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A foundation town grown by an earthquake: Cerreto Sannita

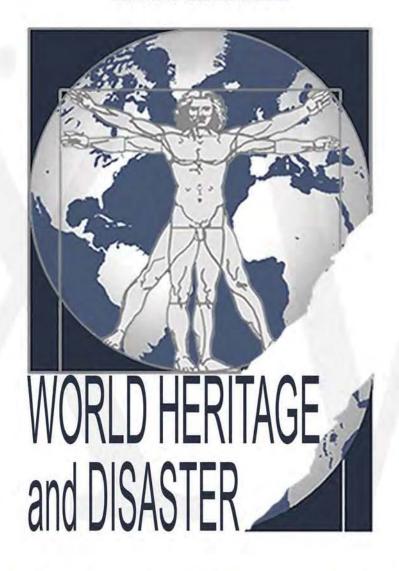
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Le Vie dei. Mercanti

XV INTERNATIONAL FORUM

Carmine Gambardella



WORLD HERITAGE and DISASTER

Knowledge, Culture and Representation

Fabbrica della Conoscenza numero 71 Collana fondata e diretta da Carmine Gambardella

Fabbrica della Conoscenza

Collana fondata e diretta da Carmine Gambardella

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WORLD HERITAGE and DISASTER

Knowledge, Culture and Rapresentation

Le Vie dei Mercanti _ XV International Forum

Carmine Gambardella
WORLD HERITAGE and DEGRADATION
Smart Design, Planning and Technologies
Le Vie dei Mercanti
XV Forum Internazionale di Studi

editing: Ciro Ferrandes

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Scholars has been invited to submit researches on theoretical and methodological aspects related to Smart Design, Planning and Te- chnologies, and show real applications and experiences carried out on this themes. Based on blind peer review, abstracts has been accepted, condi- tionally accepted, or rejected.

Authors of accepted and conditionally accepted papers has been invited to submit full papers. These has been again peer-reviewed and selected for the oral session and publication, or only for the publication in the conference proceedings.

Conference report

300 abstracts and 550 authors from 30 countries: Albania, Australia, Benin, Belgium, Bosnia and Herzegovina, California, Chile, China, Cipro, Cuba, Egypt, France, Germany, Italy, Japan, Jordan, Kosovo, Malta, Massachusetts, Michigan, New Jersey, New York, New Zealand, Poland, Portugal, Russia, Slovakia, Spain, Tunisia, Turkey.

200 papers published after double blind review by the International Scientific Committee

Preface

A theme, that in addition to highlighting the word DISASTER, wants, as in all the editions of the Forum, place the emphasis on the wordCulture, the systemic product of knowledge and applications, whichhas a plastic strength as Nietzsche pointed out, capable of healingbroken parts, to recover lost parts, and as such belongs to humanity, the Man Artifex and Faber in its historical self-reproduction.

A faith in humanity's ability to achieve ever higher levels of knowledgeto offer as patrimonial value, beyond disastrous contingencies, whichcontains reparative stem cells and also fortifies evolutionary processes involving the Skills and Work of Man, the fate of Landscapes, Territories, Cities, Architecture and Archaeology as Traces of Geography of the past that emerges in the Geography of the Present.

For these reasons, in Naples on 15 and Capri, on 16 – 17 June, the 15th "International Forum Le Vie dei Mercanti" will be held. An established event that in three decades has seen the participation of ascientific community from around the world grow, discussing multidisciplinary topics relating to the Landscape, Cultural Heritage, Government of the Territory, Design and Economics.

Therefore, I expect, along with the International Scientific Committee, contributions of studies and research relating to theories, concepts, applications, best practices to protect and preserve, in order to notonly transmit to future generations the tangible and intangible patrimonyof the World Heritage but also to orient the design processes and innovative planning for the modification that derive from thehumus of identities and roots of the places, the regenerating sap of the places and of a "new", which, citing Argan, possesses a contemporaryof what it does not have the same date.

The location is exceptional. Campania, with six sites included in theWorld Heritage List, two UNESCO Man and Biospheres, two assetson the List of Intangible Heritage, is one of the richest regions in theworld for cultural and landscape heritage. It is therefore no coincidencethat the Forum will be held in Aversa/Naples and Capri, with visitsto the sites and presentations of operational projects by thescientific community of Benecon*, a University consortium that hosts250 researchers and distinguished professors of five Italian Universities, UNESCO Chair on Landscape, Cultural Heritage and

Carmine Gambardella President and Founder of the Forum



A foundation town grown by an earthquake: Cerreto Sannita

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Abstract

The Ligury case will be compared, on various issues and scales, with the case of Cerreto Sannita, a "foundation citiy" with regular plan, entirely rebuilt by G. B. Manni with "earthquake-resistant" criteria, after the earthquake of 1688. Prestigious is the 1724 witness of P. F. Orsino, the future pope Benedict XIII. In his memoirs he describes the earthquake as a great misfortune suffered by the city of Benevento. He bestowed generous donations to rebuild religious buildings. In Cerreto Sannita where one half of the inhabitants died, alive is the testimony of the bishop of G.B. De Bellis, but also the memoirs of V. Magnati and that of V. Mazzacane entitled *The earthquake of Cerreto of June 5, 1688*. N. Ciaburri, urban planner, recalls that among the measures there are broad walls up to a meter capable of withstanding horizontal displacements; vaulted high resistant underground cellars; a distribution of the rooms on the ground floor to facilitate the nocturnal evacuation in the houses with kitchen upstairs; wide streets to facilitate the passage of the rescue and relocation of three main squares in the south and north central parts of the town to collect survivors. Negative element is the placement of the houses along the objectively unstable slopes of the two rivers Turio and Capuchins. Reconstructions of mid 20th century with reinforced concrete floors have burdened the structural philosophy of 17th century interventions.

Keywords: Cerreto Sannita, earthquake, foundation town, restoration, survey

1. Experience of the earthquake

In the important historical region of Sannio, the town of Cerreto was a reference [4] since pre-Roman times (the ancient *Cominium* destroyed by the Romans): a dense and significant player in the territorial structure; already it characterized at the time of *Pentarchia* in Late Antiquity (Paolo Diacono), with the cities of Capua, Benevento, Naples, Salerno, Paestum. Until the Kingdom of Naples, through the Middle Ages.

After an extensive series of earthquakes, the medieval town was destroyed in the earthquake of June 5^{th} , 1688, with the population halved from 8000 to 4000 inhabitants.

The seismic wave propagated from Benevento to Naples: the disaster had an extension that could damage many parts of the Molise and even the Romagna. It destroyed almost completely Benevento, San Lorenzello, San Lorenzo Maggiore (covered by numerous rocks fallen from the Erbano mountain), San Lupo (fully demolished) and Civitella, totally buried under the ruins of its buildings.

The scratch reconstruction and other Cerreto site was also dictated by the need the government of Carafa Dukes interested in receivable - through an oppressive tax system with "mace-bearers and flagellants" (Salvati) - Cerretesi's taxes, dedicated largely to the production of "shoes" and fabrics, then dyed, and manufacturing ceramic.

This paper aims to reconnect the results of my specialization thesis in Restoration of Monuments, University of Naples [5] (that I rebooted with an upgrade process, thanks to the fruitful discussion with the public administration of the city of Cerreto)

2. The old and the new Cerreto

Cerreto was rebuilt in a different location of a short distance, on a plant in planimetric hierarchical scheme, "updated and modern" whose matrix has to be sought in the context of Enlightenment rationalism. These urban theories could be reached Cerreto, filtered through the cultural environment

of Naples and Palermo, with the technicians trained in their military schools and then assigned at the task of reconstruction. "It revived in a more pleasant position, adorned with churches, streets and squares arranged with an admirable architectural order" [1].

The urban plan by the engineer Giovanni Battista Manni is unusual in fact, for the Duke Marzio Carafa, the road network was traced (the new town, built further downstream of the previous on a rocky spur at the confluence of Cappuccini stream and Titerno) [5, p. 105].

Abandoned the old head of the ridge site, the newly founded town took on the typical characteristics of a settlement on a promontory, adapting to the fundamental characteristics of the chosen site.

In fact, it is arranged at the head of a secondary ridge, on the promontory formed by the erosion of two confluent waterways delimiting it along its sides. This shift of the city has specific reasons not only in geomorphologic, topographic, economic, productive and defensive or architectural order, but also productive: the textile artisans of wool and "tenta", as well as the "faenzari", should be able to resume the production as soon as possible, in order to pay taxes to the Carafa dukes, governors of the city.

According to some, the example was "the drawing of a ward in Turin was used as a model in the reconstruction of the village. And it does not seem unlikely if you mind the regularity of streets and alleys, the perfect alignment of the houses, the architectural symmetry".

"There are three straight squares, each long about two-thirds of a mile with alleys corresponding to one another" [1, p. 449].

In fact, the ancient Cerreto stood on a mountain belt [5, Tav. 9] over 900 meters, with a hydrogeological instability characterized by the presence of a vast tertiary terracing of Mesozoic limestones with sudden fall of boulders for steep slopes. The new site instead, stood on an area comprised between 220 and 270 mt. with minor disruption (sands and sandstones with falling clods for gradients greater than 50% in the lower part of the city) with environmental particularities (complex arenaceous and marly tertiary in the upper part of the city.) such as to allow a greater stability of the buildings [5, p. 106 and Tav. 10].

This settlement that can be defined median according to previous classifications, has the needs for protection from possible floods, but also defense needs for its particular distribution.

Tied to the choice of this site, is the need to employ an efficient production structure, in fact dye continues to incentivize, thanks to the good availability of the waters, which also allows an easy processing of local ceramics. Furthermore the lesser elevation gradient allowed a soil utilization in perennial crops - olive groves, vineyards, etc. - with a specialized economic vocation unlike the bucolic one typical of the first settlement.

Analyzing the urban structure there is a clear image of a promontory city forming by three distinct areas, each corresponding to a natural architectural emergencies, precisely Cappuccini's Monastery in the North, the S. Martino's church, heart of the city, and the archbishop palace? on the South. "Its territory is fertile in wheat, corn, wine and fruit of every kind. There are copious plantations of olive trees, recently made, very well aligned, and even if they give a little bit of oil, it is not the lower of the kingdom. But wines are excellent, especially those that are made in some particular places. These also are, in addition to a good taste, profitable for human health, and are very appreciate in Naples" [1, p. 449].

Even today, the expansive and economic strength of the community of the time, that was able to realize in a short span of years (in 1696 "every citizen had made his house") the construction of the upstream sector, as well as thinner edification of the downstream sectors, denounce the declining fortunes of later times [5, p. 108].

3. A new structure for the new Cerreto

The documentation about the author of the urban project is poor: on the basis of a petition from the mayor of the University to the King, dated 25 July 1767 (where you can read "Marino Carafa of Maddaloni dukes came here after the earthquake with the Neapolitan engineer Giambattista Manna to draw squares and alleys"), Vincenzo Mazzacane suggests that it has been drawn up by the engineer Giovan Battista Manno (Manna, Manni), one of the most active royal Neapolitan engineers, author of many works and repairs after the earthquake of 1688. Manna also continued, moreover, some works by Fanzago, including the St. Giuseppe dei Vecchi's church of, and the St. Maria del Divino Amore's church in Naples was built based on his design in 1709.

The same historian considers: "So you can reasonably assume that Manna, conducted on the site by Marino Carafa, has drawn «squares and alleys»; identified the soils to build private and the public buildings; and he finally designed the S. Martino church, stating then "No matter how many searches I've done, I wasn't able to ascertain anything more" [12]

The same hypothesis is also shared by Renato Pescitelli, on the basis of new and important archival documents: "The attribution of the town plan to Manna now seems certain: he confirms an "instrumento di notar" Giovanni De Petrutiis, on 2 August 1711, where we can read that the University of Cerreto was required to build within a year, "manufactories and other buildings... included in the

plan made by the engineer Giovan Battista Manna, as the oven houses, the oven itself, the stove, and Customs described in the plant..." [8].

And about the presence of the Neapolitan engineer as an expert in the act of the notary Ettore Cappella in 1720, has been noted that: "the use of Manna for the measurement and evaluation of land in a few years after reconstruction, it can be justified by the fact that this "royal engineer" was "tavolario of S.R.C" presso cui pendevano numerose cause" [9].

4. Logics and strategies in the design and image of the city: the new urban structure

The new image of the city, after reconstruction, is also strongly structured on geometric-formal matrices known and applied (checkerboard pattern, the central square obtained from a modular lot built in the matrix according to mental models in use during the Seventeenth century, linked to the need to create residences and production facilities, but also a new organization of production methods [5, Tav. 19].

Examining in detail the types of settlement of the Eighteenth century, many specialist buildings, almost always churches emerge, in compliance with the geometrically strict schematic diagram of the Enlightenment, next to the concrete insertion of a minute construction made up of elementary types, whose organic law of development is simply made by the repeatability of "lottizzi a spina" next to the occupation of large batches characterized by a court typology.

In the analysis and interpretation, Ciaburri and Nuzzolino contiubutes are fundamental. The townhouse is in fact organized in parts and each is planned for a certain social group: "The model of the country - Ciaburri takes note - is, essentially, already aimed toward the 'most interesting urban experience of the enlightened kingdom of Carlo III: the settlement of San Leucio'. And more, "In an almost didactic way - he affirms - the idea of a plan of the productive classes becomes a model, the model becomes the rule, the rule defines the parts of the city by a wise use of the aggregation of different types of blocks... Orographic motivations, historical stays, political and cultural choices have create the support structure of the organization blocks: the road layout" [9].

Roads are of two types: main roads (width between buildings approximately 10-12 meters) and secondary roads (width about 6-7 meters).

The blocks are of three types instead. The plug type block, average size 12x60 meters, is composed by the assembly, along a central longitudinal wall, of the minimum building types. The lined up type block, with variable length in relation to orographic conditions, is composed of juxtaposed lined up buildings, with two views: on two parallel streets or towards the orchards (in order of their location).

And finally, the court type block, average size 80x100, is composed by the lined up aggregation of the minimum house with garden and the court type house. Very rare are the block type ones instead, composed by a single building.

There is this base type in the blocks on the upper part of the town. "The plug aggregation has allowed the fast realization of the first hospitalization after the earthquake, because the plug wall is common to two opposing cells, as well as the side walls are common to adjacent cells. Only one wall of the homeowner is the one parallel to the road."

Over the years it has occurred the amalgamations between neighboring cells, but this has however led upheavals typological, while obviously giving rise to a residential unit with other social destination (bourgeois house) [9].

"The entrance assumes the dignity of a representative "main door" and the relationship with the entrance hall of access to the garden is mediated by the inner courtyard. The so-called "casa palaziata" joins lining up, in the case of short blocks, or in line along the ridges towards the streams, or forms alone, one block". Ciaburri concludes his analysis with this consideration: "You can affirm that Cerreto is a possibility, almost unique, to read in an experimental way the development manners of building types, their aggregation system in blocks, the interrelationships that arise between the blocks when they combine to form a part of the city or the entire city" [9].

Ferruccio Ferrigni resumes Pescitelli's assertion: "This hypothesis (about anti-sismic constructions) that large buildings, such as the former Antoniani's Convent, Town Hall nowadays, the Bishop's palace and the seminario, just to name a few, have very small basements compared to the magnitude of the buildings and inside them there are large boulders stone on which rests the load-bearing walls, is comforting. This shows that the Cerretesi digging the foundations of their homes until they found boulders of rocks, lime stones and calcarenitics layers to built on. It would be foolhardy, indeed, by the survivors of the ordeal, rebuild on a foundation rather superficial or relatively deep, resting on clay soil, especially as during the reconstruction itself, in 1694, a second earthquake shook the nascent city as well throughout the Kingdom of Sicily" [6] [10, p. 40] [17].

Ferruccio Ferrigni also notes that "The opening on the facade are close to the edge of the property, but not to the one of the "dynamic segment", decentralized respect to the structure of the cell, but internal respect to the structure of the block. To prove this it was observed that the head of the block buildings often lack the extreme windows, replaced by openings in the front of the head [...] A formal

element that certainly expressed the culture of seismic community of Cerreto in the context of his batîr".

The same author notes how some constructive attention in anti-seismic sense have come to minimum design specifications: "it was suggested that recurrence of the injury suffered by the thresholds during the earthquake of 1688 showed the villagers that was an objective behavior of the structures. But after the break and the dislocation, the rough surfaces of the lesion prevent the sliding of the pieces, which remain stuck. The lesioned threshold loses the primitive structure, forcing to correct or replace the frame. It is logical that they have decided to create the new thresholds to "frattura predisposta" Probably, certain anti-seismic criteria were adopted without being fully aware. I think, for example, about the cellars with a vault system: the walls that hold the vault are buried and, consequently, able to withstand any load coming from above. Or the stair position and destination of the various levels: on the first floor we find the bedroom in fact, and the kitchen on the second floor. It makes easier and faster getting out of the house in case of a nocturnal earthquake. In my opinion, it was on the occasion of the earthquake of 1805, which caused a lot of damage in the lower town (including the collapse of the central part of the church of S. Antonio), that probably came the real awareness of the fact that

the first floor we find the bedroom in fact, and the kitchen on the second floor. It makes easier and faster getting out of the house in case of a nocturnal earthquake. In my opinion, it was on the occasion of the earthquake of 1805, which caused a lot of damage in the lower town (including the collapse of the central part of the church of S. Antonio), that probably came the real awareness of the fact that anti-seismic criteria were necessary in the construction of houses and that they should not go beyond two or three floor in any case. Previously, therefore, it is preferable to talk about civil protection culture. The new location of the town in a more or less flat area was determined by the experience of the previous earthquake. In fact the houses in the upper part fell on those in the lower part. To this type of culture it is also due the width of the three main roads and the road system in general, that does not create bottlenecks and leaves open any escape routes. And then there is the strategic location of the three squares (two at the end of the town and one in the center), seen as possible place for the survivors collection" [17, p. 42].

5. Plug cap: the example of S. Gennaro Church

The current church of San Gennaro was born in the new urbanistic asset of Cerreto Sannita in 1722. (by an act of the notary Lorenzo Mazzarelli of Cerreto), by the will of the spouses Giuseppe Giamei, a wealthy merchant of woolen cloth, and Elisabetta, devoted to the saints Gennaro and Liborio, originally they decided to build a chapel dedicated to them inside the collegiate church, that became a real church then. Therefore they asked to the bishop of the time, Mons. Francesco Baccari the relevant permit. The bishop agreed on October 30 of the same year and delegated the canonical Giovanni de Laurentiis to bless the first stone. The land on which was built the church was made by breaking down some houses that were owned by Giovan Lorenzo Gismondi, Anacleto and Giacomo Antonio Biondo, Nicola Sanzaro, Antonio Petronzi and Paolo di Luise. The architect Matteo Giustiniano, maybe a relative of the homonymous potters family of Cerreto, in order to make the best with the little space available planned an elliptical shaped building, maybe inspired to the chapel of San Gennaro's Cathedral in Naples. In 1725 the facade and the "pronao" by the stonemason master Antonio Di Lella were completed, while in 1729 the perimeter walls has been completed, and in the same year it was provided to raise the dome under the direction of Giacomo Caldarisi, plasterer master, because Matteo Giustiniani was absent [15]. In 1735 it was completed, four years after it was consecrated by Mons. Antonio Falangola, who noted that the church was, from the architectural point of view, very similar to the royal Treasury Chapel of S. Gennaro in the Napoli's Cathedral [5]. With the death of Elisabetta, in 1734, and the lacking of direct heirs, Giuseppe Giamei was convinced to roll out a will in which provided as the sole heir of his estate San Gennaro Church, and appointed administrator of his goods the bishop of the time Mons. Francesco Baccari and his successors. We do not know the reasons why Giamei revoked the will of 1734 on 26 November 1739, and not only named sole heir of his goods the Universitas, but also moved since that day the patronage of the church at the civic administration. Among the charges that fell on the Universitas there also were taking care of the maintenance of the sacred place, keeping alive the cult of San Gennaro and celebrating Mass in all holidays. Giuseppe Giamei died after fifteen days and was buried with his wife in the tomb below the church floor. The patronage of the church passed to the civic administration then, who used to hold its meetings (the "parliaments") in the "pronao".

In 1748 inside the dome began to appear showy damp patches that, despite the restoration, became bigger and bigger and began to threaten the stability of the structure. Only in 1761, when the bishop threatened the interdiction of the sacred place unless the dome was repaired, the elected of the Universitas worked to find the necessary funds and in 1762 the work was contracted out to Giovanni Battista Borrelli from Milano to the tune of 160 ducats. Part of the sum was obtained thanks to a loan of 100 ducats contract with the Poor Clare Sisters of Cerreto and burdened by interests. The work mainly consisted in the waterproofing of the dome and in the creation of several steps in order to drain the water without letting it break in the wall structure. The dome, as a result of these works, acquired a new look and greater momentum. Fixed the issue of the dome, other problems came: in 1765 the tombstone was broken and the adjacent floor had been damaged; in 1766 the burial was full of water and on the choir was visible a big damp patch; in 1795 the bishop ordered to restore the church within

three months, the penalty for failing was the prohibition of the church and a report to the king. Such was the situation of the church until 1854 when Mons. Luigi Sodo arranged to restore it, to reopen for worship and equip it with a brotherhood dedicated to the Madonna della Purità

In 1927 the church was declared national monument.

After the earthquake on November 23 in 1980, has undergone a radical and discussed restoration. Since 1998 houses the sacred art section of the Civic Museum and the Cerreto ceramics.

In the exterior, the facade, 15 meters height and 13 width, is made of manipulated local stone, a work of the master stonemason Antonio Lella. It has four columns with smooth shafts of Tuscan order with bases on plinths and Doric capitals. Between the columns there are three arches which lead the "pronao", decorated with wrought railings Eighteenth.

The entablature consists in an architrave bearing the inscription: "ut coniugi sorte ita pietate unanimes templum hoc divo ianuario iosephus iameus et isabella bionda fundavere. a. d. MLCCXXV"

Leave one blank line between abstract and keywords, and two blank lines between keywords and the first section.

The bell tower, another work by Di Lella, is decorated with manipulated local stones, while the dome, about thirty meters high, is set on an elliptical plan and is the result of the interventions in 1762, it consists of terraces covered with tiles yellow and green majolica, replaced in 1980 with opaque copies. The tiles placed on the windshield are authentic instead. The "pronao" consists in three bays. In the right and left bays are situated two plaster sculptures by Giacomo Caldarisi (1725) depicting San Cristoforo and San Gennaro. In the central bay there is the portal of the church, surmounted by two cherubs in plaster, and the coat of arms of Giamei and Biondi spouses, founders of the worship place. Plasters, typically Eighteenth century, are by Giacomo Caldarisi. This place, such as the dome, has an elliptical plant and possesses a main chapel and two side chapels. In the main chapel there is a painting by Luigi Cacciapuoti illustrating San Gennaro among deacons Festo and Desiderio. An angel holds the ampoules with the miraculous blood while on the ground and at the top you see the martyrdom means by which the saint was murdered. The architectural setting has elements taken from Sanfelice and Domenico Antonio Vaccaro that reconstruct the appearance of the of amphitheater in Pozzuoli, where Gennaro and his deacons were killed.

6. Conclusions

We say that the case history of Cerreto Sannita can be welded to the different scales and to the various dimensions, integration with production, confirming its existing roots will brave seventeenth-century urban redesign.

Confermando le sue attuali radici ne coraggioso riprogetto urbano seicentesco.

Everyone agree on one aspect however: "the day after the terrible earthquake of 1688 in Cerreto Sannita, one of the most beautiful pages of the Southern architectural history was achieved. But above all, it was made a positive and rational model of post-seismic reconstruction, which is still an important reference point for those engaged in reconstruction of the villages destroyed or damaged by an earthquake" [17, p. 43]. I will continue my studies, from the past to the future.

It is right to conclude with the considerations expressed by Giovanna Rubano, Councilor for Tourism and Productive Activities of Cerreto Sannita:

"It's been a long time since the city administration, with the new Pro Loco Cominium and the cultural association "Biblioteca del Sannio (Biblos)", are working for a New Town, seen as strategic development, socio-political and more strictly cultural, also pointing to support and promote its excellence even in the culinary landscape. A New City for the revival of production and craft activities that distinguish the territory, also to give the opportunity to young people to live in and own land, but also in History and for History. A New Town which is a founding member of the AiCC - Italian Association of Ceramica City, of which currently holds the national vice presidency. A Town recognized as "Olive Oil City", as well as Borgo Bandiera Arancione, the eco-environmental quality mark awarded by the Touring Club Italiano to small municipalities distinguished by an excellent service and a quality welcome. A New Town that made visible the cultural, social and productive renaissance, without neglecting its urban development, indeed aiming the implementation of a renewed urban plan, aimed at giving a renewed image of its. Moreover, Cerreto has expanded its municipal assets by purchasing the Civic Tower, the last witness of pre-earthquake Cerreto, and its two hectares of land needed to realize the Archaeological Park. They were inaugurated last year, the last direct intervention to preserve the historical center of Cerreto Sannita; work towards better use and enjoyment of important sites, including Piazza Roma, Piazza Luigi Sodo and Mazzacane Square. Finally not negligible interventions on place names, with the aim of restoring memory and dignity to so many illustrious citizens. The revival of Cerreto started therefore from a cultural, social and touristic renewal, taking care of the services and the needs of its citizens and giving the City a new urban look, elegant and "orderly", according to its urban design with the renovation of the squares, streets and sidewalks for a more aware picture of Cerreto and its history."



Fig. 1: Cerreto Sannita vista dall'alto (https://it.wikipedia.org/wiki/Cerreto_Sannita#/media/File:Cerreto_Sannita-Foto_aerea1.gif).

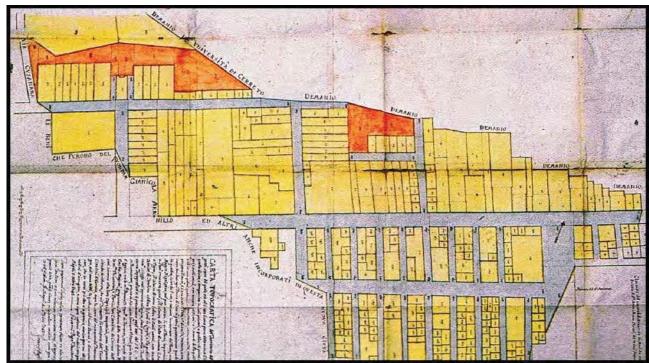


Fig. 2: Tavolario del Sacro Regio Consiglio raffigurante la parte del centro abitato, 1742. Archivio Mazzacane, Cerreto Sannita.

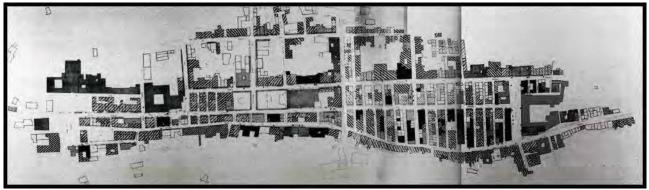


Fig. 3: Anna Marotta, *Un Centro antico del Sannio storico: Cerreto Sannita*, Tesi di Specializzazione, Napoli, Scuola di perfezionamento in Restauro dei Monumenti 1977. Analisi dei tipi edilizi e dei valori ambientali. Estratti dalle tavole: 18a, 18b. Scala originale 1:1000.

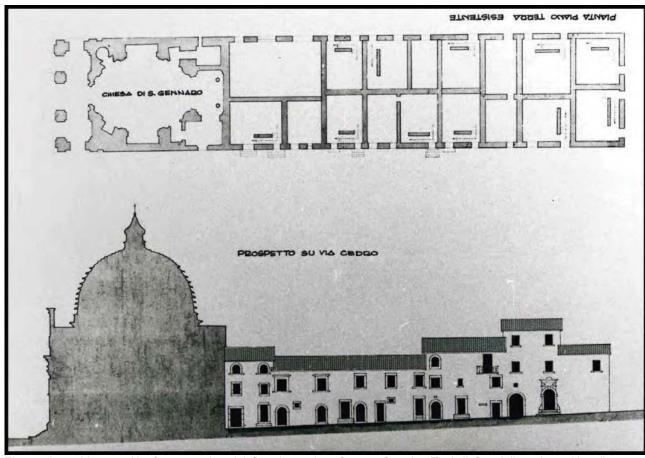


Fig. 4: Anna Marotta, *Un Centro antico del Sannio storico: Cerreto Sannita*, Tesi di Specializzazione, Napoli, Scuola di perfezionamento in Restauro dei Monumenti 1977, Pianta e prospetto degli edifici su via Cedro. Estratto da tavola 3c.

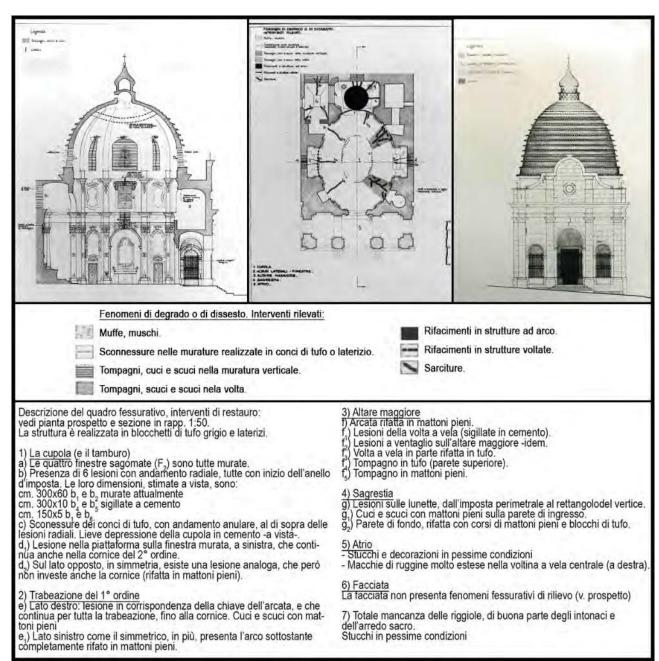


Fig. 5: Anna Marotta, *Un Centro antico del Sannio storico: Cerreto Sannita*, Tesi di Specializzazione, Napoli, Scuola di perfezionamento in Restauro dei Monumenti 1977. Chiesa di San Gennaro, elaborate di rilievo con evidenziati i dissesti statici della struttura. Estratti dalle tavole: 31a, 31c, 31b. Scala originale 1:50.

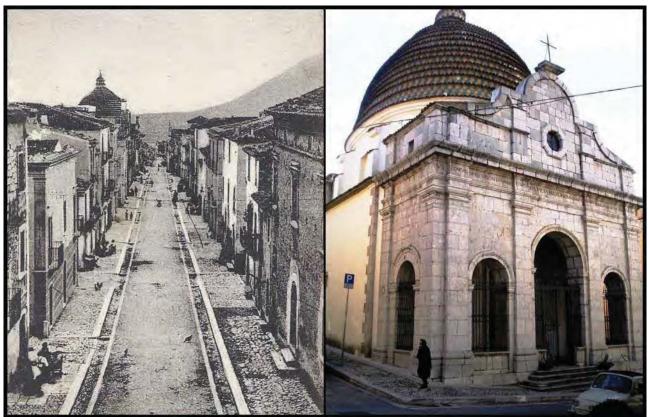


Fig. 6: Cerreto Sannita, Corso Umberto I. Chiesa di San Gennaro, prospetto principale e dettaglio della cupola.

Bibliographical References

- [1] GIUSTINIANI, Lorenzo. *La biblioteca storica, e topografica del Regno di Napoli di Lorenzo Giustiniani*. Napoli: Vincenzo Altobelli, 1793.
- [2] ROTONDI, Nicola. Memorie Storiche di Cerreto Sannita. Manoscritto inedito del 1875.
- [3] FRANCO, Domenico. Il terremoto del 1688. Napoli: s.e., 1966.
- [4] SALMON, Edward Togo. Samnium and the Samnites. Cambridge, 1967.
- [5] MAROTTA, Anna, *Un centro antico del Sannio storico: Cerreto Sannita. Analisi ed ipotesi di intervento*, Tesi di Specializzazione, Rel. Prof. U. Cardarelli, Corr. Proff. G. D'Angelo, A. De Fez, R. De Stefano, A. Realfonso, N. Spinosa, A. Venditti, Napoli, Scuola di perfezionamento in Restauro dei Monumenti, 1977.
- [6] PESCITELLI, Renato. Chiesa Telesina: luoghi di culto, di educazione e di assistenza nel XVI e nel XVII secolo. Benevento: Auxiliatrix, 1977.
- [7] NAPPI, Eduardo. Il terremoto in Campania attraverso i secoli. Napoli: La Letteraria, 1981.
- [8] PESCITELLI, Renato. La Chiesa Cattedrale, il Seminario e l'Episcopo di Cerreto Sannita. Napoli: La Laurenziana, 1987.
- [9] CIABURRI, Nicola. La ricostruzione di Cerreto Sannita dopo il terremoto del 5 giugno 1688. In NARCISO, Enrico (ed.). *Illuminismo meridionale e comunità locali*. Atti del Convegno organizzato dal Comune di Santa Croce del Sannio, Istituto storico «Giuseppe M. Galanti», 6-7 ottobre 1984. Napoli: Guida, 1988, pp. 325-359.
- [10] FERRIGNI, Ferruccio. San Lorenzello: alla ricerca delle anomalie che proteggono. Favello: Centro Universitario Europeo per i Beni Culturali, 1989.
- [11] MOSCHINI, Francesco. *Cerreto Sannita Laboratorio di Progettazione 1988*. Roma: Edizioni Kappa, 1989.
- [12] MAZZACANE, Vincenzo (ed.). Memorie storiche di Cerreto Sannita. Napoli: Liguori, 1990.
- [13] PACELLI, Vincenzo (ed.). Cerreto Sannita: testimonianze d'arte tra Sette e Ottocento. Napoli: Edizioni Scientifiche Italiane, 1991.
- [14] PESCITELLI, Renato. *La Chiesa Collegiata di San Martino vescovo in Cerreto Sannita*. Telese Terme: Arti Grafiche Don Bosco, 1993.
- [15] PESCITELLI, Renato, MONTEFUSCO Luisa. *La Chiesa di S. Gennaro Vescovo in Cerreto Sannita*. Benevento: Auxiliatrix, 1998.
- [16] PESCITELLI, Renato. Palazzi, case e famiglie cerretesi del XVIII secolo: la rinascita, l'urbanistica e la società di Cerreto Sannita dopo il sisma del 1688. Telese Terme: Arti Grafiche Don Bosco, 2001.

- NUZZOLINO, Billy. Cerreto Sannita: un modello di ricostruzione post-sismica. Telese Terme: [17]
- Media Press s.a.s., 2002.
 [18] MARCHIS, Elena Teresa Clotilde. *Disasters and earthquakes in Western Liguria. The "earthquake of Diano Marina, 1887"*, in this volume.