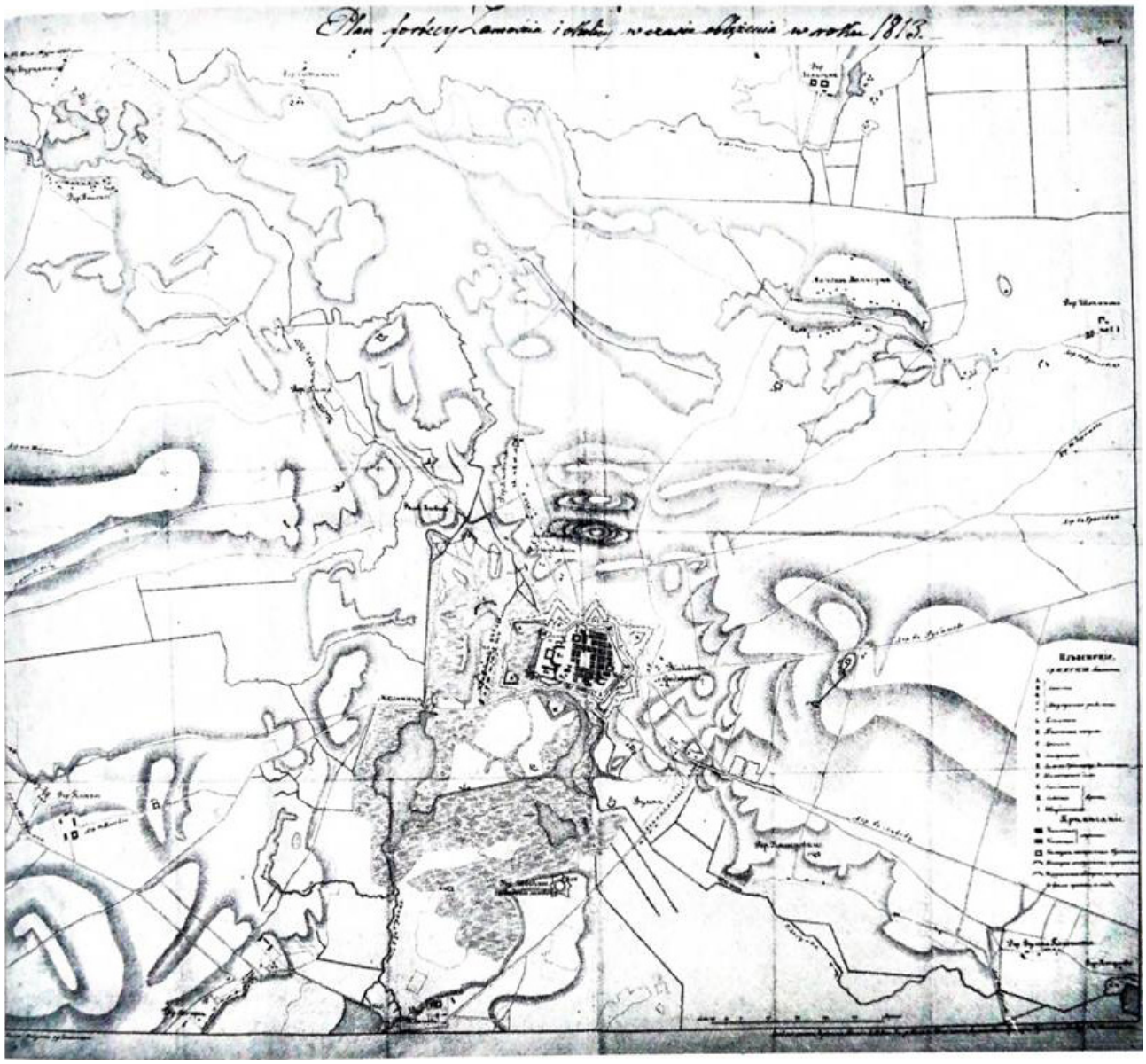

Fig. 13. Plan of the fortress city of Zamość and the sorroundings in 1813 (P.K.Z., Warsaw).

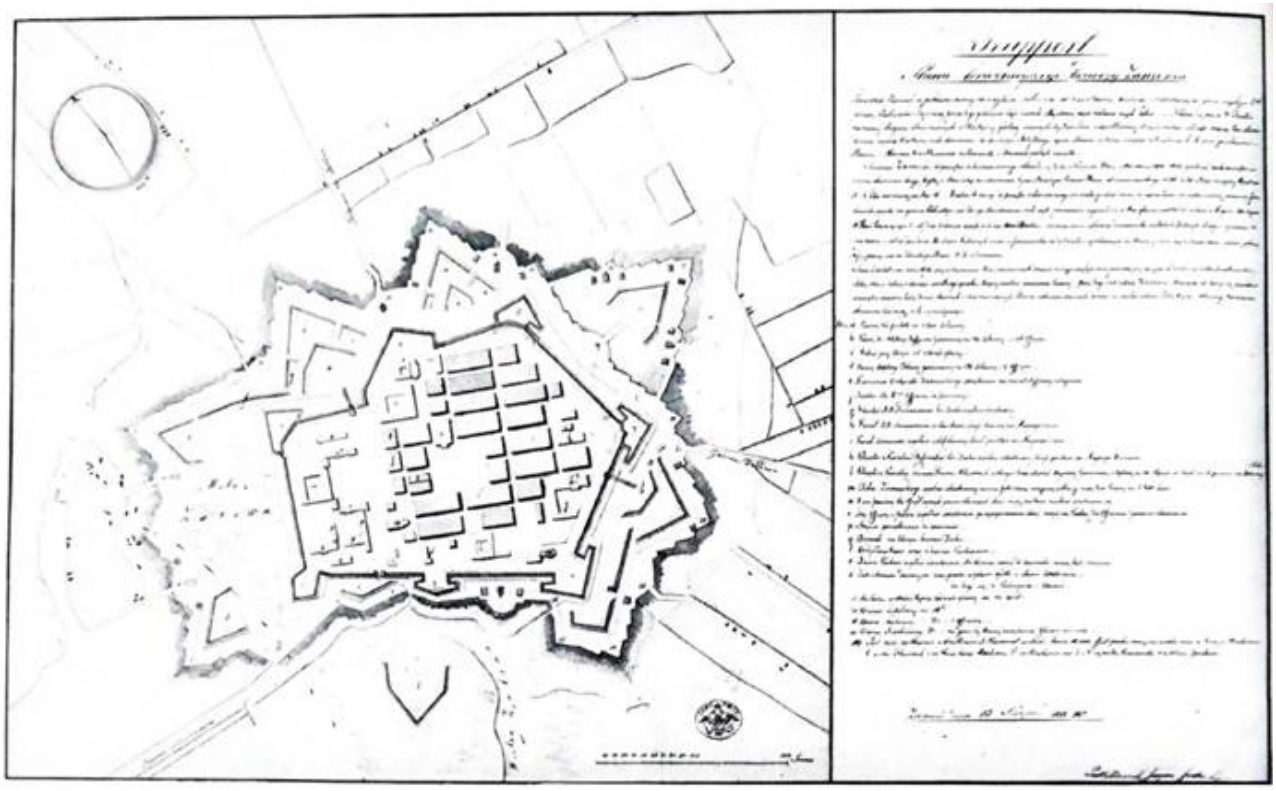

Fig. 14. Plan of the fortress city of Zamość with a report of the state of the city on that time (1818), (P.K.Z., Lublino).

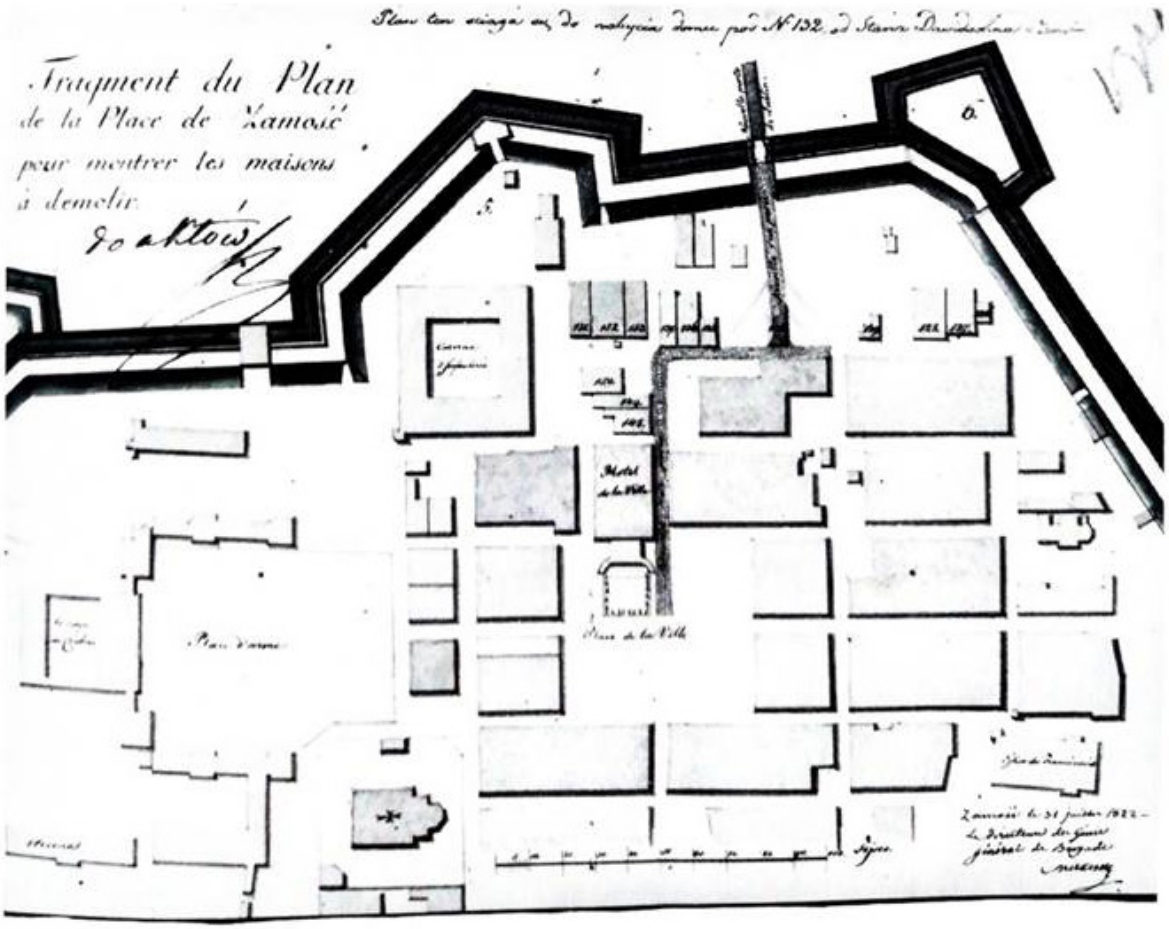

Fig. 15. Detail of the city of Zamość, with some houses to demolish and the pavement planned for the street to the door, 31 July 1822 (P.K.Z., Lublino).

The plan of the Market Square designed by an unknown Italian in 1603, contains the nouns of the owners and highlights only two plots on the corners of the meridional side still not built (28). At the same time were constructed some models of building, that Morando had designed for the Italian merchant Francesco Tellari, today at the number 23, and for his own, today at the number 25. All the parts of the city are included in this harmonic mesh, there is a correspondence between the square's dimension and the building's one (29) (Figs. 4-8).

Particularly significant is the rapport between the Church of the Collegiata and the city. The length of the temple, a *corda* of 45 metres and a half, corresponds to the measure adopted in the city (30). Because of that, the church becomes a microcity assuming the significance of "*Civitas Dei*"(31).
At the same time a first rapport of balance is given by the situation of the Church of the Collegiata, placed between the city and the Chancellor's Residence, therefore with the Academy arranged with the church symmetrically to the palace. The balance of both institutions, cultural and religious, is strictly related, also because the canons were at the same time educators of the Academy.

Zamość, capital city, symbolize the unity and the harmony of the princedom: as the prince is the State's vertex and the citizens are members of it, the Residence of the Chancellor is located in a part of the city connected through the central axis to it, a directional line that goes from orient to occident (Chancellor's Palace, Collegiata, Town Hall). The other axis is also significant, perpendicular to the first one, with a prevalent commercial destination that joins the *Rynek Wodny* (Water Square), to the *Rynek Solny* (Salt Square), passing through the *Rynek Wielki* (Market Square), central nucleus of the whole settlement, surrounded by the uniformity of the portico and by the attics (Figs. 9-12).

The organic character of the city was not limited to the planimetric planning but it extended to the third dimension. The author articulated with different heights the buildings according to their function, characterizing the difference with the architectural orders according to the codified principles of Sebastiano Serlio.
The internal spatiality is composed of accurate scenographic references with the streets projecting towards the Residence, in the choir of the Collegiata, in the tower of the Town Hall (Figs. 13-17).

The urban history of Zamość, especially in the 19th century, has seen numerous transformations, from the internal space of the initial fortification to the bordering territory.
With the first division of Poland in 1772, Zamość became part of the Austrian government, and then with the conquest of the French army on 21st May 1809, the first projects and the realization of a new wall circuit started.
In 1814 the city assumed the character of a true fortress included in the Russian territory; the annexation to the Tsarist Russia was ratified from the Congress of Vienna.
The General Mallet-Malletski, military commander of the square, built two new fortification's belt outside from the initial system.
The historical maps of this period (1822-1823-1825…) highlight this activity with the creation of a free space in the proximities of the bastions destroying numerous houses. Between 1825 and 1831was constructed outside from the bastions, the so-called *Rotonda*, a forward emplacement for the defense, underlined with a fosse (Figs. 18-21).

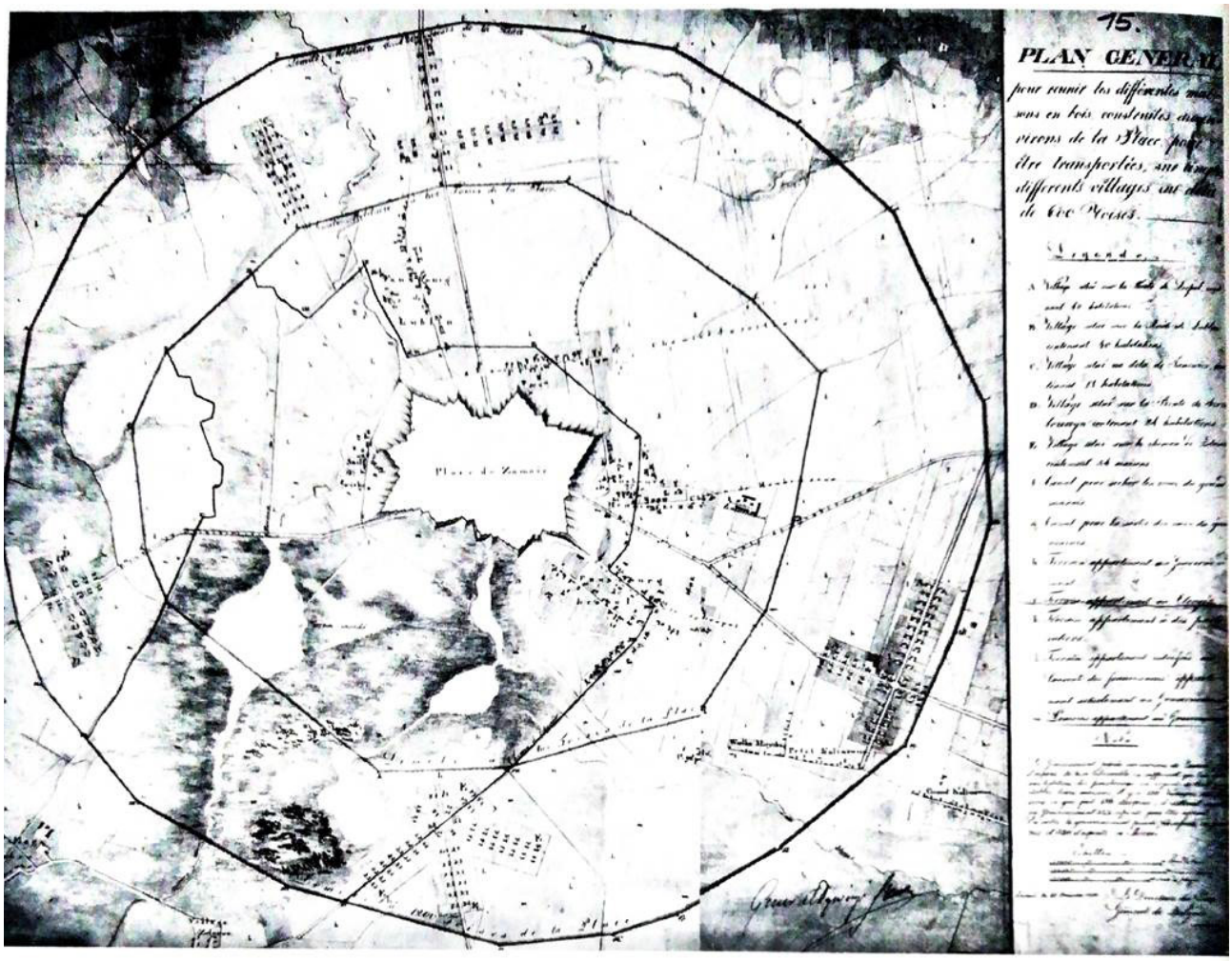

Fig. 16. General Plan of Zamość, with all the villages, fields, and spread houses in the surroundings. 25 december 1825, during Russian domination.

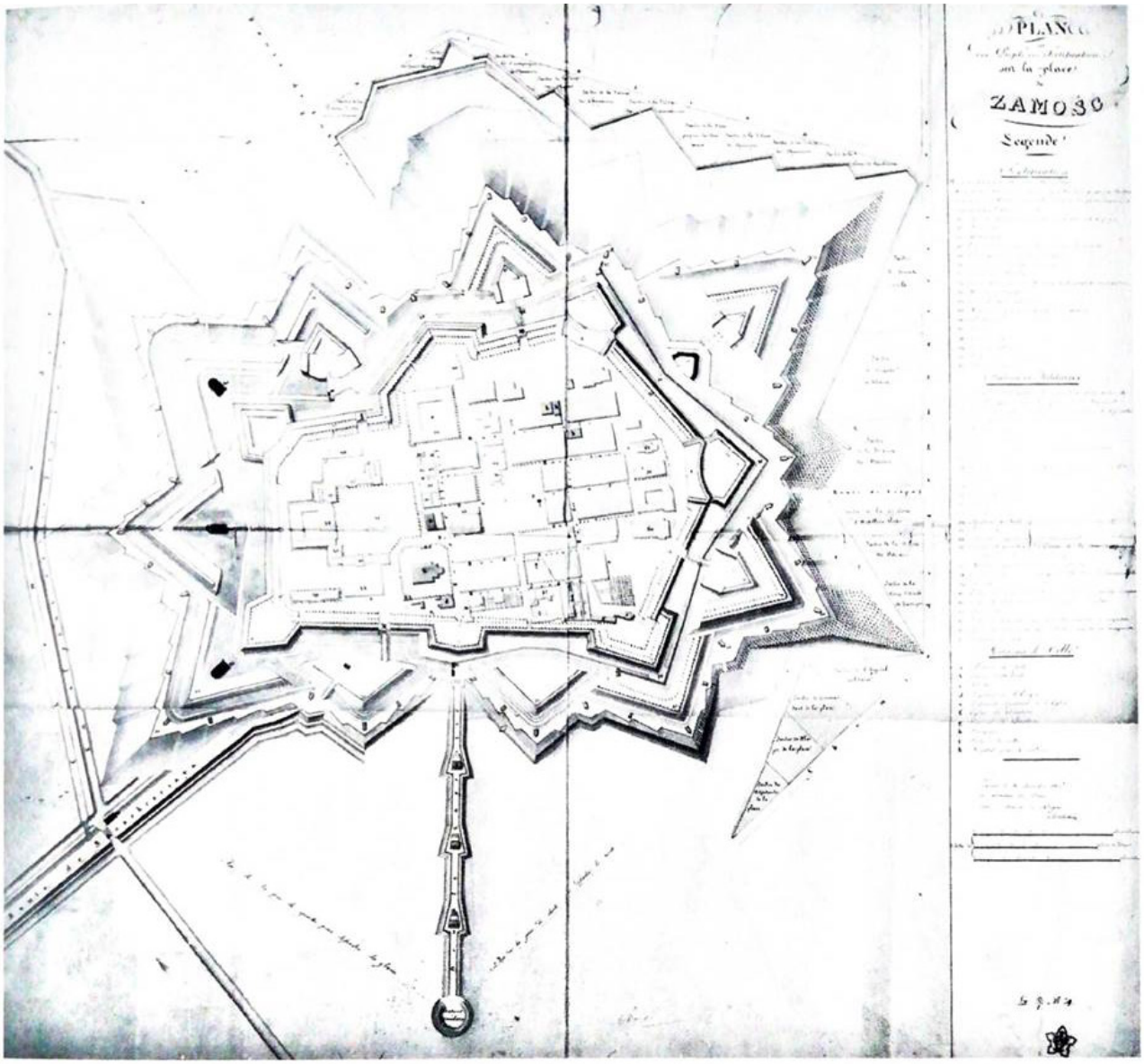

Fig. 17. Plan with the projects for the fortress of Zamość, Zamość 20 December 1825. The map highlights the fortresses as well as the military buildings of the period with the pertinence gardens, the surviving religious buildings, the hospitals and the well for the water. (P.K.Z., Lublino).

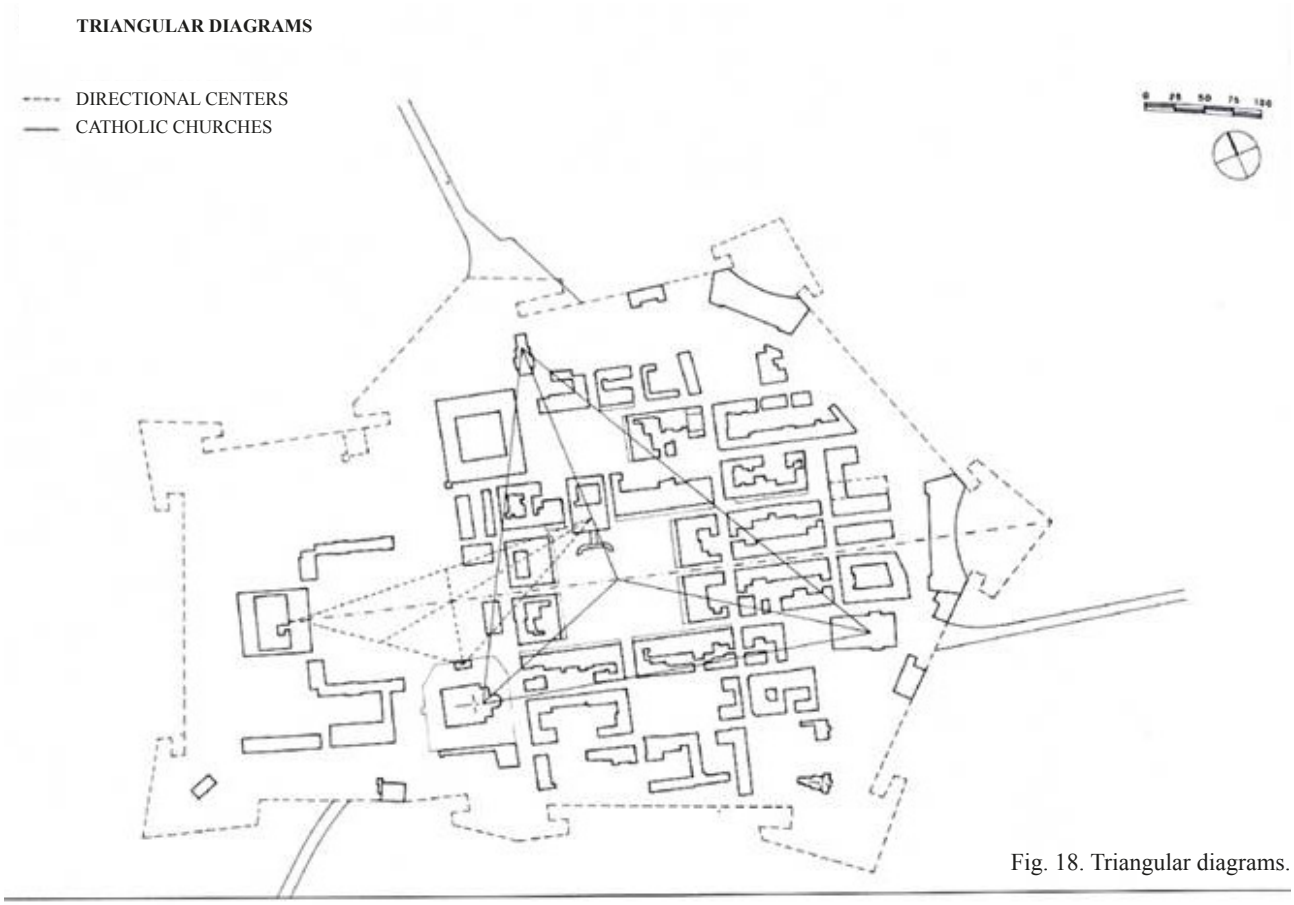

Fig. 18. Triangular diagrams.

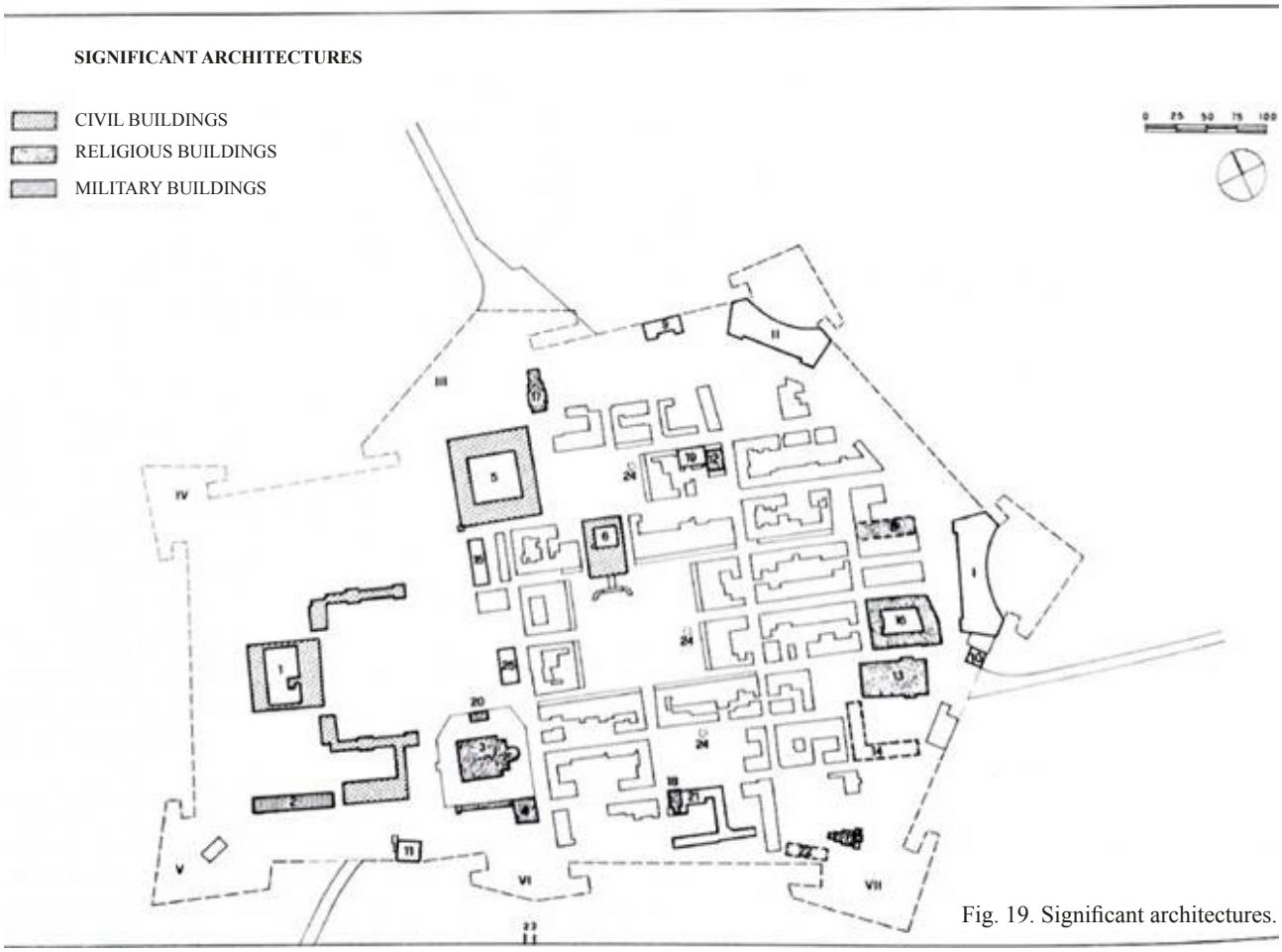

Fig. 19. Significant architectures.

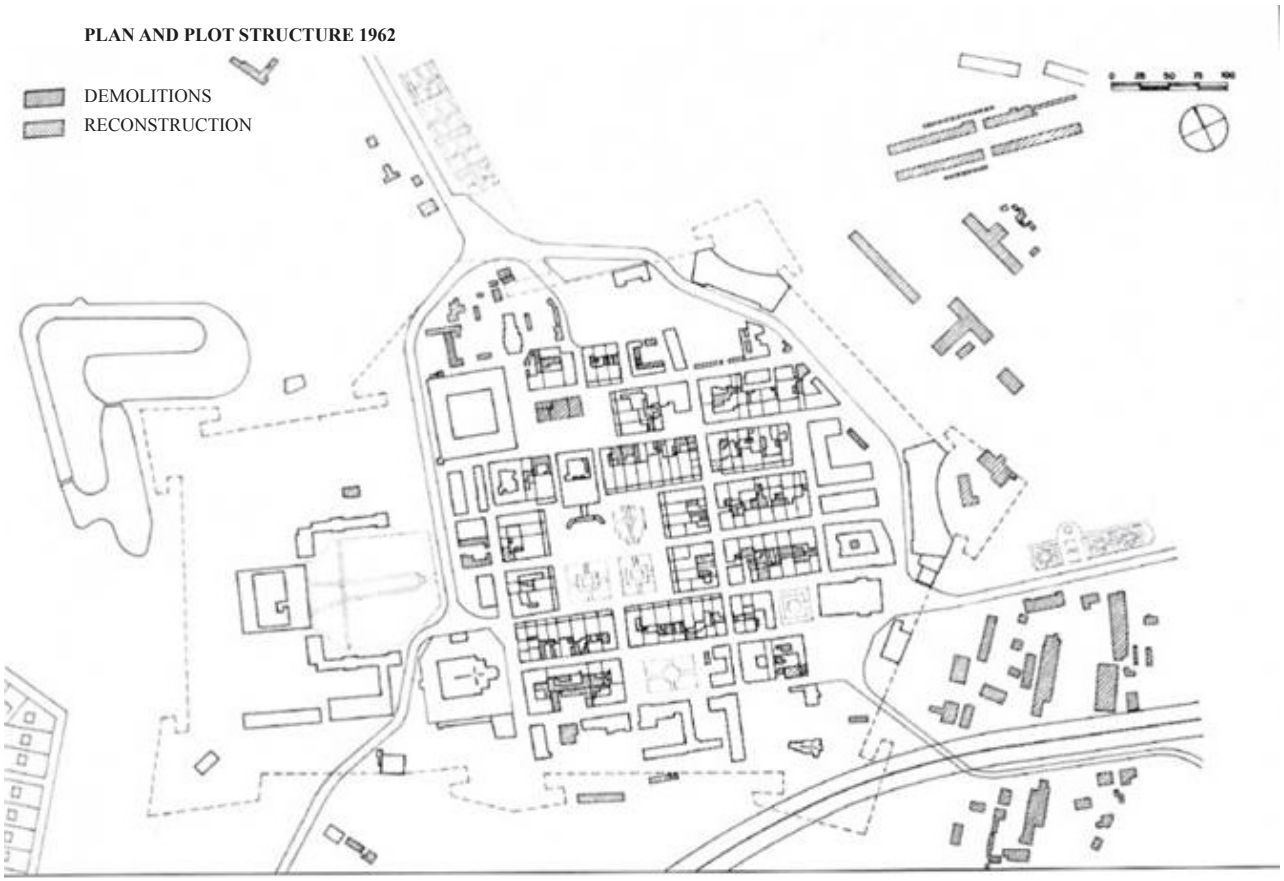

Fig. 20. Plan and plot structure 1962.

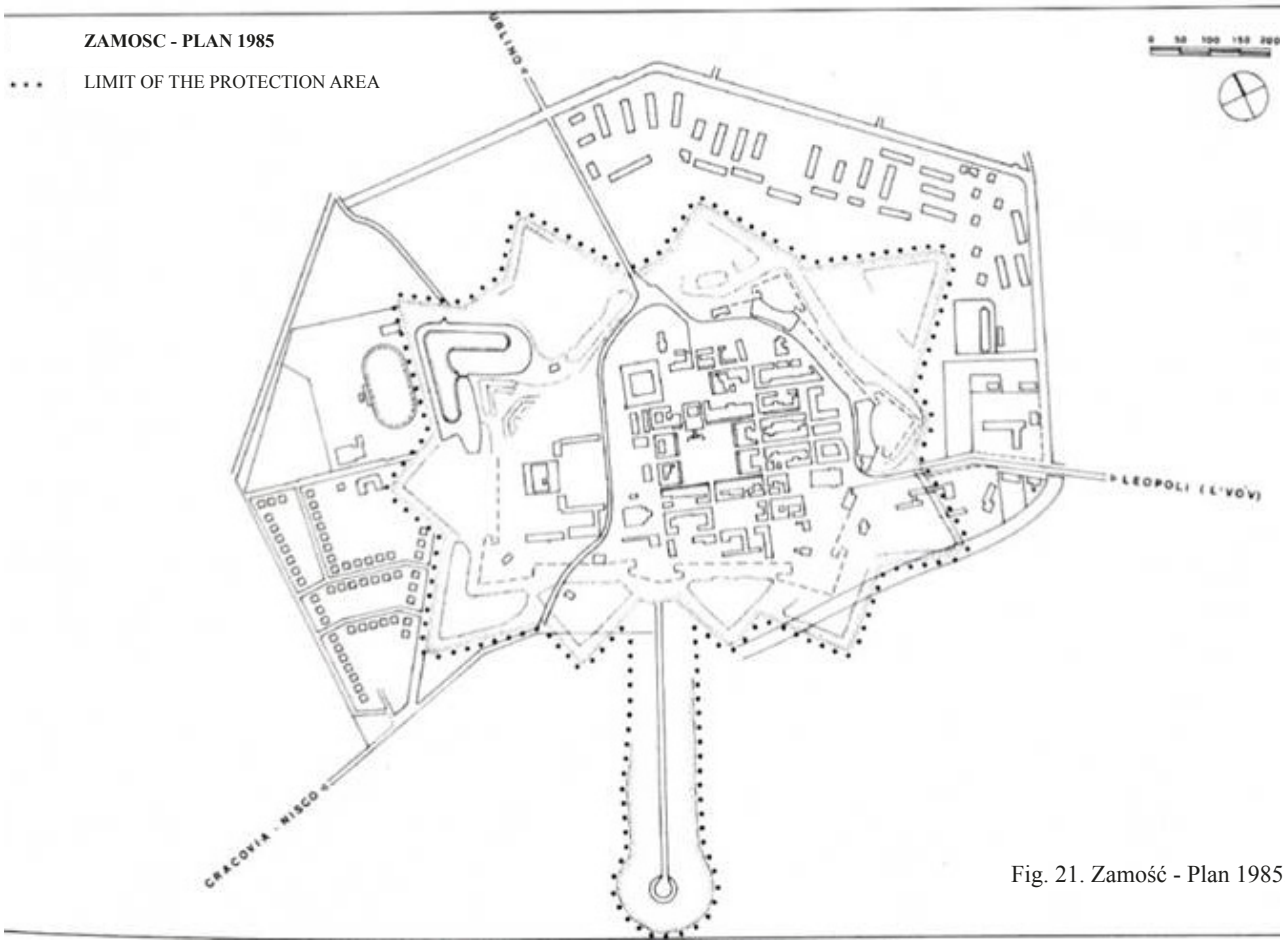

Fig. 21. Zamość - Plan 1985.

Fig. 22. Fragmented plan of Zamość and the surroundings, 1839 (P.K.Z., Lublino).

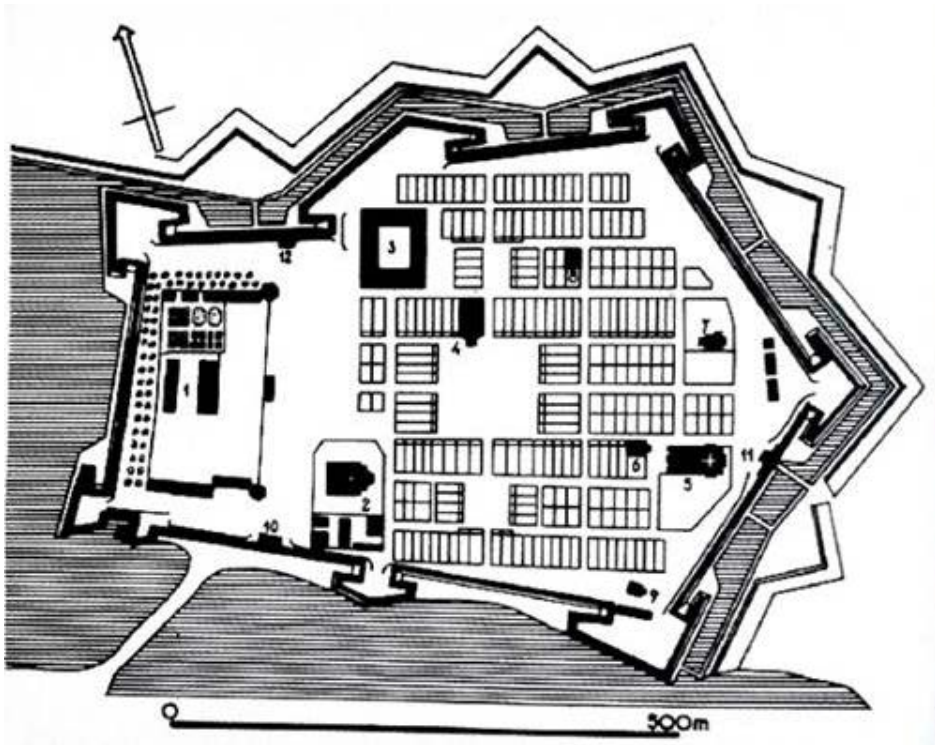

Fig. 23. Plan of the city of Zamość from W. Kalinowski, reported by Gutkind, *International History of City Development*, vol.VII, London 1964-72 (Instytut Urbanistyki i Architektury of Warsaw Unversity of Technology).

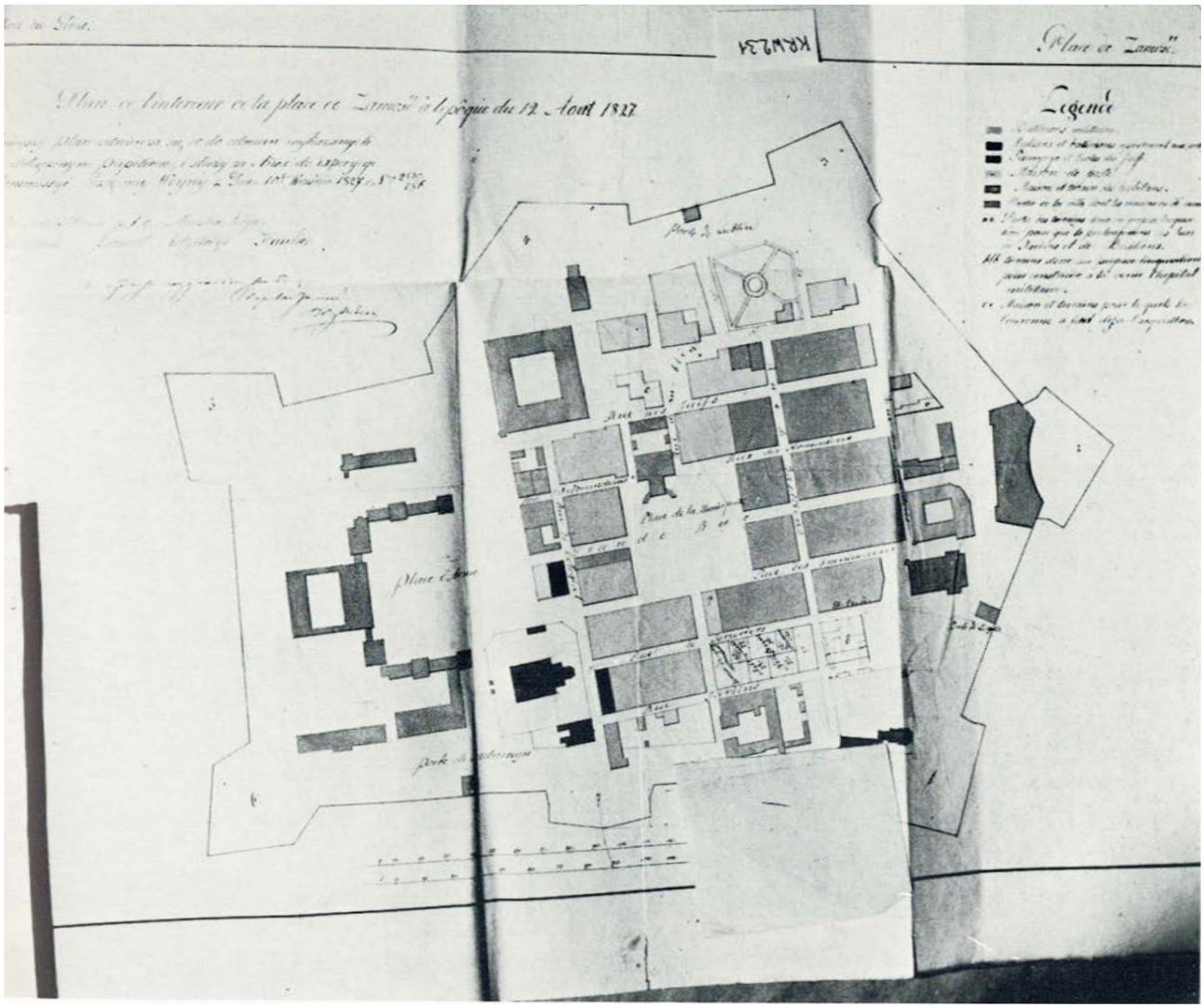

Fig. 24. Plan of the city of Zamość edited by the *Genio Militare* on 12th August 1827. It shows the situation inside the city with the distinction between military and religious buildings, schools and residences for the inhabitants. The toponymy keeps the French names.

Note: The censorship during the Communism have forbidden the reproduction of the metric scales for the State security (November 1981).

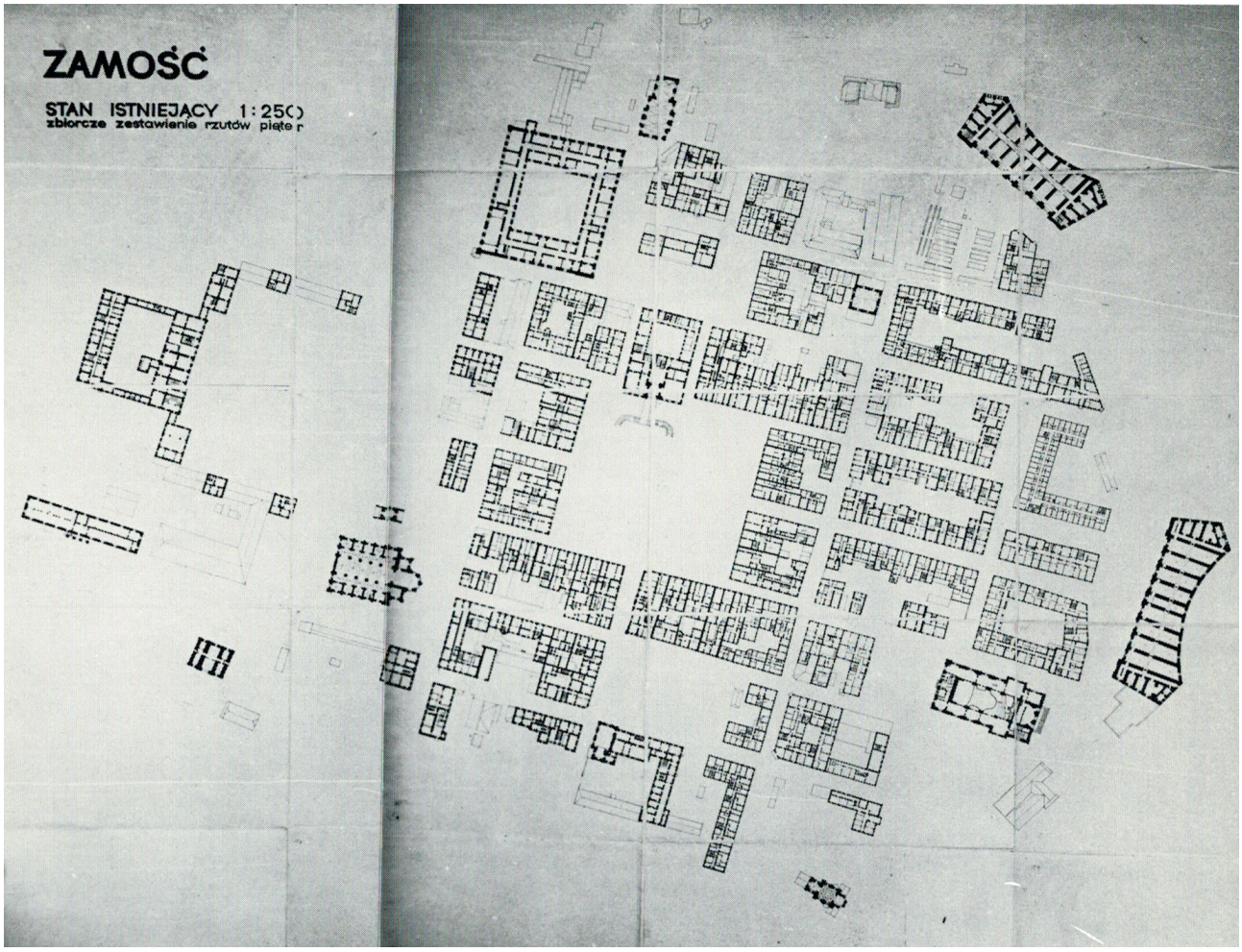

Fig. 25. Zamość, plan of the city with the survey of the ground floor, with the partition walls of the residences and of the monuments, curated by Z. Dolatowski. The state of affairs is precedent to the plan´s of 1962 implementation. (P.K.Z., Lublino).

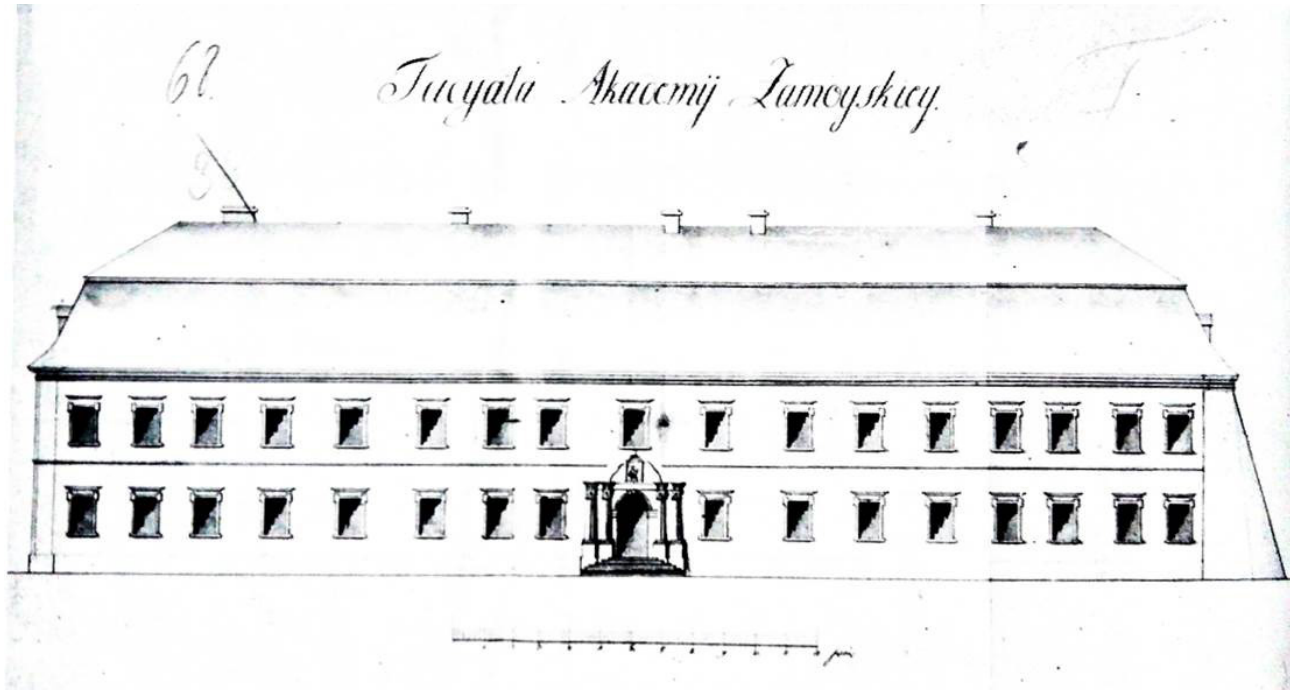

Fig. 26. Façade of the Jan Zamoyski Academy before 1810 (P.K.Z., Warsaw).

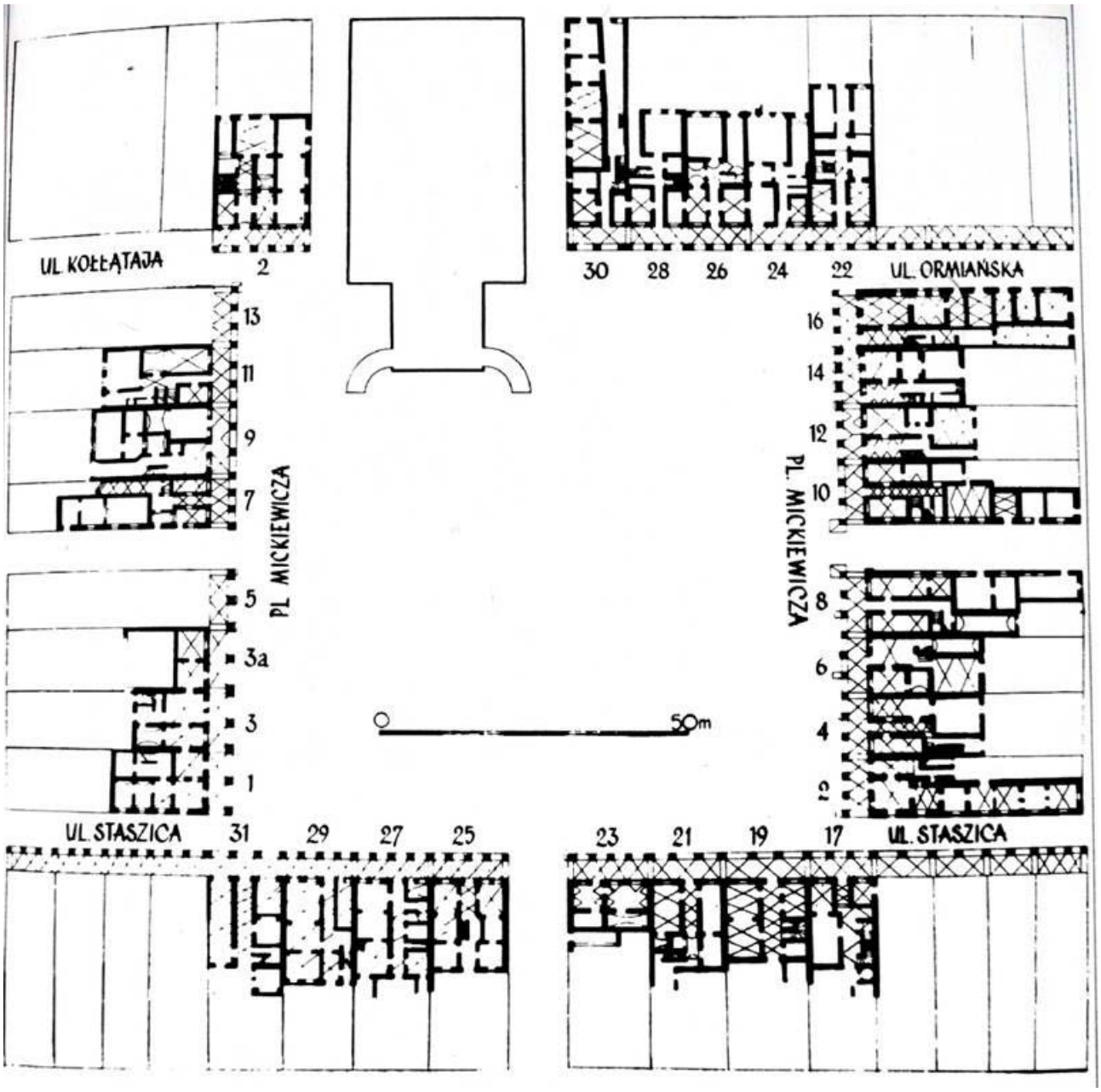

Fig. 27. The Market Square with the architectural survey of the appartments' ground floor overlooking the square. The survey was curated by Z. Dolatowski (P.K.Z. Lublino).

Fig. 28. Detail of a Zamość street during the 1930s (Art Institute, Polish Academy of Sciences).

In this first half of the 19th century the General Malletski organized the first illumination system, the sewerage system and the paving of some streets.

From 1866 the Fortress of Zamość started to lose military importance and the works for the destruction of the fortifications began. At the end of the past century with the increase of the driveability they made a kind of small "ring" in the external area of the ancient line of the fortifications; while the entry into force of the railway in 1915, it marked an opening line to the outer. In this period there is an increasing urbanization of the territory outside the city walls, with the recovery of the use of wood for some houses "*fin de siècle*". The city has 10.963 inhabitants in 1897 (Figs. 22-27).

From 1936-38 started the first works aimed to the reconstruction of the ancient Porta of Leopoli and of some attics in *Rynek Wielki*, releasing some houses from the additions of terraces and other structures added in the last years of the 19th century.
Currently Zamość makes part of those cities with a particular plan for conservation prepared by the Ministry of Culture from 1962.
This plan highlights numerous interventions of demolition of single blocks. In fact, is expected the addition or the reproposal of the internal itineraries in many typologies, or also the creation of some public spaces annexed to the single residences.

A big part of the planning of 1962 foresees the formal restitution of the seven bastions that enclosed the Morando's city. Therefore, they are working directly in the territory with introspections documented by all the previous studies. They plan to organize a "green promenade" along the ancient fortified belt.

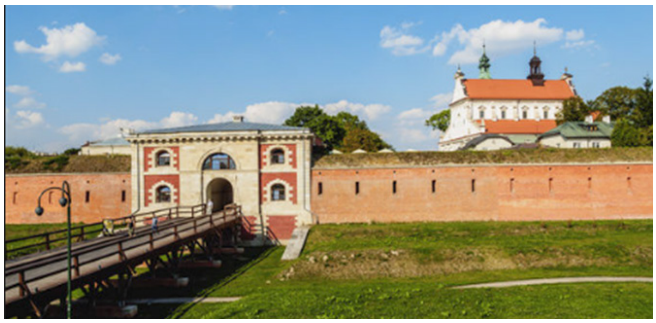

Fig. 29. Collegiate Church and Szcebrezeszyn Gate (Art Institute, Polish Academy of Sciences).

Fig. 30. Leopoli street with the Franciscan Church on the left and a part of the fortress (Art Institute, Polish Academy of Sciences).

Obviously, all these interventions reflect the traditional Polish school of Restoration employing workers specifically trained from a technical and practical point of view (National Company for the Conservation of Cultural Heritage, *Pracownie Konserwacji Zabytkow*).

The Residence of the Chancellor, built on its initial composition between 1581 and 1586, has suffered important transformations in order to modify completely its original appearance, composed partly by the current central building (32). In 1689-1690 the second floor of Link had been already added, so the addition of the lateral constructions are due to Columbani first, from 1744 to 1745, and to De Kawe and maybe J. Bem from 1747 to 1751. These additions bring life to a true honor courtyard inspired, like in many residences in Warsaw, by French models. Analyzing the painting of Bukowina is highlighted how the Residence initially was built as simple construction set up in a rectangular plan with a limpid extension of the façade, paged between two ashlars on the corners and rhythmed by a 14 rectangular windows. A jutting out cornice and a sloping roof characterized the covering. A vertical accent was given by the central tower, while the building opened towards the road with a double exterior gallery (*loggiato*). The external staircase unknots along the façade (33).

An inscription above the gate shows a written where it says that the Residence had been built by the Hetman "*per onorare il suo amore per I patrios lares*" (34). The Arsenal, located near to the Residence, built by another architect with Venetian origins, Francesco Dell'Acqua, develops in a rectangular plan in two floors, delimited by a sloping roof. The ground floor was composed by only one big space with cross vaults, supported by central pillars. Entirely renovated between 1820-1825, it keeps the compact structure with reduced openings, although in these last years some works have taken place to adapt it to a local museum (35) (Figs. 28-30).

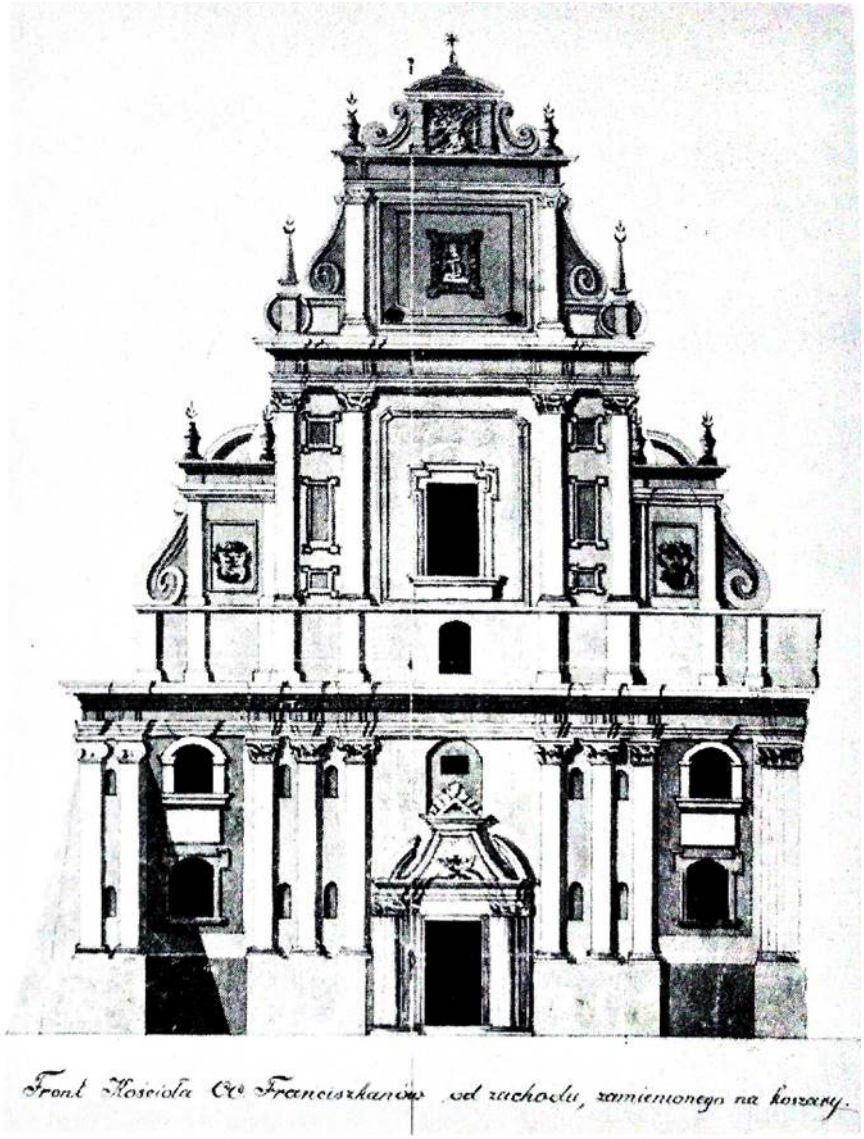

Fig. 31. Initial project for the façade of the Franciscan church. (P.K.Z., Warsaw).

The Municipal Palace (*Ratusz*) in a square "classically" included by the surrounding architecture and aligned with the other buildings has been built in various periods. The Morando's Palace didn't have the stairway on the entrance, added in the 18th century, but a continuous portico in the ground floor. Moreover, the dimensions were reduced because the tower previously organized in the limit of the construction seems to be incorporated later. In fact, both the Braun's etching and the Bukowina's painting confirm this hypothesis.
The tower is a little bit "oversized" as De Angelis d'Ossat has currently determined, but it keeps the harmony with the Venetian tradition, and it is enriched by paired columns that cover both of the floors (36) (Figs. 31, 32).

Started in 1600, only between 1640 and 1650 the portico was arranged. In 1750 the guardhouse is set on the ground floor with the stairway. In the middle of the 18th century the tower was completed with the last levels. Finally in 1830 the two low constructions were built in the background and used as a prison.
In the field of the realization of the restoration plan of the historical city, between 1964 and 1966 the guardhouse was demolished with the "renovation" of the stairway.

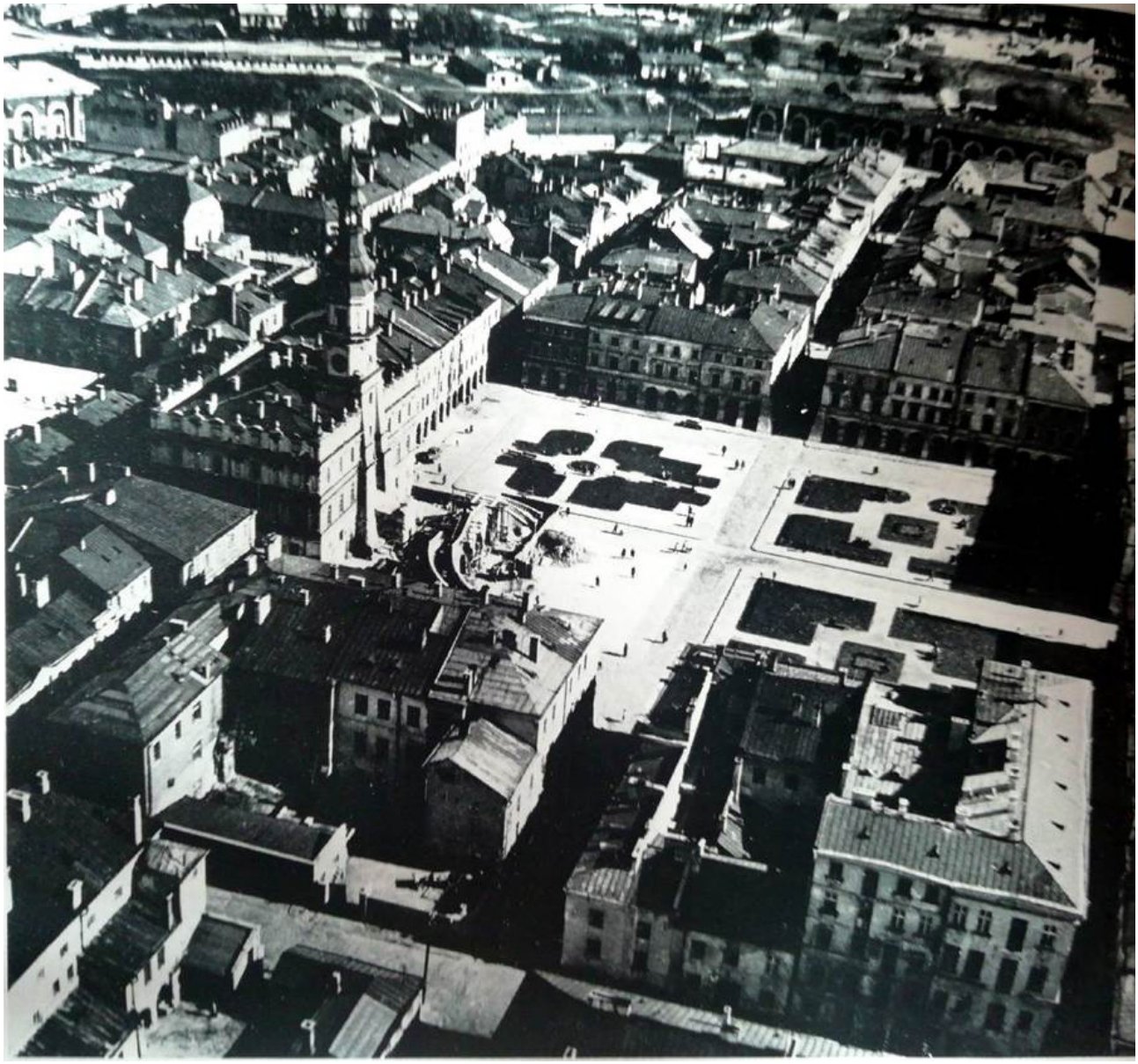

Fig. 32. Aerial view of the city center; the image shows the square during the first working implementing stage of the Planning of 1962, while the works for the demolition of the guardhouse ("*corpo di guardia*") were taking place in the City Hall, and before the reconstruction of the façade's finishes. (Documental Center of Historic Monuments).

Fig. 33. Market Square with the City Hall, before and after the restoration interventions. Photo by C.B., November 1981 and 2015.

Fig. 34. Salt Square, before the restoration interventions (November 1981) and after a new treatment of surfaces. Photo by C.B., November 1981 and December 2015.

Fig. 35. Leopoli Gate (Lwów). Photo by C.B., November 1981 and 2015.

Fig. 36. The old Lublin Gate. Photo by C.B., November 1981 and 2015.

Fig. 37. Works in progress on the perimeter of the bastion of the city. Photo by C.B., July 1983.

The Church of the Collegiata, dedicated to the Annunciation and to San Tommaso, built between 1592 and 1600 (foundation act on 5th July 1600), stress a deeply altered façade by the recent interventions. The basilica inside, with three naves, preserves the Renaissance composition with the lateral chapels. The central nave is delimited at the top by a richly decorated vault, while the presbyter is articulated in a polygonal plan with angular windows. The sepulcher of the Hetman is preserved in the inside with a simple slab on the pave "*hic est Joannes Zamoyski*". The background area of the Collegiata, next to the Water Square, shows a free space that is geared towards the Episcope. Not all was strictly designed, but it was expected an development in some sectors with a certain elasticity on the organization of the city.

The Accademy according to the idea of the founder was destined to the young Catholics and it should be tied to the knights' class (37). The decision of founding the Academy was accepted by Clemente VIII on 29th October 1594, as a sign of present the emblem of the building is composed of two shields, one for the Aldobrandini and the other for the Zamoyski. Initially the Morando's building had two perpendicular wings and a corner tower (38), so it assumed the compact shape with the central inner courtyard, after the reconstruction following the fire of 1633, between 1639 and 1648 by Jan Jaroszewicz.
The sloping roof was introduced with the intervention in 1752-65 together with some late Baroque elements. The institution was closed in 1784, and from 1811 the spaces turned into barracks. In 1825 the portico in the courtyard was abolished. Today the building of the Academy is the headquarter of some citizen schools.

The Church of San Francesco located in the eastern limit of the city and close to the Porta of Leopoli, was built from 1637. The church and the monastery were designed by Jarosewicz; from 1655 the internal decorative topic was

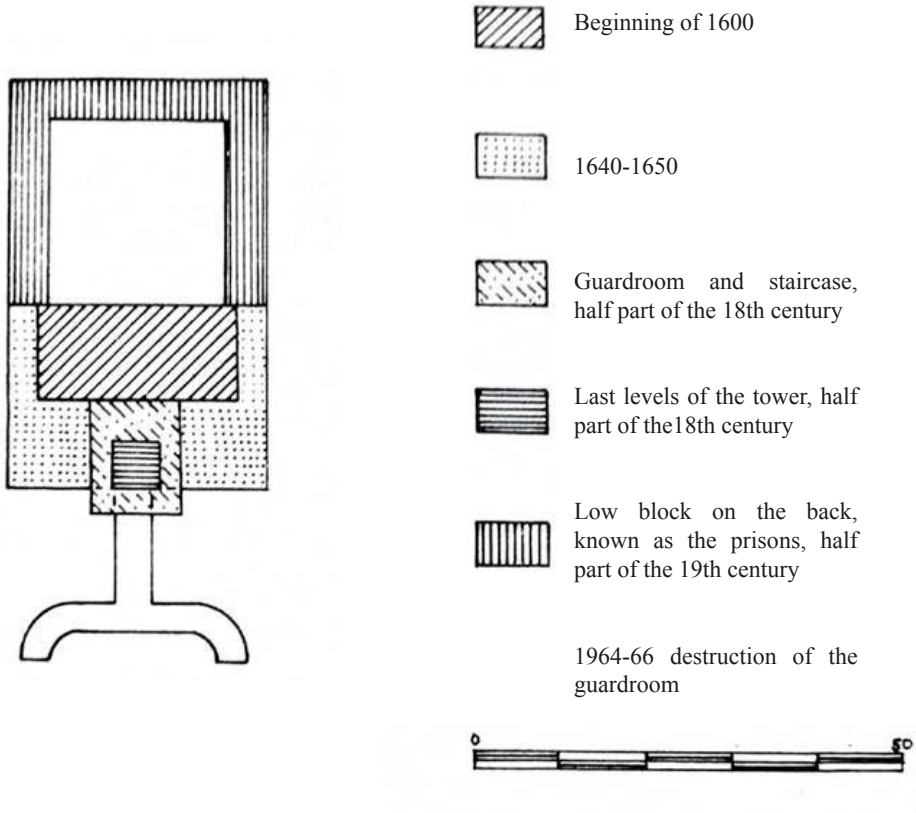

Fig. 38. Synthesis of the architecture stratification in the City Hall of Zamość, from 1600 to current date by C.B. 1985.

An example of processuality and transformations of the architectural organism.

developed by Link. The church was composed of three naves, and it has bigger dimensions than the Collegiata (39). The façade shows a first order rhythmed by half pilasters laying on high pedestals with a pronounced cornice. The accent on the verticals of the upper orders continued the tradition conception of the Polish "*Attyka*". Around 1720 the bell tower was built, destroyed then in 1826. The monastery was abandoned by the Franciscan in 1784 and it was occupied by the Sisters of Mercy. In 1817 the church turned into a military storehouse and in the same year the monastery was destroyed. In 1887 the top of the façade of the church was demolished.

Two of the citizen gates were built by Morando in the end of the 16th century, reproducing the Tuscan order (40) looking alike the models of Serlio. The lower part shows half columns, while the top is delimited by a triangular pediment. The ancient Gate of Lublino, the main gate of connection with the town, is dedicated to the personification of Poland entirely renovated in the last century and again in the last years, was closed in 1588 on the orders of the chancellor to remind the triumphal entrance with the archduke Massimiliano d'Austria, taken captive in Byczyna. The Eastern Gate, of Leopoli, shows a San Tommaso, protector of the city, in the tympanum close to a risen Christ. Finally, the Gate of Szczebrzeszyn, meridional, direction to Skokowka, is dedicated to the lineage of the Zamoyski (Figs. 33-38).

The houses show a quadrangular ground plan, with a regular portico towards the outside, and two levels delimited by an attic.
The decree emanated by the Chancellor in 1591, where they obligate to maintain the typological uniformity, has been fully observed (41).
The width and the depth of the plots differ to the position (42). The plots toward the market square have a width from 9 to 13.5 metres, while the depth varies from 28 to 36 metres, that reduces into 28 in the other squares and into 20 elsewhere.

Morando had designed two types of residence: the first one with two adjacent spaces without hallways, the second one with rooms separated by a corridor. The articulation of the façades highlights a simple disposition with horizontal and vertical divisions with friezes and shelves. The presence of "*Attyka*" that delimited the numerous façades, is one of the most recurrent topics of the Polish architecture in the 16th century (43).

Analyzing Zamość across some geometric schemes and spatial significances, it is possible to deduce the sign of the main axis.
It is obvious that we are in the field of an exemplification of the ideal geometry transferred in an urban composition. The main axis, center line of the city that traverses from orient to occident, has in its nodal center the fulcrum of the whole constituent scheme. Moreover, the axis organizes the intersections between the city bastion line, pentagonal, and the specific one for the single residence (see schemes of Teresa Zarebska), in addition to being the axis that connects the barycenter of the triangular schemes.

In the occidental sector, the Residence, the Town Hall and the bell tower of the Collegiata are geometrically connected through the expressed barycenter. But the deep geometrical meaning of the city translates in the intense catholicity of the founder and the architect. Once again, the key to reading comes with the binomial Zamoyski-Morando.
The center of the square, Sun Theater, coincides not by chance with the intersection point between the bisector of the angles generated by the altars of the three catholic churches, the Collegiata, the Church of San Francesco and the Church of Santa Caterina.

In the oriental sector, another ideal triangulation can be found, having as vertex the temples of different ethnical groups once residents, the Greek-Orthodox Church, the Church of the Armeni, today destroyed and the Synagogue, today civic library.

Between these axis, the one of the Academy shows the weak points of the planning, because from the beginning the use destinations suffered different modifications.
But returning to an analysis of the "square" of the Piazza, it is possible to see that it is strictly related to the design of the single block, understood as a simple compositional unit.
So it is possible to express conceptually the single block as one of the joints for the realization of Zamość, in addition to the similarities between the Market Square. The courtyard of the Academy understood as an internal square, and the courtyard of the Residence. All of them rotate around a unique central engine, organized in the intersection between the directional axis and the axis of the Academy.

Notes

I dedicate this work to Italo Carlo Angle that encouraged me to face it. I would like to thank all the people that helped me on this research: The Istituto dell´Arte dell´Accademia Polacca delle Scienze, the Politecnico of Warsaw, the National Enterprise for Conservation of Cultural Heritage, the Documentary Center of Historical Monuments of Warsaw, the Biblioteca e Centro di Studi dell´Accademia di Polonia in Roma, the Bibliotheca Hertziana. I also thank the Ministero degli Affari Esteri italiano, the Consiglio Nazionale delle Ricerche e l´Istituto Italiano di Cultura of Warsaw.

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2. M. HALOWNA, J. SEKOWSKI, *Materialy archiwalne do budowy zamku warszawkiego*, in "Teka Archiwalne", II, 1954, pp. 368-369.

3. In this city, meeting point between the Orient and the Occident, located in the south-east boundaries of the Polish State with the Muslim East, Turkey, Persia, from 1543 some tracks of Petrus are found , murator italicus and other crafts from Ticino, engaged, inter alia, in the construction of the church of Valacca. In W. Lozinski, *Sztuka Lwowska w XVI i XVII wieku,* Lwow 1898.

4. We know nothing about his life and activity in Italy apart from he was hailing from Antenore. In J. KOWALCZYK, *Zamość città ideale in Polonia, il fondatore Jan Zamoyski e l´architetto Bernardo Morando,* Wroclaw 1986, pp. 32-33.

5. S. LEMPICKI, *Il cancelliere Giovanni Zamoyski e l´università di Padova*, in "Omaggio dell´Accademia polacca delle Scienze e lettere all´università di Padova nel settimo centenario della sua fondazione", Krakow 1922, pp. 71-114.

6. J. KOWALCZYK, S*ui quadri di Domenico Tintoretto ordinati da J. Zamoyski*, in "Archivio Veneto" serie V, col. CI, Venezia 1974, pp. 87-107; M. LEWICKA, *Rycina Jakuba Lauro q czci Jana Zamoyskiego*, in "Biuletyn Historii Sztuki" XVIII, 1956, fasc. 1, pp. 132-138.

7. S. LEMPICKI, *Mediceusz polski XVI wieku. Rzecz o mecenaia Jana Zamoyskiego,* Zamość 1929.

8. J. KOWALCZYK, *Wkregukultury dworu Jana Zamoyskiego*, Lublin 1980, pp. 7-40.

9. The diet of Poland recognized this "princedom" in 1598 after sour polemics. In fact, the recognition opposed the hereditary right of the Republic of Poland, where the concession of the princely titles was absolutely prohibited because it unethical to the principles of the noble democracy. In J. KOWALCZYK, *Morando e Zamoyski, Italia Venezia e Polonia tra Umanesimo e Rinascimento,* Wroclaw 1967, pp. 335-351.

10. J. KOWALCZYK, *Zamość città ideale…* op. cit., p. 8.

11. The condition in the decree of foundation on 10th April 1580 which said that the city had to be inhabited exclusively by Catholics was abrogated some years later, allowing the construction of a church with Greek-Orthodox rite and a synagogue. The Chancellor designated around 250 thousand workshops to build masonry houses before twenty years from the date of assignation of the plot. In J. KOWALCZYK, *Morando e Zamoyski...*, op. cit.

12. J. KOWALCZYK, *Zamość città ideale…* op. cit., p. 9.

13. M. LEWICKA, *Bernardo Morando*, Warszawa 1952, id. *Bernardo Morando* in "Saggi e Memorie di Storia dell'Arte", II, Venezia 1958-59.

14. Glogów Malopolski built from 1570 is the first city that highlights the connection with the Italian urban culture. The structure derivate s from a roads crossing that intersect in a central square piazza. The corners of the square were destined to public buildings, churches, hospitals, baths, while the palace was located in a peripheral position. Glogów like the other cities of Wielkopolska was not fortified. Different is the case of the new cities built in the eastern territories of the country. These cities have a residential character, even if they denounce the fortification´s system. Among the other cities in the territory of Zamoyski, Janów Lubelski shows a regular structure of two perpendicular axes that cross in the market square. The whole part of the residences is delimited by a gardens' belt. It is appropriate to underline that in most part of the cities made between the 16th and the 17th century, settlers received in addition to the plot of land, another one outside the walls. Another example is the city of Brody, built in 1576, in the eastern borders of the country. Also this city shows on its initial nucleus a regular disposition with an orthogonal mesh of axes, with two quadrangular squares reserved to the markets. The presence of the double piazza is because there were different ethnical groups, Polish, Armenian, and Russian. The transformations of the structure took place between 1630 and 1636 with the insertion of the defensive system to circumscribe the initial nucleus and placing a castle on the vertex of the defensive composition. In W. KALINOWSKI, *Zarys historii budowy miast w polsce do polowy XIX wieku*, Torun 1956.

15. T. ZAREBSKA, *O zwiatzkach urbanistyki wegierskiej i polskie w drugidrugiey*, in "Kwartalnik Architektury i Urbanistyki", IX 1964, fasc. 4, pp. 259-282.

16. A. MILOBEDZKI, *Ze studio nad urbanistyka Zamościa,* in "B.H.S.", XV 1953, n. 3-4, pp. 68-87.

17. AJZ, t. II, p. 391, d. 4.

18. National Library of Warsaw, ms. Segn BOZ 1956.

19. J. KOWALCZYK, *Zamość città ideale…* op. cit., p. 9.

20. AJK, t. I, p. 366, n. 349.

21. National Library of Warsaw, ms. Segn BOZ 1956, f. 19. The most part of the construction material was obtained from the surroundings. The bricks were produced by existent furnaces in the city and in the surroundings.

Generally, two dimensions of brick were used: the biggest one for the fortifications, the others for the residences. Morando in 1594 found some Trzesiny sandstone, 35 km away from Zamość, other quarries were in the Niepryszu mountain (first new reported: 20th April 1644). Wood was transported three times a year from the forest of Sarostwa Zamosckiego. Marble came from the surroundings of Checinj (close to Kielce). In R. SZYCZ, *Zamość Miasto idealne*, Lublin 1980.

22. J. KOWALCZYK, *Kościól Ormianski w Zamościu w XVII wieku*, In "K.A.U.", XXV, 1980, facs. 3.

23. Z. BARANOWSKA, J. BARANOWSKI, *Dzielnica Zydowska i synygoga w Zamościu,* in "B.Z.I.H.", 1967, n. 63, pp. 39-56.

24. T. ZAREBSKA, op. cit., p. 27.

25. B. HORODYSKI, *Najstarsza Lustracja Zamość,* in "Teka Zamoyska", I, 1936, fasc. 4, p. 202.

26. T. ZAREBSKA, op. cit., p. 29.

27. S. HERBST, *Zamość*, Warszawa 1954, p. 20 and T. ZAREBSKA, op. cit., p. 52.

28. S. ZAJCZYK, *Murator zamojscy 1583-1609,* in "B.H.S.I.K" VII 1939, fasc. 2, p. 203.

29. The Italian character of the city struck Bonifazio Vanozzi, secretary of the cardinal Gaetano, papal legate that in December 1596 went there: "*...la maggior parte fabbrica molto simile all´italiana, la forma della città è quadrata, piazza grande recinta da tutte le bande da bellissime logge dove sono botteghe di varie merci...*" Czartoryski Library, ms. 316, pp. 617-621, copy of the Bonifazio Vanozzi´s diary.

30. A. MILOBEDZKI, *Ze studio*…op. cit.

31. J. KOWALCZYK, *Owzajemnych relacjach planu miasta Zamościa I Kolegiaty zamojskiej*, in "B.H.S." XXIV, 1962.

32. J. KOWALCZYK, *W Kregy Kultury*… pp. 25-32.

33. A. KLIMEK, *Resjdencja Jana Zamoyskiego w Zamościu*, in "K.A.U.", XXV, fasc. II, 1980, pp. 107-114.

34. J. KOWALCZYK, *Zamość città*… op. cit. p. 26.

35. In the preface of his treatise about the cannons´ construction of 1636, Francesco dell´Acqua wrote like that: "*eccomi straniero che per diciassette anni volutamente ha cercato di impadronirsi della lingua polacca sempre con l´attenzione di essere utile a questo regno...*", in J. KOWALCZYK, *Le relazioni dei polacchi con gli artisti e con l´arte veneta tra il XVI e il XVII secolo,* in Atti dell´Istituto Veneto di Scienze Lettere ed Arti, tomo CXXXVIII, 1979-1980, pp. 429-508.

36. G. DE ANGELIS D´OSSAT, *L´architettura polacca e gli apporti italiani* in "Venezia e la Polonia nei secoli dal XVII al XIX", Venezia 1968, pp. 3-17.

37. M. LEWICKA, *Mecenat artystyczny Jana Zamoyskiego,* in "Studia Renesansowe" II, 1957, pp. 303-356.

38. T. ZAREBSKA, op. cit. p. 39.

39. J. KOWALCZYK, *Zamość*, Warszawa 1975.

40. S. HERBST, J. ZACHWATOWICZ, *Twierdza Zamość,* Warszawa 1936, pp. 19-31.

41. A.A.V.V., *Zamość Miasto Idealne*, Lublin 1980 and in K.A.V., XXV, fasc. 2, 1980.

42. A. MILOBEDZKI op. cit., pp. 71-72, T. ZAREBSKA, op. cit., p. 50.

43. Z. BARANOWSKA, K. SYGIETYNSLA, op. cit., pp. 67-70; J. KOWALCZYK, S*ebastiano Serlio a sztuka polska,* Wroclaw 1973, pp. 228-230.

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Postscriptum

A profile of the operational activities for the conservation of the historic center of the city is due to Jerzy Kowalczyk and it is dedicated to the Memory of Jan Zachwatowicz, ten years on from his demise. To this end, see: J. KOWALCZYK, *Jana Zachwatowicza Badania i Prace Konserwarskie w Zamościu*, in "Kwartalnik Architektury i Urbanistyki", XXXVIII, 1993, 3-4, pp. 255-263.
A study dedicated to the reconstructions of some monuments, mainly bastions, can be found in J. KOWALCZYK, *Rekonstrukcja Zabytków architektury w Zamościu*, in "Ochrona Zabytków", 1993, 3, pp. 209-222. For a general bibliography about the history of Zamość city-planning, see the first edition of 1987.

Bibliographic Updating

In C. BELLANCA, *Scritti di storia e restauro dell´architettura tra Italia e Polonia*, in conferenze 112 Accademia Polacca delle Scienze Biblioteca e Centro di Studi a Roma, Varsavia - Roma 1999, p. 10:

For this essay about the city and the cultural environment of Zamość, historical and conservation notes, edited in "Storia della Città", 38-39, 1987, it is necessary to point to other contributions mainly due to Jerzy Kowalczyk, one of the Polish scholars who paid more attention to the artistic relations between Italia and Poland with Stanislaw Mossakowski, Mariusz Karpowicz and Teresa Zarebska.

J. KOWALCZYK, *Dole i niedole inzyniera Andrea dell´Acqua w stuzbie Tomasza Zamoyskiego*, "Konserwatorska Teka Zamojska", Warszawa-Zamość, 1987, pp. 19-24.

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In the context of other Polish contributions could be reminded:

J.A. CHROSCICKI, *Przestrzen ceremonialna w Zamościu. Wjazd i akta zaprzysiezenia przez ordynata praw ordynacji*, in: Miedzy Padwa a Zamosciem (…), Warszawa 1993, pp. 31-39.

This volume, edited by the Instytut Sztuki, gathers thirty essays written in honor of Jerzy Kowalczyk and is one of the most updated references for the studies about the history of architecture, Renaissance and Baroque in Poland.

A synthetic general profile of the foundation period of the city of Zamość could be found in:

T. DA COSTA-KAUFMANN, *Court, Cloister and City, The Art and cultur of Central Europe 1450-1800,* London 1995, p. 160 and p. 501.

It seems appropriate to remind in this study some of the contemporary realizations of the "new" city like Zamość, designed and constructed from the second half of the 16th century in different European areas. For this issue see the exhibition catalogue about *Palmanova, Fortezza d´Europa 1593-1993*; in this catalogue is shown an effective profile of the starred cities` reality in Europe. There are some maps from Anversa to Bruxelles, to Limbourg, coming from the Archivio Simancas, to continue with those of Philippeville and Mariebourg, coming from the Österreichische Nationalbibliothek of Vienna and with the "fortress project" of Giuseppe II d'Asburgo, preserved in Vienna in the Graphische Sammlung of Albertina; finally, the fortified systems of Vauban and the model of the city of Zamość.

H.W. KRUFT, *Städte in Utopia: die Idealstadt vom 15. bis zum 18. Jahrhundert,* München 1989.

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M. VIGANÒ, *Architetti e ingegneri militari italiani all'estero dal XV al XVIII secolo,* Vol. 2, Livorno 1999.

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7. Madrid, Alameda del Valle, the Church of Santa Marina, Virgen y Mártir

Susana López Verdú

Fig. 1. General view of the Church of Santa Marina, in relation to the urban and environmental context of Alameda del Valle, from the route towards the hermitage of Santa Ana. Photo by S. López Verdú, November 2019.

This study conducts a first approach to the religious architecture of the town centres along the Lozoya River Valley, to focus later in the analysis of the Parochial Church of Santa Marina, Virgen y Mártir, in Alameda del Valle. To this end, the geographic and constructive characteristics as well as the historical context are surveyed. In order to do it, some information and documentation regarding these topics is compiled, making pictures and collecting datum after an accurate fieldwork on the different villages of the valley. After finding some common points and divergences in the architecture of the various churches and hermitage of the considered area, the historical and constructive study of the most characteristic church of the place has been conducted (Fig. 1).

From the direct reading of the walls that configure the temple and according to the law of superposition, the different units of stratification have been established. To record these stratigraphic datum, a series of U.E.M sheets have been produced. Supported by a historical research and by the construction site information (compiled in the "*Libros de Fábrica*", "masonry books"), this recognition of materials, periods and constructive systems allows to examine the constructive changes of the church. In this way, it is possible to make a hypothesis of the different construction stages and of the historical phases along time, in order to define the sequences according to the law of stratigraphical succession. The archaeological study is conducted following a consolidated method that allows to recognise the efficacy and reliability of this work.

The Upper Lozoya River Valley

Historical - geographical context and religious architecture along the valley

The Lozoya Valley (Fig. 3) emerges around the river with the same name, the Lozoya River (river basin of the Tajo), and it is located on the northwest of the Community of Madrid. Is a mountain valley with an altitude non under 1000 m and it makes part of the Guadarrama Mountain Range, that at the same time belongs to the Central System. The valley hosts a total of 30 municipalities in an area with a length of 20 km and a variable width, small in its limits and higher in the central part, reaching 5 km. Characterized by a uneven topography, is an area with a great geobotanical and landscape interest, delimited and naturally framed by the mountainous mass of the Carpetanos Hills on the north and the "*Long Rope*" and the Canencia Mountain Range on the south.

The steep topography, as well as the slopes of the surrounding peaks, more than 1000 m high, shows that this is not a valley carved by the river but purely tectonic, that arises from earth movements and plenty of limestone. This fact explains the abundant use of this material for the traditional construction of the area (1).

The Upper Lozoya River Valley belonged historically, from the second half of the 11st century to the 19th century, to the "*Comunidad de Villa y Tierra*" of Segovia (Fig. 2), a kind of political and territorial organization of the Castilian Extremadura after the *Reconquista* of the territories belonging to Al-Ándalus by the Kingdom of Castile.
"... En el secular avance y repoblación de la Castilla altomedieval desde las montañas cantábricas hasta el Tajo se van a utilizar los modelos de organización administrativa... de las Comunidades de Villa y Tierra... son las tierras restauradas, organizadas, repobladas y colonizadas de nuevo tras la desaparición del caudillo amirí... Las Comunidades agrupan el nuevo territorio recuperado o ganado durante los siglos XI y XII... hemos echado en falta un catálogo completo de las Comunidades de Villa y Tierra, así como la descripción exacta del territorio original y de los límites de cada una de ellas" (2).

Fig. 2. Map of the "*Comunidad de Villa y Tierra*" of Segovia, extracted from G. Martinez Diez, *Las Comunidades de villa y tierra de la Extremadura castellana,* Madrid 1983, p. 498.

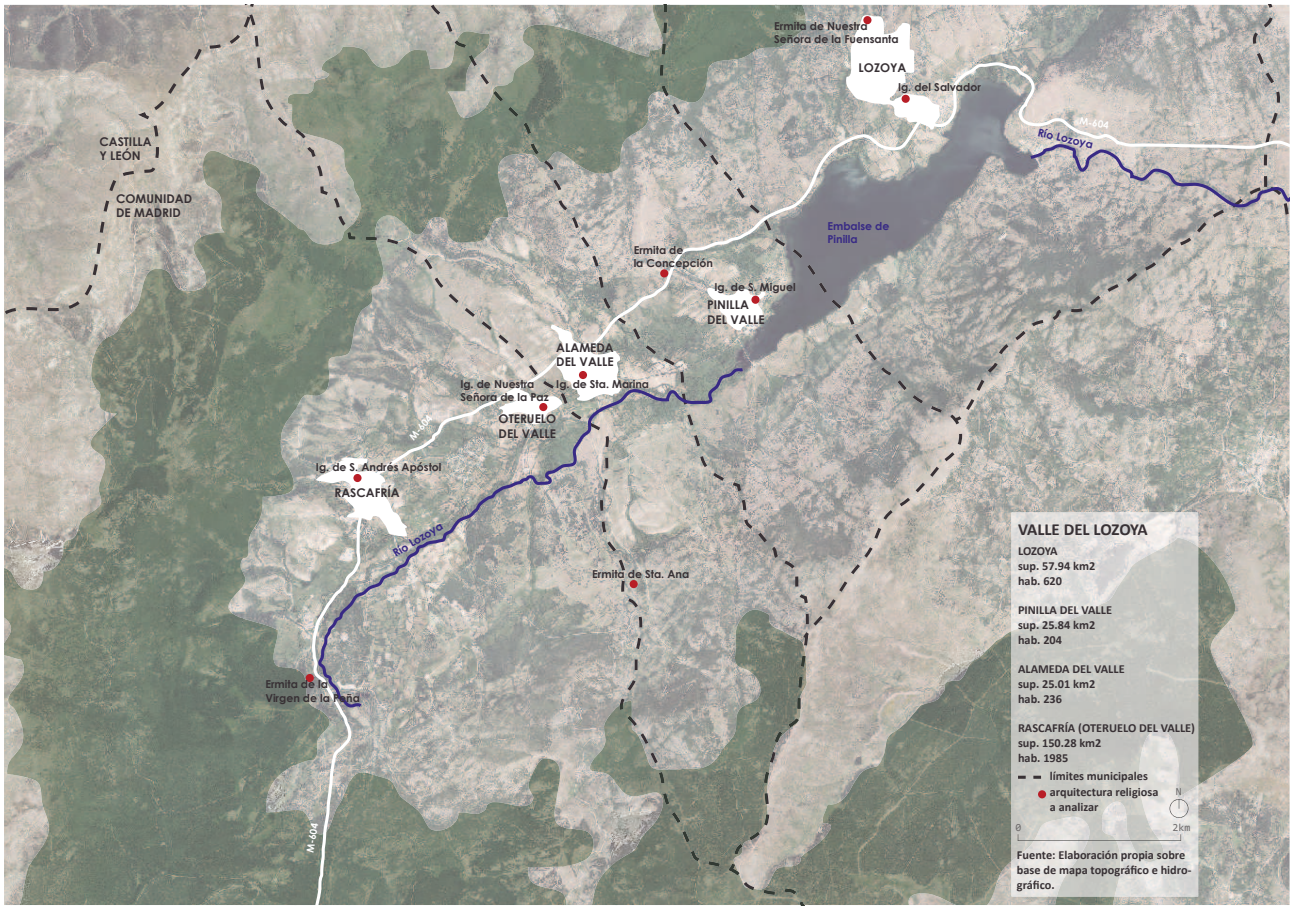


Fig. 3. Site of the town centres along the valley with the hermitage and the parochial churches. Map prepared by S. López Verdú from a topographic and hydrographic basis.

Synthesis of the religious architecture along the Lozoya River Valley

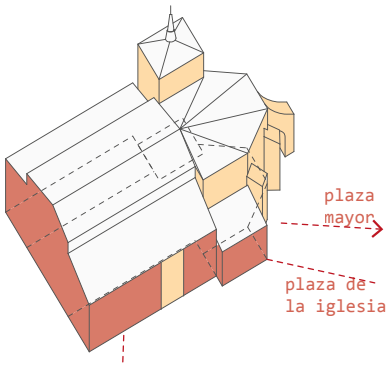
To accomplish the analysis of the religious architecture (Fig. 4) some aspects and selection criterion have been considered (like the architectural composition, geometrical aspects, historical-constructive interest, relationship with the environment...). Only the churches on the main population centers have been chosen, together with the hermitage surrounded by the typical environment of the valley. From this overall view, some general points and considerations of the valley and its architecture can be identified:

Geometry. Rural and modest constructions, small dimensions and punctual and simple decoration. Construction in local limestone, arranged with not-worked stones, ("*mampostería"*), visible or plastered, and with coverings in ceramic tile.

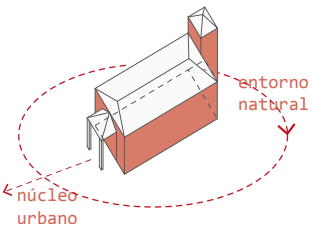
Historical-constructive interest. All the constructions have been remodeled or restored, mainly in the 18th century. During the Spanish Civil War they were gravely damaged or destroyed. For this reason in the 20th century the post-war reconstruction took place and in many cases new additions to the preexistences were made.

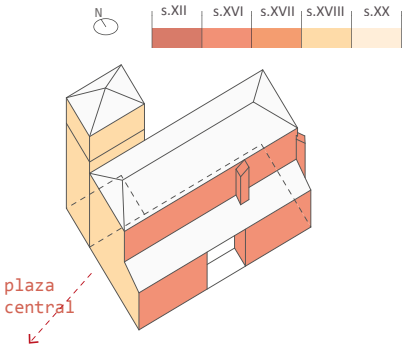
Relationship with the environment. For the hermitage is essential the relationship with the landscape of the mountains. Their location depends on that, and they are associated to the paths and pilgrimage routes. On the other hand, the churches are located in the population centers, in relation with the institutional buildings and with the main spaces or squares.

I decided to focus the archaeological study on the Church of Santa Marina in Alameda del Valle, because it joins some historical and constructive complexity as well as the essential characteristics of the traditional architecture of the valley.



- GEOMETRY/COMPOSITION
- MATERIALS/BUILDING
- LOCATION/RELATIONS

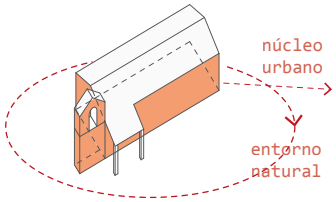


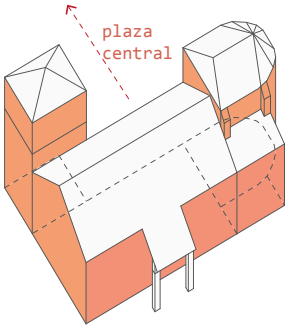


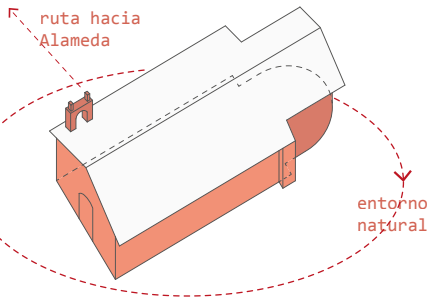
EL SALVADOR PARISH CHURCH
Lozoya
- Three naves, portico, polygonal apsis, bell tower.
- Stone walls and roof tiles. Plastered or exposed "*mamposteria*", and reinforced corners with ashlars. Defined wall plinth. Refursbished, distant from the first church of 16th century.
- Urban core, church square.

HERMITAGE OF NUESTRA SEÑORA DE LA FUENSANTA
Lozoya
- One volume, portico, bell tower.
- Stone walls and black roof tiles. Plastered "*mamposteria*", and reinforced corners with ashlars. Entirely refurbished (first hermitage 18th century)
- Natural context, outskirts of the urban core.

SAINT MICHAEL THE ARCHANGEL PARISH CHURCH
Pinilla del Valle
- One nave, bell tower, major chapel.
- Stone walls and roof tiles. "*Mamposteria*", and reinforced corners with ashlars. First church of 16th century, partially refurbished
- Urban core, close to the central square.



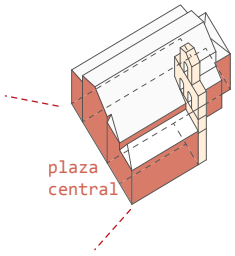


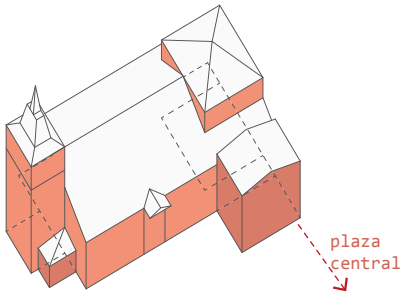


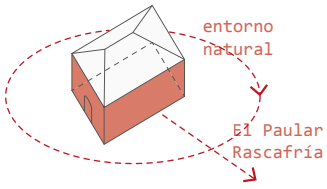
HERMITAGE OF NUESTRA SEÑORA DE LA CONCEPCIÓN
Pinilla del Valle
- One volume, portico, bell gable.
- Stone walls and roof tiles. Plastered "*mamposteria*", and reinforced corners with ashlars. First hermitage of 17th century, entirely preserved.
- Natural context, outskirts of the urban core.

PAROCHIAL CHURCH OF SANTA MARINA VIRGEN Y MÁRTIR
Alameda del Valle
- One nave, portico, polygonal apsis, bell tower.
- Stone walls and roof tiles. "*Mamposteria*", and reinforced corners with ashlars. Partially refurbished (first church of 17th century)
- Urban core, close to the central square.

HERMITAGE OF SANTA ANA
Alameda del Valle
- One volume, circular apsis, church proportions.
- Stone walls and roof tiles. Plastered "*mamposteria*", ashlars on the plinth. 18th century with addition of volumes.
- Natural environment, in the municipality of Alameda.







PARISH CHURCH OF NUESTRA SEÑORA DE LA PAZ
Oteruelo del Valle
- One nave with three sections, major chapel, bell gable.
- Stone walls and roof tiles. Plastered "*mamposteria*", and ashlars on the plinth. Refursbished, distant from the first church of 18th century.
- Urban core, central square.

PARISH CHURCH OF SAINT ANDREW THE APOSTLE
Rascafría
- Three naves, portico, sacristy, bell tower.
- Stone walls and black roof tiles. Plastered and exposed "*mamposteria*", and reinforced corners with ashlars. First church of 15th century, almost rebuilt.
- Urban core, close to the central square.

HERMITAGE OF VIRGEN DE LA PEÑA
Rascafría
- One volume.
- Stone walls and roof tiles. Plastered "*mamposteria*", and reinforced corners with ashlars. First church of 18th century, after rebuilt.
- Municipality of Rascafría, natural environment, close to the Monastery of El Paular.

Fig. 4. Comparative panel of the religious architecture of the valley, analysed with the main aspects of each construction and the historical-constructive chronology. Drawings and analysis by S. López Verdú.

Fig. 5. General view of the landscape, to the south of Alameda del Valle and to the Mountain Range of the "Long Rope". Photo by S. López Verdú, November 2015.

The Church of Santa Marina, Virgen y Mártir

The urban and environmental context: Alameda del Valle

The Parochial Church of Santa Marina, Virgen y Mártir belongs to the municipality of Alameda del Valle, in the North Mountain Range of Madrid and 92 km away from the capital city of Madrid. Alameda is a small community developed along 25 km and split by the Lozoya River. It is located in an altitude of 1107 m above sea level and has around 248 inhabitants, according to the 2013 population census (3).

The urban core is very irregular (Fig. 6); it has not been modified across its history, excepting some buildings and new cottages that appeared on the outskirts. It has vegetable gardens, narrow roads, small squares… and other samples of the architecture of the area, like the stone construction of the 18th and 19th century. The Parochial Church of Santa Marina is located exactly on the southwest of the town, in the limit of the historical centre; beyond the construction, the pastures and the non-built areas spread out.

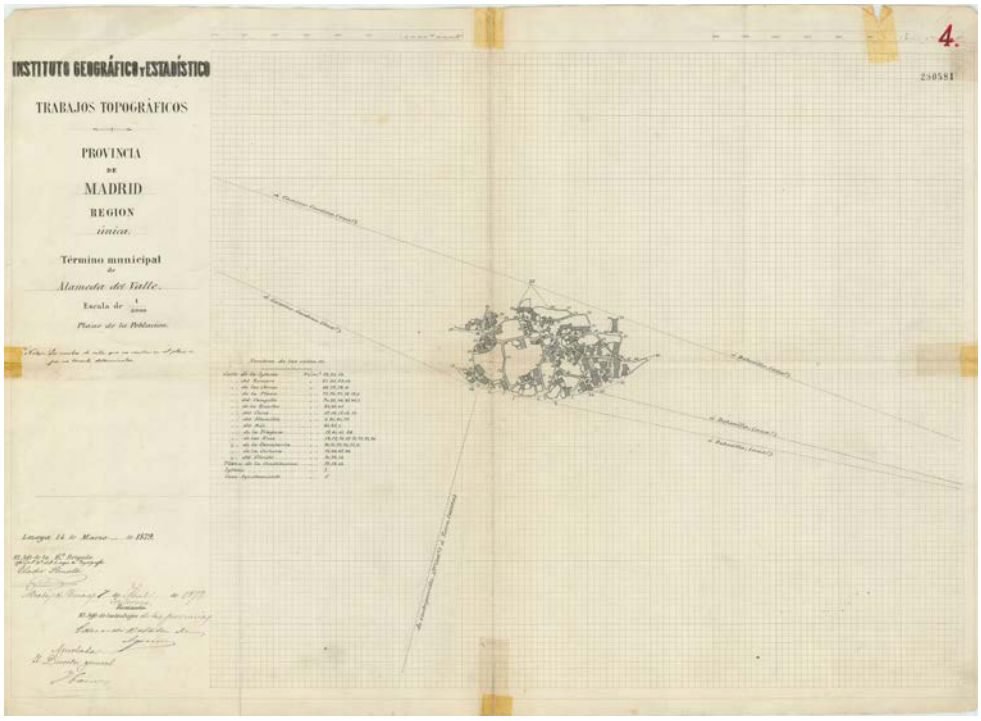


Fig. 6. Population map of 1879, Municipality of Alameda del Valle. (Plano de población 1879 CC BY 4.0 ign.es, Instituto Geográfico Nacional, Madrid).

Morphological and constructive description (4)

The construction of the Church of Santa Marina began in the 16th century, in the southwest of the town of Alameda del Valle, under the direction of the master builder Juan de la Piedra. There are some archival documents, where de la Piedra renders account to the attorney of the Monastery of Santa Maria de El Paular, reporting about the expenses associated to the construction works. The temple can be observed from almost all the points of the town, but never in a total way due to the vegetation and the proximity of other buildings (Fig. 7). The bell tower appears as a landmark, even perceptible from the Pinilla Reservoir, and shaping the profile of Alameda from the distance.

The church, of great architectural simplicity, has a rectangular plan with only one nave concluded by an apse. This element is characterized by a flat central part, one quarter of circumference on each side, and a total of five buttresses on the outside. The perimeter walls are made of visible non-worked limestone "*mampostería*" with ashlar chains on the corners in order to reinforce them. The tower is located at the foot of the volume, has a square plan and consists of two bodies, the highest one with round arc bays, emphasised with ashlars.
The portal in the south front is usual in the religious architecture of the valley area. The first space inside the temple is a foyer separated from the central nave by two round arcs on a column that reclaims the Tuscan order. The New Sacristy, now transformed into the Tabernacle Chapel is placed next to the foyer. It has a rectangular plan, covered by a barrel vault with lunettes and mouldings.

There are two entrances to the temple: the one located at the foot of the construction, the ancient one, composed of a round arc made of large keystones; in front of it the church square extends; the other entrance (Fig. 8), in the south, is a simple *plateresque* portal with a decorated lintel, protected by a small wooden portico supported by two square pilasters. It is the most decorated part of the construction, with vegetal and geometrical motifs of the 18th century.
Another sculpted part is the simple moulding on the cornice of the temple, that is the only ornament on it. The whole area of the church is surrounded by a parapet made of the same non-worked limestone, decorated with balls in *herreriano style*, placed on pilasters. This enclosure defines an irregular courtyard around the church, where the graveyard develops in the north side.

The opening on the occidental front (Fig. 9) possesses another of the punctual decoration of the 18th century in the church. Between the "*mampostería"* and highlighting the window, the lintel ashlars have simple heraldic and epigraphic

Fig. 7. Partial view of the church in its context. Photo by S. López Verdú, November 2015.

Fig. 8. Detail of the *plateresque* portal, on the southern façade. Photo by S. López Verdú, January 2016.

Fig. 9. Detail of the opening frame on the occidental front with the heraldic and epigraphic motifs on the keystones. Photo by S. López Verdú, January 2016.

motifs, where it is also written the date. As demonstrated, simplicity characterizes the entire temple.

The inside is spacious, elegant and illuminated. The "*mampostería*" of the walls is also visible in this case, and the covering is made of a barrel vault hidden behind a wooden coffered ceiling. On the *chevet* there is the main altar, covered by a barrel vault with simple ribbed vaulting supported by corbels. The chancel separates this element from the rest of the nave, through a semicircular triumphal arch supported by pilasters. The choir is elevated and it is located at the foot of the church.

Stratigraphic analysis of the masonry

"*... El empleo del método de análisis arqueológico de la construcción histórica, conocido también como de lectura estratigráfica de paramentos, puede facilitarnos la comprensión del proceso temporal que ha generado un complejo edificado, con independencia de su escala, antigüedad o importancia. Este método se basa en la determinación de las distintas unidades estratigráficas que han ido conformando el proceso de edificación partiendo de la identificación de las discontinuidades materiales existentes en la fábrica para establecer posteriormente las diversas relaciones temporales que estas unidades guardan entre sí. Los datos obtenidos por medio de este procedimiento permiten aclarar parcialmente la evolución constructiva de un edificio o de un conjunto histórico a la vez que contribuyen a plantear nuevas hipótesis relativas al modo en que ésta se ha producido, y a cómo pudo ser la traza proyectada original y las distintas etapas de ejecución en sus distintas fases históricas, así como sobre las relaciones que estos proyectos sucesivos podrían guardar entre sí"* (5).

This course of action, later applied, comes from the archaeological stratigraphy, a discipline developed from the 18th century. The method was consolidated on the 20th century and then extrapolated to the study of the historical buildings with the name of archaeology of architecture. To accomplish this study in the Church of Santa Marina of Alameda del Valle, I conducted an *orthogonal-photographic survey* on the façades, rectifying the taken pictures (it was not completely possible for the east and west fronts, due to the proximity of other constructions). During the fieldwork and after a thorough observation of the wall surfaces, it has been possible to locate the different elements, the constructive discontinuities, the material changes and their organization on the wall faces. Each one of these unique elements or limits on the masonry constitutes a different "unit of stratification". The ensemble of them will be represented on the previously rectified façades (Figs. 10, 11, 12, 13) in order to have an overall view of the masonry on the construction (6).

Rectified pictures of the façades with the ensemble of the units of stratification, numbered and delimited according to the different elements and discontinuities identified on the masonry.

Graphic documents by S. López Verdú, January 2016.

Fig. 10. Occidental façade.

Fig. 11. Southern front.

Fig. 12. East façade.

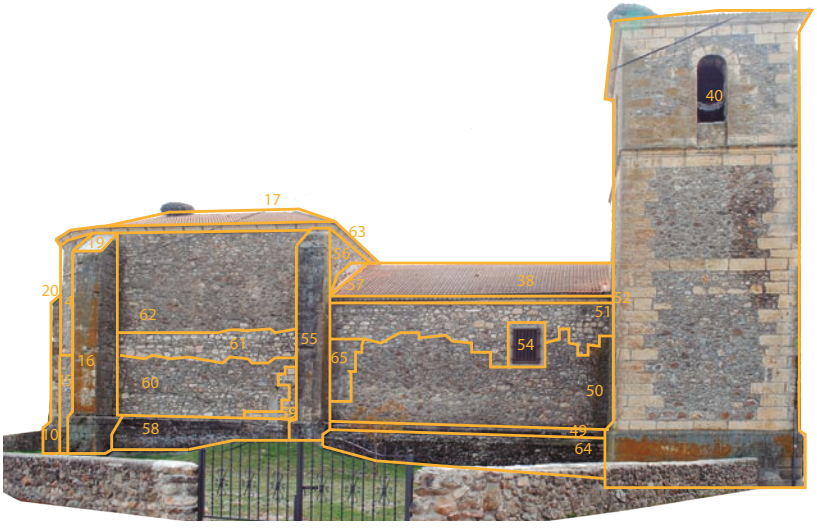


Fig. 13. North elevation.

Units of stratification of the masonry (U.E.M.) (7)

As it has been mentioned in the previous paragraphs, the recognition of these boundary contours or discontinuities on the masonry to establish the units of stratification makes also necessary to delve into the study of each one of them. Despite the group of these units is considered as a system that defines a "whole" of the construction, this "dissection" in smaller parts helps to optimise the information for the comprehension of the different layers, created over time in the studied building (8).

The U.E.M. sheets (9) allow recording the stratigraphic data according to the law of superposition and they follow a series of parameters that collect the information taken during the fieldwork stage: a detailed picture of the composition; material description and type of masonry laying; the location of the unit on the elevation and on the floor plan; the physical relationships with the surrounding units (above, below, cuts, cut by, equal…); It is also described the chronological relation among the units according to a constructive logic (previous or subsequent).

The number that identifies each unit helps to give an order during the data gathering and for the production of the U.E.M. sheets, but they are not useful to interpret or to establish chronological relationships among them.

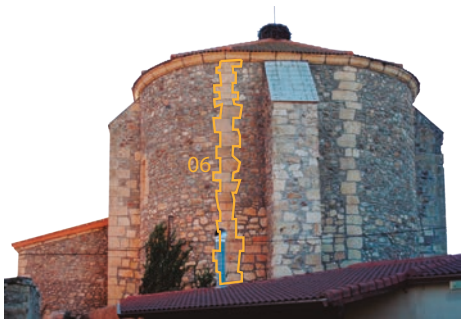
This article collects only a model of one unit of stratification sheet for each façade, to show their main characteristics and how they have been completed. A total of 65 units of stratification have been identified for the masonry of this church.

Figs. 14, 15, 16, 17. Example of an U.E.M sheet for each façade.

Graphic documents by S. López Verdú, January 2016.

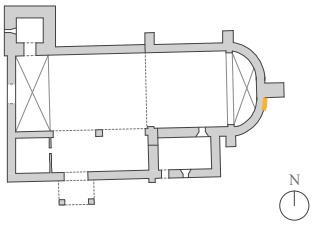
14

CHURCH OF SANTA MARINA VIRGEN Y MÁRTIR
ALAMEDA DEL VALLE, VALLE DEL LOZOYA (MADRID)



U.E.M. 06
Elaboration date: December 2015
Author: Susana López Verdú

GENERAL LOCATION



LOCATION, POSITION
East elevation

RELATIONSHIP
- Coetaneous to
- Subsequent to U.E.M.04, U.E.M.07, U.E.M.08, U.E.M.09 / Previous to U.E.M.63
Supported by / Supports U.E.M.63
Placed against U.E.M.04, U.E.M.07, U.E.M.08, U.E.M.09 / Placed next to
Covers / Covered by
Cuts / Cut by

DESCRIPTION OF MATERIALS
Limestone, limemortar

DESCRIPTION OF THE MASONRY
Worked ashlar with mortar

COMMENTS
It could be a mark of the ancient buttress

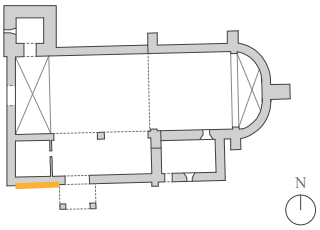
15

CHURCH OF SANTA MARINA VIRGEN Y MÁRTIR
ALAMEDA DEL VALLE, VALLE DEL LOZOYA (MADRID)

U.E.M. 35

Elaboration date: December 2015
Author: Susana López Verdú

GENERAL LOCATION



LOCATION, POSITION

South elevation

RELATIONSHIP

- Coetaneous to U.E.M.37
- Subsequent to / Previous to U.E.M.33, U.E.M.36, U.E.M.38
  Supported by / Supports U.E.M.38
  Placed against / Placed next to U.E.M.33, U.E.M.37
  Covers / Covered by
  Cuts / Cut by U.E.M.36

DESCRIPTION OF MATERIALS

Limestone, limemortar

DESCRIPTION OF THE MASONRY

Regular "*mampostería*", lime and pebble masonry grouted later with limemortar.

COMMENTS

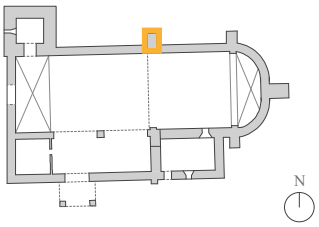
16

CHURCH OF SANTA MARINA VIRGEN Y MÁRTIR
ALAMEDA DEL VALLE, VALLE DEL LOZOYA (MADRID)

U.E.M. 55

Elaboration date: December 2015
Author: Susana López Verdú

GENERAL LOCATION



LOCATION, POSITION

North elevation

RELATIONSHIP

-Coetaneous to
-Subsequent to U.E.M.49, U.E.M.50 / Previous to U.E.M.51, U.E.M.52, U.E.M.56, U.E.M.58, U.E.M.60, U.E.M.62 U.E.M.59, U.E.M.61, U.E.M.63, U.E.M.64, U.E.M.65
Supported by / Supports U.E.M.63
Place against U.E.M.49, U.E.M.50, U.E.M.58, U.E.M.60, U.E.M.62 /
Placed next to U.E.M.51, U.E.M.52, U.E.M.56, U.E.M.59, U.E.M.61, U.E.M.62, U.E.M.64, U.E.M.65
Covers / Covered by
Cuts / Cut by

DESCRIPTION OF MATERIALS

Limestone, lime mortar

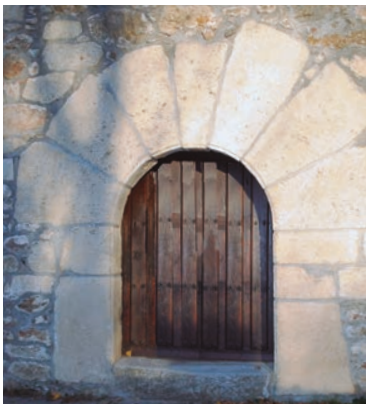
DESCRIPTION OF THE MASONRY

Worked ashlar with mortar
Built in connection with the "*mampostería*" wall

COMMENTS

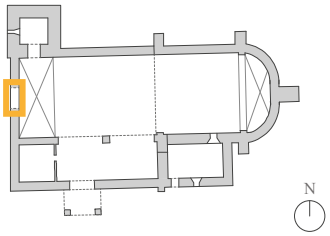
17

CHURCH OF SANTA MARINA VIRGEN Y MÁRTIR
ALAMEDA DEL VALLE, VALLE DEL LOZOYA (MADRID)



U.E.M. 42
Elaboration date: December 2015
Author: Susana López Verdú

GENERAL LOCATION



LOCATION, POSITION
West elevation

RELATIONSHIP
- Coetaneous to
- Subsequent to U.E.M.41 / Previous to U.E.M.43, U.E.M.44
Supported by / Supports
Placed against / Placed next to U.E.M.43, U.E.M.44
Covers / Covered by
Cuts U.E.M.41 / Cut by

DESCRIPTION OF MATERIALS
Limestone, lime mortar

DESCRIPTION OF THE MASONRY
Worked ashlar with lime mortar

COMMENTS
Ancient main entrance of the church, nowadays is always closed

The historical-constructive sequence

The matrix (10)

The record of the units of stratification, like the examples given above, allows developing the "stratigraphic sequence" of the Church of Santa Marina, Virgen y Mártir in Alameda del Valle. Firstly, only the observed position relationships are considered, and from them it is possible to develop the "relative sequence". This sequence indicates the stratification order of the masonry, that is, what was built before and after, following a constructive logic of supports, superposition, adjacent elements, etc. This diagram shows the principles of the "law of stratigraphical succession": joined with a horizontal line, the coetaneous U.E.M., those units of stratification built at the same time, even if they look different or they are not together; connected with vertical lines, the previous (below) and subsequent (above) U.E.M., according to the relationships of superposition, cut, support, etc. To identify the chronology of these units of stratification, it is necessary to contrast the precedent sequence with the documentary sources of the church: historical information of Alameda del Valle, cartography, ancient pictures and historical-constructive datum obtained from the "*libros de fábrica*". These books narrate the events and changes of the church over time; particularly they collect information of the site from 1490 to 1927. Crossing and joining all this information, we can obtain the "absolute sequence" that now considers chronology. It places the units of the relative sequence in the different constructive phases of the historical periods, an ascending timeline where each U.E.M. has a different height according to the period it was built (11). It is important to pay attention to the possible units of restoration interventions which could confuse the sequence, as they can appear physically below while being recent on time. In this article only the absolute sequence appears, as a synthesis of the whole process (Fig. 18).

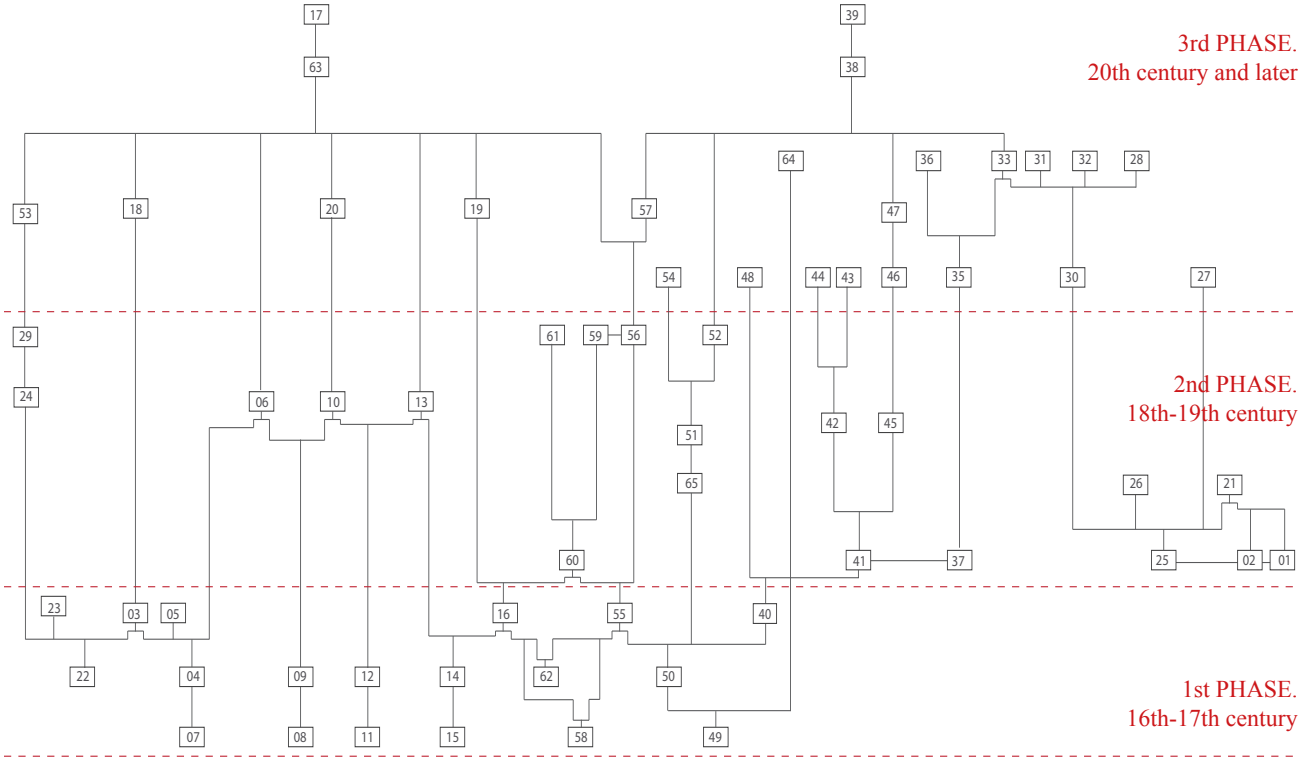


Fig. 18. Absolute stratigraphic sequence. Graphic document by S. López Verdú, January 2016.

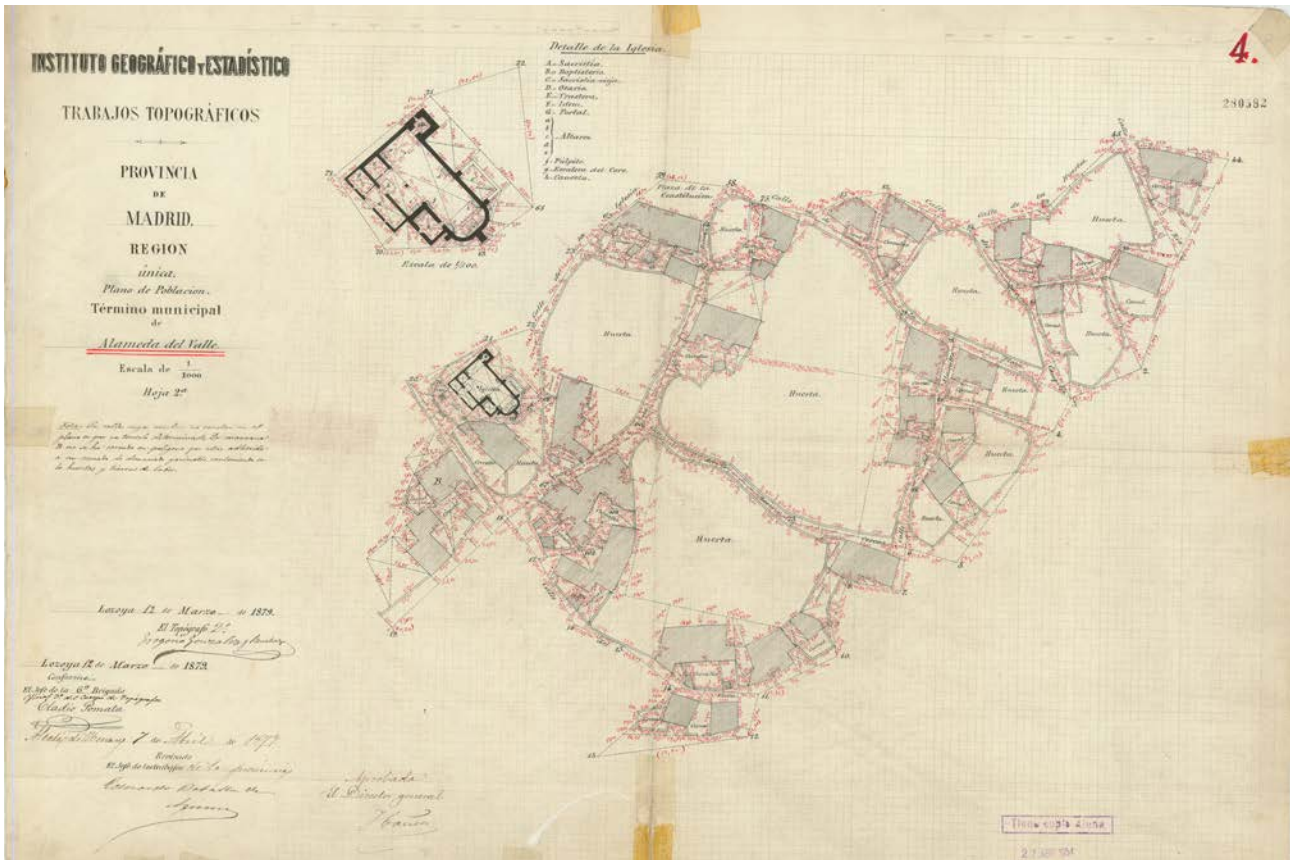
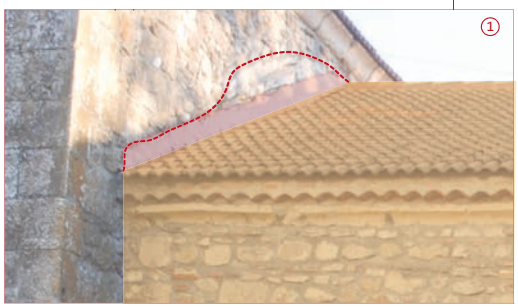


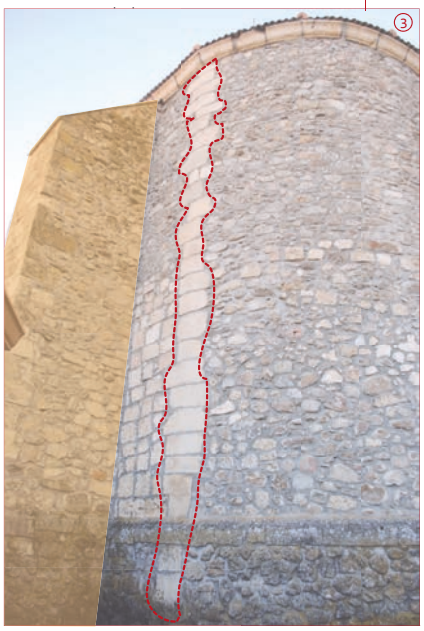
Fig. 19. Population map of Alameda del Valle in 1879. It shows the floor plan of the Church of Santa Marina in its first state, that is, during the 16th century. (Plano de población 1879 CC BY 4.0 ign.es, Instituto Geográfico Nacional, Madrid).

Mark of the ancient volume eliminated
Added or modified element/volume



Different height on the central volume.

Change of the roof slope with the addition of the porticoes.



Disappearance of the lateral buttress (mark)
New buttress on the head of the church.

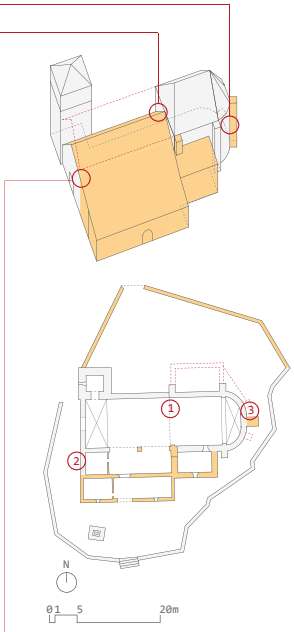


Fig. 20. Discontinuity evidences on the masonry, 18th century. Graphic document by S. López Verdú, January 2016.

Change of the roof slope with the addition of the porticoes and the lengthening of the roof.

Lengthening of the roof for the creation of the main entrance with a little portico. Insertion of the door and of the window.

Ancient and new volumes in a supportive relation. Difference of materials.

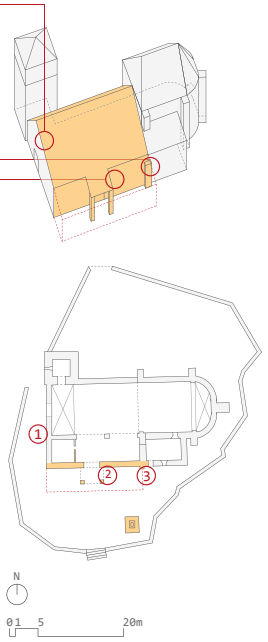
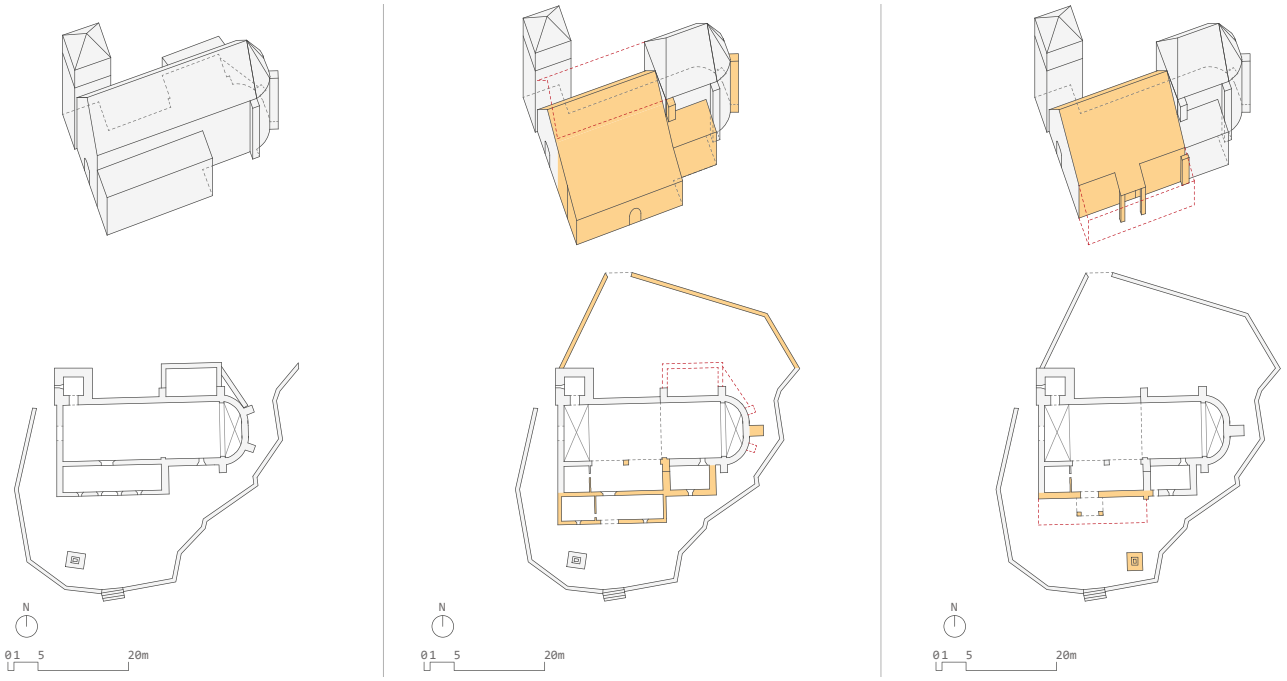


Fig. 21. Discontinuity evidences on the masonry, 20th century. Graphic document by S. López Verdú, January 2016.



16th century

- One nave covered by a barrel vault.
- Buttress around the apse.
- Portico to the south (typical of the architecture of the area).
- Bell tower.
- Ossuary.
- Old Sacristy.
- Atrium with a cross made of stone.

18th century

- Collapse of the central volume, producing a differentiation of heights.
- Lateral buttresses disappear and one buttress is atypically added on the head of the church. It rests on the wall but the masonry is not connected.
- A second portico is added (lengthening of the roof with the same slope, disappearance of the axis of symmetry of the volume).
- Disappearance of the Old Sacristy and construction of a new one (New Sacristy). Disappearance of the ossuary.
- Creation of the cemetery on the north side, including the surrounding wall.

20th century

- The building is entirely tiled again.
- Conversion of the New Sacristy in the Sanctuary Chapel.
- Elimination of the second portico. There is a memory of it on the main entrance with a portico that standts out and takes to the foyer.
- The cross made of stone on the atrium is changed.

Mark of the ancient volume eliminated
Added or modified element/volume

Fig. 22. Final synthesis and hypothesis of the historical and constructive evolution of Santa Marina. Graphic document by S. López Verdú, January 2016.

Conclusions

After the visit of the urban nucleus along the Lozoya Valley, from the Pinilla Reservoir to the beginning of the Guadarrama Mountain Range in the borders of the Community of Madrid, a general analysis of these towns has been conducted, with the information and the pictures taken during the fieldwork. This study focused on the most relevant religious architecture, considering parochial churches and hermitage. On the other hand, is essential the research of the historical documentation, in particular the consultation of the historical maps preserved in the Instituto Geografico Nacional of Madrid, of the historical events of the church and of the "*Libros de Fábrica*", that narrate the evolution, the modifications, the material inventories during the works, the payments and the technical visits to the construction site. This document comes from the Parochial Archive of Alameda del Valle and it is preserved in the Archivo Diocesano of Madrid.

The compositional aspects of the architecture, the historical and constructive interest, and the relationship with the adjacent context and with the rest of the valley in a territorial dimension, are some of the aspects considered to face this

study. The valley defines a landscape unit of vegetation, fauna, geographical characteristics and historical-constructive similar context, which makes its architecture to have some common characteristics. Some of these facets are the use of local limestone for construction, the masonry disposition, organized in an irregular way "*mamposteria*", the use of ceramic tiles, and the existence of a portico to the south in the religious buildings.
The parochial churches are modest and they are located in the proximities of the central square of the urban nucleus, where usually there are also the representative institutional buildings. The hermitage, on the contrary, looks for a relationship with the environment and with the landscape of the mountains. These chapels are associated to rural routes and pilgrimage trails. Historically, the valley was devastated during the Civil War, and for this reason, the constructions of these villages most of the times are reconstructed or rebuilt. These reconstructions were made under the principles of the Stylistic Restoration, reclaiming the traditional aesthetic of this part of the North Mountains of the Community of Madrid.

After the general study, a stratigraphical analysis has been conducted in the church of Santa Marina, Virgen y Mártir, situated in Alameda del Valle. Thanks to the study of the masonry in situ, contrasted with the historical datum and the *"libros de fábrica*", a hypothesis about the constructive evolution of the temple have been carried out, supported by the clear evidences found as boundary contours on the façades (Figs. 19-22). From this hypothesis there would be three different periods over time (12):

First phase, end of 16th-17th centuries
This period corresponds to the construction of the first church, from which not much remained. Identifying elements of this period are the bell tower, the portico on the south front, the ossuary and the Old Sacristy (Fig. 19).
Second phase, 18th-19th centuries
In the 18th century the church suffers important changes on its configuration: due to the supposed collapse of the central area of the roof, the reconstruction generates a height differentiation with the apse; the ossuary and the old sacristy disappear and they are replaced by a graveyard and a new sacristy, this time in the south façade; a second portico is added, over the precedent one, still existing, and this causes the roof to extend towards the south; two of the buttress disappear and another one is added in an unnatural way, in the axis of symmetry of the apse (maybe due to a variation of the static forces caused by the new asymmetrical configuration of the roof). During the next century only some punctual remodeling and non-significant works took place (Fig. 20).
Third phase, 20th century and later
Firstly, the reconstruction after the Civil War was carried out, shaping the volume still visible nowadays. As a result of this process, the portico on the south, added on the previous phase, was removed and a new portico main entrance was defined on the same façade. During the last years, the roof has been repaired and some parts of the perimeter walls have been restored. Also some spaces in the inside have been reconfigured.

The greatest interest of this work is to approach various aspects of the Lozoya Valley from the general of the landscape unit to the particular of its architecture. It is also significant the knowledge and the application of the stratigraphical method as a tool to interpret and to understand the evolution of the studied construction, considering it as a system of relationships.

Notes

1. General geographic information from the Lozoya Town Council, and from the the chapter "*Comprender el Valle Alto del Lozoya"* in *Valle Alto del Lozoya*, by BLAZQUEZ et al., Madrid 1996, pp. 13-37.

2. Extract from MARTÍNEZ DÍEZ, *Las Comunidades de villa y tierra de la Extremadura castellana: estudio histórico-geográfico.* Madrid 1983, pp. 9-10.

3. General information and census from the Alameda del Valle Town Council.

4. Analysis conducted making reference to the previous summary studies of the religious architecture of the valley and to the survey of the different churches and hermitages in the surroundings, as well as from the direct survey of the monument.

5. Prologue from *La Iglesia de Nuestra Señora del Manto de Riaza (Segovia). Estudio artístico, arqueológico y documental* by F. VELA COSSÍO *et al*., Madrid 2014, p. 10.

6. For further information and general concepts see: A. CARANDINI, *Storie dalla terra. Manuale di scavo archeologico,* Torino 1991; E.C. HARRIS, *Principles of archaeological stratigraphy*, London 1989 and particularly for archeology of architecture refer to: A. BOATO, *L´archeologia in architettura. Misurazioni, stratigrafie, datazioni, restauro,* Venezia 2008.

7. Ibid.

To record the stratigraphic data of each unit of stratification through the production of the following U.E.M. sheets, I followed the principles of the mentioned books in the note (6), applying their concepts to the individual case of the church of Santa Marina. Just a brief selection of these units of stratification of each façade is shown, and they have been created by the author considering that there is not a standard official card to make them.

8. Reference to the article "*Reflexiones sobre cronotipologías en Arqueología de la Arquitectura. Métodos y sistemas de Análisis"*, in *Revista nº10 de Arqueología de la Arquitectura*, C. VARGAS LORENZO, Madrid 2013, p. 2.

9. For the units of stratification, it has been kept the Spanish abbreviation U.E.M (*unidad estratigráfica muraria*) to facilitate the relationship between the text reading together with the drawings and the graphic documents.

10. Stratigraphical sequence developed according to the studied concepts from the Harris Matrix, in E.C. HARRIS, *Principles of archaeological stratigraphy*, London 1989, pp. 105-138.

11. It is recommended to see the compilation of the U.E.M of the church and the documents from the archival research to follow accurately the evolution of the temple and to understand the author´s reasoning to reach it.

12. See again the U.E.M. sheets and the *"Libros de Fábrica*" from the Archivo Diocesano of Madrid, to understand the hypothesis for the establishment of the different historical phases to the church. I would like to thank Gonzalo López-Muñíz for his documentary work on the compilation and translation of the "*Libros de Fábrica"* from the Archive.

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F. VELA COSSÍO, G. LÓPEZ-MUÑIZ MORAGAS, E. DAZA PARDO, *La Iglesia de Nuestra Señora del Manto de Riaza (Segovia). Estudio artístico, arqueológico y documental.* Madrid 2014.

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Territory information and Urban Planning of the Comunidad de Madrid.

"Libro de Fábrica" of the Church of Santa Marina in Alameda that includes: Caja 1 (l.f. 1490-1594), Caja 2 (l.f. 1593-1660), Caja 3 (l.f. 1713-1776), Caja 4 (l.f 1776-1857), Caja 5 (*Expedientes de fábrica sueltos*), Caja6 (*Expedientes de fábrica sueltos*). Archivo Parroquial Alameda del Valle, in Archivo Diocesano de Madrid, Signatura 2875, 2876, 2877, 2879, 2880.

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8. Architecture from 17th to 18th centuries in Poland

Calogero Bellanca

In the context of European events, the architectural culture of 17th and 18th centuries in Poland summarizes some tendencies. The almost simultaneous presence of these tendencies made of Central-Oriental Europe, seen in its entirety, one of the most fertile cultural regions for the development until the extreme consequence of the new affirmed architectural subject in Baroque Age.

The penetration became in the Wien of the last part of the 17th century, with important architect personalities. At the same time, it was achieved through the contribution of the nomad Italian masters, mainly with "*Ticinese*" and Venetian origins that worked in Poland, and with the vehicle of printed works in Roma and Venezia, that spread the new proposals also in Bohemia, Moravia and Russia.

The situation in Poland in the first part of 17th century reflects the complex reality of the architectural chessboard of Central Europe, distinguished from Austria, Bohemia, Germany, Silesia and Hungary (1).

In the 17th, 18th centuries religious architecture develops the topic of façades, showing at first simple line compositions and similar to the façade of the Church of the Gesù in Roma (Fig. 1), while from the second half of the 17th century, bell towers are introduced in the façades, rising from the entablature; sometimes they appear in groups of two towers.
The plans of the churches alternate longitudinal and central examples.

Civil architecture carries on with the adaptation of the palace-fortress characterized from the first buildings with garden limited by bastions to reach its own language (2), though the mediation of the venetian and Palladian influence and the knowledge of French types (hotel and *chateau*).

From the religious architecture in the first years of the 17th century, emerges the Krakow's Jesuit Church dedicated to Saints Peter and Paul (Figs. 2, 3). It was started in the end of the 16th century (3) and completed around 1620 by the Luganese Giovanni Trevano (4).
This is undoubtedly one of the first expressions of the counter-reformation architecture in Central Europe.
Even less than in other places Jesuit buildings in Poland adequate to the taste and local requirements.

The strength of the young religious institution spread very accurate functional compositional schemes (5). Architects with Italian origins of this period, most of them Jesuit, were the bearers of this knowledge.

References with the Church of Gesù in Rome are evident. In fact, the façade of the Cracow's Church in its composition develops some of the topics first introduced in Roma, in line with the counter-reformist ideals that desired the church as a part of a bigger entirety, that is, the urban space.

The whole is simple, the proportions are different, but the spatial articulation has the same aim: "the accentuation of the central part of the façade, that is, the longitudinal axis of the church" (6).
The spatial diffusion is guaranteed from the horizontal lines that integrate the verticalism of the half-pillars. The whole complex is delimited by a tympanum with the Vasa weapons, Poland sovereign.
The inside highlights the new ideal of the congregational church, a vast hall characterized by a vertical integration impressed by the sequence of the frames.

Baroque language continues its spatial evolution in the Camaldolese Monastery in Bielany, Cracow (Fig. 9), which presents the topic of the façade with the two bell towers (7).
The façade recalls numerous formal affinities with the Churches of Santa Susanna and San Luigi dei Francesi, both in Roma, but especially with the Lombard environment of Tibaldi with its ornamental details, as the shape of the apex, the recesses, the portal distribution and the Madonna statue (8).

The dimension of the architectural orders' sequence presents a difference between the lower one that is heavier, and the upper one, that is linear, where instead of the capitals we find unusually triglyph.
The large window, unrelated to the façade surface belongs to the precedent building (9).
The whole is closed on the top by a tympanum delimited by a balustrade like in the Church of Santa Susanna.

The inside arrangement is formed by the spacious nave with three couples of chapels on the sides, almost transformed in recesses.
The planimetrical articulation re-proposes a longitudinal centralized system. In the context of civil architecture, there were numerous realizations in this first part of the 17th century.

First contact between Polish environment and Palladian architecture was stablished by Vincenzo Scamozzi. Krzysztof Zbaraski, Duke of Zbaraz, staying in Venezia from 1611 to 1612, commissioned to Scamozzi a project for a palace-fortress (Fig. 4) expected for the city of Zbaraz, between Poland and Ukraine borders (10).

The Castle of Zbaraski was built around 1627-1631under the initiative of Giorgio Zbaraski, different from the first project proposed by Scamozzi.
Instead of doing a four-storey building with an inner courtyard, Zbaraski did a two-floor building in a compact plan and with a courtyard in front of it (11).

The current palace has not many connections with the Scamozzi's project, but there are some dimensional relations in the plan and in the development of the façade, that is long as the quantity of Veneto feet considered in the Scamozzi's project (12).

During the same years in Warsaw, that became the capital from 1611, Sigismondo III Vasa called Matteo Castelli (who had already collaborated with Maderno) and Giovanni Trevano. The sovereign wrote about Castelli: "*Servitori nostro cuius prompta absequia singularemque in architectura peritiam optimae perspectivam habemus*..." (13).

In the Royal Castle was defined the façade solution in line with Fontana's realizations: later, in the second decade was finished the Tower Clock.

Also in Warsaw was built the Castle of Ujazdow; it was conceived as the summer residence and articulated around a central courtyard that presents the local traditional characters, especially in the towers in the corner and in the roof, fused together with the derivations of the frame of windows and portals.

The Palladian diffusion carried on during the 17th century in a constant way, especially in civil architecture. An example is presented in the composition and in the internal disposition of the Palace of the Bishops in Kielce (1613-1641). Other example is the Krzystopór Castle in Ujazd, Sandomierz, built from the 1621.

Both of the examples, apart from assuming a predominant position in the landscape, show an articulation characterized by an external compact mass and an inner courtyard. The remains of the second castle show the magnificence of a military architecture in its dimensions and especially in the attempt of translating in an efficient concrete experience, the whole theoretical tradition of the treatises of this topic.

The reference to Palazzo Farnese in Caprarola is evident in the plan disposition that reminds of the pentagonal fortress. The residence, around the courtyard, has three floors with all the rooms distributed along the wings (14).

In the second half of the 17th century, after the Thirty Years' War, the religious building organized according to a centric plan is developed. The first expression, after the insertion of the Chapel Vasa in the Wawel Cathedral in Cracow, is the Church of "Padri Filippini" in Gostyń (Fig. 7), started in 1676 (15).

The reference to the Church of Santa Maria della Salute by Longhena, in Venezia, is evident: in fact, we know that the founder, Zofia Opalinska, received some drawing from Longhena during her trip to Italy in 1676.
Works lasted until first half of the 17th century and the dome was finished in 1726 (16).

The church is similar to the Venezia one until the tambour, while the dome and the two small bell towers on the edges are nearer to some roman models.
The figurative balance is guaranteed by the dome and the two bell towers that close the façade. The inside, despite being a centric plan, keeps the two lateral naves that wrap the octagonal basis and it is characterized by a uniformity of compositional divisions, based on the distribution of the elements, and by a clear illumination due to the presence of wide windows in the tambour supporting the dome.

As part of the central-plan churches in smallest dimensions, almost a chapel, we can find the Church of Sisters of the Holy Sacrament in Warsaw (Figs. 5, 6), made between 1688 and 1692 by Tylman Van Gameren, Dutch architect with a great knowledge of Venetian and Palladian experiences (17). That is confirmed by the preference of using the gigantic order, delimited by a high tambour with octagonal dome, giving the whole group a compact and simple aspect.

Previously, the Dutch architect designed the Royal Chapel of Danzig (Fig. 8), in 1678, showing always the preference for the central tendency, in line with the Neoplatonic theories or Pythagorean expressed by L.B. Alberti.
This chapel presents a regular façade following a gigantic order rhythm, delimited on the top by a linear cornice with balustrade; the insertion of the dome with two small bell towers highlights the sacred character of the building.

In the Church of St. Anne in Cracow (Fig. 10), the initial project of Van Gameren of 1689 proposed, in reference to the roman Church of San Carlo ai Catinari, an elongated central plan. The project was modified later by F. Solari, and became a longitudinal composition with transept and dome. The façade expanded, enriched with recesses and elements that provide chiaroscuro effects, with emergent cornices and the two slightly projecting towers.

In the inside, the decorative topics express through the use of large stucco works, coming close to the post-Bernini sculpture precepts (18).
Tylman Van Gameren, the biggest exponent of the architectonic culture between the 17th and 18th century, made a big amount of civil buildings under the filter of Italian canons but also French ones, and mediated by Polish tradition (the Dwór) as well as by the climatic conditions of the village.

The Palace of Krasinki in Warsaw (19), the Palace of Nieborow, the Palace of Branicki in Biatoystok, constitute some examples. The most representative civil building in the end of the century is the suburban Residence of Giovanni III Sobieski in Wilanów (Figs. 11, 12).

The inscription in the façade of the palace "*Quo Vetus Urbs Coluit, Nunc Nova Villa Tenet*" confirms it. Is significant that Giovanni III entrusts the assignment of the creation of the villa to Agostino Locci, architect with Italian origins, better than relying on the renowned Dutch Tylman Van Gameren. This can make us think of a preference for an architecture according to "Italian manners" respect from the Nordic ones.
In the composition of the residence the indications given by Palladio in the second book of his treatise are highlighted, in the choice of the plot and in the disposition given to the constructions.

In reference to the Palladian theories, the residence was defined and it was completed in successive stages. In 1679 the first floor was made, and then between 1681 and 1683 the second floor was completed with the galleries, the towers and the gardens.
Around 1696, in the last period of extension probably conducted by Martinelli and Colombo, it was fixed the second floor of the central part of the building, and then the wings were finished.

We can find a precise reference in the Villa Pisani in Montagnana, near Padova. The decoration of the triumphal arch is repeated along the façades and in the access to the gallery. The architect Locci clearly considered the contemporary Italian buildings like true cultural matrix.

A tight connection is evident in the Villa Doria Pamphilj, especially in the relation of palace-garden developed in two levels in the central part of the residence.

The Italian influence in Wilanów is expressed not only in the architectural composition but also in the whole decoration system of the palace, outside and inside.
The references to the ancient in the inserts of the main and lateral façades, the emperors' busts and those of ancient roman consuls, the old divinities located in the attics, approach the residence to the compositions of Villa Medici and Villa Ludovisi (20).

The Sobieski Age (1674-1696) registered a recovery in architecture and especially an increase in the artistic relations with Italy thanks to the same sovereign (21). These contacts appeared in different ways: buildings were made taking inspiration directly from the already reminded Italian models (Ville Pamphilj, Medici, Ludovisi, Borghese); Italian works of art are acquired, including some paintings of Correggio; Gian Battista Gaulli, Carlo Maratta, Martino Altomonte; Italian artist are employed, (Agostino Locci, G.B. Colombo, Domenico Martinelli, G.B. Bellotti, M. Altomonte, M. Palloni) and Polish artists J.E. Szymonowicz Siemigiowski, Jan Reisner, Kacper Bazanka e Benedykt Renard studied in Rome in the Accademia di San Luca (22).

In these years between the 17th and 18th centuries in Silesia, province of the Habsburg Empire from 1595, architecture is directly influenced by that one made in the imperial court, with the presence of the same architects Christoph and Kilian Ignaz Dientzenhofer and Johann Bernhard Fischer Von Erlach (23).

While Jesuits continued with the congregational compositions with numerous altars organized in the chapels dedicated to the saints, protestants made their churches according to the Greek cross scheme. With the Electoral Chapel in the Wroclaw Cathedral (Figs. 13, 14), made by J.B. Fischer Von Erlach (24), between 1716 and 1722, and the church in the Monastery of Sant'Edwige (Wahlstadt) built by Kilian Ignaz Dientzenhofer between 1723 and 1731, architecture in Poland make part of the diffusion of Baroque, "*Spätsil*" (25).

The Wroclaw Chapel summarizes the conception of central space with the longitudinal one. From the rest, the dome on the top of an oval space, besides being one of the favorite flat-volumetric topics of Fischer Von Erlach, can be considered emblematic for European Baroque (26).

In the Church of Legnickie Pole, Kilian Ignaz makes use of the pulsating juxtaposition as the organization principle.
The main space is an elongated hexagon. Its sides, convex along the inside, reflect the expansion of the adjacent cells; ovals, with the main axis and lenticular shape in the "diagonals".

The organism is composed by a thin columns' skeleton and by slim arches, joint in a bohemian vault decorated with frescos made by Cosmas Damin Asam, and by neutral wall surfaces. The church appears as a complex group of baldachins organized according to the pulsating juxtaposition principle.
The plan is perfectly integrated and represents a convincing synthesis of central-longitudinal space.

In the first decades of the 18th century, while in Silesia Baroque language is expressed freely, in Warsaw as in Cracow there is a return to the Classicism in

some buildings, especially in religious architecture that manifests in the Church of Missionari and in the Church of Piaristi in Cracow.
In the Church of the Missionaries (1720-1750) in Cracow (Figs. 15, 16), there is an evident recovery of the Berninian model, in fact "the façade presents undeniable classicist classifications and presume from Sant'Andrea al Quirinale a whole piece of the front inserting it without repeating the tympanums in the center" (27).

Architecture understood as missionary activity, carries on during the 18th century with recurring synthesis between consolidated shapes and local ones, exhuming medieval traditions, interrupted by the Reformation.

It is natural then that Central Europe architects were particularly interested in Italian architects as Francesco Borromini and Guarino Guarini.
But in terms of advertising that was one of the aims of their work, they adopted also the illusionist's means of the *Theatrum sacrum* of Gian Lorenzo Bernini.

The late Baroque in Central Europe represents a very rich synthesis. The Dientzenhofer were a decisive part in this process of symbiosis, while Fischer Von Erlach aimed at a historical synthesis in the service of the Austrian Empire. In these years the façade transformed into a tower, that is, in a concentrated volumetric element with a direct relation with the environment and not by chance the more significant demonstrations take place in Central Europe with a great amount of prospective focus, from the Benedictine Abbey of Melk, to the Minoriti of Eger in the Church of Holy Cross in Warsaw (Figs. 17, 18), and then in the Trinitari of Cracow and in the Hofkirche of Dresden.

With the sovereigns of Sassoni, Warsaw was the capital while the court resided in Dresden. The city of the 18th century had assumed an almost "radiocentric" scheme with a distribution of the urban spaces regulated by the royal residences and by the gardens. From the urban context of these years emerges the composition of the "Palazzo Sassone", partly designed by Poppelmann since 1713 (28).

The palaces were built according to the French modules "*entre cour et jardin"*, preferably keeping a longitudinal axis while being in relation with the environment and expressing themselves with refinement in the indoor spaces.

In the framework of architecture of the 18th century first of the beginning of the Neoclassicism, the enlargement of the Royal Castle in Warsaw can be introduced (Figs. 21-23).
The ideal of developing an independent wing from the pentagonal composition of the castle to obtain a new façade to Vistula River was a prerequisite for the Baroque composition (29).

The project of Gaetano Chiaveri (1737), the royal architect, also author of the Hofkirche in Dresden, makes part of the Baroque epigones in Poland, a few years before of the architecture of the Stanislao Augusto Poniatowski Age and before of the Fontana's and Merlini's neoclassical projects.

Fig. 1. Roma, Church of Gesù. Photo by C.B. 1981.

Fig. 2. Cracow, Saints Peter and Paul Church. Photo by C.B. 1981.

Fig. 3. Cracow, Saints Peter and Paul Church. Photo by C.B. 2000.

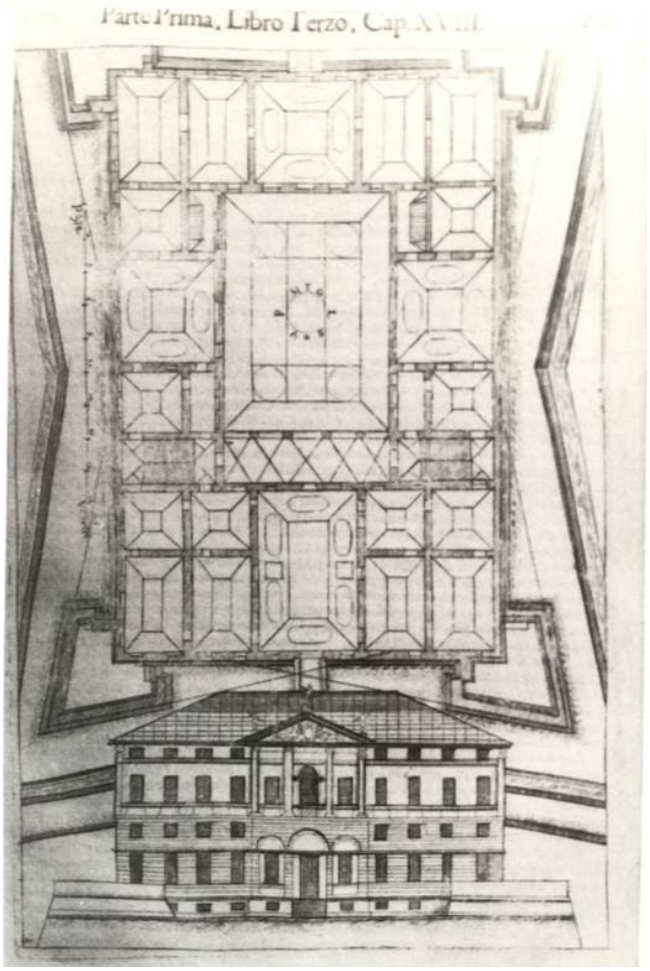


Fig. 4. Zbaraz, project by Vincenzo Scamozzi, *the idea of Universal Architecture*, first part, third book, Venezia 1615 (first edition), XVIII.

Fig. 5. Warsaw, Church of Sisters of the Holy Sacrament. Photo by C.B. 1981.

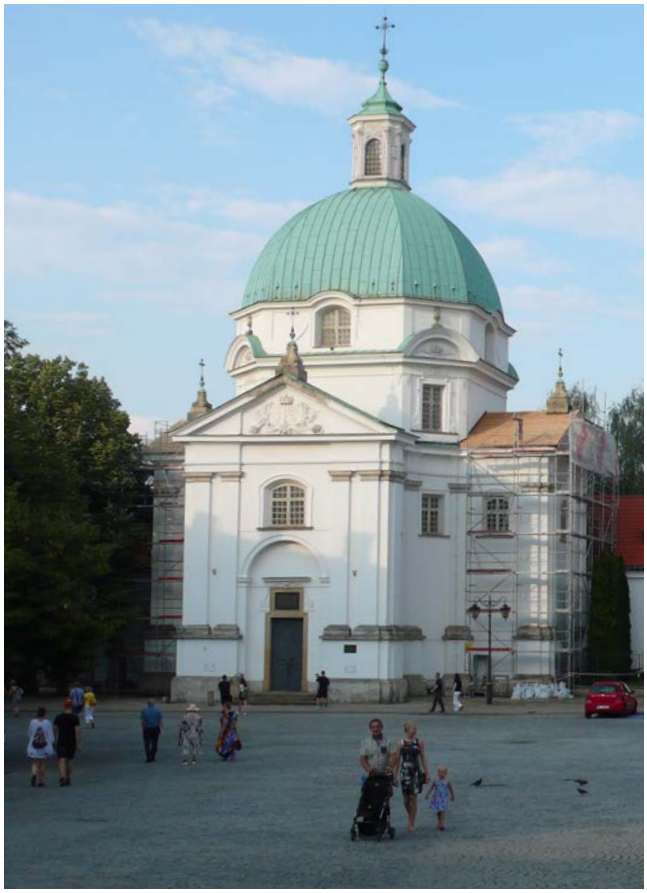


Fig. 6. Warsaw, Church of Sisters of the Holy Sacrament. Photo by C.B., July 2019.

Fig. 7. Gostyń, project for the "Chiesa dei padri Filippini". Institute of Art of the Polish Academy of Sciences.

Fig. 8. Danzig, Royal Chapel. Photo by S. Mossakowski, in *Tylman Van Gameren, architekt polskiego Baroku*, Wroclaw 1973.

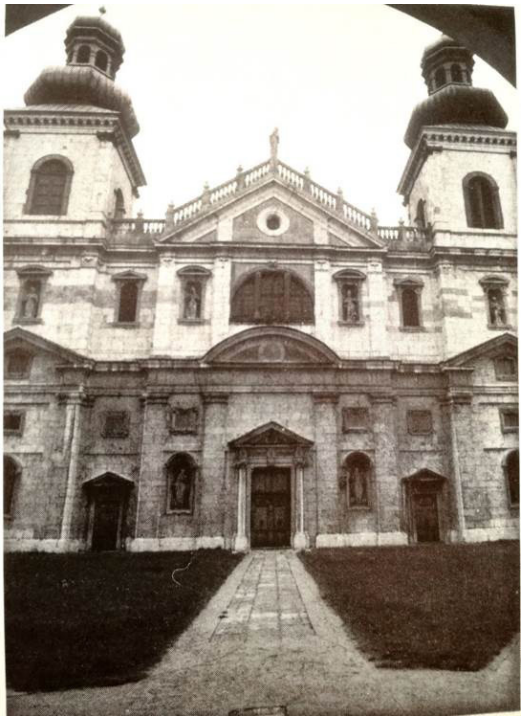


Fig. 9. Bielany, Church of Camaldolesi.
Photo by C.B. 1981.

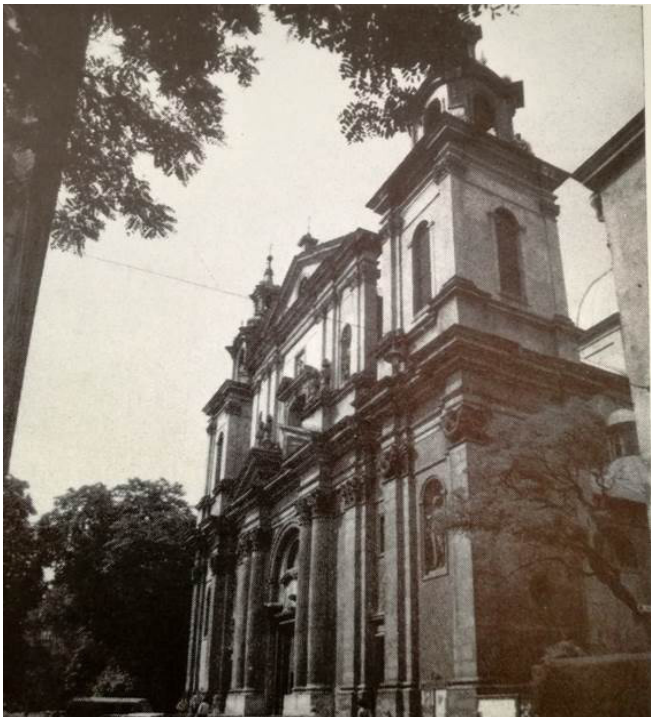


Fig. 10. Cracow, Church of St. Anne.
Photo by C.B. 1983.

Fig. 11. Wilanów, Royal Residence: façade to the garden. Photo by C.B. 1981.

Fig. 12. Wilanów, Royal Residence: façade to the Vistula river. Photo by C.B. 1981.

Fig. 13. Wroclaw, Electoral Chapel.
Photo by C.B. 1981.

Fig. 14. Wroclaw, inside of the Electoral Chapel, in H. Sedlmayr, et. al., op. cit., 1956.

Fig. 15. Cracow, Church of the Missionaries.
Photo by C.B. 1983.

Fig. 16. Cracow, Church of the Missionaries. The façade after a new surface treatment. Photo by C.B., June 2019.

Fig. 17. Warsaw, Church of Holy Cross.
Photo by C.B., June 1983.

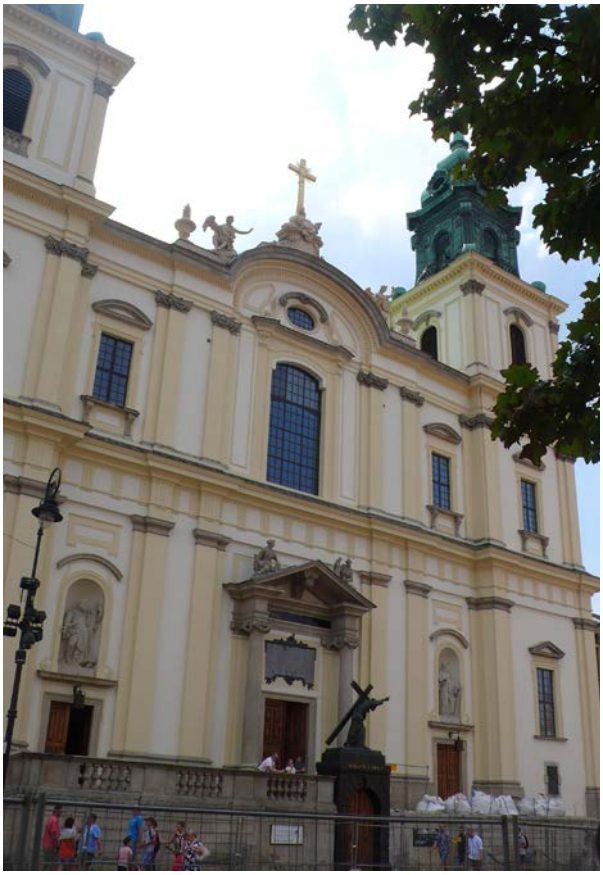


Fig. 18. Warsaw, Church of Holy Cross, The façade after a new surface treatment. Photo by C.B., June 2019.

Fig. 19. Cracow, Church of the Brothers Hospitallers.
Photo by C.B., June 2019.

Fig. 20. Cracow, Basilica of St. Michael the Archangel.
Photo by C.B., June 2019.

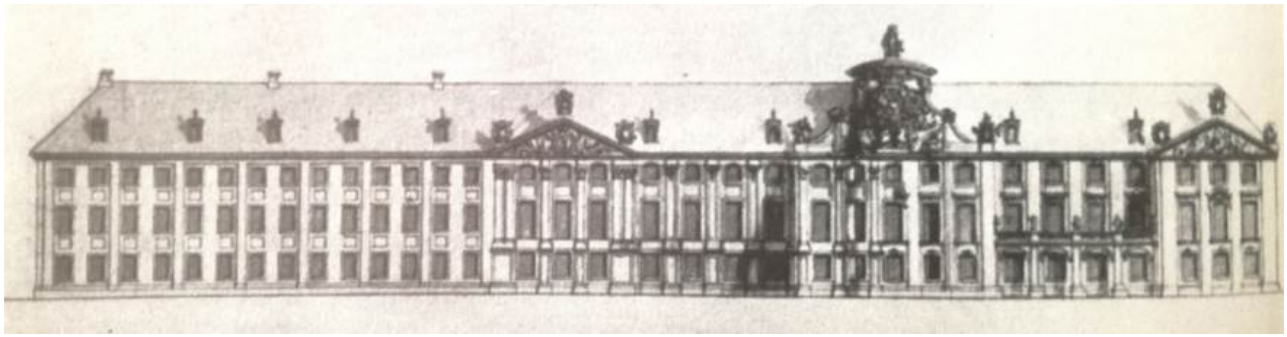


Fig. 21. Warsaw, Royal Castle, façade to Vistula river. (E. Hempel, G. Chiavesi, op. cit.)

Fig. 22. Warsaw, Royal Castle, northern wing first of its distruction (Historical Museum of Warsaw).

Fig. 23. Warsaw, Royal Castle. Photo by C.B, July 2019.

Notes

1. The Catholic Church had already consolidated with the arrival of Jesuits in 1565 the unity of the managing class of the Council of Trento. They constituted in fact, the last step for the "polonization" of Byelorussia and Ruthenia. The involvement in the Thirty Years War (1618-1648) with the block to the Habsburg produced first the deterioration of the rapports with Turkey, and then the intervention of the Cossacks to defend part of the territory; we assist to the reestablishment of the orthodox cult in the oriental provinces, while in the whole country carried out the programs of the counter-reformation. (See: A. GIEYSZTOR, *The history of Poland*, Warsaw 1968, ed.it., Storia della Polonia, Milano 1983).

2. Some of the architectures surveyed have been almost destructed by the military events and then rebuilt.

It is not possible to condemn the reconstruction of Polish monuments, under a unitary judgement (Piero Sampaolesi, Roberto Pane e Renato Bonelli). In fact, for the Warsaw reconstruction "*l´operazione trova la sua giustificazione in un motivo ideale: l´affermazione della vitalità di un popolo, che ricostruendo testimonianze della sua storia ricrea spiritualmente la continuità fra il proprio passato e il presente. Se dunque sul piano dell´estrinsecazione formale questa ricostruzione è disvalore artistico e linguistico su quello storico acquista validità di "forma simbolo" di un valore etico collettivo e dominante*" (see: R. BONELLI, *Architettura e Restauro,* Venezia 1959).

3. "*A la nef unique de trois travées avec chapelles latérales non communicantes, inscrite en plan dans un carré, succèdent le transept avec coupole e la croiséé et le chœur flanqué de chapelles, l´un et l´autre inscrits dans un autre carré de dimension très légèrement supérieures, sur lequel fait saillie l´hémicycle du chevet* » (J. VALLERY-RADOT, *Le Recueil de plans d´édifices de la Compagnie de Jésus conservé a la Biblioteque Nationale de Paris*, Roma 1960, pp. 323.-349 e pp. 497-505).

4. About the events of the construction, further information can be found in P. PIRRI, *Giovanni Tristano e i primordi dell´Architettura Gesuitica*, Roma 1955, pp. 195-203 and 204-205. While the contribution of Trevano could be resized; initially he was a member of the Builders´ Corporation, he was already nominated "*Sacrae Maiestatis fabricarum praefectus*" in 1607, and from the court accounts is reported that, only at that moment, he had begun to manage the reconstruction works and decorations of the Royal Castle (see: S. TOMKOWICZ, Wawel, in "*Teka Grona Konserwatorow Galicji Zachodniej"*, Krakow 1980, IV, pp. 346-347; A. BOCHNAK, *Kościól św. Pietra i Pawla w Krakowie I jego rzynski pierwowzór oraz architekt królewski Jan Trevano,* in "*Prace Komisji Historii Sztuki*", IX, 1948, p. 57; M. KARPOWICZ, *Artisti ticinesi in Polonia nel Seicento*, Lugano 1983).

5. C. GALASSI PALUZZI, *Storia Segreta dello Stile dei Gesuiti*, Roma 1951. P. PIRRI, *Giovanni Tristano...cit.*; ID., *Giuseppe Valeriano S.J. architetto e pittore 1542-1596*, Roma 1970.

6. All the details (portal, nave, dome) contribute to have this effect: "*La facciata diventa un ampio portale che interagisce con l´ambiente urbano circostante. La chiesa consiste di tre elementi: il portale, il percorso e la meta, concretizzati architettonicamente dalla facciata, dalla navata centrale, alla cupola*" (C. NORBERG SCHULTZ, *L´architettura barroca*, Milano 1971, 1979, p. 62).

7. S. TOMKOWICZ, Bienaly, Krakow 1904. R. AMERIO, *Brevi note biografiche sull´architetto Andrea Spezza*, in *Arta Lombarda*, 1959, IV, n.2, pp. 288-291.

8. M. KARPOWICZ, *Artisti ticinesi*…, op.cit., p. 47.

9. M. KARPOWICZ, *Artisti ticinesi*…, op.cit., p. 48.

10. J. KOWALCZYK, *Le relazioni dei polacchi con gli artisti e con l´arte veneta tra XVI e XVIII secolo*, in Atti dell´Istituto Veneto di Scienze, Lettere ed Arti, Tomo CXXXVIII (1979-80) Venezia 1980, pp. 497-508.

11. S. KOZAKIEWICZ, *L´influsso palladiano in Polonia fino alla fine del XVIII secolo*, in Bollettino C.I.S.A., II, 1960, pp. 48-52. A. MILOBEDZKI, *Architektura polska XVII wieku*, Warszawa, 1980.

12. A. MILOBEDZKI, *Tajemnice Zamku w Zbarazu, in Kwartalnik Architectury i Urbanistyki*, I, 1956, fasc. 4, pp. 371-380.

13. Warszawa, in "*Archiwum Glowne Akt Dawnych, Metryka, Koronna*", n. 168, karta 6-2.

14. The elaborations of the building program in Poland are included in the first treaties of Luca Opalinski (*Breve insegnamento sulla costruzione delle ville, dei palazzi e dei castelli secondo il cielo e l´uso polacco*, 1659) and in the treaties of J. Haur (1679), and then in the treaty of the Jesuit´s father Bartolomeo Nataniele Wasowski, "*Callitectoricorum seu de pulcro architectura sacrae et civilis compendio collectorum*", Poznań 1678.

15. E. BASSI, J. KOWALCZYK, *Longhena in Polonia la Chiesa dei Filippini di Gostyn*, in "Arte veneta" XXVI, 1972, pp. 250-262. E. LINETTE, *Jan Catenazzi - architekt i Jego dzielo w Wielkopolsce*, Warszawa 1973. M. KARPOWICZ, *Artisti ticinesi...*, cit., p. 141.

16. W. DALBOR, *Pompeo Ferrari* (1660-1736), Warszawa 1938.

17. S. MOSSAKOWSKI, *Tylman Van Gameren, architekt polskiego Baroku*, Wroclaw 1973.

18. S. MOSSAKOWSKI, *Chrakterystyka i genera formy architektonicznej Kósciola*, św. Anny w Krakowie, "Rocznik Krakowski" XXXVII, 1965, p. 40. J. PAGACZEWSKI, Baltazar Fontana w Krakowie, "Rocznik Krakowski", XI, 1909, pp. I-50.

19. S. MOSSAKOWSKI, *Palac Krasińskich w Warszawia 1677-1693*, in "Foliae Historiae Artium" II, 1965, p. 125.

20. W. FIJALKOWSKI, *Rezydencia Jana III w Wilanowie w Świetle materialów z czasów saskich* in "Biuletyn Historium Sztuki", XXIV, 1967, pp. 359-387. W. FIJALKOWSKI, *Wilanów, Palac, ogród, zbiory artystyczne*, Warszawa 1969. W. FIJALKOWSKI, *L´arte e gli artisti italiani alla corte di Jan III Sobieski,* in "*Polonia-Italia, relazioni Artistiche, dal medioevo al XVIII secolo, Atti del Convegno tenutosi a Roma 21-22 maggio 1975*", Wroclaw 1979, pp. 83-116.

21. The Royal Library preserved numerous monographies about Ferreri's palaces in Roma, the fountains in the squares and public places of the city with their elevations, as they show in the period of Falda, *l´Urbs Romae aedificorum del Dossi e Cavalleri*, in T. LUBOMIRSKI, *Katalog Ksiazék biblioteki Jana III spiany 1689*, Krakow – Warszawa 1870.

22. J.E. SZYMONOWICZ SIEMIGNOWSKI e JAN REISNER won in 1682 one of the first prizes from the Accademia, the first one for two designs about Babel Tower, in the painting course; the second one for the Architecture. The project of Jan Reisner about a centric plan church with pictorial decorations highlights his interest for painting, subject of other studies through the Accademia (see: M. KARPOWICZ, *Il filone italiano dell´arte polacca del Seicento ed i suoi rappresentanti maggiori, Barocco tra Italia e Polonia*, Varsavia 1977, p. 101-110).

23. E. HEMPEL, *Baroque Art and Architecture in Central Europe, Harmardsworth 1965*; p. 144. K. KALINOWSKI, *Architectura Doby Baroku na Ślazku,* Warszawa, 1977.

24. From 1671 to 1684 was already in Rome, then in the Church of Trinità in Salisburgo in 1695 shows his programmatic reference to Borromini, in P. PORTOGHESI, *Borromini nella cultura europea,* Roma 1968, p. 156.

25. C. NORBERG-SCHULZ, *Kilian Ignaz Dientzenhofer e il barocco boemo*, Roma 1968.

26. H. SEDLMAYR , *J.B. FISCHER Von ERLACH*, Wien-München 1956, 1976, pp. 164-165 e 286-287.

27. G. DE ANGELIS d´OSSAT, *L´architettura polacca e gli apporti italiani*, in *Venezia e la Polonia nei secoli dal XVII al XIX*, Venezia 1968, pp. 33-17.

28. E. HEMPEL, op.cit., pp.141-142 and Z. DMOCHOWSKI, *The Architecture of Poland and historical survey*, London 1956.

29. E. HEMPEL, *Gaetano Chiaveri*, Dresden, 1955, pp. 180-186. E. HEMPEL, Baroque Art op.cit., pp. 283 and 386. J. LILEYKO, *Zamek Warszawski w czasach baroku. Treści ideowe przedsiewzieć artystycznych*, in "Biuletyn Historii Sztuki", n. 3/4, 1980, pp. 329-344.

Bibliographic Updating

C. BELLANCA, *Scritti di storia e restauro dell´architettura tra Italia e Polonia*, in Conferenze 112 Accademia Polacca delle Scienze, Biblioteca e Centro di Sudi a Roma, Varsavia-Roma 1999.

There is a tendency to reiterate the increasing interest in Europe through some figures of architects from Italy and other countries and through their works, fell into oblivion along the time, for which would be appropriate some monographies.

Only to mention some of them, are reminded: Vincenzo Scamozzi and his presence in Poland, Pompeo Ferrari, Gaetano Chiaveri and maybe Nicola Salvi; then Baldassare and Giacomo Fontana, Giuseppe and his son Jakub Fontana, Francesco Placidi, Carlo Antonio Bay and Giovanni Maria Bernardoni.

The most part of the writings about these architects are in Polish language and because of that, little known and spread in other countries.

We must not forget Tilman van Gameren, architect born in Holland, from whom an Italian edition would be appropriate, after the complete monography of Stanislaw Mossakowski in Polish and German.

To facilitate the in-depth studies about some architects, it is appropriate to insert in the text some bibliographic indications regarding their activity.

Carlo Antonio Maria Bay

I. MALINOWSKA, s.v. in: *Dizionario Biografico degli Italiani*, t. VII, Roma 1965, p. 309.

J. GAJEWSKI, s.v. in: *Allgemeines Künstlerlexikon*, t. VII, München 1993, p. 657.

Kacper Bazanka

O. ZAGOROWSKI, *Architekt K. Bazanka*, okolo 1680-1726, "Biuletyn Historii Sztuki", XVIII, 1956, 1, pp. 84-122.

H. DZIURLA, *Kacper Bazanka byl uczniem Andrei Pozza*, "Biuletyn Historii Sztuki", LI, 1989, 2, pp. 179-182.

Giovanni Maria Bernardoni

P. PIRRI S.J., *Giovanni Tristano e i primordi della Architettura Gesuitica*, Roma 1955, pp. 195-203.

J. LEPIARCZYK, s.v. in: *Dizionario biografico degli italiani*, vol. 9, Roma 1969, p. 316.

The essays of J. PASZENDA, *Bernardoni in Polonia,* and of T. BERNATOWICZ, *Le chiese del Bernardoni nel ducato di Njasviz,* in *L'architetto Gian Maria Bernardoni SJ, tra l'Italia e le terre dell´Europa centro-orientale*, edited by S. Graciotti and J. Kowalczyk, Roma 1999, pp. 23-37 and 39-55.

Matteo Castello

M. KARPOWICZ, *Matteo Castello architekt wczesnego baroku*, Warszawa 1994.

Gaetano Chiaveri, the basic knowledge text still remains E. HEMPEL, *Gaetano Chiaveri der Architekt der Katolischen Hofkirche zu Dresen*, Dresden 1955, see also E. HEMPEL, *La Chiesa di corte di Dresda nel suo stato presente*, in "L´Urbe", XV, 1952,1, pp. 10-13, and ID., *Gaetano Chiaveri – supplementi alle opere dell´architetto romano*, in "Palladio", n.s., III, 1957, 1, pp. 172-178.

J. LILEYKO, *Projekty Gaetano Chiaverigo dla Zamku Królewskiego w Warszawie. Problem datowania*, "Biuletyn Historii Sztuki", XXIX, 1967, 3, pp. 344-358.

J. LILEYKO, *Zachariasz Longuelune i Gaetano Chiaveri inspiratorzy póznego baroku w architekturze warszawskiej*, in: *Sztuka polska polowy XVIII wieku. Materialy Sesji Stowarzyszenia Historyków Sztuki,* Warszawa 1981, p. 129 and following. About the architectural activity in Dresden an useful reference remains, F. LOFFLER, *Das alte Dresden: Geschichte seiner Bauten*, Dresden 1955; then R. WISHNEVSKY, Gaetano Chiaveri in: *Dizionario Biografico degli Italiani,* XXIV, Roma 1980, pp. 645-649.

Pompeo Ferrari

W. DALBOR, *Pompeo Ferrari i jego dzialalnosc artystyczna w Polsce* Warszawa 1938.

J. WRABEC, *Wroclawskie projekty Pompeo Ferrariego,* "Biuletyn Historii Sztuki", XXXVII, 1975, 3, pp. 295-298.

GIL. R. SMITH, *A Disciple of Carlo Fontana in Poland,* in "*An Architectural Progress in the Renaissance and Baroque Sojourns in and Out of Italy. Essays in Architectural History presented to Hellmut Hager on his Sixty-sixth Birthday*", edited by H-A. Millon and S. Scott Munshower, Pennsylvania 1992, 2, pp. 765-776.

Baldassare Fontana

J. PAGACZEWSKI, *Baltazar Fontana w Krakowie*, "Rocznik Krakowski" XI, 1909, pp. 1-50.

ID., *Geneza i charakterystyka sztuki Baltazara Fontany*, "Rocznik Krakowski", XXX, 1938, pp. 1-4; is pointed L. MACELOVÁ, *Baltassar Fontana na Morave*, Brno 1949.

M. KARPOWICZ, *Baldasar Fontana 1661-1773, un berniniano ticinese in Moravia e Polonia*, Lugano 1990.

ID., *Baltazar Fontana,* Warszawa 1994.

About Francesco Placidi, see the first studies of C. GURLITT, W*arschauer Bauten aus der Zeit der sächsichen könige,* Berlin 1917, and then those of P. BOHDZIEWICZ, F*rancesco Placidi architect, Wloch XVIII-go stulecia w Polsce,* "Prace I Materialy Sprawozdawcze Sekcji Historii Sztuki w Wilnie", III, 1938-39, pp. 219-236.

J. LEPIARCZYK, *Architekt Francizek Placidi 1710-1782,* "Rocznik Krakowski" XXXVIII, 1965, pp. 63-126. A most general essay published is due to J. KOWALCZYK, *Miedzy Krakowen a Warszawa. Uwagi o Bazance, Bayu i Placidim*, in: *Sztuka baroku. Materialy sesji naukowej ku czci sp. Profesorów Adama Bochnaka i Józefa Lepiarczyka*, Kraków 1991, pp. 77-91.

About the figure and the activity of father Bartolomeo Nataniele Wasowski see:

J. BARONOWSKI, B.N. *Wasowski, teoretyk i architect XVII wieku,* Wroclaw 1975, and A. MALKIEWICZ, *Bartolomeo Nataniele Wasowski e l´architettura italiana*, in: *Viaggio in Italia e viaggio in Polonia* (…). Edited by D. Quirini Poplawska, Kraków 1994, pp. 129-143.

It seems appropriate draw attention to the role of some treatise´s editions in Poland in the 17th century, today preserved in the National Library of Warsaw.

This shows the great diffusion of the architectural language of roman and Italian derivation, especially thanks to the presence of the church with its religious orders, first of all, the *Compagnia di Gesù*.

It is significant to notice that the action of the Jesuits with their widespread presence in all of the provinces of Poland, had a foreground position in the reinforcement and in the renovation of the Catholic Church. But beyond of the *Compagnia di Gesù´*s events, the task of these lines is to underline some aspects strictly connected to the architectural process. Therefore, in addition to the Church of Cracow dedicated to the Saints Peter and Paul, they can be reminded the school and the Church of Piotrków in the Palatinate of Lódz, the School and the Church of Jaroslaw in the Palatinate of Rzeszów; then the School of Lublin and the one of Leopoli. This one was already converted from mission to a residence in 1592. For the "small Poland" we can point out the projects for Ostróg and Przemysl, Palatinate of Rzeszów and then in Sandomierz, Palatinate of Kielce and finally for the Province of Masovia, the School of Lomza, in the Palatinate of Bialystok and the projects for Warsaw and Poznan.

These structures showed how the Jesuits "*adottarono forme…conformi alle tradizioni prevalenti, agli usi…del luogo; oscillando così dal mantenimento di modi gotici alle citazioni più forbite delle cadenze cinque-seicentesche italiane*". Therefore, it is possible to agree with both, Rudolf Wittkower and Sandro Benedetti about the inexistence of a Jesuits´ "style" of architecture. Benedetti has specified as "*un´unità profonda leghi l´operare architettonico del nuovo Ordine…*" this can be find in the concept of architectural typology, that becomes "*…importante per coordinare e unificare la molteplice attività della Compagnia*". The essential indications about the constructions can be summarized from the Atti della Congregazione Generale of 1558: "*modum esse imponendum aedificiis Domorum et Collegiorum, quod in nobis est,… fiant aliquando palatial nobelium, sed sint ad habitandum et oficia nostra exercenda utilia, sana et fortia…*".

The basic theme as it can be sensed is in the "utilitarian and reasonable conception of the construction", making a thematic distinction between the architecture for the human use and the buildings destined to the cult of God. It is necessary to remind then, the decisive function first of Giovanni Tristano, and of De Rosis, and finally of Grassi, who were entrusted to guide the constructive process of the architectures of the Compagnia. Through these assumptions "*si può definire quell meccanismo centralizzato attraverso il quale i Gesuiti riuscirono diffondere il loro modo di fare architettura*". Sandro Benedetti identified these modes in three elements: accurate typological choices, the presence of an elaboration office, and the cultural discretion about the applications. From the examination of the inventory redacted by Jean Vallery Radot it can be reminded the prevalence, in the collections, of projects of plan elaborations, compared to the graphic of sections and of fronts and these, as surveyed by Benedetti, highlights that "*l´approvazione riguardasse la soluzione tipologica, la disposizione dell´organismo*". From the proposed and made solutions it is possible to see that the most representative trend is the one with the "aula", to underline a unanimous participation to the liturgy. The architectural solutions that delineate in that way include: a vast unitary space, two rows of chapels located in both sides and differently connected with the aula, a covering by a ceiling in the main aula, an area for the main altar, constituted by the most important chapel.

A second aspect that demonstrates the cultural background from where these architectures of the sei-settecento were generated, is related to the diffusion of the treatises; in a particular way some books of Sebastiano Serlio in some editions: Libro Terzo edited in Venezia in 1540; Libri I-V-VI, Venezia 1559-1566; *Extraordinario libro di Architetture, Lyon 1560;* and *Tutte l´opere d´Architettura e prospettiva*, Venezia 1619.

Is also significant the presence of the "treatise" edited by Bartholomeus Nathanael Wasowski, S.J., *Callitectonicorum seu de Pulcri Architecturae sacrae e civilis, compendio collectorum, Liber unicus,* Posnaniae 1678.

This volume is useful because in the six chapters in which it is organized, gave directly some applicative rules.

I. De ijs quae praeficienda Sunt.

II. De Cognitione Pulcri Architectonici constituti in columnationibus earum symmetris partionibus… 5 ordinibus pulchri.

III. De praxis Stylometriae, Seu de efformatione columnationum in qualibet ordine Diuretia.

IV. De ijs, quae in compositione operis Architectonici sequuntur conditionen e ordinem columnetionis e qvomodo in praxi.

V. De compositione operis Architectonici ex columnis seu columnetionibus.

VI. De Ideis Architectonicis aedium Sacrarum e Civilium.

Also in Krakow, in the Jagiellonian library is preserved a printed copy of a Polish treatise attributed to Andrea Opalinski, *Krótka nauka budownicza Dworów, Palaców, Zamków wedlug Nieba I zwyczaju Polskiego*, 1659 (short teaching about the construction of the villas, palaces and castle under the sky of Poland).

Other copies of this treatise can be found in the Library of Kórnik in the surroundings of Poznan and in the Library of the Academy of Sciences in Gdansk (Danzig).

It is appropriate to remind the knowledge of the works of Andrea Pozzo, *Perspectivae pictorum atque architectorum,* Habsburg 1693-1702 then the divulgation of the Palladian subjects in Poland, especially in the second half of the 18th century.

The sovereign Stanislao Augusto Poniatowski owned in his library the second edition of *Le fabriche e i disegni di Andrea Palladio* edited by Ottavio Bertotti Scamozzi, Venezia 1786. While the prince Michal Radziwill had the *L´Architettura de Palladio*, edited in French in 1726 in the Hague and the Count Stanislaw Potocki owned the first and the second edition of *Le fabbriche e I disegni di Andrea Palladio,* of Bertotti Scamozzi.

At the current state of the studies, some writings of J. KOWALCZYK can be considered, *Il ruolo di Roma nell´Architettura polacca del tardo barocco,* Warsaw- Roma, 1996; and ID. *La fortuna di Andrea Pozzo in Polonia. Altari e cupola finta,* in: *Andrea Pozzo e il suo tempo*, edited by A. Battisti, Trento 1996, pp. 441-449, and the reviewed and enlarged edition in German language by S. MOSSAKOWSKI, *Tilman van Gameren, Leben und Werk*, Berlin-München 1994.

Useful repertories can be found in J. KOWALCZYK, *L´Arte dell´antica Polonia nelle ricerche polacco-italiane,* "Biuletyn Historii Sztuki" LVII, 1995, n. 1-2, pp. 1-17, dedicated to the artistic relations between Italy and Poland.

Other in-depth studies can be found in the agile profile edited by T. DACOSTA KAUFMANN, *Court, Cloister and City, The Art and Culture of Centrale Europe 1450-1800,* London 1995.

In this book the references to the Baroque art start, as usually, from the construction of the Church of the Jesuits in Krakow, after the Thirty Years´ War, then the Castle of Podhorce (pp. 248-249), this one expresses a type of palace-fortress.

A second stage is considered after 1683, the defense of Vienna, with the second diffusion of the Baroque language during the Age of Sobieski III.

In this period the diffusion centers in addition to Warsaw and Krakow, are Vilnius and Leopoli.

In this last one work Bernardo Merettini (Cattedrale di San Giorgio 1748-1760) and Jan de Witte (Church of Domenicani 1749-1764).

The greater Polish scholars agree that the most significant realizations of this period are the Palace Krasinski and the Suburban Residence of Wilanów in Warsaw; while from the first half of the 18th century an important architectural activity appears in Sassonia and Dresden assumes a foreground role.

Other contributes can be tracked down in:

M. KARPOWICZ, *Barok w Polsce,* Warszawa 1988.

K. KALINOWSKI, *Barok in Schlesien, Geschichte, Eigenart und heutige Erscheinung,* Munich 1990.

J. PUTKOWSKA, *Architektura Warszawy XVII wieku,* Warszawa 1991.

And still by K. KALINOWSKI, the repertory dedicated to Poland, in *The Baroque in Central Europe, Places, Architecture and Art,* edited by M. Brusatin and G. Pizzamiglio, Venezia 1992, pp.107-153.

But from a repertory of the publications edited in the next 10-15 years other considerations can be deduced.

If the Council of Trento, started in 1545, had raced the way of a religious renovation and Carlo Borromeo stablished the basis, one of the cornerstones of the diffusion of the sacred architecture, from the half of the Cinquecento, can be found in the *Instructiones Fabricae et Supellectilis ecclesiasticae libri II, Caroli S.R.E. Cardinals tituli S. Praxedis Archiepiscopi iussu, ex provinciali decreto editi ad provinciae Mediolanensis usum,* Milano 1577.

The big luck of the "Instructions" was the reprinting, after the one of 1577 can be pointed out the edition of Paris in 1642 and the one of Lyon in 1682, that contributed to a higher diffusion in the whole catholic world.

To this end see: J.S. ACKERMANN, *Pellegrino Tibaldi, San Carlo Borromeo e l´Architettura ecclesiastica del*

loro tempo, in Atti del Convegno Internazionale *nel IV* Centenario della morte*, Carlo Borromeo esempio e modello 1984*, Roma 1986, pp. 574-586. In addition, it is possible to extend also for Warsaw and Cracow the axiom that in the 18th century the Baroque seems to become Mitteleuropean.

Certainly, Vienna and Prague raise among the capital cities, for the quality of the figurative expressions, but in Poland of the 17th and the 18th century there is maybe a more widespread penetration also in the smaller centers and in the isolated places of the territory.

It is enough to implement itineraries of study in the country and then the examination of the history of architecture journals and those of history of art to verify this affirmation. Among all the episodes can be mentioned J. KOWALCZYK, *Uwagi o Kosciele i klasztorze trynitarzy w Lucku (...)*, "Kwartalnik Architektury i Urbanistyki", XXXIV, 1989, n. 3-4, pp. 193-203.

R. ZDZIARSKA, *Kosciót i klasztor misjonarzy w Siemiatyczach w pierwszej polowie XVIII w*. "Kwartalnik Architektury I Urbanistyki"; XXXVI, 1991, 2 pp. 103-122.

K. GUTTMEJER, *Kosciót w Karczewie pod Warszawa,* "Kwartalnik Architektury i Urbanistyki" XXXVII, 1992, 4, pp. 315-330.

A. KUSZTELSKI, *Zbór ewangelicki Św. Krzyża w Lesznie. Problem autorstwa i pierwotnego projektu.* "Kwartalnik Architektury i Urbanistyki", XXXVII, 1992, 2, pp. 145-157.

At the same time, it is detectable that some synthesis about the Baroque architecture of these years mentioned Poland just a little.

A first approach was noticed in the Stanislaw Wilinski´s contribute, *L´architettura in Polonia nel 700 tra Barocco e Classicismo,* in *Bernardo Vittone e la disputa fra Classicismo e Barocco*, among the Atti del Convegno Internazionale promoted by the Accademia delle Scienze di Torino in the anniversary of the second centenary of the Bernardo Vittone´s death (21st – 24th September 1970), Torino 1972, vol. I, pp. 321-329; while in the previous symposium about Guarino Guarini in 1968, only two essays were dedicated to Central Europe. The Polish reality was not even in the Atti del Convegno Roma l´Italia e l´Europa: *Il barocco nelle Capitali* (Roma 22nd – 27th October 1987), Roma 1992.

A different in-depth study appeared in the Saggi in Onore di Hellmut Hager, edited in 1992. The G.R. Smith´s contribute, dedicated to Pompeo Ferrari, Carlo Fontana´s pupil, is pointed out for the direct incidences of the Roman architecture of the time and for the projects studied inside of the Accademia di San Luca and their diffusion in Poland.

Hellmut Hager proposed one of the most convincing "key to reading" to best interpret the architectural activity in Dresden and in Poland by means of Carlo Fontana. Augusto il Forte, from 1695 elector and from 1697 sovereign of Poland, in 1694 had visited the Città Eterna meeting, by the way, the Roman architect Carlo Fontana.

On 12th April 1694, after carrying out an inspection to the Basilica Vaticana with Carlo Fontana, and after seeing a copy of the Libro del Tempio Vaticano through a bookbinder, Augusto asked the architect for a copy of the sample. Fontana offered the copy, already destined to the King of Spain. The King of Poland declared in 1697 that his religious conversion was due to this book as "main reason". He went this far to confirm the role that Carlo had in all of this. On 15th August 1699 conferred him the title of "*Conte libero in riga de i maggiori Conti e Magnati del Regno*".

Some years later after 1710, Matthäus Daniel Pöppelmann, young architect of the king of Sassonia sent to Roma to study architecture, visits the studio of Fontana and takes remarkable solicitations for his future realizations. The event is summarized in H. HAGER, *Bernini, Carlo Fontana e la Fortuna del "Terzo Braccio" del Colonnato di Piazza San Pietro in Vaticano, L'architettura della Basilica di San Pietro Storia e Costruzione*, Atti del Convegno Internazionale di Studi (Roma 7th – 10th November 1995), Roma 1997, see particularly pp. 351-353 and 358-360.

Other news about the meeting between Carlo Fontana and the future king of Poland are found in G. BASERGA, *L´architetto Carlo Fontana e i suoi rapporti col re di Polonia,* in Periodico della Società storica della Provincia e Diocesi di Como, 26, 1927, pp. 113-117.

Finally, in the next years other authors approached the topic. They can be reminded: R. BÖSEL, *Le opera viennesi e i loro riflessi nell´Europa centro-orientale*, in Andrea Pozzo, Milano 1996, edited by V. De Feo and V. Martinelli, p. 225; J. KOWALCZYK, *La fortuna di Andrea Pozzo in Polonia. Altari e finte cupole*, in AA.VV., Andrea Pozzo, Milano-Trento 1996, pp. 441-449. In this essay, the author reiterates some of the Polish crafts: "*In realtà molto di rado abbiamo a che fare in Polonia con una fedele ripetizione dei modelli del Pozzo. Gli artisti proponevano continue innovazioni*". J. KOWALCZYK, *Il ruolo di Roma nell'architettura polacca del tardo Barocco,* Warsaw-Roma 1996. A. ROTTERMUND, *Il Castello Reale di Varsavia,* Warsaw 1996.

In summary, to remind an axiom of Hellmut Hager, the "tangencies and affinities" in these years of the Baroque Age, remain valid also for Poland. The artistic culture recognized and renovated from Italy and from other European environments.

About the widespread diffusion in Europe of the Baroque architecture, some essays are dedicated in the volume *I trionfi del Barocco Architettura in Europa 1600-1750*, Torino 1999, see particularly the essays by H.A. MILLON, *Introduzione*, pp. 19-32, C. NORBERG-SCHULZ, *Il barocco e le sue architetture,* pp. 57-80, H. BALLON, *L´architettura nell´Europa del Seicento*, pp. 81-111, then C. NORBERG-SCHULZ, *L´età del tardo Barocco e del rococò,* pp. 113-134, and D. SVIDKOVSKIJ, *L´architettura imperiale russa tra Oriente e Occidente (1600-1760)*, pp. 135-172, finally E. KIEVEN, "*Mostrar l´inventione". Il ruolo degli architetti romani nel barocco: disegno e modello*, pp. 173-205, and C. MIGNOT, *Mutazioni urbane*, pp. 315-331, to conclude with the contribute of M. KRAPF, *Il modello architettonico nell´area d´influenza della corte imperiale di Vienna*, pp. 397- 417.

This writing pointed mainly to the architectural events, but it is possible to affirm that the unity of the visual arts that appeared in the Rome of Bernini (I. LAVIN) and from his artistic circle, was spread also in this European region.

Additional studies about this architecture will request geometric-dimensional representations in the appropriate metric scale and architectural surveys that represent, through plans, sections and elevations, the current state, together with some detailed survey about the construction techniques and their different materials employed in the various areas of the country.

Finally, it will be desirable more collaboration among the Italian and Polish scientific institutions, training some young researchers able to go beyond the language barriers, to best survey and make progress on the research of this sector.

J. KOWALCZYK, *L´architetture du baroque tardif de Vilnius et ses rapports européens,* in *Biuletyn Historii Sztuki,* 55, 1993, pp.169-197.

J. KOWALCZYK, *Guarino Guarini a pózno barokowa architektura w Polsce i na Litwie*, in *Kwartalnik Architektury i Urbanistyki,* 42, 1998, pp. 179-201.

J. KOWALCZYK, *Vincenzo Scamozziego w wiazki Polska*, in *Kwartalnik Architektury i Urbanistyki,* 43, 1998, pp. 145-158.

J.K. OSTROWSKI, J. PODLECKI, *Wawel, castle and cathedral,* Cracow 1999.

J. KOWALCZYK, *Znaczenie wzorów Giovanniego Battisty Montano dla architektury barokowej w Polsce i na Litwie,* in *Biuletyn Historii Sztuki,* 2000, pp. 9-49.

M. KARPOWICZ, *Artisti ticinesi in Polonia nella prima metà del ´600,* Ticino 2002.

J. KOWALCZYK, *The significance of Bohemia and Moravia for late-Baroque architecture in Poland,* in *Biuletyn Historii Sztuki Państwowy Instytut Sztuki; Stowarzyszenie Historyków Sztuki,* Warsaw 2002, pp. 97-151.

A.A.V.V., *F. Fiorentino, The Wawel, Cracow 1504-1548*, in *Icons of Renaissance architecture,* edited by Alexander Markschies, Prestel may 2003, pp. 46-48.

M. KARPOWICZ, *Matteo Castello, l'architetto del primo barocco a Roma e in Polonia*, Lugano 2003, from the polish edition *Matteo Castello: architekt wczesnego baroku / Karpowicz, Mariusz, 1934-2015.*

M. RÓZIEWICZ, J. WENDLANDT, *Historic Monuments in Poland: 30 Treasures of National Heritage,* Warsaw 2006.

A. BUJAK*, Polish cathedrals,* Krakow 2007.

A. ROTTERMUND, *Artisti italiani alla corte di re Stanislao Augusto Poniatowski,* Pessano 2007.

A. ROTTERMUND, *Zamek Królewski w Warszawie,* Warsaw 2007.

M. KARPOWICZ, *Matteo Castello da Melide, l'architetto del primo barocco da Roma alla Polonia*, in Arte & storia, Lugano 2007, pp. 124-129.

J. HARASIMOWICZ, *Representation of the Court and Burghers: Kraków, Wroclaw and Dresden in a Historical Comparison*, in *Embodiments of Power: Building Baroque Cities in Europe,* edited by Gary B. Cohen, Franz A. J. Szabo, New York-Oxford 2008, pp. 97-120.

M. KARPOWICZ, *Artisti valsoldesi in Polonia nel '600 e '700,* Menaggio 1996.

M. KARPOWICZ, *Isidoro Affaitati (1622-1684): architetto valsodese in Polonia,* Valsolda 2009.

M. DĘBICKA, *Wawel, il Wawel scomparso*, Kraków 2010.

T. TORBUS, *The king and his patronage. Sigismund I the Elder and the Royal Castle on Wawel Hill in Krakow,* in *Architecture, liturgy and identity,* edited by: Zoë Opačić and Achim Timmermann, Turnhout 2011, pp. 185-195.

B. ARCISZEWSKA, *The royal residence in Wilanów and gender construction in early modern Poland*, in *Bâtir au féminin?,* Paris 2013, 137-150.

A. FISCHINGER, M. FABIANSKI, *The Renaissance Wawel, building the royal residence,* Cracow 2013.

P. KRASNY, *Sto lat samotności, Jezuicki kościoł świętych Piotra i Pawła a architektura Krakowa i województwa krakowskiego w XVII wieku* (english version: *One hundred years of solitude: the Jesuit Church of Saints Peter and Paul versus the architecture of Krakow and the Krakow Voivodeship)* in *Studia nad sztuką renesansu i baroku Towarzystwo Naukowe Katolickiego Uniwersytetu Lubelskiego,* Lublin 2015, pp. 201-226.

J.K. OSTROWSKI, *Royal residences,Wawel Royal Castle, the Royal Castle in Warsaw - Museum, the Palace of King Jan III at Wilanów, the Royal Łazienki Museum in Warsaw,* Olszanica 2015.

P.M. STĘPIEŃ*, Protection of historic heritage between dangers and hopes; the case of Wawel*, in *Il nuovo umanesimo rappresentato e annunciato* edited by Bartolomeo Azzaro, Calogero Bellanca, Città del Vaticano 2015, pp.125-138.

B. ARCISZEWSKA*, Vincenzo Scamozzi and architectural discourse in the Polish-Lithuanian Commonwealth (c. 1600-1800),* in *Vincenzo Scamozzi teorico europeo,* edited by Franco Barbieri, Maria Elisa Avagnina e Paolo Sanvito, Vicenza 2016, pp. 230-252.

9. Vienna, Palazzo Sternberg, a palimpsest for Europe

Calogero Bellanca

The urban contest

The Palazzo Sternberg is situated along the Ungargasse, number 43.
The current neighbourhood, or better, the third district of the city of Vienna, forms in the site of the Landstraβe (1). This free land between the medieval city and the "outskirts" of the Baroque city was urbanized from 1857.
Retracing, in short, the urban history of this district, of the capital of the Habsburg Empire, it is understandable how, from some of the city maps, it is possible to summarize the historical stratification and the urban modifications in time. At the same time, some documents preserved in the archive of the neighborhood of the Landstraβe, report a "story of the construction events" in which in addition to the register of the owners, it gathers the facts that confirm the existence of an architectural reality at the time of the Joseph Daniel Huber's representation, and the J. Adam's engraving (Fig. 1). In this view of Vienna it can be deduce the pre-existence of the current Palazzo Sternberg from the garden. The bird's eye view indicates the central part, "while in 1821 the builder Karl Ehmann has added the lateral wings… built by Moreau, around 1810,… Ehmann obtained the license for the added building, and… with this work he has erected one of the most significant architectures of the Landstraβe… it should be noted that in the 60's of the 19th century, a bas relief of Apollo in the fronton was substituted by the Sternberg emblem and were removed some of the bust of the divinities and the sages of the Ancient Greece, located in some niches of the lateral bodies…" (2).

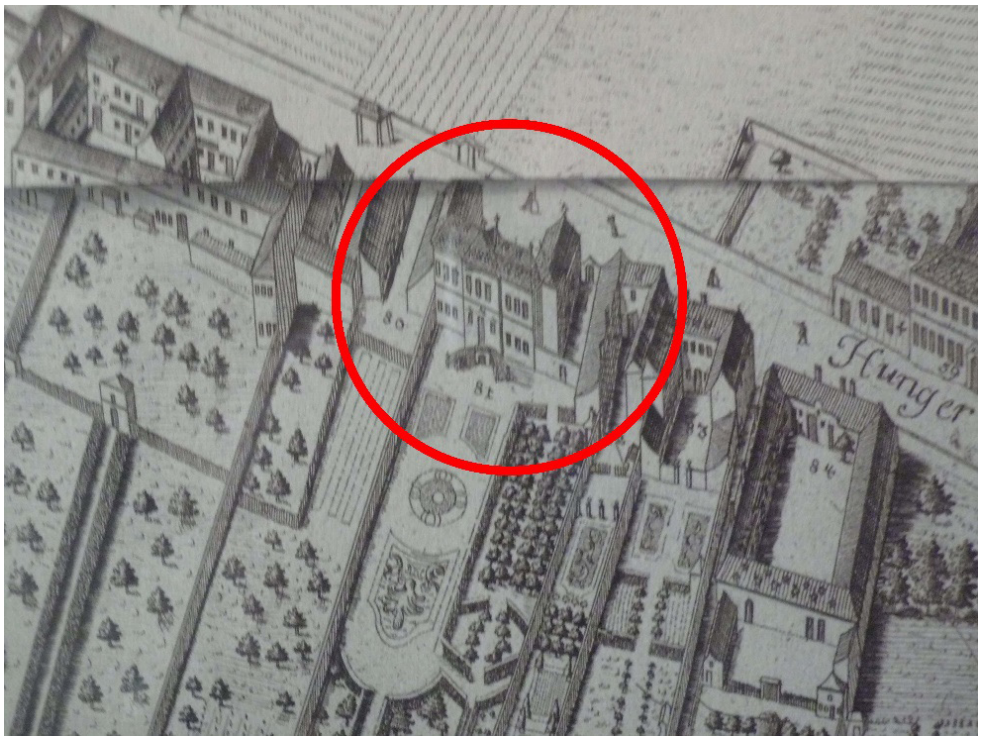


Fig 1. 1773-1778, Vienna (Plan by Joseph Daniel Huber) Detail of the Ungargasse, with the current presence of Palazzo Sternberg.

Notes

1. For the neighbourhood of the Landstraβe see: III. Bezirk and see *Die erhaltenswerten Denkmale des III. Bezirkes*. One of the first esays about III District of Landstraβe can be found on *Kunsthistorischer Atlas der k.k. Reichshaupt-und-Residenzstadt Wien*, by Hugo Hassinger, Vienna 1916, with an introduction by Max Dvořák. Il Palazzo Sternberg is identified from the parcel 43. The Bezirksplanen was made in 1912 with the cronological recognition of the constructions. In fact, our palace is indicated between the: "*Bauten u. Denkmale vom Beginn des 19. Jahrh. bis in die Vierzigerjahre (Empire u. Biedermeier)*". In the plan the previsions of the expansion plan can be noticed with the tracing of new roads and the particles of the buildings under construction. Particularly, about Palazzo Sternberg refer to the description in this article.

2. Detail of the big plan preserved in the Historical Museum of the city of Vienna, on the first floor. Daniel von Huber, *"Scenographie" der Stadt Wien mit ihren Vorstädten,* made between 1769-1773 (1778).

The architectural reality from the iconographic and archival documentation

The study allowed tracking down both, some groups of drawings and some manuscripts. First documents are dated between 1810 and 1823 and provide the description for the enlargement and the execution of some works. More specifically, the authorizations to obtain the building license are asked, and the execution of the roofs, pavements, doors and windows is indicated. A considerable section is dedicated to the backyard with the various subdivisions and splits.
The first group of drawings is composed by two graphic reproductions of the first years of the 19th century; these are preserved, actually reproduced in black and white pictures, in the Photographic Archive of Bundesdenkmalamt. A second nucleus of drawings shows the ensemble of the works effectuated in the 20's and the 30's of the 20th century and it is guarded in the Archive of the Magistrat Wien; finally a third series is found in the same offices of the Istituto Italiano di Cultura.
The plans show the representation of the three levels: the basement, the ground floor and the piano nobile. All the historical drawings are made according to the usual graphic techniques, for the history of architecture and for the restoration, with the backgrounds in black and other colorful signs, red, yellow to facilitate the reading of the interventions like for example the demolitions, the reconstructions, the reinforcements and the enlargements.

The whole iconographic apparatus is extremely interesting, and it deserves some critical considerations. To approach to the comprehension of the progress of the architectural organism a first drawing date back to 1810, *"Grundlageplan",* preserved as a copy in the Bundesdenkmalamt.
This plan shows an U disposition through the limit of the Ungargasse, while a "pincers" staircase rises through the big garden, preexistent to the current one.
The drawing of the staircase invites us to reflect and seems to demonstrate that architectural preexistence that many researches had assumed. The elevation to the garden has a linear development; in fact, it seems to be the same organism represented as a bird's eye view in the Huber's cartography, in the end of the 18th century.

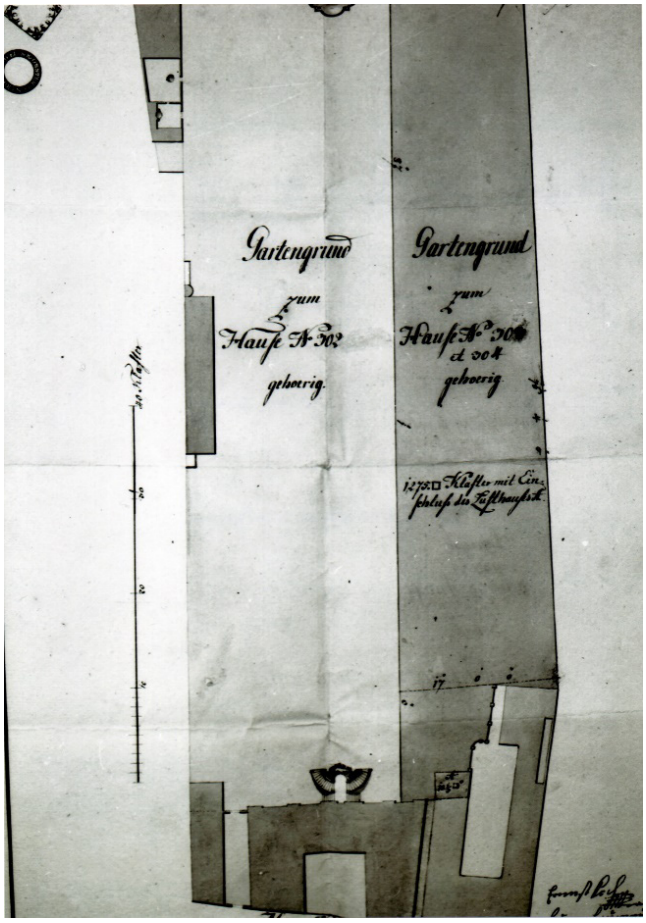
It can be read *"Gartengrund zum Haus n. 302 gehoerig*". The drawing is expressed according to the unit of measurement adopted in Vienna in that time, the *Klafter* (1).

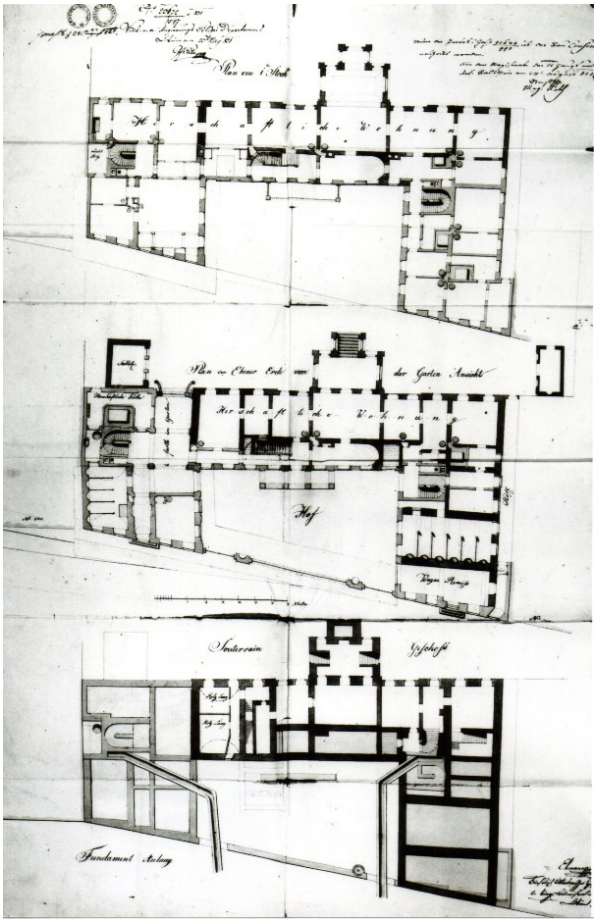
An isolated detail in the sheet of the drawing, but not for the history of the artistic expressions, is a small architectural element, that seems to be the "*Gartenpavillon"* made in the first years of the 19th century maybe by Charles Moreau. Next to the palace there is a reduced opening that leads into a "corridor" which from the outside brings to the garden. That should be the access reserved to the carriages (Fig. 2).

The second drawing includes the three levels of the palace and it is dated 1821. The subterranean shows the existent nucleus with the almost symmetric addition on the left that follows the development of the property.
It is interesting to notice how the different staircases and the water runoff are highlighted.
Some captions wrote by the author can be read, and they indicate the level of foundation *"Fundament Anfang"* and the lumberyard *"Holzlager"*.
Moreover, the drawing shows the overhang of the avant-corps through the garden, in all the levels, but the configuration of the outside stair has changed through the inside.
An accurate reading allows understanding how the articulation is different with the closure towards the road while the hopper windows open towards the garden.
The masonry structure shows the different supporting perimeter walls and with regularity it takes shape also in the inside. The preexistent nucleus shows from the foundations with the connection staircases extracted from the skeleton of the structure.
The ground floor or "*Plan von Ebener Erde von der Garten Ansicht"* shows an architectural configuration that rotates around the *hof.*

Fig. 2. Palazzo Sternberg, Ungargasse 43, III Bez. Grundlagenplan v. 1810, EZ 1687.
Photographic Archive of the Bundesdenkmalamt Nr. N 34280.

Fig. 3. Palazzo Sternberg, Ungargasse 43, III Bez. Plan v. 1821, EZ 1687.
Photographic Archive of the Bundesdenkmalamt Nr. N 34281.
They can be read together the additions made by the builder Ehmann on the precedent organism by Moreau.





The drawing pays attention to differentiate the initial nucleus from the one of the additions, expressed graphically in a lighter tone in the wall thickness filling. The front to the Ungargasse shows two symmetrical entrances, while a portico is deduced at the front in the *hof*. In this drawing the two pilasters that delimitate the courtyard with a fence are represented.
Passing the entrance, on the left, a staircase that leads to the upper floor appears. There are here a number of spaces with an enfilade that show the master's apartment (*Herrschaftliche Wohnung*) and from this one the garden is directly accessible by a staircase.

On the left, it is extracted a passage through the garden *(Farth im Garten)* and the master's kitchen *(Herrschaftliche Küche)*. From the whole documentation it can be understand how the path on the left was reserved to the carriages' entrance and to leave the horses (*Wagen Remise*) and to an adjacent pavilion *"Salettl"*.

The wing on the right shows a separated space but with a similar characteristic to host other stables. In the plans, they can be read three staircases overall, particularly the one on the right connects with the basement and is the one that still exists today, while the staircase on the left has been modified in the various interventions of the 20th century, as well as the central one, reduced in its initial realization.
The third representation highlights the plan of the "*piano nobile*".

This is the real residential floor "*Herrschaftliche Wohnung"* and a reduced space with a skylight "*Lichthof*" (Fig. 3). In the *Palais* Sternberg, the new distribution of the *piano nobile* exhibits the boardroom through the garden with a rooms' *enfilade,* while the residential spaces are allocated in the two lateral wings.

The drawing deduces by the way a small staircase that in a certain way, absolves to the function of hallway in the piano nobile. But this is not the stairway that will be made in 1900. In the ensemble, the arrivals of the three staircases can be read and symmetrically to the central one, there is a connection space with the wing on the right side of the palace. In a reduce proportions, it can be found the model of the French residence, set according to the "*commodité e distribution"* parameters.

From the beginning of the century, the Academy of Architecture in Paris had surveyed that the comfort of the residences was preferred to the external appearance. The architecture in the first years of the century reveals a general direction but it is specified with an extraordinary ductility (2).
To these first drawings follow other graphic arts where the different works effectuated during the past century can be identified.

Among the projects maybe the most surprising one is that of an "allotment plan" which would have destroyed the Alois Graf Sternberg palace.
That plan, started from the end of the 19th century, jeopardizes the existence of the residence and in the 20's of the 20th century was expected the real cut of the palace with the creation of an orthogonal road axis and the project to make straighter the Ungargasse. The new axis was planned be around 15,17 m wide (Fig. 4).

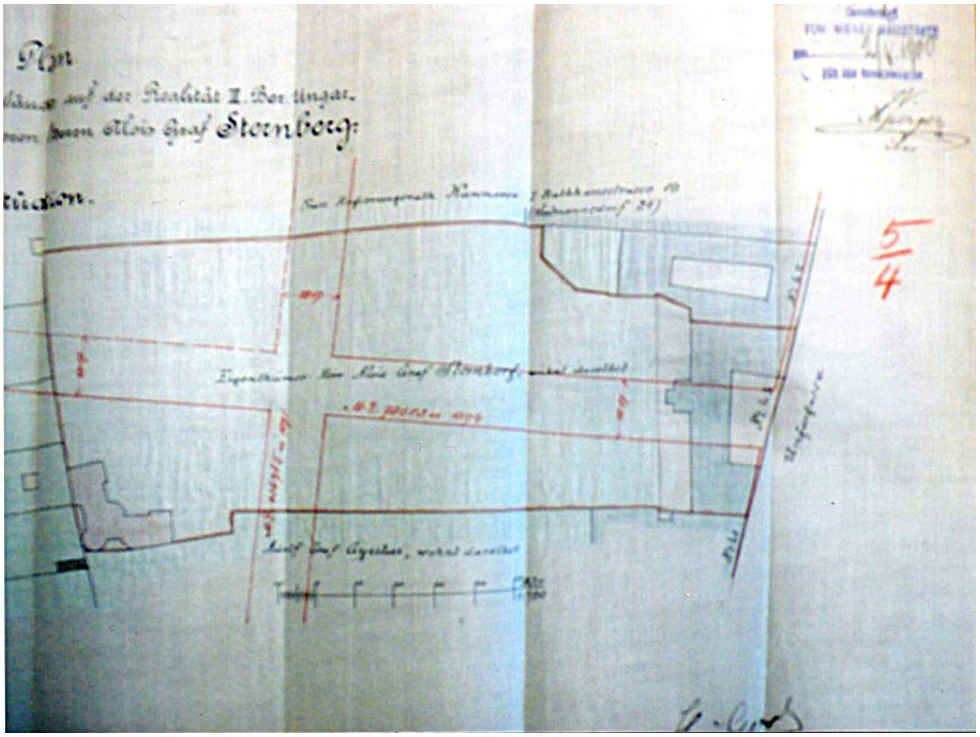


Fig. 4. Palazzo Sternberg. Allotment project that destroyed the palace (Archive Magistrat Wien).

At the same time other adaptation works are proposed for the façade *"für herzustellende Adaptierungsarbeiten im Palais Sternberg"*. The project is signed by the Austrian Association of Engineers. This composition tries to remodel the entrance to the Ungargasse with the stabilization of some slabs and the substitution of the wooden beams (3).

Notes

1. "The fundamental unity of linear measurement of Vienna is the *Klafter,* that divides in 6 *Fuss* (feet); the *Fuss* splits in 12 *Zoll* (fingers or inch); the il *Zoll* in 12 *Linien* (lines) that correspond to 1,896612980…" from L. MALAVASI, *Misure e pesi di Vienna e loro rapporti colle metriche,* in *La Metrologia italiana ne' suoi scambievoli rapporti desunti dal confronto col sistema metrico*, Modena 1842, p. 321.

2. The topics about the French and Italian treatises seem to be recognised particularly through the *Cours d'architecture* by D'AVILER, 1691 and *L'art de batir des maisons de campagne*, by BRISEUX, 1781 and by J. F. BLONDEL, *Cours d' Architecture, ou traité de la Décoration. Distribution et Construction des bâtiments*, Paris, 1771-1777, vol. IV; G. MASI, *Teoria e pratica d'Architettura per istruzione della gioventù specialmente romana*, Roma 1788 and finally F. MILIZIA, *Principj di architettura civile*, vol 1-3, 1781. See also G. VALADIER, *Progetti architettonici per ogni specie di fabbrica in stile e usi diversi inventati dall'architetto camerale Giuseppe Valadier*, Accademico di San Luca, Roma 1807. For a summary see H. W. KRUFT, S*toria delle teorie architettoniche, Da Vitruvio al Settecento*, Roma-Bari 1988.

3. This Association of Austrian Engineers and Architects was founded in 1848 and is one of the most ancient international associations of engineering. Among its members and associates can be recalled: Siegfried Marcus, Ferdinand Porsche, Viktor Kaplan, Karl Ritter von Ghega, Karl Terzaghi e Leopold Müller.

The architectural reality, current state

Façade

The façade to the road has two elevations and a U configuration (Figs. 5, 6), almost to build a small main courtyard. This architectural character continues, as a constructive scheme, in other Viennese and European palaces in the period that starts from the 18th century.
The architectural consistency rises beyond the fence, made in wrought iron rhythmed by two rectangular pilasters, delimited on the top by two couples of putti with *torchères*.
The central part shows a slightly jutting out body. That seems to reclaim some Classic elements. These elements can be read in both, the ground floor and the higher level, and particularly in the big triangular tympanum on the summit that delimits the overhang.
This avant-corps still shows, in its constructive details on the ground floor, an echo of a classic architectural order. In fact, they can be read on both sides of the reduced pairs of half-pilasters, while on the centre, there are two simple half-pilasters that delimit the entrance. These are crowned by capitals that approach a Doric language.

Fig. 5. Ungargasse, partial view of the central body. Photo by C.B. 2014.

Fig. 6. Palazzo Sternberg, partial view of the façade to the Ungargasse. Photo by C.B. 2014.

The ensemble of the façade, concluded by the great triangular tympanum that contains the emblem of the family Sternberg, a nine point crown of the Count.
The shield crumpled in the central field, highlights the above-mentioned nine point star with two cornucopias on both sides.
A particularity can be found in the opening of ground floor.
Both of the wings are symmetric even though the light-sloped tendency of the architectural organism.
Another characteristic can be found in both of the corner solutions, or better of connection between a slightly jutting out body on the entrance and the lateral part of the front. Here, there are two semicylindrical elements delimited on the top by decorations that show in the outside the need of the constructive connection in the inside of the atrium.

Façade overlooking the garden

The front on the garden (Fig. 7) shows a more articulated composition.
This disposition seems to suppose the permanence of that architectural preexistence, built in the end of the 18th century as the historical iconography shows in the map by Huber as well as in the more recent drawing already described.
The central body juts out compared to the two lateral wings.
This block, today, rests on a slightly raised surface, a kind of a reduced *parterre* obtained by the four gardens. This seems to be the addition of the '20s of the 20th century.
The façade of the *parterre* is shaped by a composed and split balustrade but that shows elements from the architectural lexicon with a pedestal and a cymatium.
In Palazzo Sternberg the ensemble of the balusters' groups, in fact, proposes the classic criterion of the baluster and shows the so-called "Tuscan" model.
In fact, five balusters or columns can be distinguished forming each single balustrade. The sequence is interrupted by a small pilaster, while its parts are readable and according to the classic lexicon can be recognized: "*il plinto, il corpo, il collo e il capitello"*.
A greater attention to the architectural grammar allows to discover: base, lower torus, a small cable and a "*fuso*", that is a cylinder, abnormal, in the lexicon of the balusters and a terminal abacus.
The ensemble of the central jutting out body is characterized by a frame produced by an attempt of assimilate two exemplifications of architectural orders (1).
In the end, in these realizations that reclaim characters of the renaissance language can be notice the permanence of the cultured and refined crafts that know the constructive tradition of different noble residences in Europe.

The façade in the ground floor highlights and echo of the Doric order while on the first floor, it exhibits a different order, comparable to the Tuscan.
It can be also found the reinforcement of the corners according to a recurrent character in residential architecture.

Fig. 7. Overall view of the façade overlooking the garden. Photo by C.B. 2014.

The three openings on the ground floor show a direct entrance door through the garden with a elliptical fronton, while the two lateral windows are delimited by a semi-circular moulding and a reduced shelf on the top.
The whole structure shows also a floral decoration on both of the sides of the main door, similar to two palms.
The openings of the higher level are simple rectangular windows with the windowsill supported by shelfs.

Fig. 8. *Gartenpavillon*, partial view of the first floor and of crowning element. Photo by C.B. 2016.

An architectural element still existing in the old great park is the *"Gartenpavillon"*, comparable to a coffee house. The architecture shows a quadrangular structure in two levels (Fig. 8). The ground floor is open with four arcades while the higher level is closed; the whole element is delimited on the top by a fours slopes roof. It can be noticed also the spiral staircase with a railing that approach the one on the cellar of the palace in the constructive details and in the treatment of the iron (2).

Interior spaces

The interior spaces, in the various levels, show, through a direct reading of the constructive characters and an accurate test of the documents, the different constructive phases.
It can be specified that, beyond the main threshold from the Ungargasse, only a few metres separate the visitors from the stairway (Fig. 9) that lead into the piano nobile. This spatial and architectural anomaly makes feel and immediately perceive the difficulty of doing this addition.

The entrance atrium on the ground floor, if during the Renaissance period had the task of introducing the visitor to the inside in a solemn way, now seems to limit its function to the connection between the road axis and the entrance to the residence.
The current architectural reality invites to reflect about the different constructive phases and about the moments of the construction, from the first decades of the 19th century, to the insertions of the 1900 and those of the ’20s.
The internal part of the stairway (Fig. 10) highlights a stucco decoration that reclaims the topic treated in the whole foyer and it can be notice a particular cornice decorated with a mirror insertion. But this seems abnormal because it is situated in front of a wall, closed later. The singularity can be notice on the abrupt interruption of the decoration on the ceiling.

Fig. 9. Stairway and view of the foyer. Photo by C.B. 2016.

Fig. 10. Internal part of the stairway with the mirror. Photo by C.B. 2016.

In fact, it is necessary to reiterate that the reduced space demonstrate how the stairway has been a successful outcome of one of the successive additions. This is evident from the numerous preparatory drawings and from the work reports.

The dominant architectural element is the spiral stairway, with a railing made in wrought iron with tracks of gilding and wooden handrail that continues the railings’ tradition of the end of the 18th century of French derivation and improved in Vienna, variously disposed and worked (3). In the execution it can be notice towards the inside that any coil with points and curls stick out. The small columns, real cornerstones of the parapet, are fixed in two cylinders between the second and the third step.

The arrival space (Fig. 11) constitutes a real extended corridor, while it shows a great brightness thanks to the different glazed surfaces absolving to the distribution function of the different rooms particularly between the representation spaces and those of the offices.

The space is enriched by a 19th century wall mirror, composed of 24 squares framed by stucco decorations; adjacent to this element the large door appears, framed by a wooden cornice and abundantly glazed composed of eight doors.

Fig. 11. Corridor on the *piano nobile* with the stairway and the large glass wall. Photo by Paola Zofrea, January 2016.

Among the various "public rooms", deserve special mention:
The so-called White Room (known as of Dante), the blue one (due to the current coloring of the painted panels) and the room called toscana, as a result of some wooden decoration elements.
All these rooms have wooden pavements.

The White Room called of Dante (Fig. 12), the largest one, with an elongated rectangular composition, shows sculptural decorations on the top of the two door frames that circumscribe tenuous floral motifs.
For several years this representation room has the function of conference room. This shows large windowed surfaces that favour the relation with the outside.

On the left it is located the so-called Blue Room (Fig. 13), known like that due to the color of the wall panels with golden decorations (7,40x4,70 m). In this room it can be notice a system of shades for the three windows and the golden grills to cover the heating system. The wooden pavement shows geometrical marquetry with different essences: pine and oak.

This room communicates with the adjacent one with a ceiling composed of wooden lozenge and decorative motifs that reclaim those of the late Baroque (Fig. 14).
This room exhibits a door with glazed squares. This particular wooden decoration seems to be the result of the bedroom adaptation for a Count Sternberg's son. The author could be the architect Ludwig Richter (4).
All these rooms are intercommunicating through finely decorated and engraved doors.

The reading room, with a quadrangular disposition, is rhythmed by a wooden paneling that reclaims a classic architectural language.

Fig. 8. Partial view of the “White Room”, (called of Dante) to the garden.


Fig. 9. “Blue Room” overlooking the garden.


Fig. 10. Toscana Room.


Fig. 11. Director Room, detail of the fireplace.

They can be found a base, a shaft and a capital, this one finely engraved. That is composed by two orders of foliage and stands out the treatment of the corner solution.
The combination of the elevations develops with regular paneling rhythmed by the architectural order. This represents a double development, while at the top there is a simple frieze and a crowning element.
Above there is a space decorated with stucco, with the presence of figurative sculptures alternating with geometrical and floral motifs. The figurative motifs show 8 symbolic figures and a couple of winged "puttini" that lay down two baskets. About the "puttini" topic, very popular in the first decades of the 19th century, it can be also found a bas relief inserted in a garden wall.
The space is split in two areas. The real reading room and the other reserved to the paper catalogues and to the location of the management.
An additional architectural element in the fireplace with bronze decorations, reproduce the language of the first years of the 19th century. This fireplace shows some characters of others coeval made for different Viennese palaces; among them, it can be remembered the one of the Festsaal of Palais Palffy in Wallnerstrasse.

The itinerary continues towards the right wing of the palace and here there are the spaces initially destined to some private rooms of the residence.
Among these rooms, deserve special mention the current management and Secretary's Office spaces and the historic Bathroom, in addition to a spiral service staircase and other bedrooms adapted to services and offices.
The spaces currently assigned to the management of the institute show the walls' finishing ennoble by stucco cornices and by a fireplace in the left corner. This seems simpler than the previous one, without the bronze decorations, but it exhibits an articulated floral ornamentation (5). The current secretary's office shows a space with three large windows with the usual shades "*a libretto*" and a Jugendstil chandelier.
The room reserved to the Director's Study highlights a central niche that derives from the adaptation, once assigned, to main bedroom. In both sides they are two doors and other two niches, from one of these, with the successive interventions, communicates an outside terrace.
Along the corridor the Bathroom can be reached.
Particular attention should be given to this room that preserves a character of the Vienna in the first decades of the 20th century.
The space reflects the new "lifestyle" of the private residence and the renovation of the custom of the houses in the period between the end of the Ottocento and the beginning of the Novecento (6).

The historical period of this addition reflects also in the inside of Palazzo Sternberg the successful moment of the Viennese architectural realizations widespread across Europe with the masters of the Jugendstil School.

In the exaltation of the bathroom some attention can be read to the individual objects, as the hydraulic is considered as an artisan, as the tailor, the blacksmith or the sculptor. In fact from the marbles and from the single furniture can be deduced his teaching. But specially re-emerge other Max Dvořák reflections, referring to the houses: "…[these] with modifications quite irrelevant could be returned comfortable and correspondent to every sanitary rule…" (7).

In some elements can be read and seen a bath inserted in a niche (Fig. 16) all delimited by a marble covering with a refined water fittings made in brass. The group of the taps is applied to the wall in the half length of the bath. The buttons

and handles emerge from a metal plate and the water descend to the bath from only one tap better than from the flexible arm of the shower.
On the right, in a rectangular niche is inserted a sink supported by thin small metallic columns and delimited on the top by a simple central mirror and two lateral niches simulated by mirror openings. This seems to echoes the one in the Villa Müller in Prague.

Fig. 16. "Bathroom of the Favourite". Photo by Paola Zofrea (January 2016).

Notes

1. About the topic of the baluster: H. WÖLFFLIN, *Renaissance und Barock, Basel* 1888, p. 27.

R. WITTKOWER, *Il balaustro rinascimentale e il Palladio*, in *Palladio e il Palladianesimo*, Ed. It. Torino 1984, pp. 53-70; P. PECCHIAI, *Il Campidoglio nel Cinquecento sulla scorta dei documenti*, Roma 1950; G. DE ANGELIS d'OSSAT, *L'architettura del Palazzo dei Conservatori*, in G. DE ANGELIS d'OSSAT - C. PIETRANGELI, *Il Campidoglio di Michelangelo*, Milano 1965, pp. 103-105; C. BELLANCA, *Rome, the façade of Palazzo dei Conservatori,* in *Methodical approach to the restoration of historic architecture*, with foreword of Giovanni Carbonara, Jukka Jokilehto, Mounir Bouchenaki and Paolo Del Bianco, Alinea, Firenze 2011, pp. 113-123.

2. For a short detailed historical study of this *Hausgarten* today accessible from the dall'Ungargasse 39-41, see: BERGER, *Historische Gärten Österreichs* ... Wien-Kôln 2004, pp. 131-132. In this volume can be found mentions to other *gärten palais* spread in the parks and gardens of Vienna.

3. One of the first direct references is composed by the panels from the dall'*Encyclopedie* del 1762: *Serruerie,* edited in "*Recueille des planches sur les Scienses, les Arts liberaux et les Arts mèccaniques avec leur explications",* that had a wide application in the architecture of the 20th century across Europe.

4. Some references, in European environment for these decorations of the ceilings can be found in the bedroom of the pink castle of Roquetaillade by Edmont-Armand-Marie Duthoit (1864).

5. To this end see: G.B. PIRANESI, *Diverse maniere di adornare i camini,* Roma 1769; J. WINCKELMANN, *Storia delle arti del disegno*, t. III, Roma 1784.

6. About the topic of the bathrooms, see Adolf Loos that in the chapter dedicated to the *Plumbers*, will write: "In the German bourgeois houses the bathroom was the most splendid and great space of the residence… while the Viennese bathrooms were unsatisfactory" (p. 60) and still points a constant attention in the chapter *Gli interni nella rotonda*, "Even the glasses over the sink… were accomplished according to Wagner's drawings also the enchanting garnish of the toilette" In A. LOOS, *Ins Leere gesprochen trotzdem,* Wien-München 1962, ed. it. *Parole nel vuoto,* Milano 1972, ed. 1999, p. 31, 60.

7. M. DVOŘÁK, *Katechismus der Denkmalpfege*, Wien 1916, ed. it. *Catechismo per la tutela dei monumenti* in Antologia di critici, italian translation by Mina Bacci "Paragone-Arte" n. XXII, 1971, pp. 30-63.

8. P.J. MARTELLO, *Il vero parigino italiano, in Prose degli Arcadi*, Roma 1718, reprint in *Studi critici e satirici* edited by Hannibal S. Noce, Bari 1963.

To this end it is apporpiated to point that the designers that have attended the insertion of the new Bathroom of the Favourite have applied the modern technologies of the time and can be remembered, among the French

publications: J. ROCHARD et E. RICHARD, *Installations complémentaires de l'habitation (Enciclopedia d'igiene Rochard, III)*, 1891; P. BERTHOT, *Traité de l'élévation des eaux*, s.l., 1893; F. COREIL, *L'eau potable*, s.l. 1896; L. A. BARRÉ, La maison salubre, Baillières - Paris 1898; G. DARIÈS, Distribution d'eau, s.l. 1899; F. et E. PUTZEYS, *Les installations sanitaires des habitations privées et collectives,* Ramlot, Bruxelles s.d.

While among the German ones: W. BEIELSTEIN, *Die Wasserleitung im Wohngebäude*, 1894; E. SCHMITT, *Die Wasserversorgung der Gebäude (Handbuch der Architektur)*, Darmstadt s.d.; J. D. STRUKEL, *Der Wasserbau,* 1897 - 1902.

The proposals of study and restoration of the external finishes

A methodological premise, restoration as a cultural act

The topic of the architectural surfaces' restoration is one of the most stimulating and complex aspects in the restoration sector (1).
Paul Philippot, former Director-Generals of ICCROM, has underlined for a long time in his studies the importance of strict historical studies as the tools to guarantee the best comprehension of the architectural language of the works and, through an historical-critical interpretation to guide the intervention (2).
In the same way Giuseppe Zander, master of entire architects' generations, Italians and not only, affirms how "the most habitual mistakes depend on the knowledge lose, in the last half century, of the architectural order's value".
He describes the importance of knowing the history and consequently, applying to the restoration interventions the correct reading of the architectural order: "it is an ensemble constituted by columns, each one composed of a base, a shaft and a capital and of a trabeation; this one subdivided in architrave, frieze, cornice; and the cornice divided in turn, in under-cornice, dripstone and cymatium" (3).
To this end, it can be noticed how, in many European cities, there are some architectures belonging to historical periods and particularly to the 19th and 20th century, which suffered "hurried" interventions of maintenance and not of restoration, most of the times without an appropriate design command and with not enough knowledge of the architectural language.
These are, in the majority of the cases, constructions that show a refined language, cultured and dense of constructive references typical from an eclectic cultural climate which have a variegated lexicon constituted by architectural orders: from the classical antiquity, to the Renaissance and to the Baroque until the whole 19th century. More the text is complex, as a result of quality projects, more the attentions are necessaries also for the interventions, "rather simples, as the painting of the façades…" (4). A lot of the accomplished interventions affect strongly to the architectural reality, causing sometimes that the (first) text appears less comprehensible and fragmentary, without any aware and current reading that could replace it.

In this way, first of dealing with a coloring project for the façade, it is primary and essential to understand, on a case by case basis, which were the intentions of the architect, what did he want to communicate with the use of the orders and specially which was the internal logic of their purpose.
Too many times in the operating activity there has been a widespread trend of a complete flattening of the architectural language that characterizes the façades of the preexistences, caused by a lack of awareness, sometimes unintentional, of the constitutive character of architecture.

There are a lot of case studies and an attentive observer could understand real mistakes of comprehension and the outcome highlights real "architectural grammatical errors". An example is given by the jutting out architectural frames and the background mirrors when they are treated with the same tone, causing arbitrary interpretations of the grammar of the historical façades that very often implicate uncertain operating results.
In the same way, from the '80s of the 20th century, and even today, a similar common phenomenon is the use of the so-called "neutral colors".
To this end it is evident that the intervention propagates as a kind of "no choice". Paul Philippot has specified that for architecture, with the employ and with the numerous interventions that use the neutral colors "identical problems are posed and it they are exposed to the same dangers" as compared to the paintings when "often with a hesitant taste", in numerous interventions, they resort to "broken tones, ocher, with a delicate opacity".

These tints, most of the times are applied in a way that determine "a game of imperceptible background", that sometimes, for this reason can modify the correct reading of the surfaces, "dissolving the constructive solidity of the walls and the incisive rigor of the sculpted ornaments" (5). In most of the parts of central Europe and particularly in the postwar period, there was a common predisposition that tended to use the so-called "flat" "neutral colors" and also the intervention on Palazzo Sternberg at that time was accomplished with this technique.
One of the changes in the process of recognition of the historical finishes value for the façades is due to the numerous congress and international conventions that from the '60s of the 20th century are organized regularly across Europe. Among all of them could be remembered those of Rome and Brixen where the operating and doctrinal reflections of various architectural exponents of the European culture of restoration converge. Particularly in Austria the conservative, architects and restorers from the '80s of the 20th century, prove to be attentive to the study of the finishes restoration in the laboratories of Bundesdenkmalamt and in universities the topic of the tones is discussed. One of the most significant studies effectively translated is the one of the façades of Hofburg in Vienna. Manfred Koller is between the main researchers and demonstrates in his essay of 1997, *Die Fassaden der Wiener Hofburg-Erforschung und Restaurierung* 1987-1997, the long and meditated reflections before and during restoration (6).
To this end it is evident how the restoration intervention has, in addition to the task of maintaining the efficiency of the construction, simplified the reading and passed it down entirely to the future. The correct and appropriated use of the color helps with the comprehension of the historical architecture.
In this sense, the previous coloring of Palazzo Sternberg didn't make correctly readable the architecture. The façades were characterized by a smooth pseudo ashlar that didn't rhythmed with both, the ground floor and the *piano nobile* in the reading of the entire perspective for the comprehension of the background mirrors and of the cornices that model the openings of the first floor. The façade along the Ungargasse highlighted the cornices delimited by a triangular tympanum on a kneel-shelf; but these shelves showed in the same way as the painted backgrounds, with the same grey color that didn't make readable and correct the façade articulation. The same happened for the great tympanum on the top that had a decoration inside with garlands that, flatten by an homogeneous and opaque color, didn't went out from the background as it would have been natural according to the correct reading.

The façades of the front overlooking the internal garden are treated in the same way, with the exception of the central avant-corps that shows the half-columns and the half-pilasters painted with a darker tone and the mirrors on the background with the same grey color.

Current state analysis and proposals for restoration

From the direct study and from the research of the documentary sources emerged different realities regarding the current state, particularly I mean the studies started from 2011 related to the superficial sediments and to the biological patina in correspondence with the protrusions of the cornices, of the cornices over the windows and in the tympanum of the first floor.
In the basement of the first floor there were phenomenon of lack and fall of the plaster, frequently considerable, that falling allowed to see large portions of wall.
From some reflections of the historical "Viennese" masters of the first years of the 20th century it must be remembered that Alois Riegl in his *Der moderne Denkmalkultus*, Wien-Leipzig 1903, reiterated that: "it should be avoid in every way from the point of view of the ancient value, the arbitrary intervention by the man's hand about the consistence reached by the monument…it shouldn't suffer an embellishment or a completion… so maintenance, in a sense, should be encouraged" (7). But are the Max Dvořák reflections that still incite: [I] "…damages should be obviously repaired in the best possible way for the conservation of the monument and restoration shouldn't be an end in itself but should represent a tool to guarantee to the monument its condition and its effect to preserve it with respect for future generations. And finally between the final advices with the time and the use, ancient buildings always need some improvement… the plaster peels, and we shouldn't wait to the last minute when the damages will have reached a vast size because, erasing quickly the small, greater damages could be prevented…" (8).
Palazzo Sternberg, like other "Viennese" architectural realities, can be considered among these exemplifications, especially for some post-war interventions.
On the basis of the study and the survey accomplished, it could be observed how the described façades of the palace showed different ways of alterations. First of all I wish to underline how the façades, the one to the Ungargasse (Figs. 17, 18) and the internal one to the garden (Figs. 19, 20), were plastered with painting dated back to an intervention of the post-war years.
The existent treatment of the surfaces until march 2014 wasn't entirely compatible with the history of the building; and it is evident how this has materials in part extraneous to the architecture of the 19th century. In fact, on that years was common the use of the so-called modern materials, that didn't use natural limes and typical pigments of the traditional techniques, employed in the historical construction sites, but they use plasters with additives and made with artificial components.
Secondly, in addition to the use of non-compatible materials with the historical construction, it can be still underlined how the type of tone used was extraneous to the history if the building. The surfaces showed an opaque grey tint that covered both, the background and the architectural protrusions, as the "*bugnati*" on the ground floor and the cornices of the windows, together with the great tympanum on the top and homogenized in a forced way the façades that in their 19th century design showed rich and articulated characters. About this topic, always a central subject in the "Viennese" architecture as a partial amendment it could be recall some of the Max Dvořák assertions, related to the plastering:

"… also renovating the external and internal plasters, strident and disharmonic effects must be avoided. A hand of a rowdy pink or yellow tint, often used with no taste in the houses or ancient churches, disfigures the building for many years. Usually the most appropriated tint for a modest building is a simple grey plaster for the outside or a grey or white tint…" (9).

Fig. 17. Palazzo Sternberg, façade before restoration. Photo by C.B. 2014.

Fig. 18. Intervention of treatment of surfaces and protection of the cornices (2014-2015). Photo by Paola Zofrea.

Fig. 19. Palazzo Sternberg, façade before restoration. Photo by C.B. 2014.

Fig. 20. Restoration proposal by C.B.

Guidelines for the restoration intervention

The choices that carried to the first intervention phases of the external finishing restoration of the façades to the Ungargasse have been the direct consequence of the knowledge of the palace's architecture, through the in situ study and other Viennese architectures of the same period.
The intervention follows the principle that first of all tries to stop and limit the degradation forms. In the first place the causes of these degradations have been eliminated and successively they have proceeded with punctual interventions to find the most adequate answers for the single problems surveyed, in the different materials.
To contrast the phenomenon of biodeterioration that affected mainly the horizontal surfaces and the parts over the cornices of the windows and the protrusions, it has been done a treatment with a biocidal product.
Contemporarily, the superficial and incoherent sediments have been removed.

In the entire surface of the external façades the current state colouring has been removed. The painting has been taken away with mechanical means. At the same time the reintegration of stucco works made during the intervention on the post-war years have been removed. The removal of the stucco of restoration and of the "*risarciture*" related to the previous interventions, made with non-compatible materials and overflowing on the original surfaces, have been taken away with a microchisel and a precision electric microdrill.
To the removal operations of the improper additions have followed punctual reintegration interventions.
Firstly, a reintegration of the lacunas ("*risarcitura*") of the plasters and of the deep layers of the stucco cornices have been accomplished with mortars on a base of hydraulic and natural lime and mix of dusts appropriately measured by coloring and granulometry. The intervention's aim was the completion of the plaster covering of the surfaces through the integration, of the preparatory layers, predicting, if and where needed, for the stucco cornices, appropriated internal armors constituted by pivots made in glass-resin and metallic and nylon filaments.
In the cases where it has been necessary a "*risarcitura*" of the lack of adherence of the plaster layers this has been reintegrated with infiltrations of natural and ventilated hydraulic lime, with acrylic resin additives in a watery emulsion and hydraulic pre-mixed.
To consolidate the detachments of remarkable depth, it has been also chosen the employ of a microfine hydraulic binder without salts.

Finally, a coloring and reintegration operation of the plaster surfaces has been planned, through overlapping veiling with a base of natural mineral pigments and milk of lime, with soft brushes and sponges. The tones have been chosen after conducing in-depth tests and proves in situ, that allowed knowing and understanding the construction in all the aspects, technical and historical. In this sense, having eliminated the flat and opaque aspect originated from the precedent interventions' painting, the tones that could lend a correct architectural articulation of the façades have been chosen (Figs. 18, 20).
A plaster of restoration has been proposed with a tone to tint the architectural elements that define the articulations of the façades, as the pseudo ashlar on the ground floor, the cornices and the tympanum of the windows of the first order, and the great tympanum on the top; while, for the mirrors on the background, it has been chosen a tint to make the architectural articulation emerges and to avoid the flattening of the decoration elements (10).
To this end the architecture of the palace could be understood in its real and more correct configuration to maintain and respect the integrity of the architectural text.
At the same time, with the restoration intervention the relationship of the historical and antiquity "values" together with the contemporary ones will demonstrate their vitality.
"The contemporary value has its roots in the satisfaction of the material and, or intellectual needs" (11).

Notes

1. There is a rich literature about the color finishes in the main European languages. To this end see some references: P. PHILIPPOT, *La notion de patine et le nettoyage des peintures*, in "Bulletin de l'Institut Royal du Patrimonie Artistique", IX, 1966, pp. 138-143; A. M. COLINI, *Tinte moderne ed edifici antichi, in Il monumento per l'uomo*, Atti del II Congresso Internazionale sul restauro, Venezia 1964, ICOMOS, Padova 1971, pp. 561-562; R. M. EVANS, The perception of color, New York 1974; L. MORA, P. MORA, P. PHILIPPOT, *La conservation des peintures murales*, Bologna 1977, ed. inglese, *Conservation of Wall paintings*, London 1984; DIMOS, *Manuali Leganti, fissativi, pigmenti. Metodi di riconoscimento*, parte I, modulo III, Roma / I.C.R. 1979; M. DUTTNANN, F. SCHMUCK, J. UHL, Color in Townscape, San Francisco 1981; P. BALDI, M. CORDARO, L. MORA, P. MORA, *Architecture - coleur, in Mortars, Cements and Grouts used in the Conservation of Historic Buildings*, Symposium (3-6.11.1981 Rome), ICCROM, Roma 1982, pp. 133-140; *Il colore nell'edilizia storica. Riflessioni e ricerche sugli intonaci e le coloriture*, "Bollettino d'Arte", suppl. al n. 6,1984; S. BISCONTIN (a cura di), *L'intonaco: storia, cultura, tecnologia*, Atti del Convegno di Studi, (Bressanone 24-27 giugno 1985), Padova 1985; C. BRANDI, *Intervento di apertura al Convegno Intonaci, colore e coloriture nell'edilizia storica* in Atti del Convegno, Roma 25-27 ottobre 1984, I-II, "Bollettino d'Arte", supplemento al n. 35-36, 1986, vol. I, pp.6-8; P. PHILIPPOT, L. MORA, P. MORA, *Il restauro degli intonaci colorati in architettura: l'esempio di Roma e la questione di metodo, in Intonaci, colore e coloriture,* op. cit., pp. 139-142; G. MIARELLI MARIANI, *Osservazioni in margine ai trattamenti dei colori nell'edilizia minore*, in *Intonaci, colore e coloriture*, op. cit., pp. 165-169; H. P. AUTENRIETH, *Il colore nell'architettura italiana: ricerche e restauri,* Kolloquium der Bibliotheca Hertziana Rom im Gemeinschaft mit dem Fachbereich Universität Berlin, (Rom 19-20 Februar 1987), in "Kunstchronik", 6, 1987, pp. 264-268 e pp. 277-278; G. CARBONARA, *Ancora sul colore di Roma. Note in margine ad un colloquio sul trattamento dei prospetti degli edifici antichi,* in "Studi Romani", XXXV, 1987, 1-2, pp. 92-103; M. P. SETTE, *Colore e città storica. Consonanze e dissonanze nel dibattito contemporaneo*, in "Studi Romani", XXXVI, 1988, 1-2, pp. 73-86; G. SPAGNESI, *Il colore nelle città,* in *Il colore della città,* Catalogo del Convegno-mostra (Roma 1988), Roma 1988; W. TAFELMIER, G. DONAUER, G, JHL, *Architekturmalerei an Fassaden*, Stuttgart 1988; G. TRIPP, *L'apport de Paul Philippot à la théorie et la pratique de la restauration,* in P. PHILIPPOT, *Pénétrer l'art. Restaurer l'œuvre. Une vision humaniste. Hommage en forme de florilège*, edited by C. Périer- D. Ieterten, Countrai, Groeninghe eds, 1990, pp. 369-378; C. BELLANCA, I*l restauro critico del colore e la Carta del '72, in Patrimonio architettonico: nodi e difficoltà della tutela*, atti del convegno nazionale ICOMOS (Roma 26 febbraio 1991), "Restauro", XX, 1991, 113-114, pp. 83-87; G. TABAK, *I colori della città eterna. Le tinteggiature dei palazzi romani nei documenti d'archivio (secc. XVII-XIX)*, Quaderni della Rassegna degli Archivi di Stato, 72, Roma 1993; G. CARBONARA, *Avvicinamento al restauro*, Napoli 1997, pp. 511- 560; C. BELLANCA, *Il restauro e la manutenzione nel processo storico-critico*, in "Recuperare l'edilizia", 1999, 12, pp. 24-28; R. S. BERNS, *Billmeyer and Saltzman Principles of Color Technology*, New York 2000; D. ESPOSITO, *Malte, intonaci e stucch*i, in *Atlante del Restauro*, directed by G. CARBONARA, Torino 2004, pp. 75-101; O. MURATORE, *Il colore dell'architettura storica. Un tema di restauro*, Firenze 2010.

2. See the Paul Philippot's intervention in the Seminary about *Il colore della città tenutosi in Roma*, february 1988, in M. P. SETTE, *Colore e città storica, Consonanze e dissonanze nel dibattito contemporaneo*, in "Studi Romani", XXXVI, 1988, 1-2, pp. 73-86, particularly p. 76. For a general consideration about the topic of roman façades 'coloring, refer to: P. PHILIPPOT, *Le couleurs de Rome*, in "Bulletin de l'Académie Royale de Belgique, Classe des Beaux-Arts" 5, serie LXX, 1988, 10-12, pp. 259-292. The researcher reaffirms: "Speak about colour in a city means to deal with an extremely complex subject. The city is, indeed, an alive body and then by definition, constantly in metamorphosis. In consequence, the history of a building and its colouring can't be considered only for that building isolated of its context, but on the other hand acquires, necessarily, an urban dimension… (therefore) if a conception of restoration wants to lead each building back to its primitive colouring it would need… to transform the urban ensemble in a juxtaposition of a never existed chromatic situations…".

3. G. ZANDER, *La coloritura degli edifici e l'ordine architettonico*, in *Intonaci colore e coloriture nell'edilizia storica*, Atti del Convegno (Roma 25-27 ottobre 1984), "Bollettino d'Arte", suppl. al n. 35-36, 2 voll., 1986, pp. 25-29, particularly p. 25.

4. G. ZANDER, Ibidem, p.27.

5. P. PHILIPPOT, *Le problème de l'intégration des lacunes dans la restauration des peintures*, in "Bulletin de l'Institut Royal du Patrimonie Artistique", II, 1959, pp. 5-19, in P. PHILIPPOT, *Saggi sul restauro e dintorni. Antologia,* edited by di P. FANCELLI, Scuola di Specializzazione per lo studio ed il restauro dei monumenti, Università degli Studi di Roma La Sapienza, "Strumenti", 17, Roma 1998, p. 25.

6. M. KOLLER, *Die Fassaden der Wiener Hofburg - Erforschung und Restaurierung 1987-1997*, in "Österreichische Zeitschrift für Kunst und Denkmalpflege", LI, 1997, 3-4, pp. 494-536.

7. A. RIEGL, *Der moderne Denkmalkultus Sein Wesen und seine Entstehung,* Wien - Leipzig 1903, ed. italiana *Il culto moderno dei monumenti, il suo carattere i suoi inizi,* edited by di Sandro Scarrocchia, Bologna 1981, p. 161.

8. M. DVOŘÁK, *Katechismus der Denkmalpfege,* Wien 1916, ed. it. Catechismo per la tutela dei monumenti in Antologia di critici, traduzione italiana di Mina Bacci "Paragone-Arte" n. XXII, 1971, p. 48, 50, 55.

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10. A. MUNSELL, *Book of color,* (*Color company*), Baltimora 1970, particularly see: Gradazione giallo - Chroma 4, Value 9, Hue symbol 2,5y; Gradazione bianco-Chroma 1, Value 9, Hue symbol 5y.

11. A. RIEGL, *Der moderne Denkmalkultus*, Wien-Leipzig 1903, ed. italiana, Bologna 1981, p. 170.

10. Madrid, conservation of the historical Metro

Alejandro Iniesta Muñoz

Introduction

In 1914, the "*Compañía Metropolitana Alfonso XIII*" was created in order to endue the growing city of Madrid with a modern transportation system, eliminating the congestion problems within the centre of the capital. For Madrid, that at that time was more of a village than a capital when compared with the metropolis of London or Paris, it became an important step towards its upgrade and also an important tool for its expansion (1).

The city was divided by a stratified class scheme so the area around the Royal Palace was occupied by the aristocracy, the well-to-do class lived in the new expansion district (Salamanca neighbourhood) and the working class was being expelled from the centre to the south neighbourhoods (Lavapiés or Latina) and also the close by towns like Carabanchel, Chamartín de la Rosa, Fuencarral or Vallecas. In this scheme the commerce was located around the Puerta del Sol and Paseo del Prado.
Unlike Barcelona or Bilbao, industrialization was rare and the principal economic resource was its condition of capital that has provided with public buildings and offices where most of the people worked.

In the population census of Madrid from the year 1910 carried out by the "Instituto Nacional de Estadística", the population within the centre was of 599.807 residents. Ten years later, after a year of the inauguration, the population had increased in 50.000 residents and the close town of Vallecas had doubled its population. This increasing population in the towns around the city created a new issue, workers no longer lived inside the capital and they needed a transportation system able to communicate the manpower with their working place.

Madrid had used its position as capital to became the railway centre of Spain, creating a radial system that connected it with the main cities of the country. This transportation system was ruled by the railway companies whose lines departed from three stations. North Station (actually Príncipe Pío Station) built in 1861 by the "*Compañía de los Caminos de Hierro del Norte de España*", Atocha Station, which was settled in 1851 as a simple terminal for the "*Compañía de los Ferrocarriles de Madrid, Zaragoza y Alicante*" had grown up to became the most important station in 1900, and Delicias Station opened up in 1880 as the central station for the same company as Atocha and later used by the "*Compañía de los Ferrocarriles a Cáceres y Portugal*".

Inside the city, different public means of transportation coexisted. Eleven regular lines of trams (electric, steam engine or animal draught) run from Puerta del Sol to every corner of the city while coaches and carriages were starting to compete with the new cars. The first car to be driven in Madrid was the Peñalver Count's in 1898 and since then its use had been popularized around the high society. Its use resulted in the driving rules of 1903 ("*Reglamento para la circulación del 12 de junio de 1903*"). Also in Madrid, several lines of buses travelled on peak

times and during special celebrations as open-air dances and bullfightings. In 1914, the public transportation system carried 4.923.000 passengers creating traffic jams and the obstruction of important spaces like Puerta del Sol, which had already been enlarged between 1857 and 1862 by Lucio del Valle, Juan Rivera and José Morer (2).

A year before the establishment of the "*Compañía Metropolitana Alfonso XIII*", 1913, the Civil Engineer, Carlos Mendoza y Sáez de Argandoña (3) decided to start planning an underground railway system as the one he had seen in Paris during his honey moon in 1912. In order to develop his ideas, he was joint by other two engineers he knew from previous works, Antonio González Echarte (4) and Miguel Otamendi Machimbarrena (5).

Before starting the project for Madrid's underground, Otamendi and Echarte had the opportunity to visit the inauguration of New York's City Subway, as the Spanish state representative at the International Congress of Electricity in San Luis 1904, by the government of the United States.
The three engineers agreed that Otamendi (Fig. 1) should be the responsible for creating the project of the transportation net and getting the government permit to its construction. Said concession and the beginning permit arrived in 1917 after years of hard work and search for the economic support.

By the time they received the license, thirteen underground railway system where running around the world and were studied by the engineers and architects of Madrid's Subway. The first underground railway system was inaugurated the 10th January 1863 in London (6), and were followed by another 12, Chicago 1892, Glasgow 1896, Boston 1897, Vienna 1898 (7), Paris 1900 (8), Budapest 1901(9), Berlin 1902, New York 1904 (10), (New York already had an elevated railway system since 1868), Athens 1904, Philadelphia 1907, Hamburg 1912 and Buenos Aires 1914.

The project presented consisted on a net of 14 kilometres, divided in four lines able to cover most of Madrid and also its growing area. The lines were drawn not only to help the transportation system but also thinking about the economic support of the residents of the high class neighbourhoods. This way, the lines were projected over crowded areas (studied by calculations of dairy users), such as the line Puerta del Sol-Cuatro Caminos, and over the well-to-do areas like the line of the "*Bulevares*". Also the lines tried to achieve some other goals, connecting the recreational areas with the centre, reducing traffic and the distance between residences and working spaces, and lowering the building prices inside the city that had increased over the last years due to the immigration from the countryside.
Two years and ten months of construction work were necessary in order to finally open Madrid's Metropolitan Railway on the 17th October 1919 with the presence of the King Alfonso XIII connecting Cuatro Caminos Square with Puerta del Sol in 7 minutes and 40 seconds (11).

Architectual aspects
The net designed in 1914 and presented the 26th May at the Ministry was composed by four radial lines with centre in Puerta del Sol that run through Madrid north to south and west to east. Those lines had thirty stations. The proposed lines were:

Line I. It was the north to south line, extendible in both sides, starting in Cuatro Caminos, where the shed was situated to Progreso. It had an extension of 3.960 metres and nine stations.
Line II. From Ferraz to Goya connected to Puerta del Sol. It run through a distance of 4.565 metres and had twelve stations.
Line III. Under Serrano Street, from Independence Square, with connexion with Line II, towards Diego de León. 1.572 metres of railway and ten stations.
Line IV. It run under the high-class neighbourhouds (*Bulevares* Line) from Ferraz to Alcalá connecting with line I and II. It had an extension of 3.837 metres and 10 stations.

All lines were to be constructed under the streets in order to excavate the railway in the trench way lessening the costs, even if tunnel construction must be used at some points of the net because of the depth necessary or pre-existing conditions like pipes or basements.

The stations would be separated at a minimum distance of 500 metres, making it the metro net with the shortest distance between them. This decision was made in order to be able to clear the city centre in a faster and easiest way.

The depth of the vault should be between 1 or 2 metres under the street were trench system was used and about 12 or 20 metres when the excavation was in tunnel. A minimum turn radium was settled to assure that the trains could take it as well as a maximum slope, securing that the stations were always on a plain area to secure it acceleration.

Also, some special measures should be taken into account in order to secure the tunnel in case of failure and derailment of the trains. Tunnels should have enough breadth, it was not specify, as some problems might occur during it construction (it was going to be made by hand and obstacles may appear) but it must be enough to accommodate two trains of 2.40 metres width. Therefore, a minimum radium width for the vault was settled at 5.80 metres and also it was settled that it was obligatory to create shelters of 1.50 metres each 25 metres of tunnel in a herringbone method so the real distance between them is 12.50 metres.

Fig 1. Inside of the tunnel between the roundabout of Bilbao and Fuencarral (2nd February 1918, M. Otamendi, 1919).

The tracks would be built with the international width of 1.45 metres, so construction was easier, being it smaller than the Spanish width (1.67 metres). This way it would be impossible to connect the net with the pre-existing railways but it adapted better to the necessities of the subway.

All the net was electric and it would take the energy from strips located under the vehicle. Trains would be able to run at 20 kilometres per hour of medium velocity, travelling each six minutes or three on peak times.

In this first project, that was modified in its development, three kind of stations were considered, terminus station, junction station or overlap ones depending on its position on the net and on its connection or not with other lines.
Construction began on 17th July 1917. Work was not easy, labour started in the middle of the First World War (12), with shortage of building materials and labour disputes that were suffocated strongly by the government. However, those mishaps did not stop the finalization of the first section on 1919, as it had been agreed.

Otamendi had planned the tunnel construction using two methods already used in Europe when building underground railway systems, the Open Ditch Way, in theory easier that means digging a trench through the streets without running under buildings, and the tunnel construction method, called the Belgian Method after 1828 when the tunnel between Charleroi and Brussels was dug, that should be used when there was a steep slope or buildings could not be avoided.
Both methods would be constructed in reinforced concrete, but the scarcity of steel and cement needed for its structure forced them to use concrete only on vaults and buttress on those areas constructed in trench and also on the base of tunnels. The rest of the construction was made using bricks.

Belgian Method
The distance between Sol and Bilbao must be dug using the Belgian method due to the narrowness of the streets (Montera and Fuencarral streets) and also due to the slope between Tribunal (Hospicio), Gran Vía (Red de San Luis) and Sol where the medium depth was 20 metres (Fig. 2).
First, the tunnel its started from the vault and once it is secured, the buttress and finally the concrete base and the tracks. At the stations the order was reversed because of the bigger width, starting with the buttress and ending with the vault.

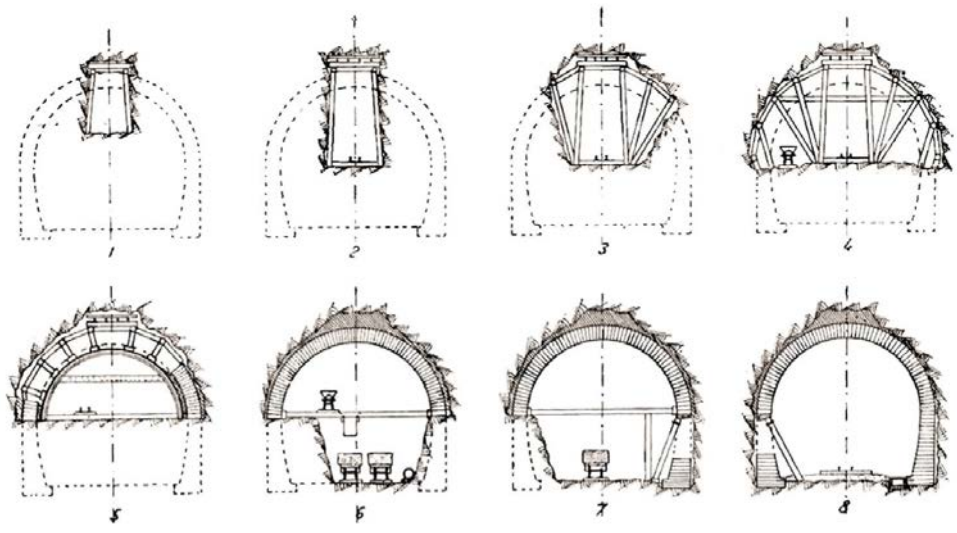

Fig 2. Constructive phases of Belgian Method. Escario, 1943.

The construction begun opening manually the advance gallery with dimension of 3 metres in height and 1.60 metres in width while scaffolding with wood beams. Once the keystone was secured, the vault walls were dug, and gradually, the wooden fanning formwork was placed each 1.25 metres. After the Great War, the formwork was made of iron and brought from Luxemburg. Once the tunnel was assured, the vault was built using bricks. The walls, of 1.85 metres width were also built using bricks but it was formed by several layers, 1 foot of perforated brick on the exterior, 2 foots or two and a half foots on the interior layer and a masonry filing between them.
The vaults were built by consecutive rings of 2.5 or 5 metres long depending on the terrain. So, the building velocity was of 30 or 40 metres monthly on each borehole.

Open Ditch Method
The stretch from Bilbao to Cuatro Caminos, built under the streets of Luchana and Santa Engracia, allowed the used of trench because of the bigger width of the streets and the smaller distance with the vault, also those streets had less traffic. The vault was therefore constructed at a depth of 1.5 metres (Fig. 3).
It started by opening two trenches of 0.95 metres separated at a distance of 6 metres and filled with concrete to create the buttress of the vault. Once it was made, the vault was built using a soil formwork on section between 4 and 6 metres each. For that the pavement of the street was opened and before pouring the concrete the soil was smoothed and covered in gypsum. After two or three months the tunnel was excavated and the base was built.

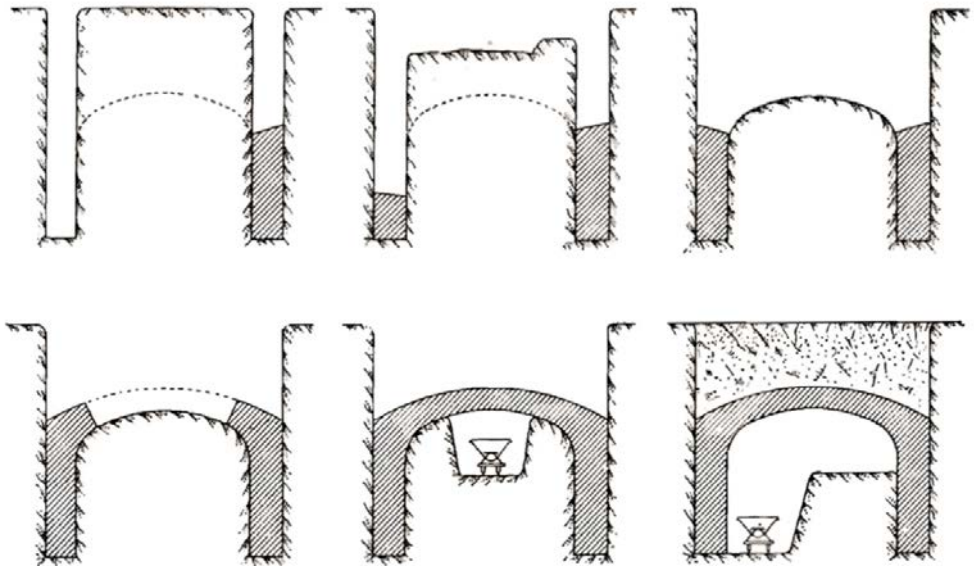

Fig 3. Constructive phases of the Open Ditch Method. Escario, 1943.

On 1944, the net projected in 1914 was finished when line 4 connected Argüelles with Goya (Fig. 4). That year the net, which had been designed to have four lines had one more, the extension had been almost doubled (from 14 kilometres to 26) and had 42 stations. The construction of the net suffered delays caused by wars (the Spanish Civil War stopped the construction of some stretches and create some destruction that had to be repair), recessions (after war it was important to rebuilt the city and most materials were used for that purpose) and social problems, and yet had become bigger and more important than expected. The final net was:

Line 1. Tetúan-Puente de Vallecas. Line I was planned to be extend on its end, but not as far as Vallecas, but it was proved successful and needed. In 1944 another extension of the line was in construction to the town of Chamartin de la Rosa. The line had 17 stations and the route between Chamberí and Gran Vía had changed from the Hortaleza street to Fuencarral to made it easier to build.
Line 2. Cuatro Caminos-Ventas-Diego de León, Serrano's line had become a branch of Line 2 joining Goya with Diego de León, and instead of finishing in Marqués de Urquijo it had been extended to Cuatro Caminos, connecting with Line 1 and line 1's shed. It had 15 station, two projected stations were eliminated ("Plaza de la Independencia" and Velázquez) and in the middle one was built, Retiro. This station was design with triple platform so it could connect with Serrano but was never used.
Line 3. Argüelles-Legazpi: This line was created in 1936 to connect the southeast of the city with Sol through Princesa street. In 1944 it had 10 stations constructed in three phases due to the Spanish Civil War.
Line 4. Argüelles-Goya, the promised boulevards' line was finished in 1944, was the last line to be started from the planned ones. The connection station with line 1 was modified from Alonso Martínez to Bilbao with the change of route in line 1. The line had 8 stations.

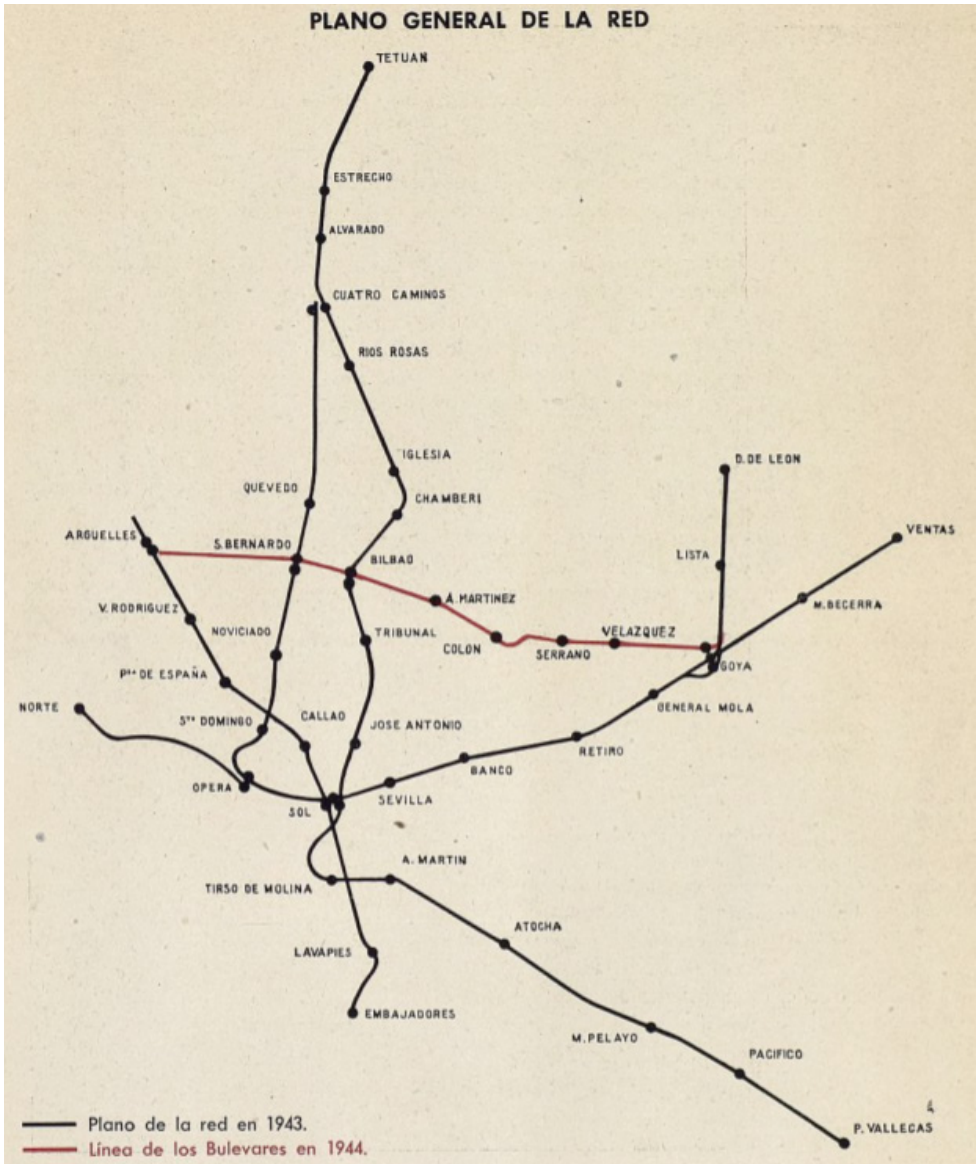

Fig 4. Plan of the lines built until 1944, when the initial plan was finished. (M. Otamendi (1944), *El Ferrocarril Metropolitano de Madrid. Años 1917-1944*).

Railway Branch Isabel II-Estación del Norte. On the ’20s a new need appeared, it was necessary to connect the metro lines with the principal train stations so the net was modified, line 1 was extended to Atocha Station, but it became impossible to extend any lines to Estación del Norte (now Príncipe Pío) so a new branch was added connecting the railway station with line 2 in Isabel II (now Ópera). The line, with only two stations, was built in tunnel, going under the royal palace and overcoming a great slope between the stations.

Station’s architecture

The problem of designing a station for a subway system appears at the very beginning, how to join the exterior part of the station with the interior and the problems of passenger movement inside. As had already happen with the railway station in the early 19th century, years were needed in order to optimize the running. Each city had considered a different way of joining the platforms with the streets above, for example, in London the Underground decided to purchase plots of land in order to build the stations integrated within the city. Other cases, such as Paris or Vienna, choose known architects to design the stations and the public access. Otto Wagner in Vienna used bandstands for the most important stations using the secession style while in Paris, Hector Guimard decided to build the access to the “*Métropolitain*” with a simpler design and glass and cast iron in Art Nouveau architecture (Figs. 6, 7, 8, 9).

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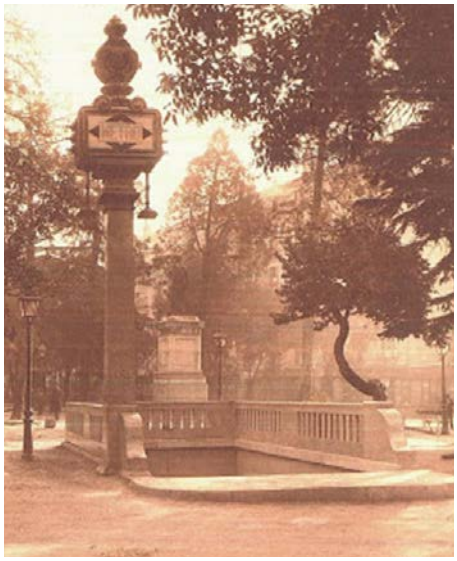

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Fig. 5. Progreso Station Access, now Tirso de Molina Station, 1921. Archivo de Metro de Madrid (metromadrid_2770).

Fig. 6. Access to Paris “*Metropolitain*” designed by Hector Guimard between 1900 and 1913. In X. Febres, *Metros y Metropolitanos*.

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Fig. 7. Entrance Pavilion to the Millenium Metro in Budapest 1896. In S. Olivares, *Antonio Palacios Ramilo (1874-1945): La arquitectura del metropolitan y su idea de metrópolis*.

Fig. 8. Karlplatz Pavilion, Vienna. Photo by A. Iniesta, January 2019.

Fig. 9. Sol Station Access pavillion, 1920. Archivo de Metro de Madrid (metromadrid_2761).

From travelling and studying the subways systems in Europe and America, the engineers decided to rely the design of the stations (the interior and the exterior as well as the logo) to a well-known architect in Spain, Antonio Palacios (13),

who had worked in Madrid in important buildings such as the "Palacio de Telecomunicaciones" or the "Hospital de Maudes" (Fig. 10).
He used a model station that would modified the exits and the internal movement of passengers according to its position inside the city, and the depth of the station, but with the same materials and the search for functionality.
He specified the width of the platforms using 4 metres on Sol and Cuatro Caminos and 3 metres on the rest thinking that on terminal stations the number of passengers would be larger. On length all stations will be 60 metres long in order to allow the entrance, braked and acceleration of trains with five carriages (Fig. 11).

All the stations had an entry hall over the tracks that was connected to the platform by stairs. The connection between this hall and the street was made by stairs also, but in the special cases of Red de San Luis (Gran Vía) and Sol, lifts were placed in order to climb the 14.72 metres and the 9.92 metres of slope that existed. This solution was also intended for "Hospicio" (Tribunal) because the platforms are 11.59 metres under the hall but it was impossible to achieve because of the narrowness of the street above.

Fig. 10. Progreso Station, 1921. Antonio Palacios Ramilo. "Metropolitano Alfonso XIII: Trozo Sol-Atocha". Miguel Otamendi, 1921.

The halls were lightened up through an overhead light created by a skylight in the centre of the vault that allowed natural light inside the space.
The materials used inside the stations were selected so they could reflect the light and be able to capture the colours and the brightness of the outside city. Mostly, it was used bevelled white ceramic from Onda and colourful ceramic from Sevilla. Each station had a different design so passengers could identify them without reading and in order to give the stations a different atmosphere. It was decided that the walls of the stations must work as an advert, so the platform walls and corridors were used for advertising painted over the ceramic. A special part of the station, was the opening of the tunnel, that area was covered in colourful ceramics and designed as if they were the canvas of a painting, marking the beginning and the ending of the tunnel.

For the more functional areas wood and iron were chosen, for instance, access doors were made of wood and the tickets offices, handrails and turnstiles were built with iron.
As the lines grew in number and distance, transfer stations appeared. In 1944, it existed seven transfer stations, Sol, Ópera, Cuatro Caminos, Goya, Argüelles, San Bernardo y Bilbao, and between them Goya and Sol had a triple connection. Those stations were designed so passengers could change lines without going out so central halls were enlarged several times to take up the increasing number of users. Also new accesses were needed, creating in some cases new halls, but these new spaces were always built using the same materials and the unique style so people could recognise them.

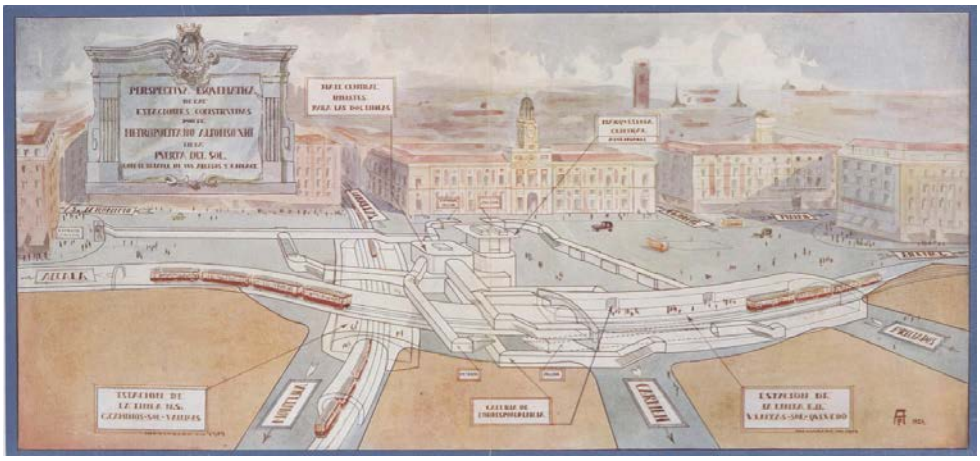

Fig. 11. Axonometric view of Puerta del Sol Station with crossing Lines 1 and 2 in 1924. Antonio Palacios Ramilo.

As important as the presence underground was the entrance, Antonio Palacios designed three different access for the Metro:
Deep stations. The access was made through a pavilion with lifts. Red de San Luis (Gran Vía) and Sol had pavilions. For Puerta del Sol, iron and glass were the chosen materials as a symbol of the modernity and progress of the city. On the contrary, Red de San Luis, stone was the principal material for a pavilion that had to compete with the tall buildings outside.

The rest of stations had a simpler design, as those used in Budapest or New York, open access with only the balustrade and decorative lampposts on some of them. But two types existed depending on the street circumstances or the importance of the station:
Stretch stations. Iron handrails over stone. It was used for "Hospicio" (Tribunal), Chamberí and Martinez Campos (Iglesia).
Principal, transfer or terminal stations. The access was built in stone and had a stone lamppost with the first logo on it to mark the entrance. It was used in Bilbao, Ríos Rosas and Cuatro Caminos.

Heritage, consolidation and renovation
Historical metropolitan railway systems found a great concern, how to enlarge and modernise their spaces (14) to absorb the increasing number of passengers, the higher velocity of trains or the new security and control measures imposed by the government. "*Metro de Madrid*" has mostly solved those problems prevailing the new realities over conservation, that the case of Gran Vía or Sol. Even though we can find some exceptions that have been able to preserve their values, partially or completely, and that today, allow us to know them, Chamberí or Progreso (Tirso de Molina) for instance.

GRAN VÍA

Gran Vía station, whose first name was Red de San Luis (Fig. 12), was one of the deep stations and that situation combined with its position in the city (it is placed on the centre of the big avenue of Gran Vía) determined its design.

Underground the station worked in a similar way as the rest of the net, corridor, halls and platforms decorated with white ceramic and colourful frieze. Its central hall was 48 m^2 and a height of 4 metres and the platform was 3.25 metres width. But it access was a pavilion on the centre of Red de San Luis square. It was built in granite and had an iron and glass roof so natural light could lighten up the stairs. Its proportions were similar to the buildings around.

In 1940, after the Spanish Civil War, the station would change its interior decorations to adequate itself to the new name and government order (it was named Jose Antonio). Green and white ceramics were used in the new decorations and could still be seen in the corridors of Line 1.

In 1960, all platforms of the initial Line 1 were enlarged from 60 metres to 90 destroying the tunnel entrances, the new decorations were simplified and some walls were simply painted in white.

But the greater change happened between 1967 and 1977, when the "*Ferrocarril Suburbano de Carabanchel*" was extended from Callao to Ventas stopping in Gran Vía. A connection was needed and a new hall and new access were built. Also in 1974 the pavilion was dismantled as the access through it was closed

Fig. 12. View to Montera Street with the entrance pavillion to Gran Via Station. Archivo de Metro de Madrid (metromadrid_2758).

Fig. 13. "*Red de San Luis*" Pavilion. In its actual site in Porriño. Photo by Jesús Manuel García Diaz.

(Fig. 13). It was donated to the city hoping it would be used as a tourist office or some other public use, instead the city declined the pavilion and the stones were deliver to the hometown of the architect were they still wait for some use. The station is now under new works as a new connection with Sol is being built and it is expected to reopen in 2020. Through the works, the pavilion stairs and foundations have appeared as well as some parts of the 1919 central hall. Plans for the pavilion rebuilt have been traced but not yet implemented.

CHAMBERÍ

Chamberí station belongs to the first stretch of line 1 and was inaugurated in 1919. It had only one access between the streets of Luchana and Santa Engracía that was designed curved to solve the problem of its situation. The entrance was simple, with the handrail made in iron and the hall was 6.0x7.90 metros with two exedras on its sides of 3.60x1.55 metros. The hall had a square skylight in the centre of the vault which dimensions were 2.0x2.0. Platforms had the usual width of 3 metres and 60 metres long.

The decorations where simple, as it was one stretch station, Sevillian ceramics covers its walls using white tiles combined with green and copper on friezes and

adverts borders. Map of the lines were engraved on the access corridors to the platforms and painted adverts were placed on the vaulted walls of the platform. On the tunnel entrance we can see the decorations depicting some advertising inside ceramic circles.

In 1966 the station was closed after being impossible to lengthen the platform to 90 metres as was being made in the rest of stations (Figs. 14-16). The station was too close to Iglesia and Bilbao and it would be impossible to stop and start the trains without lessening the velocity of the whole net.

The station was keep closed and untouched until 2008, when finished the process

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Fig. 14. Chamberí entrance Hall after restoration. Archivo de Metro de Madrid.

Fig. 15. Platform corridor. Photo by A. Iniesta 2018.

Fig. 16. Detail from the tunnel entrance, in S. Olivares, *Antonio Palacios Ramilo (1874-1945): La arquitectura del metropolitan y su idea de metrópolis*.

of restoration that had started on august 2006. The restoration work allowed to visit the station as a museum, it has preserved its interior as it was designed, even the adverts on its walls and the furniture on the hall were maintained. However, the curved access sealed in 1966 has disappeared and a new entrance was built. Only a few steps can be seen in the interior of the station and are now used as a theatre for the introducing video of the exposition. The new entrance appears as a chimney in the street distinguish from the entrances designed by Palacios.

TIRSO DE MOLINA

Progreso, the original name of this station, was inaugurated on 26th December 1921 in the first extension of line 1 alongside with the stations of Antón Martín and Atocha (Figs. 5, 17-19). It has two access, the principal in Progreso Square with direct connection with the central hall was designed as a principal station with the access in granite and the lamppost. The other one, towards Magdalena street was a secondary access so it was designed with the iron handrail.

The vaulted hall was rectangular with rounded corners and decorated with yellow, blue and white Sevillian ceramics and a big coat of arms of Madrid over the access to Sol's platform. It had a skylight in the centre allowing natural light inside. On the other access another hall was designed, although smaller and with less profuse decorations, using the same ceramics in yellow, white and blue colours.

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Fig. 17. Progreso Station Hall, 1921. Antonio Palacios Ramilo. "Metropolitano Alfonso XIII: Trozo Sol-Atocha". Miguel Otamendi, 1921.

Fig. 18. Progreso Station Hall, now Tirso de Molina, 1921. Archivo de Metro de Madrid (metromadrid_2765).

Fig. 19. Vault of Progreso entrance Hall. Photo by A. Iniesta 2018.

Over the years the station suffered the extension of the platforms, losing its decorations but keeping the principal hall and some of the ceramics, at some point the yellow ceramics where changed for the white ones we can see today. The furniture, turnstiles and the ticket office have also changed and modernise over the years and on the exterior, the stone entrance was keep, but, the lamppost was destroyed as in the other stations. The skylight was closed but we can still see its position today in the vaulted ceiling of the principal hall. Also the big coat of arms of Madrid is intact in its position over the access to Sol's platform. The station has not suffered yet the modernisation that it is expected for today's underground, as it lacks escalators, lifts or other accessibility systems but its installation is planned to fulfil the accessibility plan of "*Metro de Madrid*". How is it going to happen is yet to see.

Conclusions

After studying Madrid's Underground Railway System, we can see that in most of the stations the architectural values have been lost due to the extension, modernisation and increase in passengers and trains. Only one station interior can be found almost complete but with no use in the net, and the rest of the stations have been able to keep very few touches of the architect and the engineers ideas.

But not only exists functionality reasons for the changes suffered by "*Metro de Madrid*", also the need to change the aspects of the station on a contemporary architecture, in the '60s was the white and green ceramic and in 2000s was the colourful metallic panels, has provoked great loses, the destruction of ceramics and vaulted platforms for instance.

The issue of adaptation to today's needs is yet being discuss as only three stations of the 1919 line are accessible (Cuatro Caminos, Iglesia and Sol) and so, more destruction is expected even after being protected by law as architectural heritage.

Notes

1. This chapter is an overview from a final undergraduate thesis carried out for the "Escuela Técnica Superior de Arquitectura de Madrid" on 2018 by Alejandro Iniesta Muñoz with Susana Mora Alonso Muñoyerro as tutor.

2. In 1857 a Project to enlarge Puerta del Sol is approved by the government. The architects and engineers responsible for this reform were Lucio del Valle, Juan Rivera and José Morer. The reform consisted in the demolition of 30 houses in three different streets in order to get 21.000 m^2, almost four times the previous area. The new project created a semicircle with buildings with similar architecture that created a uniformed view for the square façade. In the centre a stone fountain of 18 metres diameter and able to throw a 30 metres height water jet was located.

3. Carlos Mendoza y Sáez de Argandoña (1872-1950) was a Spanish Civil Engineer that studied in the "Escuela de Ingenieros de Caminos, Canales y Puertos". He started working in hidraulic works in the Río Manzanares asociated with Marqués de Salamanca. Alongside with Antonio Gonzalez Echarte they founded a company dedicated to civil engineer and industrial projects in Madrid and Andalusia called Mangemor.

4. Antonio González Echarte (1864-1942) was a Civil Engineer who had studied with Carlos Mendoza in the "Escuela Politécnica de Madrid", at the "Escuela de Ingenieros". He finished his studies in the United States where he specialized in hydraulics, the reason why once he returned to Spain he worked with the "Canal de Isabel II".

5. Miguel Otamendi Machimbarrena, was a Spanish Civil Engineer, who came from a family of architects and engineers and had worked on projects such as the Monumental Bridge over the river Nervión in 1901 ("*Proyecto de Puente Monumental sobre el Nervión de 1901 en Bilbao*").

6. London underground is considered the first metropolitan railway system, its first section was constructed between 1859 and 1863 connecting Paddington Station and Bishop Road. The project was presented by the engineer Charles Pearson and at first it was rejected in 1828 and twenty-five years later approved by Parliament. The tunnel was built using the "cut and cover" technique consisted in excavate the tunnel in an open air way and later cover it. The steam-driven trains needed several openings to the outside to evacuate the smoke and this can still be observed in the stations.

7. Wiener Stadtbahn (german for Vienna Metropolitan Railway) as its known the Underground Railway of Vienna was a transport system that operated from 1896 to 1989 when it was absorbed by the Wien S. Bahn. Albert Gatnar was the chief engineer and Otto Wagner was selected to design the architectural image of the stations.

8. Paris Subway ("*Chemin de Fer Métropolitain*", known as *Métro*) is a metropolitan railway system, inaugurated on 19 July 1900 on the occasion of the 1900 Olympic Games, consisted on some stretch of nowadays Lines 2 and 6. The first stations were designed by the architect Fulgence Bienvenue. Two techniques were used in its construction: open trench on areas were the tunnel was not deep; and also the traditional technique used in mining, using wood to build the excavation area, this technique was the most used one.

9. Budapest Metropolitan Railway System ("*Budapesti metro*" in Hungarian) was started in 1896. It was built under the principal street of the city (Sugár Ut, Avenue Street, nowadays Népköztársaság útja, Public Republic Avenue) as a transport solution that would not interrupt the calmly environment of the street above. The inauguration coincided with the celebrations of the millennium (the thousandth anniversary of the arrival of the Magyars) on 2nd May 1896. It consisted on a line of 3.5 kilometres constructed using the "cut and cover" method. The inauguration line was not change until 1974 when the line was enlarged. The architecture of the installations was mostly conserved inside and outside and it is still in use.

10. New York City Subway, known as "The Subway" started its first underground line on 27 October 1904, almost 36 years after the first elevated line (the IRT Ninth Avenue Line) was built. The line run through 14,6 kilometres and was called "Manhattan Main Line". The stations were commissioned to the architects Heins and LaFarge, who were accompanied by the Spanish architect Rafael Gustavino (Valencia, 1842). Gustavino worked, among other stations, on the City Hall Station, where he used bright ceramic tiles to cover the vaults.

11. Madrid's Metro was not open to the general public after 14 days, and it run from Cuatro Caminos to Sol without stopping so the passengers would get used to the new transportation system.

12. Antonio Palacios Ramilo (1874-1945) was a Spanish architect born in Pontevedra, he studied in the "Escuela Preparatoria de Madrid" where he decided to be an architect and where he met Joaquín Otamendi, brother of Miguel Otamendi. Together they worked several times in Spain. He was appointed the architect of the "*Compañía Metropolitana Alfonso XIII*" until 1944 and was the leading designer of the stations, administrative buildings and logos, being him the creator of the actual logo with the red rhombus and the "METRO" inside.

13. On 28 July 1914 the First World War started, the principal Europeans countries participated in the war while Spain remained neutral in spite of the meddling of government and the monarchy. The war lasted until 11th November 1918, during the war time Spain used its neutral position to sell raw materials, lessening the internal consumption, increasing prices and creating an internal shortage for the "Metro" construction, against what was expected from the engineers.

14. "*Metro de Madrid*" resulted on a perfect test bed, over the years, the principal technological progress was tested on its installation, the first escalator was placed in "Hospicio", or the fluorescent lights were tried in the tunnels. Also modern prototipes were implemented in signposting or the passengers control through the turnstile.

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The book provides a series of reflections on the study of architectural preexistences that have matured during the almost thirty-five years of study and research in Italy and Europe. Furthermore, it shows how the discipline of restoration of monuments is all based in architecture, intended in its many-faceted meanings. The methodical approach to the restoration of historic architecture consists in the historical-critical analysis, central nucleus of the study of architecture and is composed by specific in-depth thematic sessions (the historical iconography; the analysis of the constructive features; the constructive model; the volumetric layout; metrological and proportional analysis; the theme of the figurative model; the analysis of masonry; the theme of decorations; spolia and reemployed; comparisons, analogies and differences; the reading of the architectural organism through the synthesis of the monument in time). The author and his team have collected thematic essays on key issues that have great interest not only in Italy but also abroad. From the general concepts to examples of the application of Italian consolidated restoration methodology to the analysis and conservation of historic architecture.

Calogero Bellanca has a PhD in Conservation of Architectural Heritage and is Professor of Architectural Conservation at the Faculty of Architecture, Sapienza University of Rome. He has carried out studies and research in various European countries and has participated in the ICCROM Fellows Programme. He is Coordinator of the General Agreement with the TU Wien University, Polytechnic of Krakow, and Politecnico de Madrid. His practical work includes the study and restoration of palaces and churches in Rome and in other regions of Italy. Among his publications there are many books and essays in the field of restoration and architectural history.

ISBN 978-88-9377-126-9

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