

The work of Alessandro Antonelli¹ and Crescentino Caselli² between the Architecture of the *Raison* and the *architecture raisonnée*

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The representation of the Mole Antonelliana on Italian 2 cents coins recognizes this unusual modern monument as the symbol of Turin, but at the same time confirms its conventional image: the sharp profile that towers over the neighbouring houses roofs does not reveal its identity, constituted of little matter and of strong constructive conception, nor its proportions and its neoclassic style as a solid dignified appearance, contrast to the changing suggestions of the Eclectic taste. The Mole dominates Turin (figure 1), however it is placed in an recent anonymous building plot aside its ancient core, and it reports to the urban development rather than to its built surroundings: likewise the *Sagrada familia* in Barcelona. As for that, the attention of the critics regarded more its exceptionality, then its relationships with the town and with the history.

The Mole,³ 167 meters high and in origin all in brick and stoneashlar masonry with same necessary iron tie beams, has been understood as «a monument to the megalomania of his architect» (Hitchcock 1971), comparing it to the Tour Eiffel, built during its achievement in 1888. This concept neglects however the complex relationships about Architecture/functions and traditional/innovating technologies, that characterize it. Admired, criticized, feared from the contemporaries, the Mole arouses from a century a thin and prestigious *fil rouge* of critical attention, understood to report it to the European experiences of its age and to the large and coherent context of the production of its author,

distinguishing it among the buildings of the Italian Eclecticism, addressed essentially to stylistic improvements. The Mole and all the works of Antonelli report instead, more than to the Italian culture of their time, to the Illuminism's principles of the rationality in the building arts and to an acute sensibility to the tasks of the architecture in the prevailing bourgeois and liberal society: rational organisation of the cities, production of solid and dignified public and private buildings and efficient and economic houses, optimizing realistically the available local resources. A coherent program, referable to the teachings of Durand, but without rigorisms; referring to the accelerated developments of the century and to the material conditions of Piedmont at that time: good tradition of the arts, scarcity of new materials and industrial technologies. A well-tried bricks, mortars, stone architecture, as done by expert and intelligent workmen; a proper neoclassic style no more reserved to monumentals edifices but applied to all normal tasks of current building (Daverio 1980:59): a choice that reminds the Loos' judgements about the most proper dress of the modern man and the impossibility of conceiving new ornaments.

Crescentino Caselli, faithful, coherent and innovative disciple of Antonelli, affirms:

Antonelli was the teacher to himself, and he is the just one Italian architect who, formed when all swore for Greek and Roman, was able to give to his works a very mighty



Figure 1
The Mole Antonelliana in Turin

personality, and to develop a system in architecture, I would say a style, all his own. In his system, the walls do not exist otherwise then as enclosure and shelter; the support and the solidity of the building is all delivered to pillars, that are the principal support, to arches, wich brace pillars, and give an additional support when suitable, and prop the vaults; order and equilibrium govern and harmonize all the masses. (Caselli 1889)

A century later, we may ascertain however that such prophecy as not been accomplished, because of the rapid transformation of the productive and social context: the spread of reinforced concrete technics, the reduction of the building trade to a subordinate role in the increasing industrial town,⁴ the ephemeral *fin-de-siècle* fashions. So as it happened in all other fields for the utopia of Ruskin and Morris, the development of the technologies and the industrialisation, between XIXth and XXth Century, has laid in aside the optimization search of the masonry building, that Antonelli pursued with constant coherence in all his works (monumental architectures, public buildings, residences). Such building optimization concerned equally both typologies, and technologies, through the regularity of the modular plans and of the supporting framework at *fulcri* (pillars, granite or masonry columns) that hold up the thin domical vaults in bricks, that are flat layed in concentric courses stiffed by arches at the extrados. The vaults are often let very lower, like a kind of continous velarium, that favours opportunely the diffusion of daylight, allowing to realize very thick bodies of building. That technique could be applied as well to the frame of the roof, built with arches and vaults in bricks to support of the covering in tiles: as it was made by Caselli in the *Ospizio di Carità* (poor-house) of Turin⁵ (figures 2, 3, 4). A few illustrations can display the singleness and the constructive and spatial values of that building method and of the brick-roof system as an alternative to the iron construction, still extraneous to a country as Piedmont, where the industrialisation was just begun and instead the resources of the traditional crafts were subject to be cleverly addressed toward the same aim. The amazing exaltation of the relationship between spaces and masses obtained in those buildings is without equals⁶ except in the iron-masonry architectures, like those realized or conceived by Labrouste and Viollet-le-Duc, starting on analogous principles and aims of rationality; and likewise expressed in rigorous forms, oppositely to the new

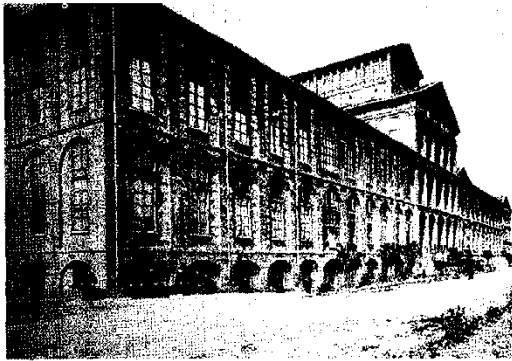


Figure 2
The Ospizio di Carità in Turin, at its achievement in 1887



Figure 3
Front view of a pavilion of the Ospizio di Carità

tendencies to «serving of all the concepts of the different styles in accordance with the utility, the opportunity and the taste» (Boito 1891). In the Antonelli's and Caselli's works the architecture (aimed to the new functions) and the structure (according to the scientific knowledges) are integrated in the conception and in the practice, so as it was still possible at that time, when the professional rules and technical competences were just dividing, and either an architect (as Antonelli) or an engineer (as Caselli)

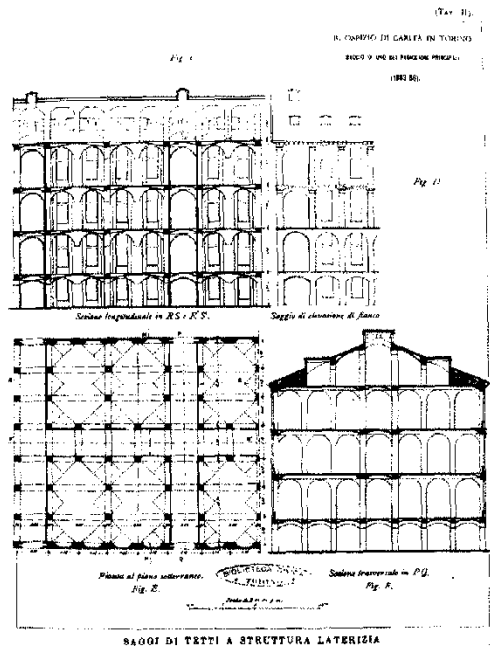


Figure 4
Cross section and perspective view of a pavilion of the Ospizio di Carità (Caselli 1894)

were both able to conceive, to proportionate and to realize completely not only usual buildings, but even the most audacious and extraordinary ones, as experimentations and demonstrations of the progress of the art.

The works of Antonelli and Caselli, realized in the course of about a century (1830–1930), bear witness to a significant phase of the history of the Italian architecture, from Neoclassic to Modern Movement, across and against other changing experiences occurred in those times, but they are circumscribed in a part of the Piedmont, among Turin, Novara, Alessandria and their countries.⁷ That undoubtedly marginalized them, in a freshly united Nation, whose capital town was transferred in a few years from Turin to Florence and finally to Rome (1870): that is those who are still the centers and the references of the Italian tradition of arts and of knowledge by the foreign connaisseurs. Moreover, the «Metodo antonelliano» does not find a generalized consent,

both for the scepticism of some protagonists of the local culture, and even for other reasons, as the success of a new political and operating class, instead of that cultured liberal middle class, active also in the ecclesiastical hierarchy and in the local government, elective appointer of the buildings of Antonelli. His plentiful production was realized in the years between the Restoration and the Italian Unity, even though the greatest works are developed in following circumstances and sometimes among hard polemics.⁸ The classical tradition and the academic models did not answer any longer to the new requirements of towns and countries (roads, bridges, social institutions buildings, residential typologies for housing or rent), nor they were able to express the manifold motivations of the new romantic sensibility. The experiences of the Napoleonic years (1800–1814) and of the European new asset, with its references to France and United Kingdom, arose as the examples for the new practical requirements of Piedmont in the bourgeois renewal of the society. Antonelli, like Labrouste, added to the mastery in the neoclassic architectural composition, acquired during his studies at the academies of Milan, Turin and Rome, the new interests for the building crafts and the rationalization of typologies, as promoted by the precepts of Rondelet and Durand. The new task of the Architecture (who nothing of the civil society was extraneous, according to Ledoux) was the pursuit of the material and cultural progress, beyond the expression of consolidated values. The field of the architecture was equally open to all buildings with useful destination (as bridges, hospitals, markets, museums, theatres, schools, public gardens), conceiving the art as a *«moyen efficace de contribuer au bonheur public»*, *«faisant usage . . . de la méthode que la raison indique»* (Durand 1825), in order to *«partager . . . les aises et les commodités de la vie»* (Navier 1809). A further aim of the architecture was the one suggested by Navier: *«l'art consiste . . . à faire le moins de dépense et à employer le moins de matière qu'il est possible»* (Navier 1830). That is a concept to be applied not only in an economic value, because the architecture coming from those principles, by its characteristics of lightness and rational disposition of the materials, participates of the natural laws of symmetry and of equilibrium, *«et les caprices du goût ne pourront jamais en altérer l'élégance»* (Navier 1830). Navier was dealing with

suspension bridges, but the observation can be applied to a lot of buildings from the architecture of Illuminism to the Modern Movement, from those according to Laugier's theory, to Sainte-Geneviève by Soufflot and the Bibliothèque Nationale by Labrouste, till the works of de Baudot and Séjourné.⁹

The works of Antonelli and subsequently those of Caselli, too often neglected by critics as marginal curiosities in comparison with the cultural debate of those years (the conversion, one after the other, of Turin, Florence and Rome into modern capital cities; the pursuit of a National Style, the restauration—or integration, or ideation—of the medieval and Renaissance monuments, the international Competition for the monument to celebrate the Italian Unity and its first King, Vittorio Emanuele II) appears unusual for their rational dispositions of frames and spaces, for their strict relationship between the building art and the use of the materials (from which both their design and their shapes proceed), for their wide field of interest, open to the emergent necessities of the modern society. From these assumptions, it resulted reliable and durable buildings, containing in the least volume the most useful space, well illuminated and airy; by using and encouraging the development of the best local resources: workers skill, good quality bricks, mortars, stone ashlar. Those buildings show altogether how innovation and progress descend not necessarily from the availability of new technologies and material resources (iron, pit-coal), still scarce and very expensive in Italy in those years; but from the critical intelligence in dwelling with the tradition.

As in the Durand's *Précis*, architectural typologies of Antonelli and Caselli derive from the *combinaison* of space and frame modules (the squared *«grille polytechnique»*) creating regular cells, disposed both in consequence and organisation of the functional programme of the building. Synthesis of classical culture and of social intentions, this *«raison»* was able to give a progressive answer to the pursuit for the identity of the new Italian architecture, so ennobled as conditioned from the mythes of its old tradition. But already in the Competition for the Parliament Palace in Turin (1864), Antonelli's project was left behind in favour of another, whose emphasis, whose sumptuous stylistic *pastiche* of manifold inspiration, inevitably preludes to the buildings of the King Umberto I style.

The wide architectural production of Antonelli (more of 80 great buildings planned, of which more of an half



Figure 5
The renewed Cathedral of Novara, 1864–68

was realized) includes the new Cathedral of Novara (figure 5), replacing the ancient one —demolished in spite of the disapprovals by many connoisseurs of medieval art—, plans of urban development for Turin (one of which was suggesting in 1852 to build a railroad to connect the three planned railway head stations), residence buildings as growth and renewal of preexisting constructions (as it was usual) or of new and rational establishment (figure 6), many parish churches, kindergartens (figure 7), boarding schools, hospitals ...

Unusual then is that his projects are conceived and appointed even in the smallest details, and when they are performing, he himself is at the same time the architect, the head manager and the assistant, the builder and the bricklayer, the stonemason and the plasterer, and the carpenter, because he is able to teach the best rules to all workers; and that same hand which still today masters so well pencils and compasses, is expert to model in clay a Corinthian capital, worth of the best sculptor. (Caselli 1884)

Crescentino Caselli production was as much plentiful, and it is placed mostly in towns and countries between Turin and Alessandria. His buildings show as still after the end of the XIXth century Antonelli's method was susceptible to the most various applications with the same dignity and



Figure 6
«Casa delle Colonne» in Turin, 1853

quality result, even in constructions «straight microscopic for importance and dimension, however existing in various circumstances and conditions and in tight relationship with common experiences in the field of the civil architecture» (Caselli 1894). In particular, even thanks to a personal conception of the restoration —at that time a main subject of the cultural debate— (Vinardi 2000), and the comparison with the contemporaneous European experiences, Caselli proved as the new building system —non necessarily pertaining to the classical language, but by means of the sincere exposure of his constitutive elements and of the various materials (those of the tradition, which he added enameled tiles in the capitals and in the modillions and emphasized wrought iron works— gratings, railings, heads of tie beams) proposed new decorative suggestions to the



Figure 7
The Kindergarten in Bellinzago near Novara, 1873 76

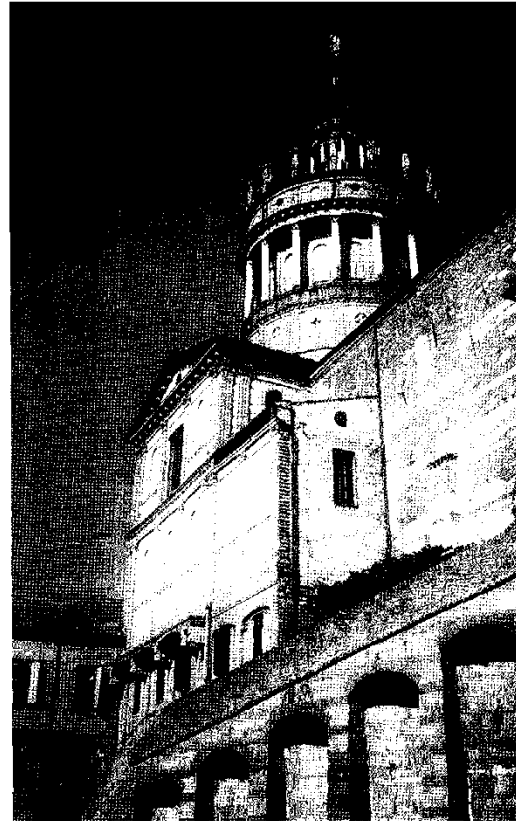


Figure 8
The Dome of the parish of Camagna near Alessandria, 1887

Eclectic taste (figure 8). Excluding any utopy of return to the past, those architectures, understood to the innovation of the art of the building arts in reponse to the modernisation of the society and of the towns, realize their relations with the tradition by innovating experiences and the exemplarity of a production, whose cultural meaning goes beyond their circumscribed geographical and chronological circumstances.

This double finality, of experiment and demonstration, sustains the highest and most audacious Antonelli's architectures —the Mole in Turin and the Dome of the San Gaudenzio Basilica in Novara— not as curiosities and eccentricities of a seclusive genius, but as a synthesis of an historical condition and proposals towards the future. The Mole, usually considered only for its structural performance, presents about that many cues of

reflection. The center for the Israelitic community of Turin, acknowledged in Piedmont's laws with the Statute of 1848, would gather in a small lot manifold available functions (temple, schools, administrative offices), in one building of strong symbolic connotation. Proposing an unitary and complex resolution to this task without preceedings, Antonelli declared his intent to add a further aim: «to give light to the progress of the masonry and stone building for the great vaults»¹⁰ while «the more appropriate to our Italian uses, the most profitable to our cares and duties, employing preferably the materials of which the nature was lavish for us» (Figures 9, 10). The occurrences stopped the achievement of that program and the building remained incomplete, until its care was taken by the City Council. It is a point, that

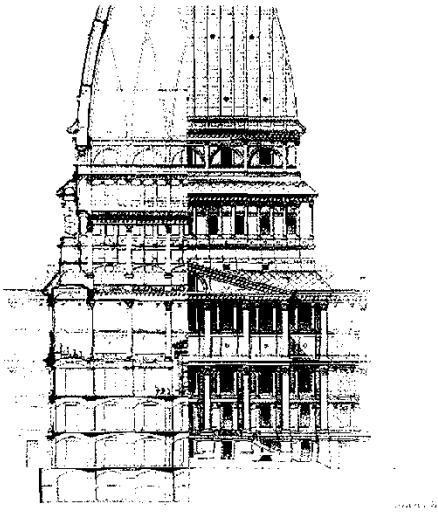


Figure 9
Mole Antonelliana: detail of the front view and cross section by Crescentino Caselli, 1872

monument inspired by memories and recreated styles of the ancient East, but an architecture-symbol of her living presence in the contemporary society. A similar observation, even if with smaller evidence, is valid regarding the several catholic churches planned by Antonelli, without never indulging to the influence of the neo-Gothic taste, or refer to the past, till justifying the substitution of the ancient cathedral of Novara.

Analogous considerations are also valid concerning the high Dome, that Antonelli superimposed on the preexisting San Gaudenzio Basilica at Novara (figures 11, 12). The dome, although notably lower than the Mole, is established on a such amazing structure—for complexity and lightness—as to be valued—at least regarding the building art—as synthesis or conclusion of a secular progress of the typology, from the domes of ancient times to those by Brunelleschi and Michelangelo, and by Mansart, Wren and Soufflot (Daverio 1980). In its growing and implementing process through the following developments of the project, the Dome relates to the actuality too: the

among the lot of Synagogues of those years (including that built in Turin afterwards), only the Mole would have assured to the Community not a



Figure 10
Mole Antonelliana: frame between the Pavilion and the «Tempietto» (rendering by F.Algostino)

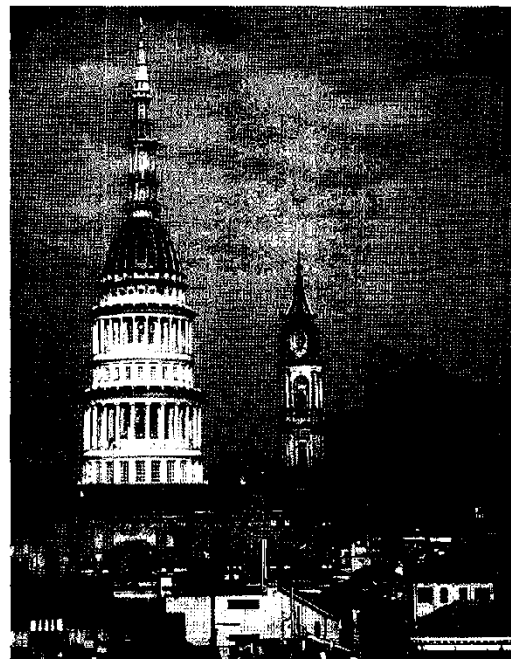


Figure 11
Dome of San Gaudenzio's Basilica in Novara

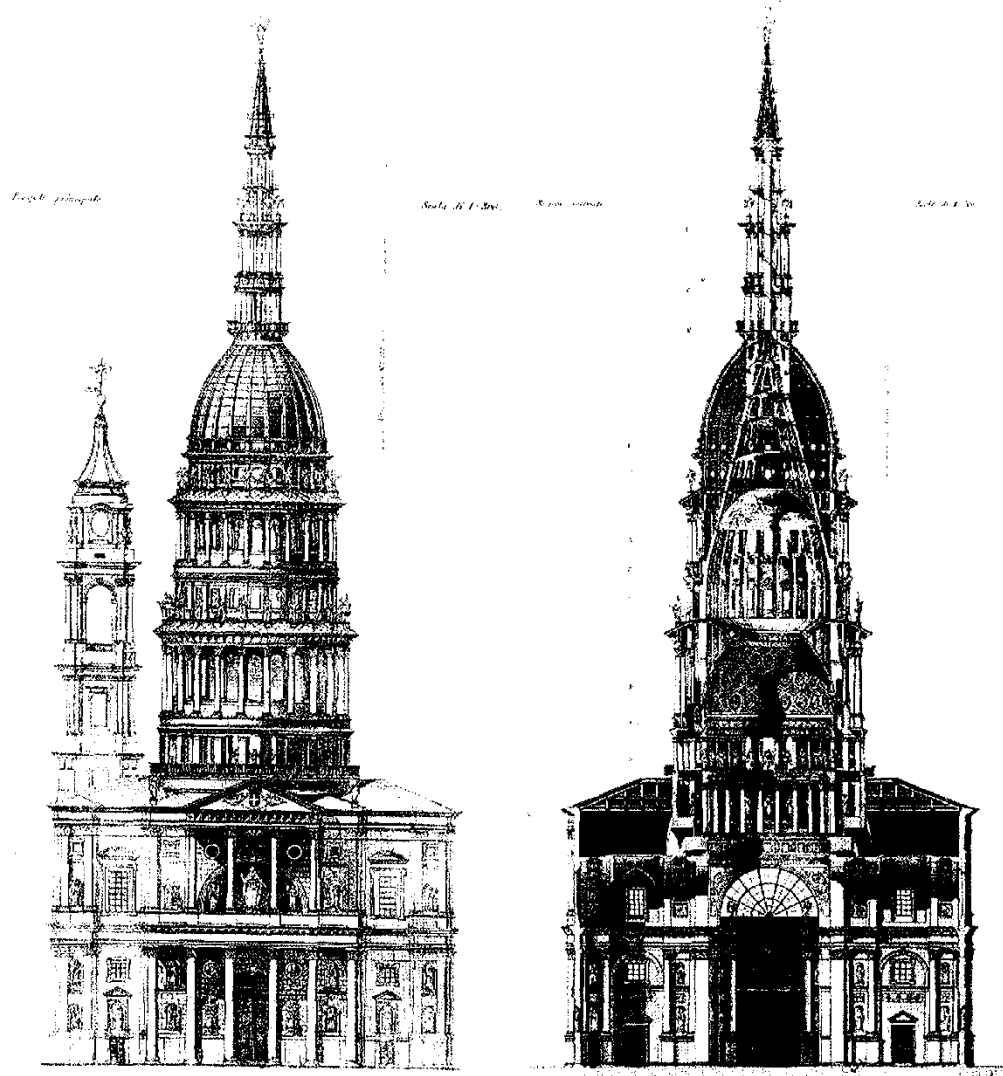


Figure 12
Dome of San Gaudenzio's Basilica in Novara; front view and cross section by Leandro Caselli, 1877

masonry cone enlightened by holes that make its space permeable to the light can be compared with the dome of Wren¹¹ (or the Romanesque Baptistery of Pisa), but also with contemporaneous buildings, as the towers of the suspension bridge of Cubzac. Its meaning is not only in the relationship with the underlying Basilica,

that it has climbed over with the audacious interposition of a system of great parabolic masonry arches, without grounding upon the inadequate arches of the ancient transept; but the new Dome imposes its outline above all the country: «so ample to cover with its shades all the peoples», how Leon Baptist Alberti

stated about the dome of Brunelleschi (Alberti 1975).

To those accomplished buildings, that subsist though overloaded from the invading reinforcements imposed by cautions, perhaps impossible to avoid, but heavily conditioned by the methods of validation operable in the first half of the XXth Century, we could add the latest ideation, entrusted by two autographs by Antonelli, sketched with pencil in plan, cross-section and elevation, together to other drawings perhaps referring to the same object.¹² They delineates allusively a third masonry Dome, defined as a «church»; but certainly it refers to another monument, perhaps a preliminary thought on the

international competition for the mausoleum of the Kings of Italy. We know indeed by Caselli that Antonelli, nearly ninety years old, was applying to that task (that hypothesis presents however some chronological discordances). The building appears covered by a titanic dome, an ogive at «tubular structure or like a beehive» (as Antonelli himself related the Mole's pavilion, interconnected by means of «right-reversed arches»), that supports a great two-level Lanterna¹³ (figures 12, 13). Supposing that this building was such as to respect the Galilei's evaluations about the proportions of the frames of a giant; and that the intuition of Antonelli was able to let it safe against sismic risks and strengthes of the

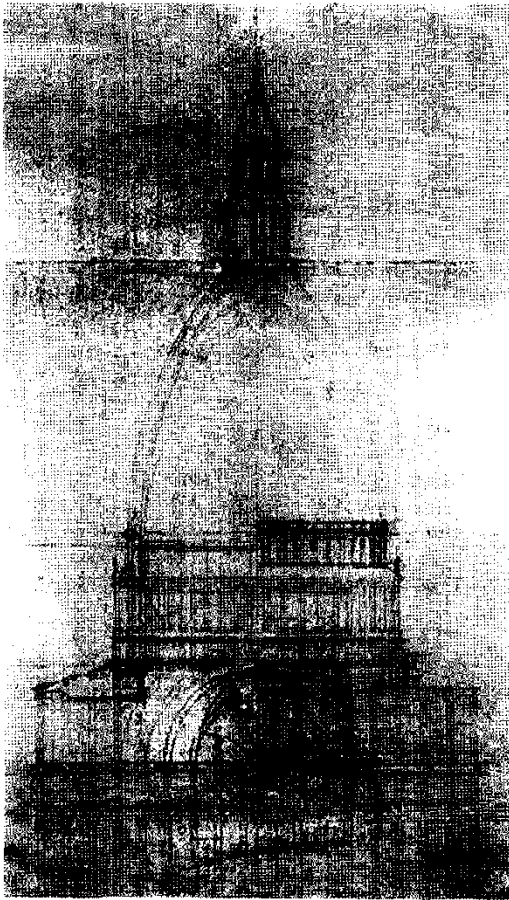


Figure 13
Cross section of the Third Dome, outlined by Antonelli
(Archivio Antonelli, Galleria Civica d'Arte Moderna, Turin)

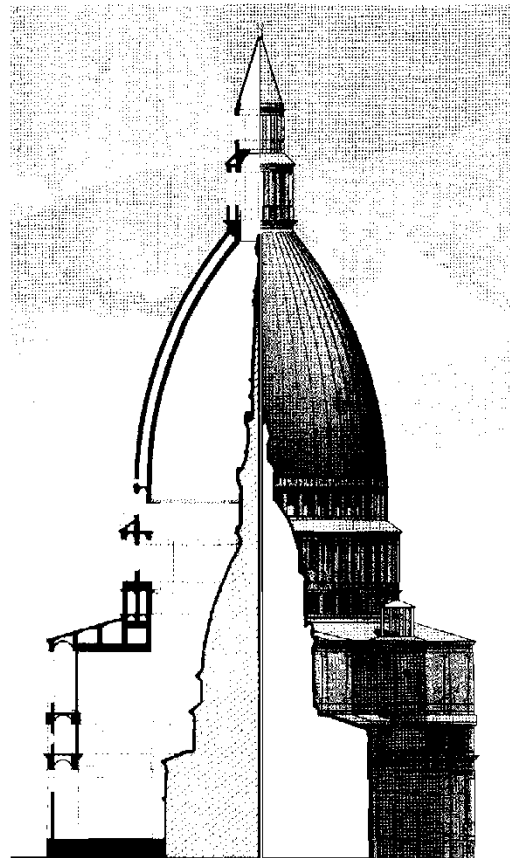


Figure 14
Comparison between the three Domes (rendering by D.Borra)

winds, as he achieved for the Mole and the Dome; and that it was possible to carry out the works without the improvement assured by his continuous presence in yard (as a few years ago he was able to do for the Mole),¹⁴ the steady realism that had sustained the audacious preceding monuments sublimates by now into the Utopia. A century after the achievement of the Panthéon of Paris, the «*architecture raisonnée*» seems to complete its historical experience, merging with the visions of Boullée,¹⁵ towards the sources of the architecture of the *Raison*.



Figure 15
Hypothesis on the re-creation of the Third Dome (rendering by D.Borra)

Notes

1. Alessandro Antonelli (Ghemme, Novara, 1798–Turin 1888), architect, professor at the Accademia Albertina of Turin; Rosso 1989; Biancolini 1988 (with bibliography). Crescentino Caselli, Camillo Boito, Arialdo Daverio, Carlo Mollino, Roberto Gabetti, Franco Rosso, Vittorio Gregotti, Aldo Rossi, are among the critics who have written on Antonelli.
2. Crescentino Caselli (Fubine, Alessandria, 1849–Bagni San Giuliano, Pisa, 1932), engineer, professor at the Accademia Albertina and Politecnico of Turin; Rosso 1979.
3. The building was begun in the 1863 as synagogue. The continuous development of its construction and the polemics on its stability led to the interruption of the works and to their acquisition by the Town Council of Turin, to dedicate it as the monument to the first King of Italy, Vittorio Emanuele II. Its consistence is today substantially altered from the consolidations in reinforced concrete carried out from the year 1928 and from the substitution of the pinnacle, torn from a hurricane in 1953 and reconstructed with steel frame in 1961. The interior has been recently staged to a *Museo del Cinema*.
4. The Factories FIAT were founded in 1899; when Turin, no more capital of the kingdom of Italy since 1864, had already assumed a remarkable consistence of an industrial town.
5. The Ospizio (1883–87), of a length of 351,50 mt and nearly 100 mt of depth, was the greatest building of Turin before the Fiat Lingotto Factory. The question of the incombustible roof, proposed in the XVIIIth Century (Espie 1754), finds references in Italy in the project of Antonelli for the theatre of Novara, 1858, and in the new Departement of the Finances building, Rome 1876, by the architect Raffaele Canevari. Caselli adopts it for his building, theorizing it in an Essay on tile structure roofs-*Saggi di tetti a struttura laterizia*, 1894; also because it makes habitable or at least usable the rooms under roof. For a systematic exposure of the building method employed by Antonelli and Caselli, see Franco Rosso (1979, 1989).
6. The relationship between the structure and the cover area of the Mole is of the 5,4%, in comparison with the 15,4% of the Panthéon of Paris (Gabetti 1962).
7. Nevertheless, some buildings by Crescentino Caselli are too in Pisa and Cagliari and others of his brother Leandro in Carrara.
8. Particularly, those about the rebuilding of the ancient cathedral of Casale, proposed by Antonelli (1853–54), and contrasted for the safeguard of historic values by Luigi Canina and Edoardo Arborio Mella (that afterwards realized its stylistic restoration); those about the ancient cathedral of Novara (where Antonelli realized his project, 1864–69) and those on the inexorable growth of the Dome at Novara (1841–64) and of the Mole at Turin (1863–88).
9. The building method proposed by Antonelli and its development in the works of Caselli could be compared to the construction and the ornamentation, not stylistic but structural, of the examples proposed by Viollet-le-Duc in the *Entretiens* and in their applications. Another

- question is proposed by their suggestive space analogies and motivations (not extended at the consistencies) with the *bóvedas tabicadas* by Rafael Guastavino Moreno (García-Gutiérrez 2000).
10. The amazing height of the Mole is grounded in reason of its tubular structure to double hull constituted from interlaced arches on a square plan, carried out without scaffoldings till the limit of their steadiness.
 11. The development of the lantern of the dome in a shape of a pinnacle at many levels, like a pagoda, was conceived by Wren in the «Warrant Design» for the St.Paul's Cathedral in 1675, but with a carpentry in wood.
 12. Those plans are kept in the Archivio Antonelli, Galleria Civica d'Arte Moderna, Turin. Caselli (1888) reports the site proposed by Antonelli for the Mausoleum: the Monte Mario in Rome (where today the Hilton hotel rises) or the Monte Cavi, site of the ancient temple of Jupiter, in the Colli Albani near Rome.
 13. Conjecturally, the building seem high over 200 mt; nearly such to contain the Mole, and perhaps this one the Dome of San Gaudenzio . . .
 14. This consideration limits every ideal reconstruction of the project to an approximate and not all defined hypothesis of the external shape, referred from typologic analogies.
 15. Specifically, it is possible to apply to this building the considerations referred by Boullée with regard to the architectural type of the basilica, about how the greatness comes from the multiplicity and the combination of structures, from the diffusion of the light, from the variety of the perspective effects, rather than from their dimensions (Boullée [ms. ante 1799] 1967).
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