Exercises in the Transcription of Contemporary Italian Architecture

The competition project for the New Passenger Terminal at Termini Rail Station (1947-'48)

Lucio Valerio Barbera

Abstract: The essay documents a lengthy research by Lucio Valerio Barbera on the well-known competition project for the New Passenger Terminal at Termini Rail Station (1947-'48) by Ludovico Quaroni, Mario Ridolfi, Aldo Cardelli, Mario Fiorentino, Giulio Ceradini, Aldo Carè. This articulated and complex study – presented here in its definitive version as an exercise of "transcription" – examines a project that belongs to the intriguing events of modern architecture in Rome in the wake of the Second World War.

Keywords: Modern Italian Architecture, 3D modelling, virtual reconstruction, transcription.

I will begin with a premise. Why have I chosen to entitle this research, of which I am presenting one of the first results, *Exercises in Transcription*, rather than simply *Virtual Reconstructions of Modern Italian Architecture*? Aside from the literal meaning of the term "transcription", applicable to any field that deals with relationships between complete systems of writing, the transcription I intend here is well represented by a practice widely used in music, where it has diverse meanings. One of these meanings defines it as the transfer of a composition to instruments and players different from those for whom it was originally written.

Often, I would even go as far as to say always, they are truly subjective, and thus creative interpretations, despite being for the most part rigorous in their intentions. One need only look at the beautiful transcription by Maurice Ravel of Modest Petrovič Mussorgsky, appreciated to this day, and those, instead, by Nikolaj Andreevič Rimskij-Korsakov, again of Mussorgsky, now so highly criticised for being "revision". In this sense, my first transcription – in other words the transposition of the 1947 competition project for the Termini Rail Station by Mario Ridolfi, Ludovico Quaroni, Aldo Cardelli,

Mario Fiorentino, Giulio Ceradini and Aldo Carè, using the few existing two-dimensional black & white drawings, into a complete, digital and three-dimensional colour representation – may possess the characteristics of a transcription, at best, or of a revision, at worst.

Yet another definition of the musical transcription appears to me to clarify the true sense of my research: the definition of transcription as the *deciphering* and presentation in an up-to-date language, in this case contemporary, of a work written in ancient musical notation; something diverse or in any case difficult to understand in the present. This difficulty results from the disappearance of its original authors, their culture and the practices they employed to express themselves. To remain within the musical analogy, there are very well known, I would go as far as to say very famous ancient musical scores, for example Albinoni's *Adagio*, that we continually listen to in transcriptions by our contemporaries. They have been created with the aim, in the words of their interpreters, of rendering performable the traces of an often mysterious work – considered to have been discovered incomplete or written in an overly pared down language – and, in lowbrow examples, to construct the artifice for rendering it more fascinating. Hence transcription is always a subjective and inherently ambiguous action because it overlaps, and only with a certain degree of transparency, one author atop another. There is also the case of the splendid *Renderings* of Franz Schubert by Luciano Berio, who interweaves one author with another, generating results that are clearly directed toward creating a new interest in both the original work and its second author, who receives attention by reflection; precisely for this reason, whether they are appropriations, simulations or interweavings, transcriptions often give rise to significant polemics, in some cases capable, in other authors, of inducing new and further attempts at more valid transcriptions of the same work. This is my hope.

The sense of deciphering thus best represents the nature of the work I have realised. In particular it clarifies precisely how my first transcription is in any case a more or les complex conjecture of reconstruction that does not conceal unresolved problems or the subjective traits of the recomposed text. In my way of seeing things they remain based on linguistic and technical data philologically linked to the author's history.

Deciphering the Project

In 1958, when at the tender age of twenty-one I went to work for Ludovico Quaroni, my understanding of the project developed by Ridolfi, Quaroni, Ceradini, Carè and others for the Termini Rail Station was limited to what I had learned from books on Contemporary Architectural History, which were rare at the time. I knew that in 1947 the *Ferrovie dello Stato*, the Italian State Railway Company, had organised a competition for the completion of the Termini Rail Station in Rome, whose design by Angiolo Mazzoni had been interrupted in 1942 by the Second World War. The building lacked an entrance atrium and the façade that faces the large plaza separating the monumental station from the Baths of Diocletian and, from afar, serves to compare the two. Angiolo Mazzoni, in the wake of a few almost industrial ideas marked by a frank rationalism (Fig.1, Fig.2), was forced to develop a more classically inspired portico (Fig.3). The result was heavy, perhaps his worst project, so far removed from the inventive and modern grace expressed when he was freed of ceremonial obligations in the many smaller stations he designed, including his masterpiece in Siena. I knew that the competition had draw a great many entries – including Quaroni and Ridolfi working together – and that the jury had invited the first two groups classified *ex aequo*, the one guided by Eugenio Montuori and the other by Annibale Vitellozzi, to develop the definitive design. Their project was built rapidly, and the city was both pleased and proud. It marked the closure of the chapter of fascism and the War and the beginnings of the reconstruction; the architectural language of international modernism of the "new" Termini Station appeared to loudly proclaim in a language comprehensible to all that Italy had returned to the folds of Western democracy. It was above all the audacious canopy that stirred hearts and imaginations; even mine. I didn't know a great deal more. Yet in the studio of Ludovico, precisely in his office, presented in a wooden frame, there were two drawings (Fig.4): above was the drawing of the project for the station developed by Eugenio Montuori and Annibale Vitellozzi, the one that was built; below was a sketch, now famous, of the project by Quaroni and Ridolfi; a splendid, incisive sketch of the interior, traditionally attributed to Mario Ridolfi, but which Carlo Melograni claims to be the work of the hand of Ludovico

Fig. 1

Fig. 2

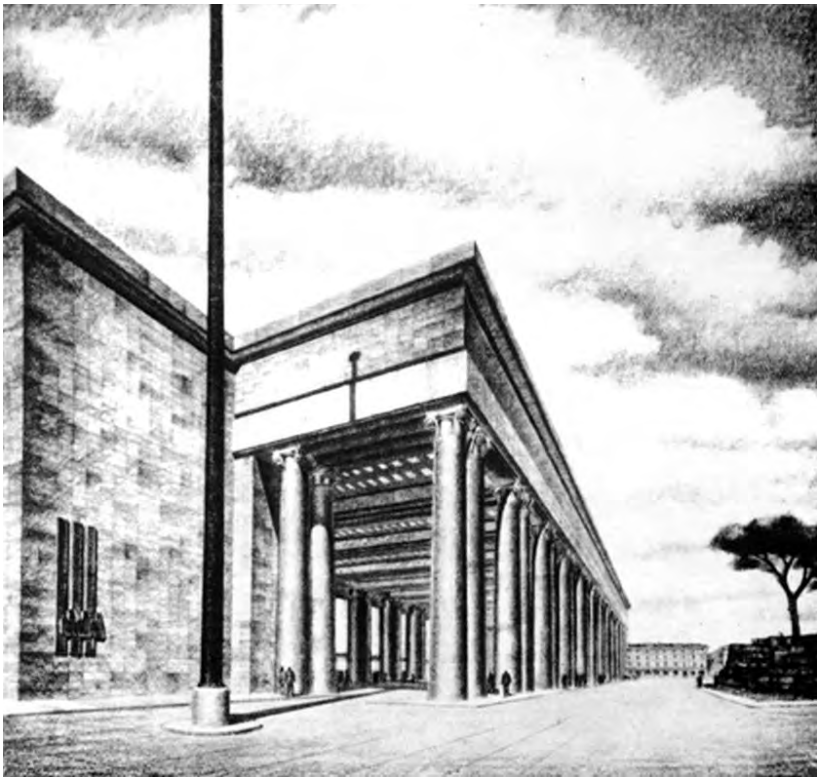


Fig. 3

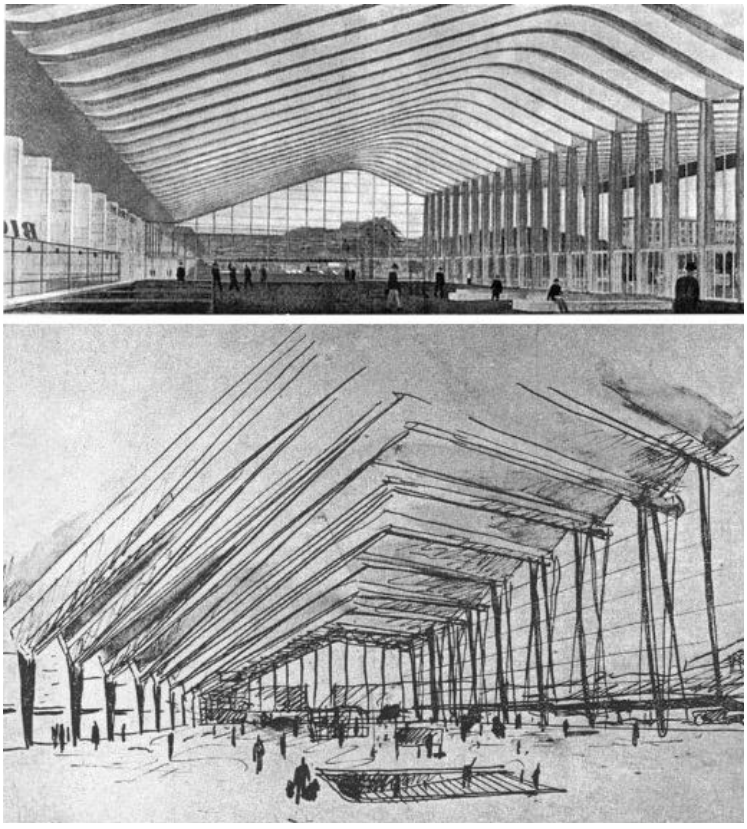


Fig. 4

Fig. 5

Quaroni. It was a silent, permanent polemical gesture and, at the same time, another means of deducing the similarity between the drawings, a glaring homage by Montuori and Vitellozzi to the spatial inventiveness of Quaroni and Ridolfi, Ceradini, Carè and the other members of their group. Yet a great number of years would have to pass before the question of the project to complete the Termini Station developed by our direct masters – Quaroni, Ceradini and Carè taught with the University and Ridolfi was the recognised master of architectural neorealism – came to my attention. A fundamental push in this direction came from Carlo Aymonino, from a brief and intense phrase spoken during a lengthy conversation I had the fortune to capture on video (Fig.5). He spoke of his beginnings as an architect, of his friends and his masters, of the spirit of the years of the reconstruction: «They were different times…» he told me, «… the important competitions… We young architects moved from office to office, and our older friends, even our masters, showed us their projects before submitting them!». «What a joy!» I stated, «and whom did you visit?». «Anyone whose work we admired», he answered: «Fiorentino, Benevolo, Valori, but above all Quaroni and Ridolfi.» He continued: «The Competition for Termini Station was epochal. Certainly we knew Quaroni and Ridolfi had formed a group to participate; it was natural, then, to go visit them. And so…» he stopped. «And so?» I pressed. «… it was beautiful» he answered. His intensity in pronouncing the adjective transmitted all of the intensity of his memory, in other words, of having seen the original drawings, the model, the sketches by the architects themselves, that – I thought – would certainly have shown their young pupil the true nature of their project, more than the competition drawings. It was that «… it was beautiful» that inspired my need to understand this work that was never realised, to approach this same truth. Yet how was I to do this, having access only to the few, small images we are all familiar with, faded in their passage from magazine to book to magazine, small figures eroded by the successive halftones of the printed page?

Even Francesco Cellini and Claudio D'Amato, two important scholars of Ridolfi, in their catalogue of the master's works, make no mention of the location of the originals. Certainly, we can still hope they are to be found in the archives of Ludovico Quaroni, for the most

part ceded to the Fondazione Olivetti; yet at the moment we have nothing more than the opaque images we see, forever the same, published over and over again. The journal "Strutture, rivista di scienza e arte del costruire", in its double edition of December 1947 and January 1948, dedicated for the most part to this project, has thus come to represent the most complete and least ruined source for the virtual reconstruction presented here. It contains the sections and elevations (Fig.6) that when enlarged grow horribly out of focus. It also features a site plan showing (Fig.7) the ground floor, also impossible to enlarge, but sufficient to offer a reading of the project in its context. The photographs of the model (Fig.8-10), which appears to have been realised in gesso, are much more telling; though faded with time they demonstrate a plastic and rhythmic spatial creativity that speaks of a language so distant from the contemporary canons of international architecture, which is surprising. All the same, in all of the images in my possession, the model is always shown in only two ways: from inside and from the plaza in front, from various viewpoints. We never see the entire roof, or the elevation on the train side. It is almost certain that the gesso model did not contemplate the office building, turned toward the tracks, though it did include the plastic solution of the “low” supports of the large atrium. However, the aforementioned issue of "Strutture" also includes a fundamental drawing for those wishing to know more about this work: an axonometric section that appears to be the key to the entire project. The architectural and structural members seem to be fully revealed (Fig.11). Certainly, without this axonometric it would have been difficult to even begin my research. All the same, its complete decryption was not easy; it must be considered that the drawings are purely for “a competition”, no doubt designed in haste as the deadline approached, a condition we architects are all so familiar with. Thus, if we look closely, this eloquent axonometric, while decisive to understanding the project, is in some way itself a document to be interpreted with a great deal of attention. It was undoubtedly developed by one of the architects *for effect* and with more speed than precision. There are numerous incongruencies with the other drawings, and its geometric structure is obscure to say the least (just what type of axonometric is it?). Cecilia Vodret, assisted by Professor Riccardo Migliari, attempted to retrace its geometry, though it was im-

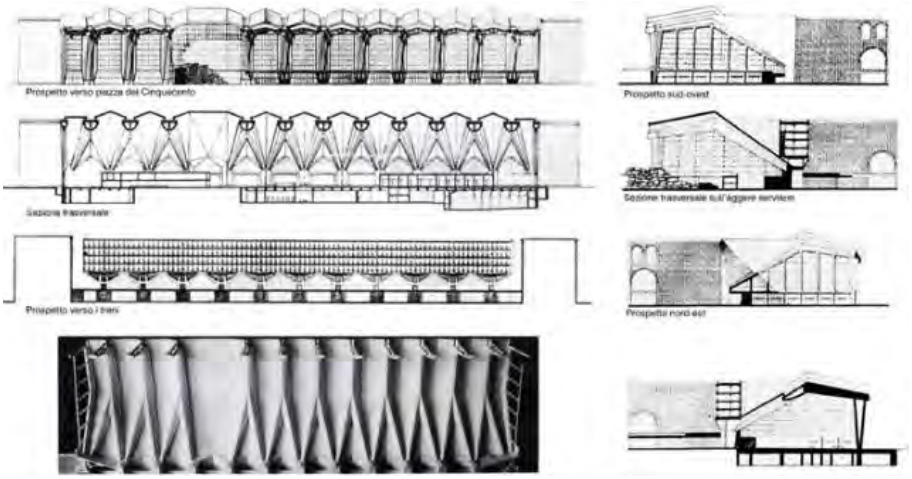


Fig. 6

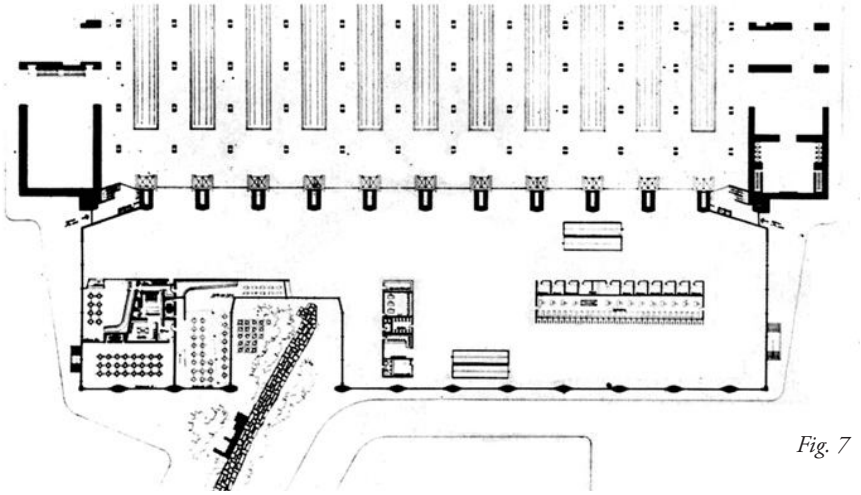
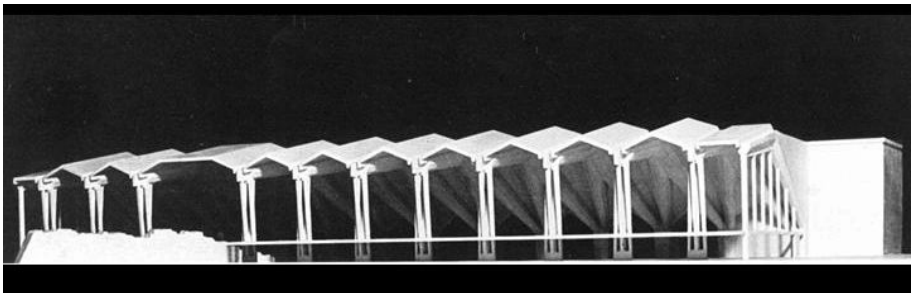


Fig. 7

Fig. 8



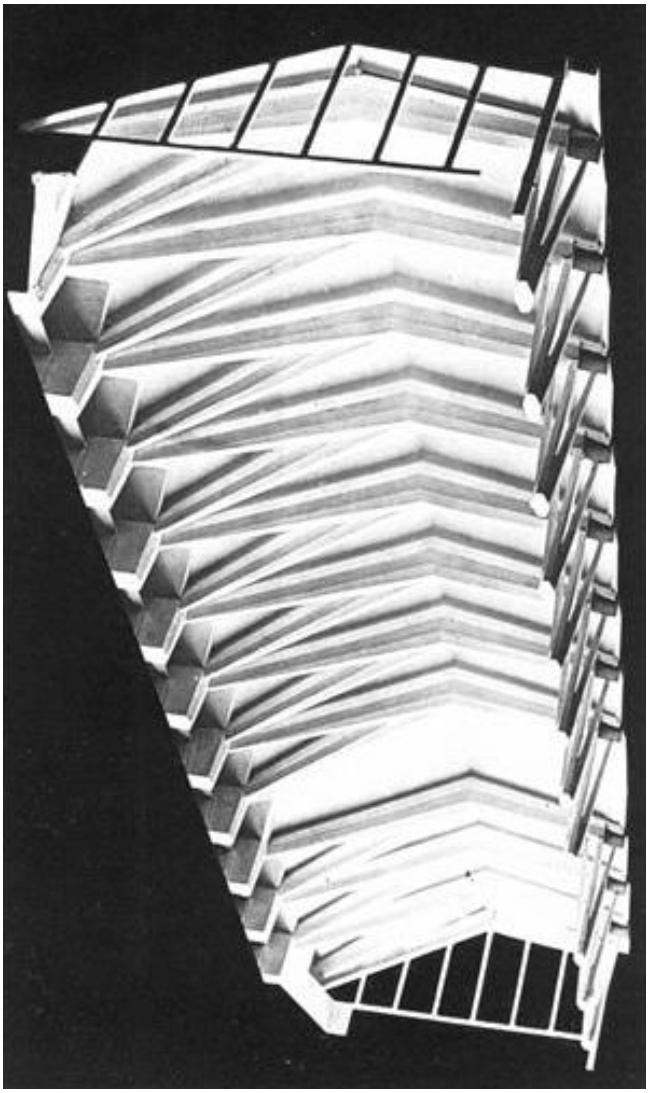
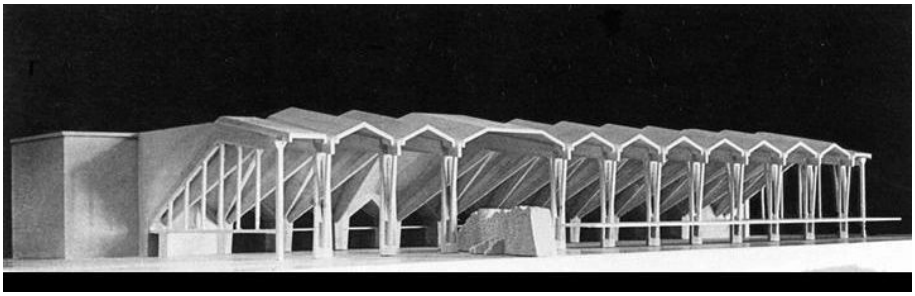


Fig. 9

Fig. 10



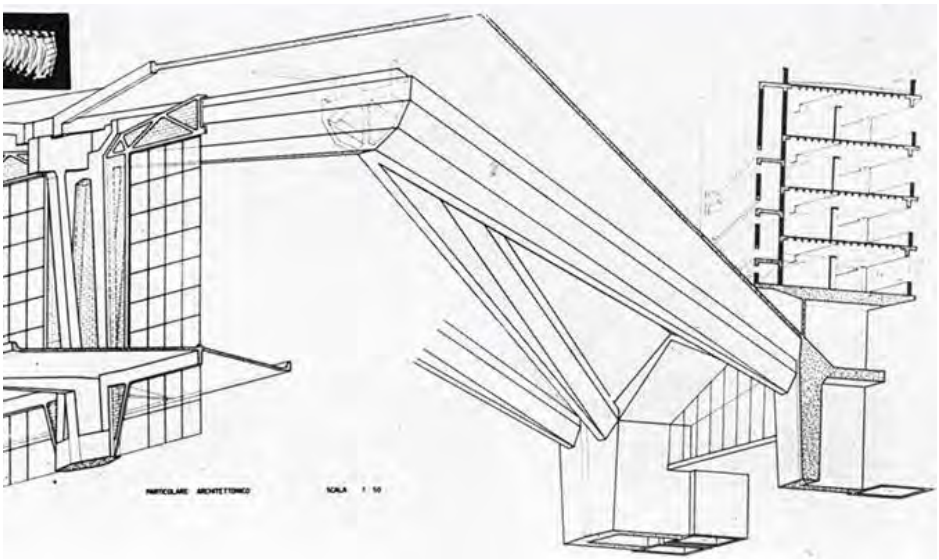
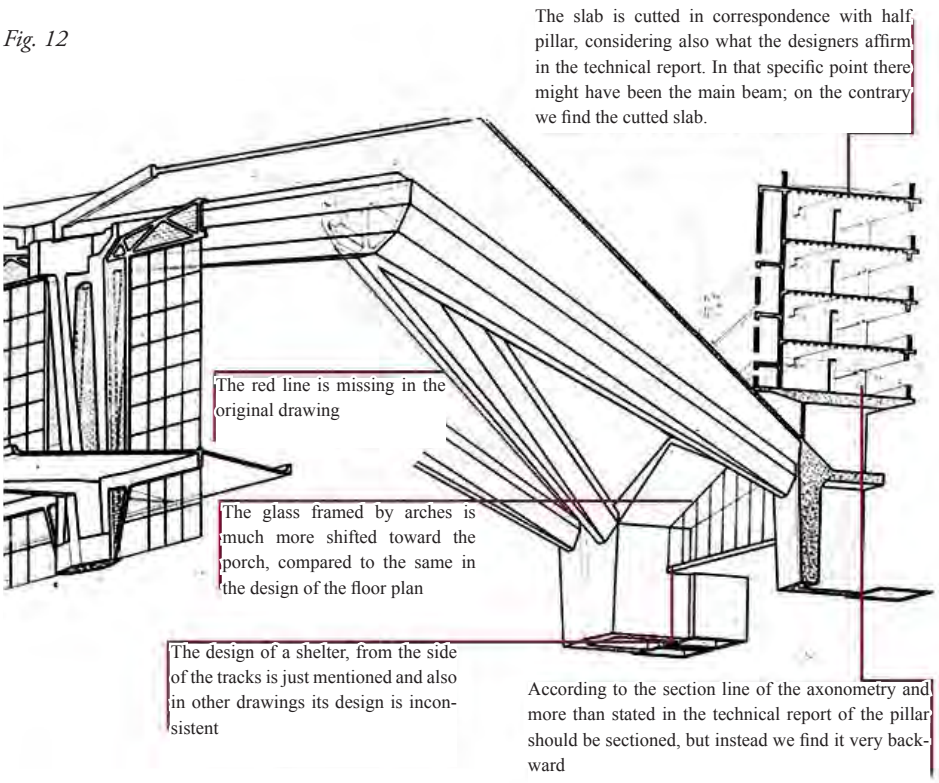


Fig. 11

Fig. 12


The slab is cutted in correspondence with half pillar, considering also what the designers affirm in the technical report. In that specific point there might have been the main beam; on the contrary we find the cutted slab.
The red line is missing in the original drawing
The glass framed by arches is much more shifted toward the porch, compared to the same in the design of the floor plan
The design of a shelter, from the side of the tracks is just mentioned and also in other drawings its design is inconsistent
According to the section line of the axonometry and more than stated in the technical report of the pillar should be sectioned, but instead we find it very backward

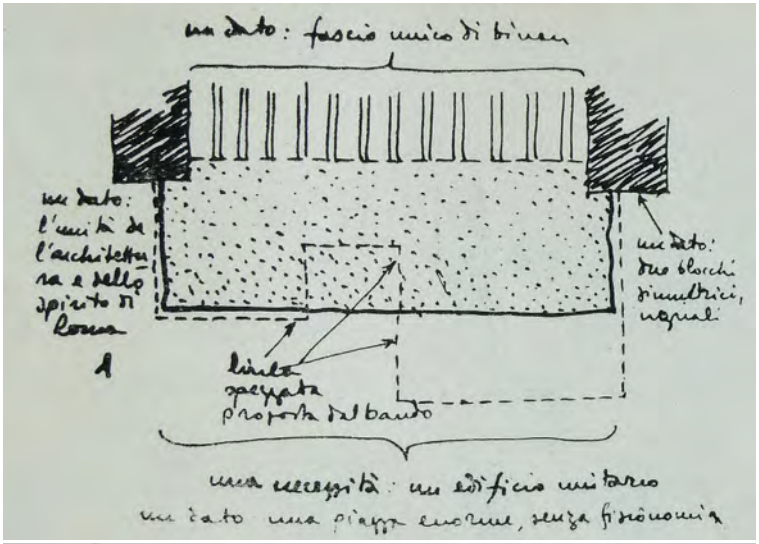


Fig. 13

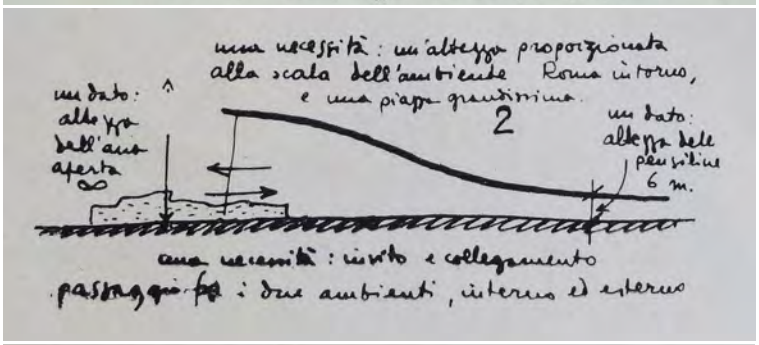


Fig. 14

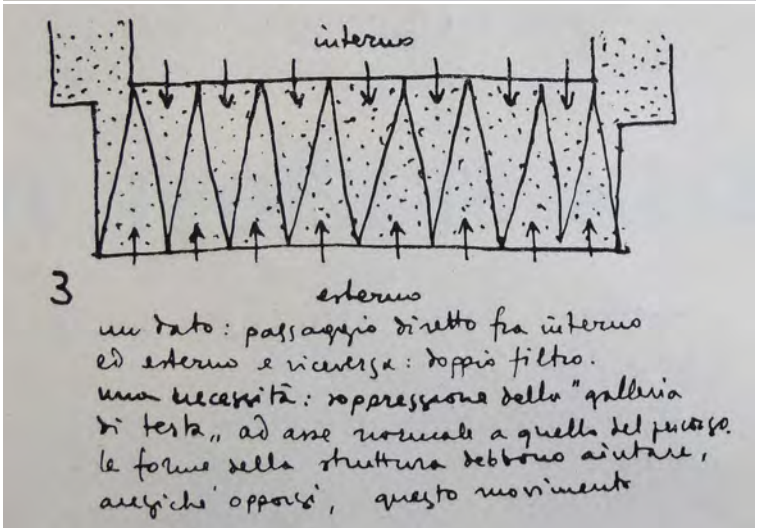


Fig. 15

possible to arrive at an absolutely precise result (Fig.12). The drawing is thus a "casually" developed resplendent technical drawing, more a description than a demonstration, used to adjust a few unsatisfactory elements as they arose during the development of the details. All the same, without this drawing it would be impossible to establish any plausible three-dimensional reconstruction. It offers the idea and dimensions of the structural and architectural model of the atrium, which would have measured approximately twenty-five meters to the underside. The structure is similar to a hull in reinforced concrete that, as it moves toward the interior of the station, initially rises up sharply, increasing its dimensions and, later, having reached its maximum height, divides into two minor hulls, that drop towards a series of portals giving on to the train platforms; it is the giant order modelled by an architectural and structural cell conceived for the construction of a space that is absolutely out of the ordinary. Whoever designed this axonometric created a series of graphic corrections, almost evidence of an intention to lighten the image of the structure: in particular, the designer eliminated the line that connects the most internal side of the directrix, and raised the point of connection between the two minor hulls. If its designer had respected the rules of geometric construction, the two legs divaricated toward the minor vertical structures would have been much more squat.

At the right extremity of this drawing there is also an axonometric section of the office block, containing a unique single ramp stair whose position is unclear, as we have no drawings of plans at this level. In any case, when developing a vectorial reconstruction in 3D CAD, I, a former "hostile student" of Saverio Muratori, initially had the impression of being part of a design process that Muratori himself would have considered "gothic". In other words, a process based on the modelling of a complex architectural element – "serially" repeatable to infinity – that inherently reassumes all the spatial hierarchy of the architectural idea: from the base to the multi-carved vertical members to their aerial articulation where, at their summit, like the vaults of a cathedral, they fill the space like sails under wind. I was reminded of the teachings of Pier Luigi Nervi, another of my professors, and his love for gothic architecture; I attributed the school of Italian engineering – intended by Attilio Muggia, Pier Luigi Nervi or Arturo Danusso – and thus the pres-

ence of Carè and Ceradini in the design team, with the origin of the gothic spirit that appears to transpire from the project. All the same, as I continued by work, I seemed to feel the plasticity exasperated by that architectural cell, which made it, for other reasons, consonant with the plasticity of the spatial cells that make up the "plastic-masonry" fabric – as it would have been defined once again by my "hostile master" Saverio Muratori – of the Baths of Diocletian, whose dimensions, as I discovered when I completed my virtual reconstruction, were perfectly reflected in the dimensions of the bays of the project by Quaroni and Ridolfi.[1] I was again reminded of the "realism" of Ridolfi and Quaroni. For the first this undoubtedly represented a desire to affirm the language of an Italy that, while lost remained vital, diverse from the nation forcibly expressed by fascism; for the second it was merely a phase in his restless semantic experimentation that, from a linguistic-literary – and political – point of view, is rooted in the spirit expressed by the work of Giovanni Pascoli more than that of Pier Paolo Pasolini or Vasco Pratolini. It also appeared to me that, as Pascoli was moved to compose poetry in Latin to give a real voice to sentiments that have arrived from an ancient time to our present day, thus Quaroni was perhaps moved to attempt the cadences of the imperial Latin of the ancient Baths, which have also survived to the present day. He perhaps wished to assign his project with the role of regenerating the sense of the formless and cas-

1. Muratori 1947. In truth, my spontaneous *Muratorian* interpretation of the project by Quaroni and Ridolfi for the Termini Station almost slavishly coincides with what Muratori himself had confirmed in a critical essay in the double issue n. 3 and 4 of "Strutture, rivista di scienza e arte del costruire" (December 1947/January 1948), pp. 57-61. As he attributed modern architecture *tout court* with a markedly technicist character, according to his "gothic" interpretation, described the competition project by Quaroni and Ridolfi as follows: we are "dealing with a structure of characteristic linear elements employed by modern technique, in other words, of simple iteration". However, he continued: "having begun with a technicist enthusiasm (denounced what is more by the gothic-inspired ribbed structure) the architects soon deviate from a dry gothic structuralism" and design a "wholly autochthonous structural organism, undoubtedly influenced by the proximity to the Baths of Diocletian and the Roman climate. The gothic structure no longer offered the formal pretext, developed with a desire for a broad plasticity that recalls the *Massenziana* and the Baths of Caracalla, what is more observed through a contemporary sensitivity, polluted by exoticism and primitive pseudo-barbarism." When I read these words in the reading room of the library of the Accademia di San Luca, where I had tracked down this rare journal – I had already completed the virtual reconstruction of the project and was on my way to completing this essay – I understood that the interpretative model of architectural history that Saverio Muratori proposed during my years as an apprentice – he taught fourth and fifth year classes at the Faculty of Architecture in Rome – in its extreme simplification had nonetheless remained with me as a current and automatic practice, a litmus paper for a first test of any project, whether simple or complex; and I understood I would have to manage it, henceforth, with greater care and circumspection.

ual urban space of the enormous plaza in front of the project. In other words, as I proceeded with the virtual reconstruction it seemed increasingly clearer to me that Quaroni, Ridolfi and the others had recognised in the monumental dimension – in the "Latin" architecture of the nearby ancient Baths – the only theme with which to work in order to convert a hopeless urban void into a *piazza* that was both Roman and modern. I thus told myself that this was the reason for this "high language", this monumental emphasis, the imperial "Latin" employed to model the powerful spatial and structural cell of the project. It is precisely due to the difficulty of this modern "late ancient" language, by which I mean Diocletian, in other words, devoid of proportional grace though dense with experience in construction and a peremptory, free expression irreverent toward classical conventions, that I believe Saverio Muratori ambiguously wished to attack the project in a critical essay published in the double issue n. 3 and 4 of "Strutture, rivista di scienza e arte del costruire" (cited in note 1), clearly in contrast with the sweeping praise expressed by Giuseppe Samonà for the same project only a few weeks earlier in the pages of "Metron"[2], directed by Bruno Zevi, in which he declared it the moral winner of the competition.

Another essential document for comprehending the project is certainly the report accompanying the competition submission. There is no need to go into detail; the sketches accompanying it allow for an immediate comprehension of the architects' theses, their ideas about the structure and identity of the project. There are four hand sketches (Fig.13) and a small drawing drafted using a ruler and square, as we used to say. Each sketch highlights a small group of "data" related to a problem and an equally small number of incisive "necessities" of the project, in addition to a few other important aspects related to the site or the concept. The first sketch – identified with number 1 and written in pen – affirms the fundamental idea of the project: unity. The highlighted data are: "a unique band of tracks", "two equal and symmetrical blocks" (the *Mazzonian* wings), "the unity of the architecture and spirit of Rome", "an enormous plaza, with no physiognomy". The necessity is for: "a unitary building". This contrasts – well indicated in the sketch

2. Samonà 1947

– with the indications of the Competition Brief that provided competitors with the envelope inside which to insert the project volumes, in substance excluding the area of the Servian Wall and effectively dividing the area facing the plaza into two halves: one larger and one smaller. This indication is fully respected in the project by Montuori and Vitellozzi, later realised. The second sketch (Fig.14) uses only one sharp and undulating line to synthesise the architectural concept: a unique space modulated between two diverse dimensions, that of the city – the large plaza – and that of the train platforms, of a space trapped between the roofs and floor. There are only two data: the first is "the height of the open space" (the plaza), which is equal to "infinity", indicated using the classical sign of the horizontal eight. The second is "the height of the canopies" above the trains, all at six meters. This produces two necessities: the first "a height proportioned to the scale of the environment. Of surrounding Rome, a very large plaza." The second is an "invitation and connection, a passage between two environments, internal and external". The undulating line traces the general profile of the competition project, which partially encases the Servian Wall, thus considered an essential part of the project itself. The idea of "surrounding Rome" may be a generic reference to the city, but also to the presence of the Baths of Diocletian that, while not immediately adjacent are clearly visible. The third sketch (Fig.15) presents only one piece of information arising from a necessity. The data reaffirms what was written in the previous sketch: "direct passage between interior and exterior and vice versa: double filter". This produces the necessity, fundamental to the formal conception of the Station and once again in open contrast with the Brief: "suppression of the 'end galleria' along an axis normal to that of travel. The forms of the structure must assist, rather than oppose, this movement". There is thus a conviction that the structure, or better still, the *forms* of the structure are essential to the expression of the concept. Even the simple site plan accompanying these affirmations is nothing other than a highly synthetic diagram of the geometric matrix of the structural model. The fourth sketch (Fig.16) breaks with the logic of the first three – presentation of data and recognition of necessities. It is, in fact, only the "scheme of the structure", as written in pen at the bottom of the sketch; it serves essentially as a graphic reference to the part of

the report dedicated to the structural system – impossible to comprehend without making explicit reference to this sketch which I have thus partially described in the notes[3]. The sketch provides the fundamental dimensions of the project (which I read as being measured perhaps by the structural axes, or better yet their intrados): 25 meters of maximum height, 21 metres of the opening toward the plaza, 51-meter width of the galleria. The height of the train canopies, six meters, was already defined in sketch number 2. In the report the large scale of the structure is more often presented as part of the very identity of the project: "The various services, according to the logical function suggested by the space (agger) and by the structure of the Brief, are of little import; they are a simple *furnishing* of the large, unique hall of the Station…secondary accents to the pure human scale related to the purely material needs of the traveller, of the *only* episode at the scale of Rome: two hundred meters by fifty-six meters by twenty-seven meters." The parentheses and italics are from the original report. Having completed the examination of these small freehand sketches I can state that a few short lines and few words, written by hand, establish the indissoluble unity between spatial and structural intuition, between expressive space and the expressive force of its elements; there is a simultaneous affirmation of the necessity – what is more to resolve the problem of the scale of the urban area generated by the setback of the front of the Station – of speaking in a "high" language: at the scale of Rome. At the "historic" scale of that Rome so physically present in the theme of the competition due to the presence of the Servian Wall. Almost all of the competitors refer to it as an "agger" and almost of them place it in a separate space. Yet it is represented above all in the area of "infinite height" in front of the station, by the eloquent remains of the Baths of Diocletian, never explicitly evoked, but according to me certainly an object of constant

3. Muratori S. 1947. "The roof of the large hall of the station is supported by structural frames as illustrated in the drawing. The main load bearing beam is connected to the supports in front with hinged connections at the base and, at the other end, set into the large pylons of the office building; the transversal stability of the structure is ensured by the bifurcation of the load bearing beams, by the presence of the of effective trusses at the end and by the solidarity of the roof, constructed in a mixture of reinforced concrete and masonry". In addition to being published in "Strutture" etc., as mentioned, the report was also printed, or more precisely reprinted in *La nuova stazione di Roma Termini delle Ferrovie Italiane dello Stato.* A collection of articles published by "Ingegneria Ferroviaria" Rome: Collegio ingegneri ferroviari italiani, 1951.

consideration by Quaroni and Ridolfi while designing. The final image (Fig.17) in the report is, instead, a geometric drawing, the fundamental section. It is nothing more than a significant detail from the competition drawings. Why is it replicated in the report together with the other sketches so dense with intuition and design proposals? I believe the reason for this is to be found in the report, when the architects state: "the stability of all of the fundamental elements of the structures were verified; the dimensions indicated on the drawings are thus to be considered almost definitive and sufficient for guaranteeing the safety and feasibility of the project". The precision of this small drawing, inserted alongside these words, appears to testify to the sincerity of this affirmation. This assisted me in understanding that, after attempting to virtually reconstruct the architectural form, it would be necessary to analyse the structural design both to verify the credibility of the digital reconstruction and to arrive, with greater plausibility, at the truth.

Finally, the most famous image (Fig.18): the tempera, painted on board – as Ludovico Quaroni told me – realised by his brother the painter Giorgio Quaroni, in which the project is realistically inserted within the context of the city. Just how realistically? Certainly the Piazza dei Cinquecento [the plaza in front of the station – TN] is recognisable and the perspective of Via Giolitti [to one side of the station – TN] trapped between the nineteenth century *palazzi* of the Esquiline neighbourhood and the *ala Mazzoniana* of the station [the wing along Via Giolitti – TN] is exactly as it appears today. However, the project is represented solely, and intentionally, in the structural essence of the gesso model. What is more, I am convinced that the painting is nothing other than the montage of one a photograph of the model against a photograph of the plaza, redesigned beneath an overcast sky rent by the wind and pierced by rays of light. Hence the building appears to consist only of the structure, stripped of any architectural or functional detail. What this *tavola picta* intends to transmit is thus uniquely the dimension – superhuman – of the large portico opening onto the immense plaza. The evaluation of the exceptional scale of the project can be assisted by comparing – at the same scale (Fig.19, 20) – the cross section of the station designed by Montuori and Vitellozzi with that by Ridolfi, Quaroni and Carè. The height of the atrium of the actual station is 12

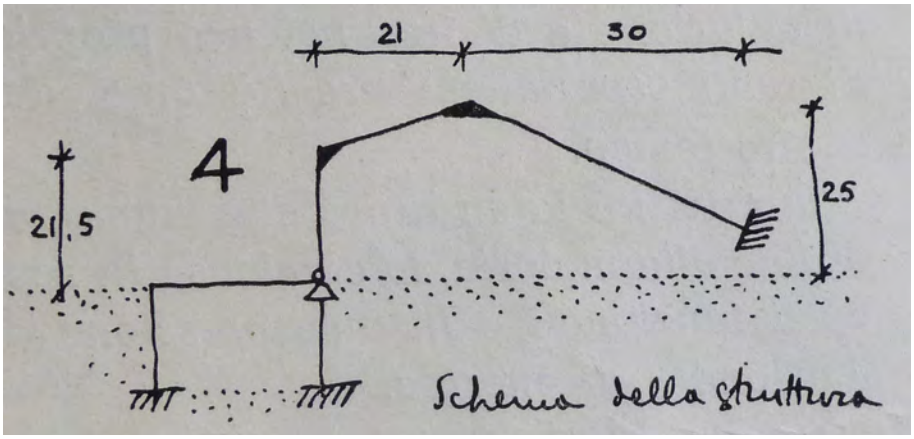


Fig. 16

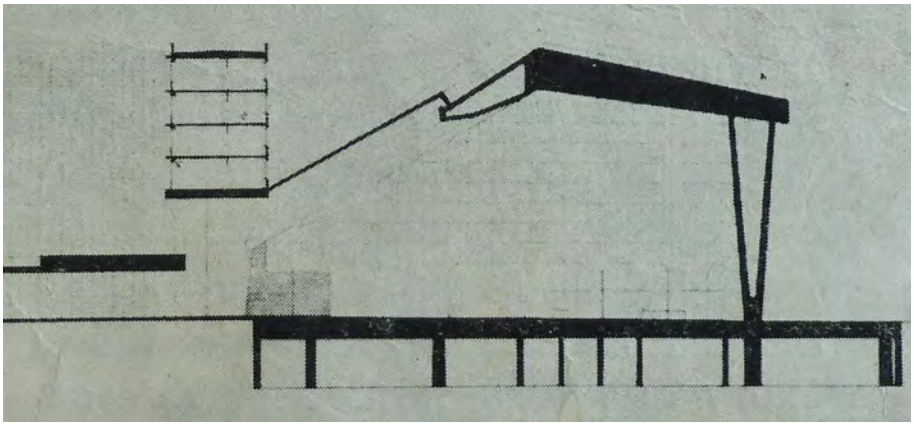


Fig. 17

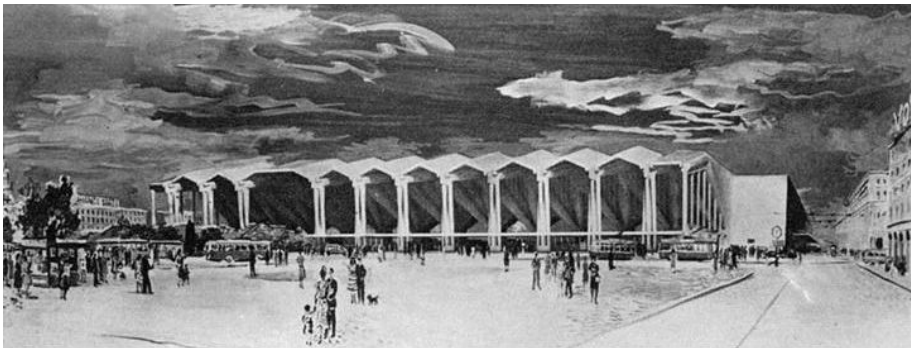


Fig. 18

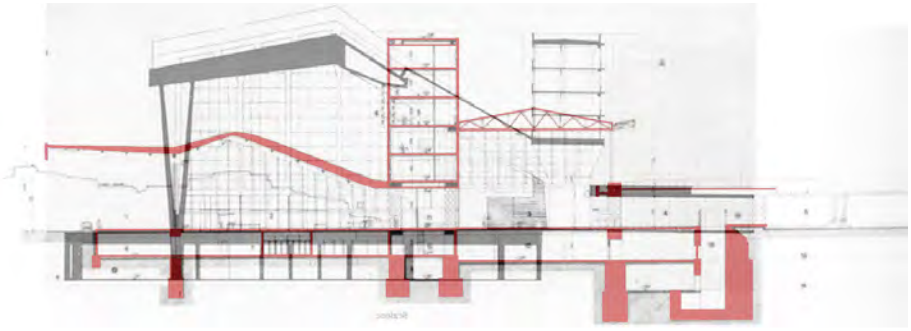


Fig. 19

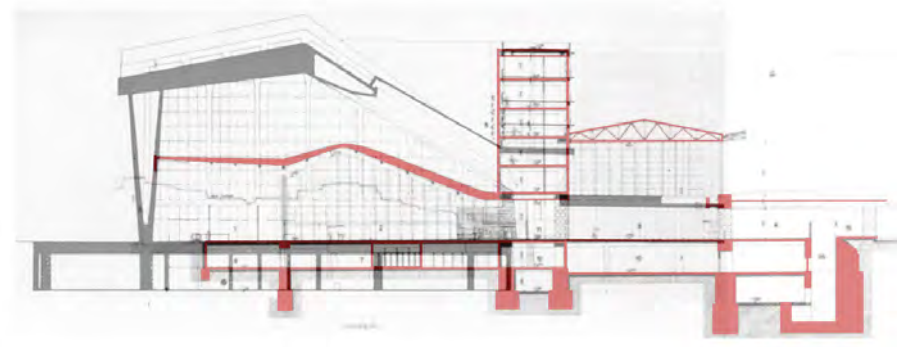


Fig. 20

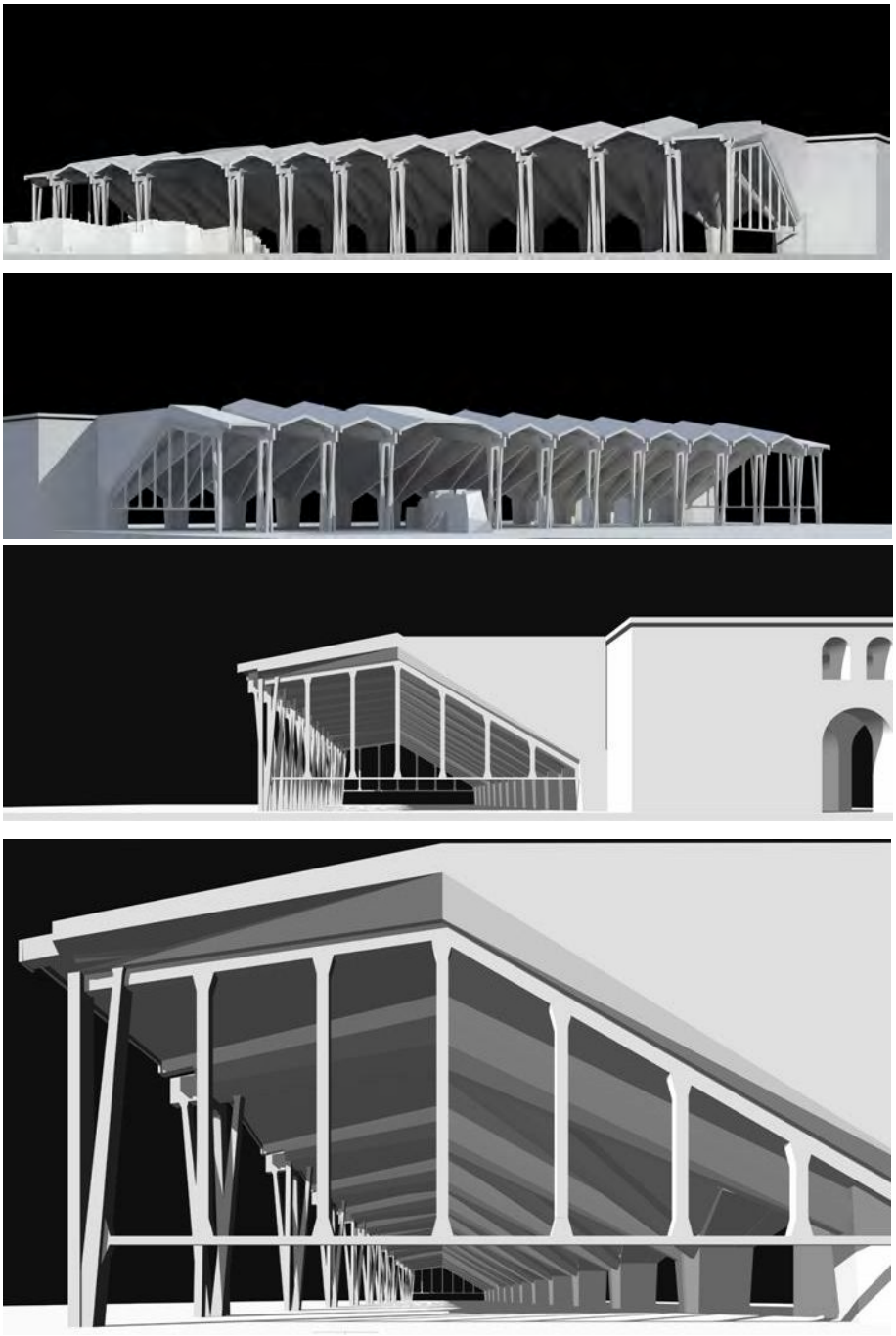
Fig. 21

meters on the interior and 15 m on the exterior. The atrium designed by the Quaroni-Ridolfi group reaches a maximum height to the underside of the beams on the interior of 25 m and beneath the highest points of 30 meters. Considered side by side the two sections are effectively composed of the same elements: the office building and the volume of the atrium. However, the relationships between the two elements are inverted: in the actual station the façade of the office building is the dominant figure, literally *completing* the station toward the city, while the atrium serves as an antechamber, of notable dimensions no doubt, though with a clearly minor scale and importance. The station designed by Quaroni and Ridolfi is instead dominated by the atrium, which literally *opens* the station toward the city; the office building appears to occupy an ancillary position with respect to the atrium and, while it is of the same maximum height, it is smaller in volume (one less floor, ceded to the volume of the structure supporting it) than the homologous office building constructed according to the project by Montuori and Vitellozzi. Nonetheless, it must be said that the latter two architects produced a work of elevated architectural rhetoric, notable for its aerodynamic form, enchanting undulating atrium roof and the beautiful invention of an end galleria that defines a true city street which crosses the station from one side to the other, making it an integral part of the regular urban fabric of the Esquiline neighbourhood (Fig.21). It only affirms the necessity that Rome's main station should boast a predominant and close functional relationship with the fabric of the vast popular neighbourhood surrounding it, more than with the space of the infinite plaza overlooked by the ancient Baths.

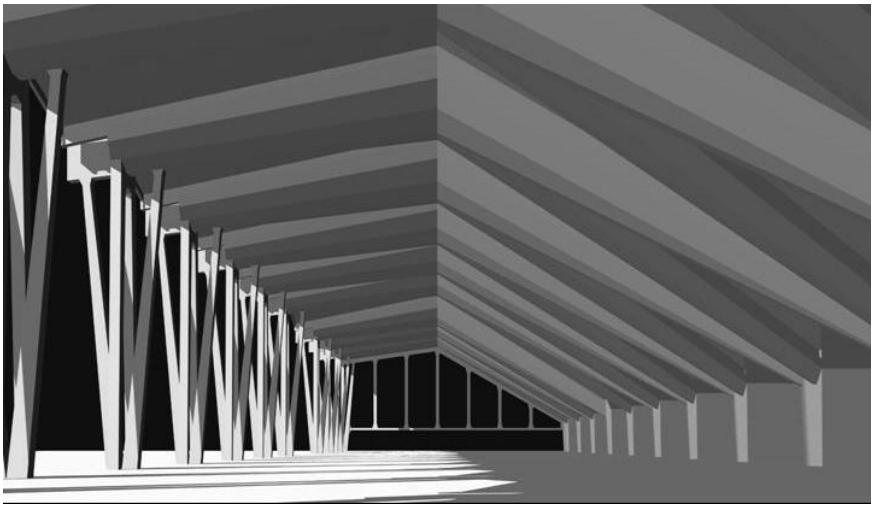
We should return to the project by Quaroni and Ridolfi. From the documents described so far – with their missing information, peremptory linguistic affirmations and taciturn drawings – I was able to complete my decryption and, as a first step, digitally model the original gesso model. The digital model can be observed from the same viewpoints (Fig.22-23) as the photographs of the original model, which remain in any case much more fascinating for their suffuse lighting, veiled by the patina of time typical of historic photographs. However, we can now move around the model (Fig.24-27), zoom in, enter inside it and discover the expressionistic exasperation of the relation-

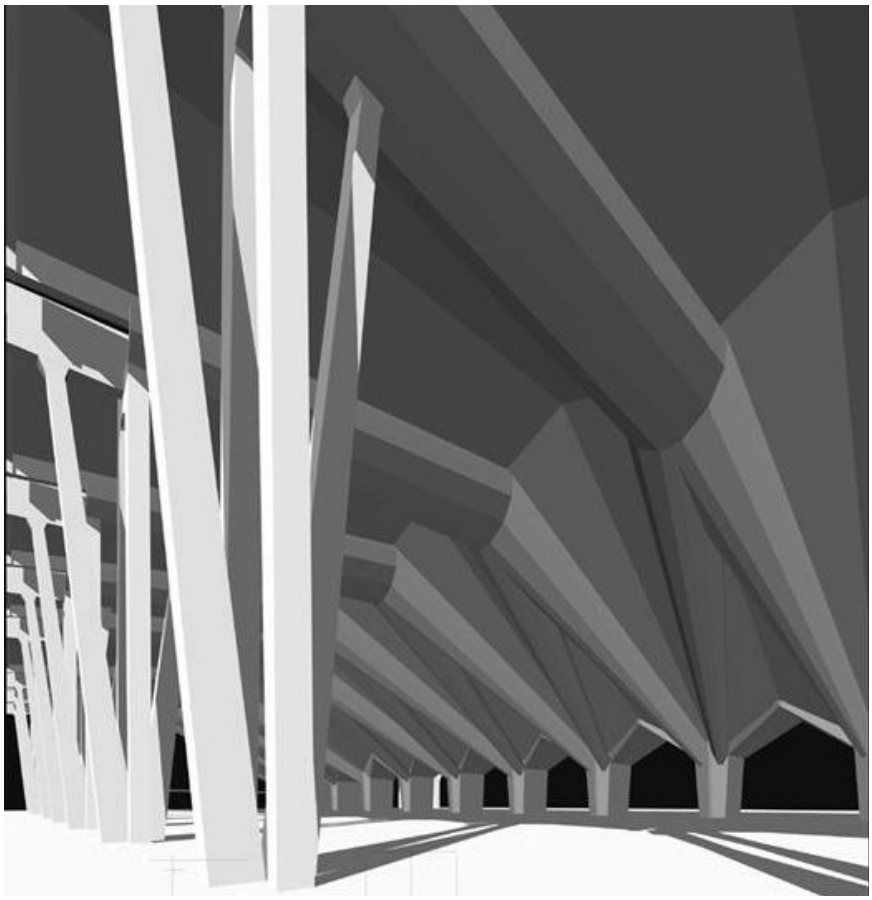
ship between its diverse dimensions, which cascade in a dramatic compression. We can finally soar above the volume (Fig.28-29) after deciphering its geometry, recognising the architects' impressive skill in dominating the imagination with ideas and modelling a complex, rigorous and refined form in a few pen strokes. A form implicitly syntetized into the limited number of drawings developed for the competition and, all the same never fully revealed in any one drawing or photograph. It is now possible to unfold the hidden side of the atrium structure facing the train platforms. This structural solution appears to be minor only in its scale and certainly not in its expressive force, architectural complexity and function (Fig.30). It constitutes the support for the office building, about which the architects appear to have been intentionally reticent in the competition drawings, almost as if they considered it less important and secondary. For now we can refer only to the faded elevations (Fig.31-32), as there is no three-dimensional perspective, and what can be garnered from the cross sections and the difficult fragment present in the aforementioned axonometric.

However, these limited elements, so synthetically and almost indifferently represented by the architects, instead define an office building innovative for its time. Highly expressive, its monumentally modelled base dialogues at the scale of the large arches of the *ala Mazzoniana*; its rhythmically and densely subdivided elevation resembles a luminous transfiguration of the large, level fields of masonry framing the arches designed by Angiolo Mazzoni. What is more, when developing the virtual model I could not help but consider it an extraordinary and unknown – or certainly little known – and perhaps to this point unrivalled Italian interpretation of the theme of pilotis presented as one of the five points of modern architecture proclaimed by Le Corbusier in 1923 (Fig.33). All I had to do was compare it to the solution developed in 1953 by Pier Luigi Nervi, Marcel Breuer and Bernhard Zerfhuss for the UNESCO building in Paris, or the eloquent column by Pier Luigi and Antonio Nervi for the Italian Embassy in Brasilia, designed and constructed between 1970 and 1977 (Fig.34-35), to convince myself of the unrepeatable and premature creative success expressed by this group of architects and engineers in their project for Termini during this period in Italian history, in 1947.

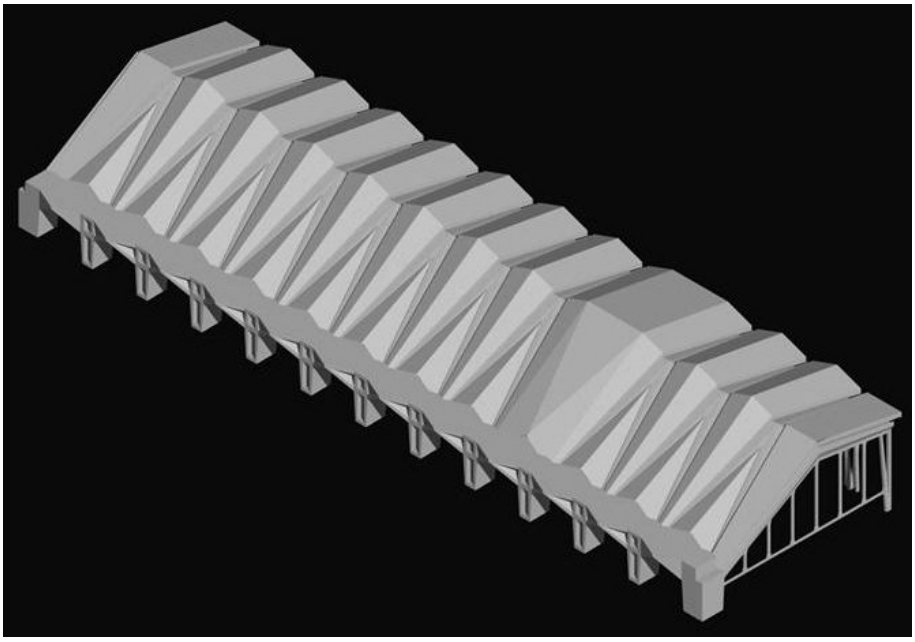


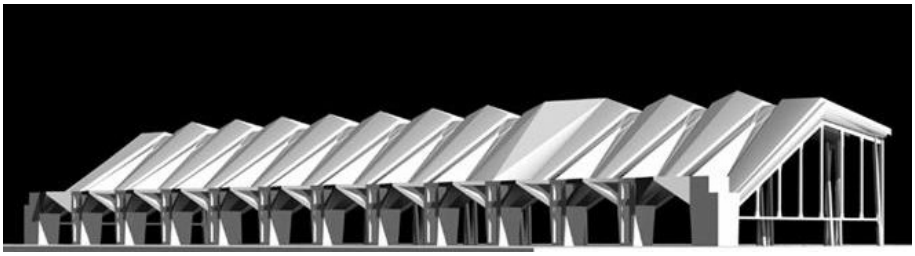
Figg. 22-25

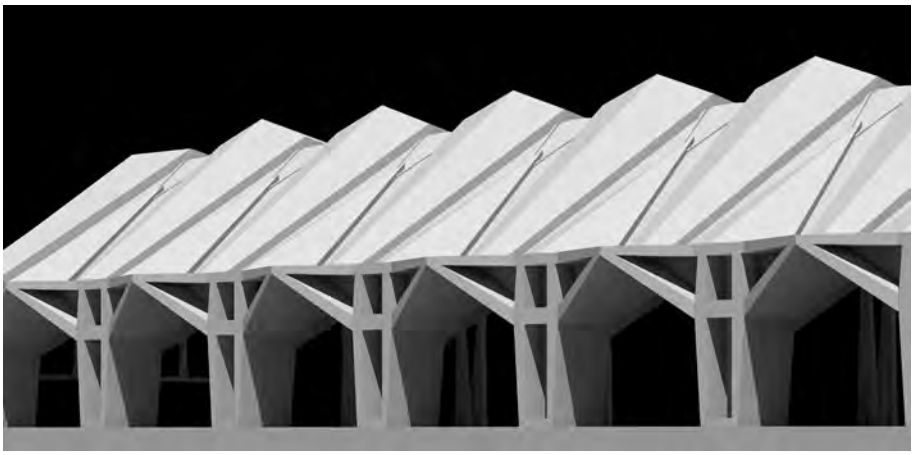


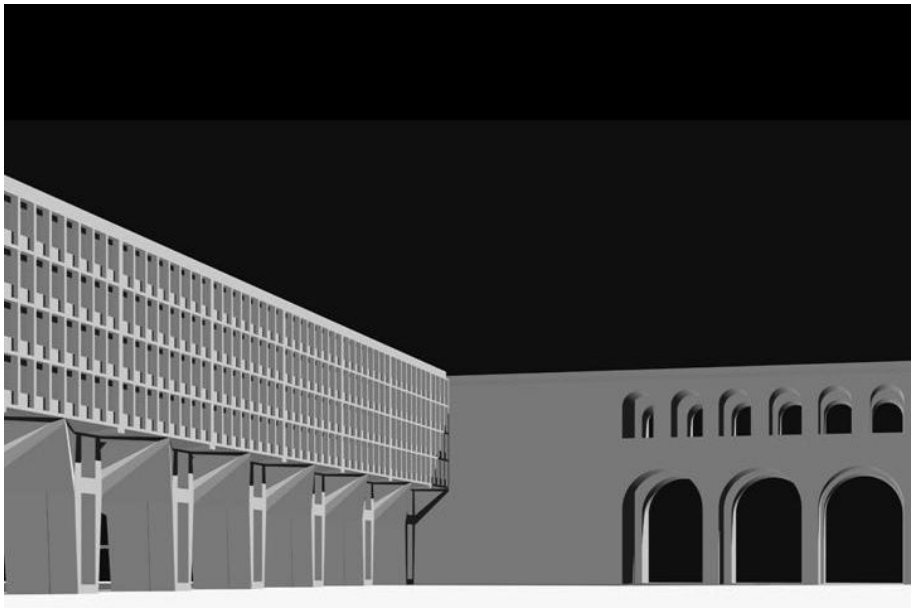


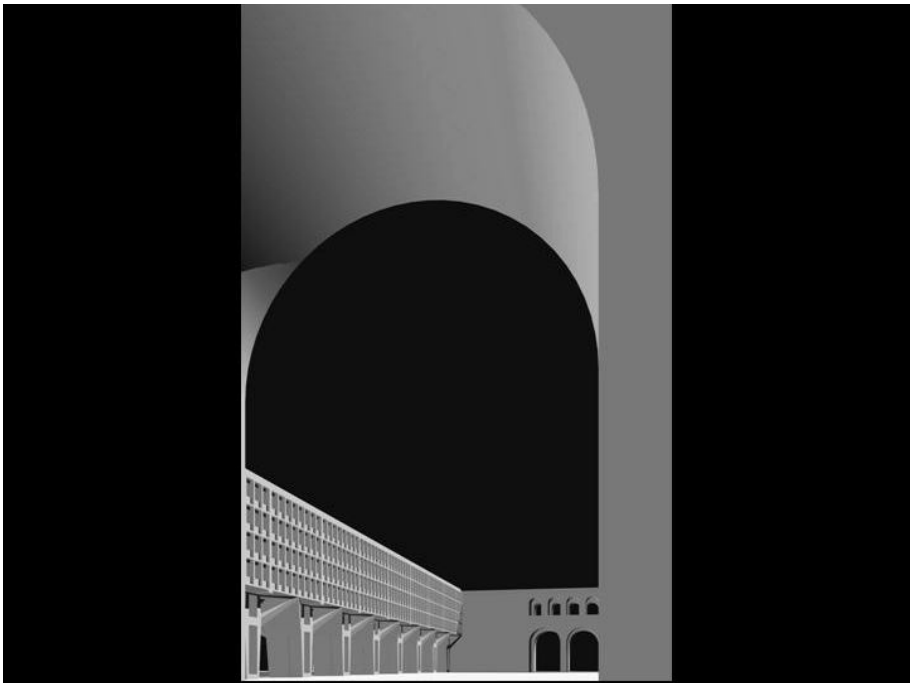
Figg. 25-27



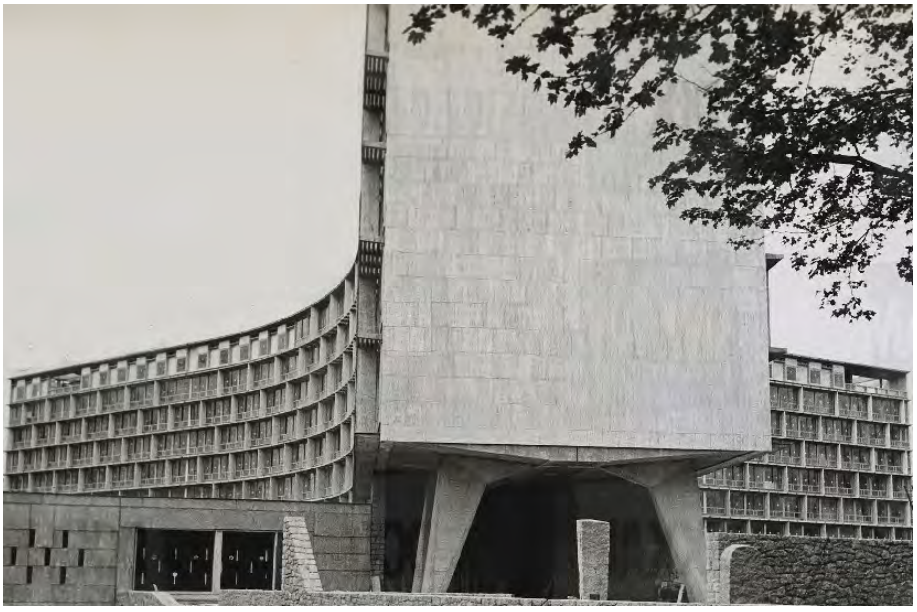




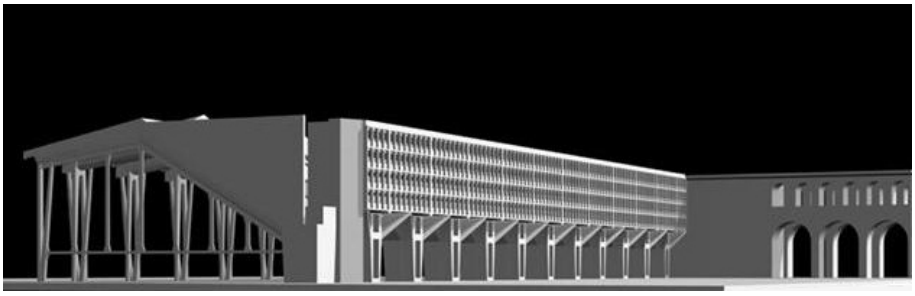




Figg. 28-32



Figg. 33-34



Figg. 35-36, 37, 37bis

I was disappointed when Alessandra Muntoni, a highly respected and treasured friend, wrote: «the project for Termini by Quaroni and Ridolfi, together with the experience of the borgo La Martella, the Tiburtino neighbourhood in Rome and the church in Francavilla al Mare, inaugurated the season of neorealism that led Italian architecture on a detour down the trail opened by the Monument to the Martyrs of the Fosse Ardeatine and the end block of the Termini station developed by the group guided by Montuori. At this point modernism moved away from the horizons of research, due to an attempt to reconnect with a more popular form of communication (…)». She continues: «It was not the first time, nor will it be the last, that Italian culture, in the search for a new starting point that would move it away from such a compromised recent past – in this case the fascist regime – would commit errors of this type»[4]. I was pleased to have learned, during the years of my education as a student at the Faculty of Architecture in Rome, that to comprehend a complex project it is necessary to retrace its architectural truth, if necessary with a pencil, and in any case as an architect.

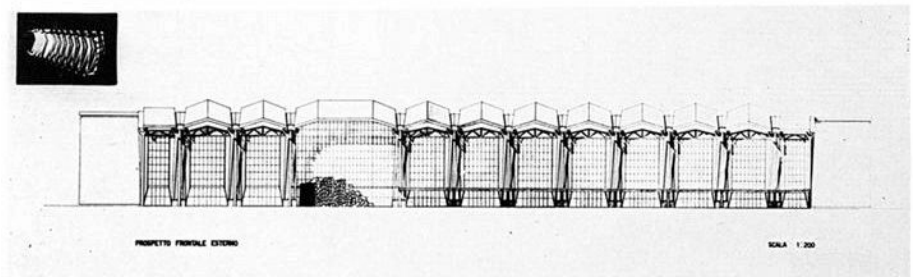
Almost all of the project's structural material has been retraced and described so far. Yet it is impossible to avoid considering one highly singular element of the project: the two large sails (Fig.36) extending along the flanks of the atrium and 'welding' it to the office building. There is no doubt this is a *Schauwände*: two purely scenographic walls, similar to the floating walls of the Lubecca town hall (Fig.37)**.** Yet, what image did Quaroni and Ridolfi wish to represent on a stage set of such dimensions? I am sure that this unique set was created to present the entire project as if it had been carved out of a single block of material, from *a monumental solid body*. The atrium could thus appear *not* to have been constructed from the sum of different structural elements, but rather as something dramatically carved out of a solid element by *a corrosive wave* that, penetrating violently from the great void of the plaza and crashing against some hard and solid material, was compressed and crushed by the impact, without losing its power to cross the entirety of this tectonic mass, finally erupting on the other side, toward the train platforms. It is this, I tell myself,

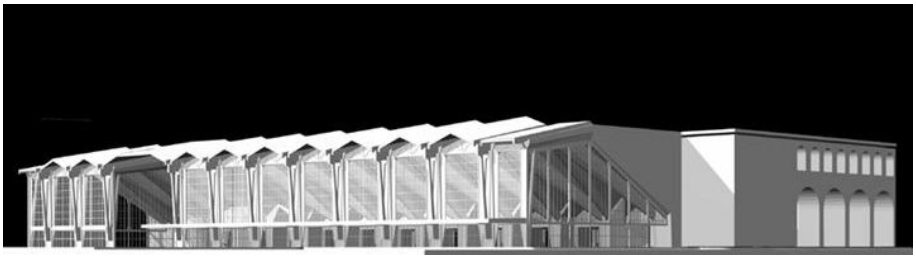
4. Muntoni 2007

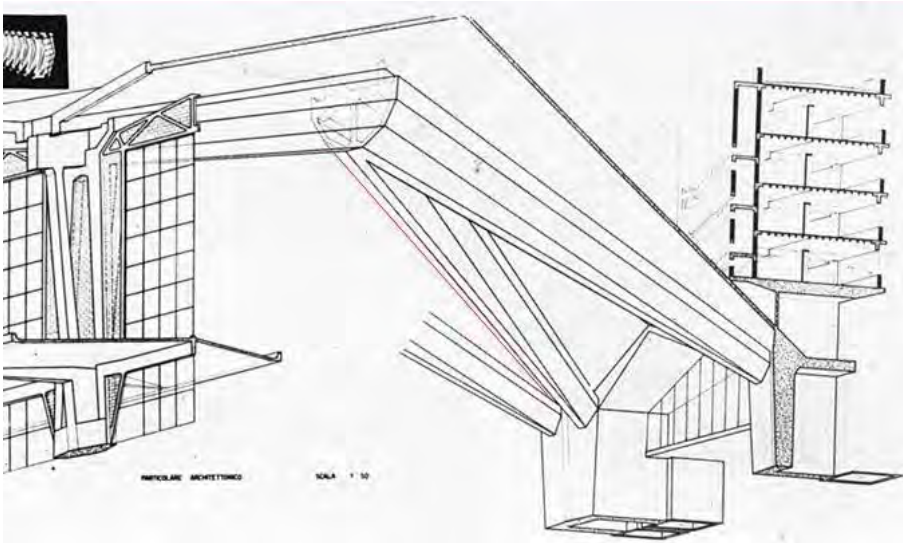
that creates the apparent fragility of the supports on the façade, none of which is vertical, reunited in groups similar to provisional supports for some immense cave, a gigantic *latomia*. I am reminded of a phrase spoken by Carlo Aymonino, pronounced at the end of the conversation I mentioned above (Marta Calzolaretti was also present). To our question about the character of his architecture he responded, surprisingly, that I would have liked his architectural ideas to have been realised by carving into some compact material, into stone, into marble; this is how they had been conceived. Recalling this phrase, and considering my in any case uncertain reconstructions of the project by Quaroni and Ridolfi, I told myself, and continue to do so, that a "school" of architecture can be said to exist when it is able to mysteriously transmit, from generation to generation, a precise sentiment, concrete and yet almost metaphysical, of the relationship between space and matter.

However, the decryption of the project was not yet complete. I return to the drawings, and in particular to the elevation developed for the competition (Fig.38). Different from the gesso model and the painting, here the large 'dark arches' of the atrium are anything but voids; they are clearly screened by a system of windows and doors that appears to have been intentionally only hinted at, though sufficiently enough to suggest its complexity. In fact, it is possible to comprehend that the system of screens, in addition to true and proper windows and doors, includes a minor load bearing structure crowned by narrow frames, similar to lightweight trusses. The largest bay, corresponding with the intrusion of the Servian Wall, is also screened by a large glass wall. This latter element was undoubtedly set back, as indicated by the shadow on its surface and the attenuation of the drawing tracing the pattern of the windows. Thus the large atrium was not imagined as an immense, void portico, but instead as a complex viewing machine whose interior is concealed and revealed in a play of transparencies and reflections (Fig.39).

The aggressive image of the atrium as a superhuman grotto gives way to a more articulated vision. The diaphanous, solemn drapery of the glass curtain exalts the gigantic architectural structures of the space of the larger cavity (Fig.40). Finally, we can return to the axonometric section (Fig.41), which proved to be one of the most important references. The large hull-shape of the beams, the roofs, the


PROSPETTO FRONTALE ESTERNO
SCALA 1:200




PARTICOLARE ARCHITETTONICO
SCALA 1:10

Figg. 38, 39, 41

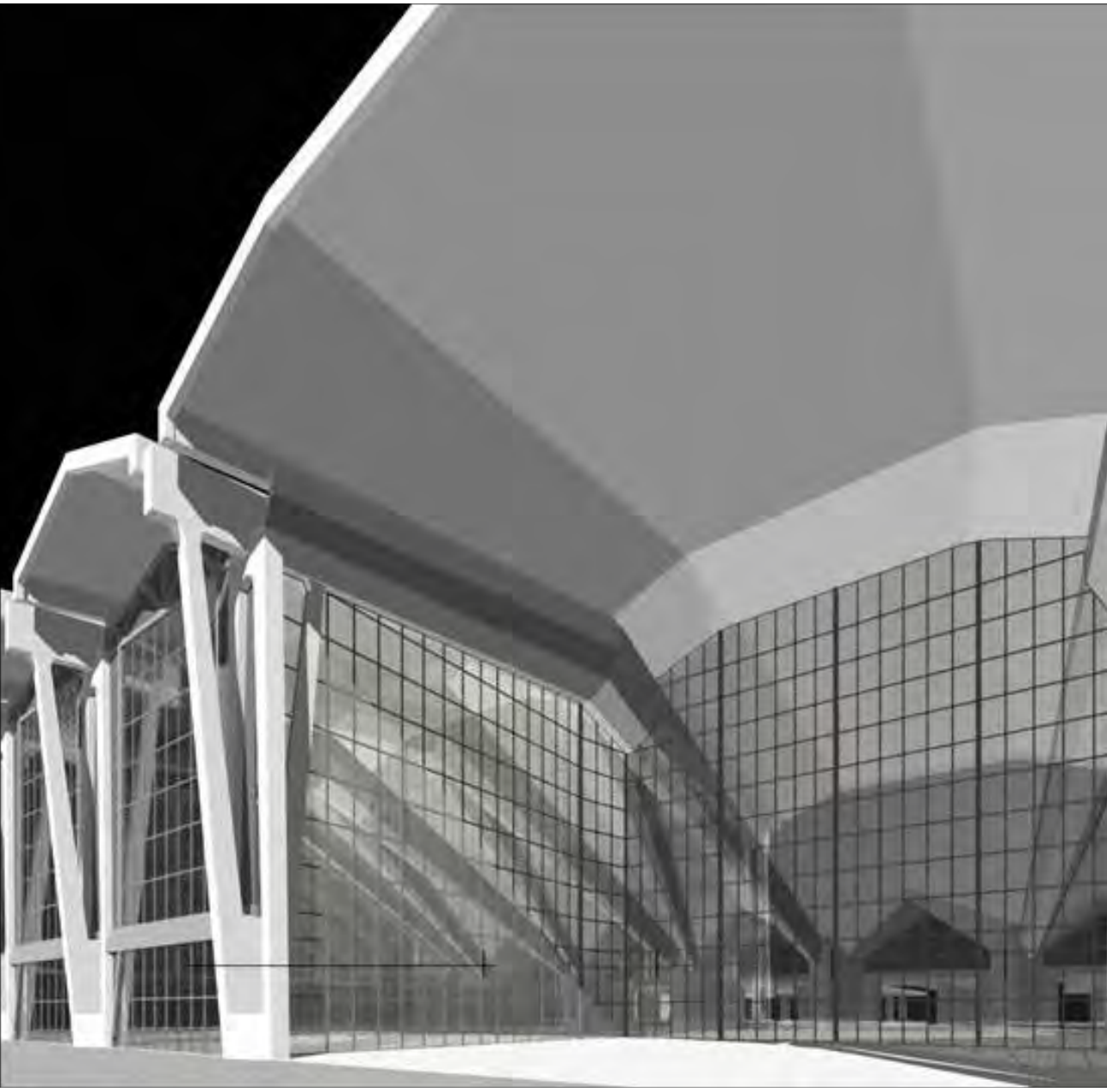


Fig. 40

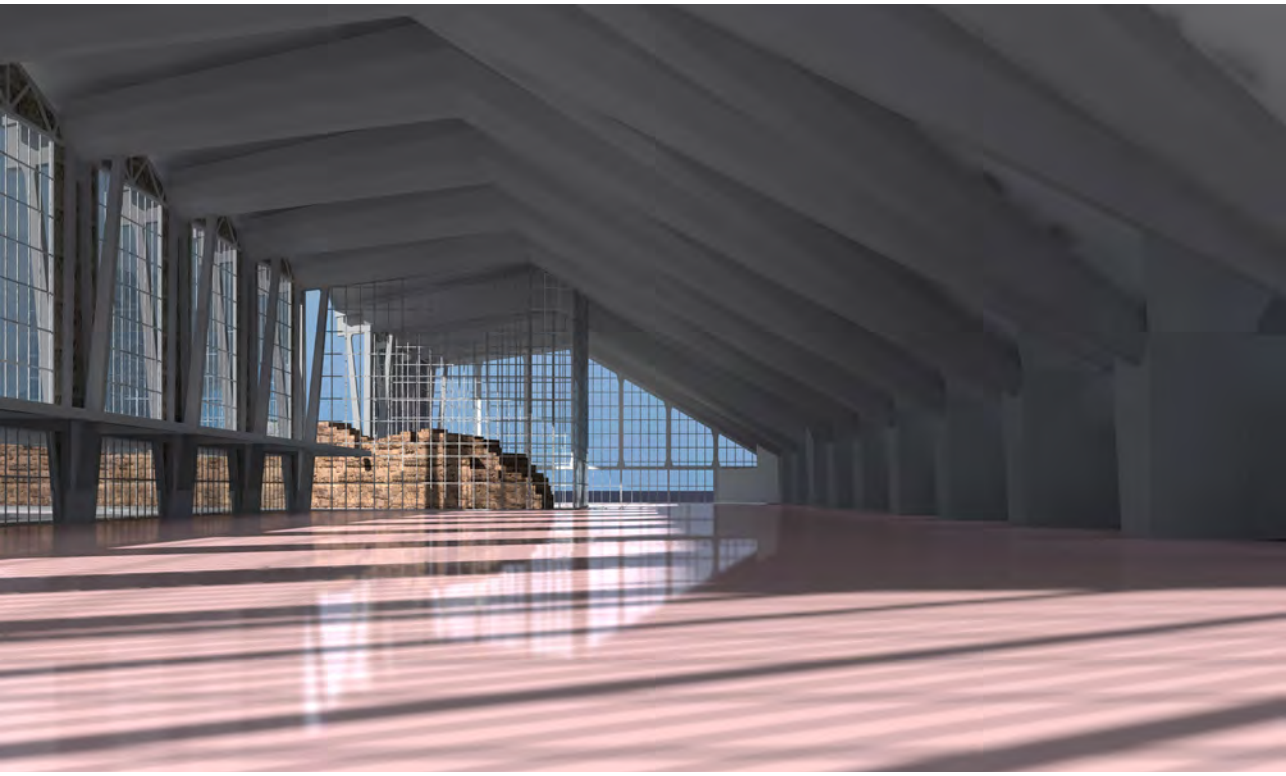


Fig. 47

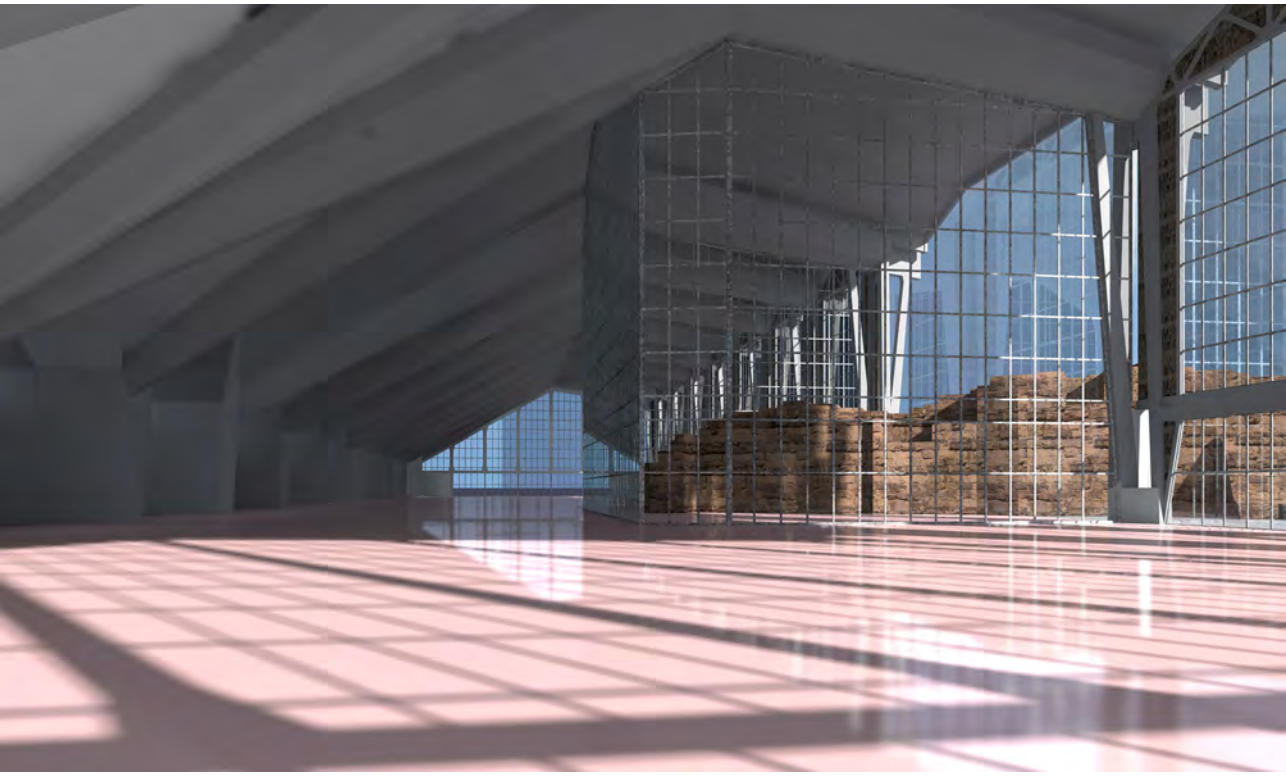


Fig. 48

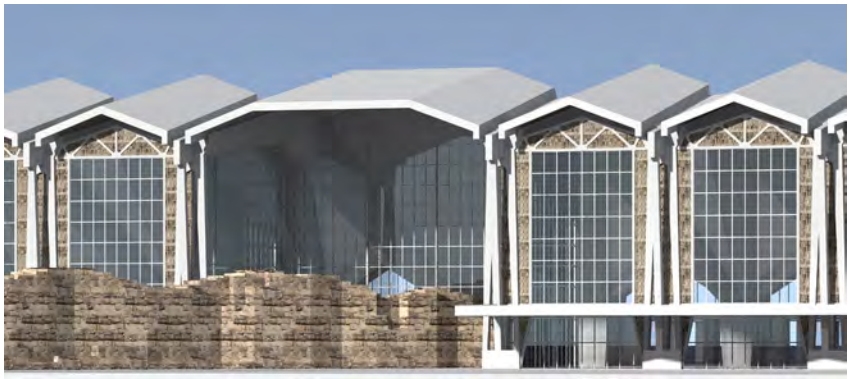
columns, the minor canopy, its brackets, the elements supporting the glazing, are all described without ever specifying any materials. We are led to believe that the whole was imagined in a homogenous material, in any case finished using a limited palette of stone or pseudo-stone elements; natural or artificial stones – concrete – and plaster that, as has always been the case in a city like Rome, were applied to large masonry surfaces as the most classical substitutes for an ideal stone finish. The project is represented as being materially – or at least visually – unitary. Despite so much homogeneity, the diverse pattern of the masonry fields created by the lightweight structural trusses sporting the large windows clearly stands out. Why then, in a project designed in such an intentionally summary fashion, were these small fields so intentionally represented? What exactly are they? Undoubtedly we are dealing with a traditional masonry structure, whose pattern, material and colour, so exposed on the façade, were certainly destined to a minor role in defining the relationship between building and context. One could advance the conjecture that we are looking at patterns of brick, a sort of echo or reflection of the ancient surfaces of the Baths of Diocletian. However, the dimension of the elements of this pattern is too large to be made from bricks. I am convinced that the pattern is in stone, in rows measuring 25 cm in height, comprised of pieces approximately 50 cm in length. What stone? The travertine used to finish parts of the Station designed by Angiolo Mazzoni? Peperino? Typically Roman materials? I have preferred to convince myself that it is a typically Roman stone – tufa – the same beautiful tufa from the Grotta Oscura used to construct the Servian Wall that, in the minds of Quaroni and Ridolfi, is deeply incorporated in the project and participates in modelling its volumes and spaces.[5] How can

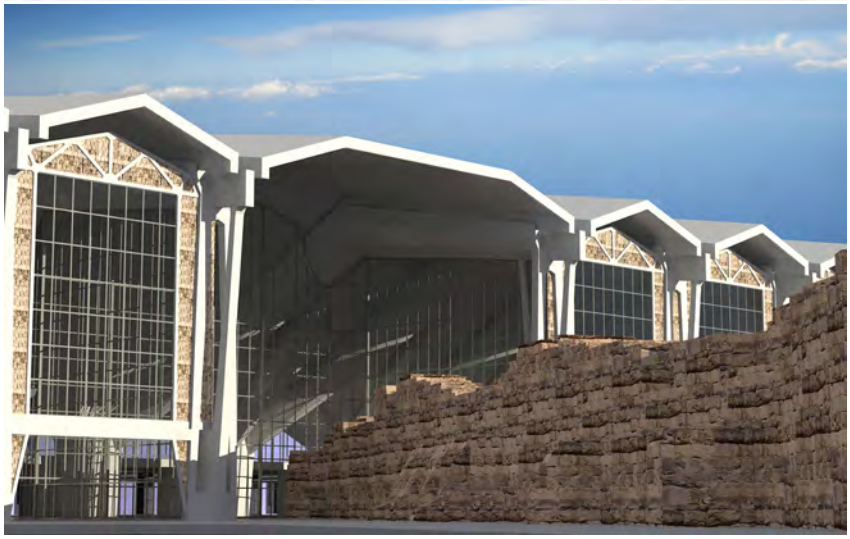
5. Montuori 2011. The direct inclusion of the Servian Wall as an integral part and source of identity for the project is one of the most qualifying elements of the proposal by Quaroni and Ridolfi, what is more because it is an intuition that considers the permanent state of abandonment that Rome, a Rome whose sloppy cruelty they were only too familiar with, tends to relegate its monuments and historic spaces as soon as they pass from the direct observation of the public, in other words, whenever they no longer serve to freely decorate the undeserving spaces of contemporary public life. This was also observed by Luca Montuori in his beautiful and complete essay that both defended and exalted the project for Termini by Eugenio Montuori and Annibale Vitellozzi; he was forced to recognise that the Servian Wall, the *Agger* so often cited by the participants in the 1947 competition, as it was arranged in the project that was built, stands as a "*stone guest* that remains isolated in a flowerbed behind some oversized image of Nike's hero-of-the-moment that welcomes visitors indifferently to any city". Luca Montuori, "Hortus ", n. 50, November 2011.

we forget the role of this semi-soft stone in the architecture of Ridolfi, where it is used to represent the *myth of a simple language* – both spontaneous and traditional – *of Italian architecture*? Using this new element the project reveals itself in all of its material consistence (Fig.42-46). It is no longer a plastic abstraction, but instead the idea of a large building that dialogues with the city in its dimensions, breath, the timbre of its materials, even the dimension of its roofs that, upon careful inspection, in an aerial photographic montage reveal a rhythm that appears to be the echo of the metric of the rooftops, and thus the interior spaces, of the Baths of Diocletian (Fig.46a). This is something very different than the dry spatial proposition of the first gesso model; it is the design of a building whose 'face' would have vibrated due to the consonance of its materials under the light of Rome; what is more, at night it would have emanated a grand spectacle, illuminating the tufa stone of the Servian Wall from within. The project becomes a landscape within the landscape of Rome, and an interior landscape, a box of light inside which the remains of the Servian Wall lie in wait like some large feline (Fig.47-48).

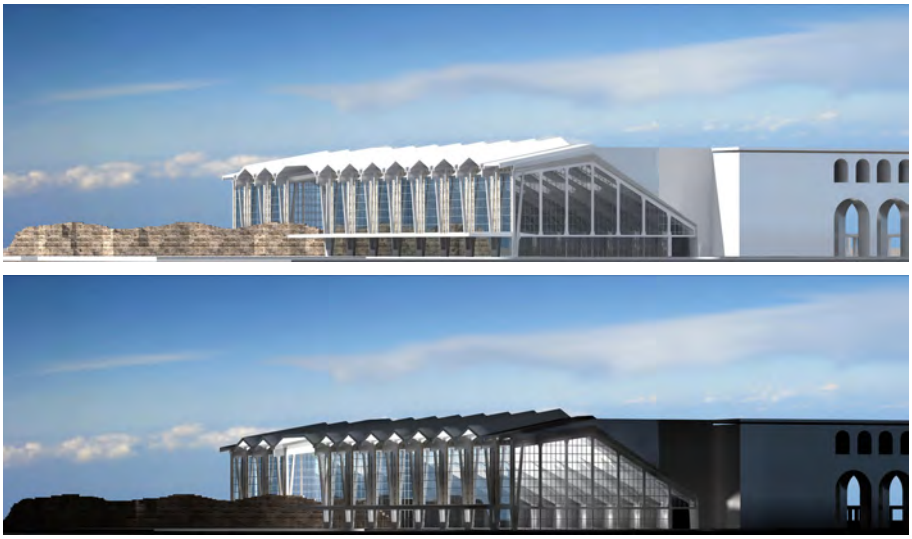
A Structural Check

The transcription thus came to a halt halfway between subjectivity and objectivity, yet the research continued. Considered carefully, all of the work realised so far was carried out using a few, carefully measured references. The most certain dimensions were those measured from the station by Mazzoni: widths, lengths and heights were controlled in situ; the rest was a work of conjecture developed using poorly printed drawings and poorly conserved prints. Widths and geometries, even from the rigorous model, were all developed beginning with a limited number of reliable clues. Were it not for the inflexible geometry of modelling software, it could be said that the investigation, the decryption, was a *freehand* exercise undertaken using a few certain and fundamental supports. As mentioned, during the period of transcription I was aware that only access to Quaroni's Archive could offer – I hope – a positive or negative evaluation of what I had reconstructed virtually. All the same, from the outset I was certain of the existence of an objective and practical means for testing the reliability of my work, or at least





Figg. 42-44



Figg. 45-46

Fig. 46a

for refining its results: the verification of the structure of the project. The starting points were clearly outlined in the structural diagrams developed by the authors and the dimensions I had deduced from the drawings made this possible. Yet there were other references to be considered: first and foremost the culture of structural design at the time of the 1947 competition and Carè's and Ceradini's ideas about structures. Finally, the practice of structural engineering at the time and applicable regulations on structural calculations and construction. The structural verification required a scientific direction, sensitive toward the objective of the research and able to govern the situation. It was thus natural for me to turn to Renato Masiani, professor of Structural Mechanics within the faculty where I teach, and a student of Carè and Ceradini; Masiani never tires of affirming the role of structural analysis as the primary tool for understanding the historic truth of ancient and modern architecture. Together we selected a young graduate student, Cecilia Vodret, with a particular interest in the structural aspects of architecture. Renato Masiani directed the studies and results. I was merely an active observer, ensuring that we stayed on course. My efforts were not in vain.

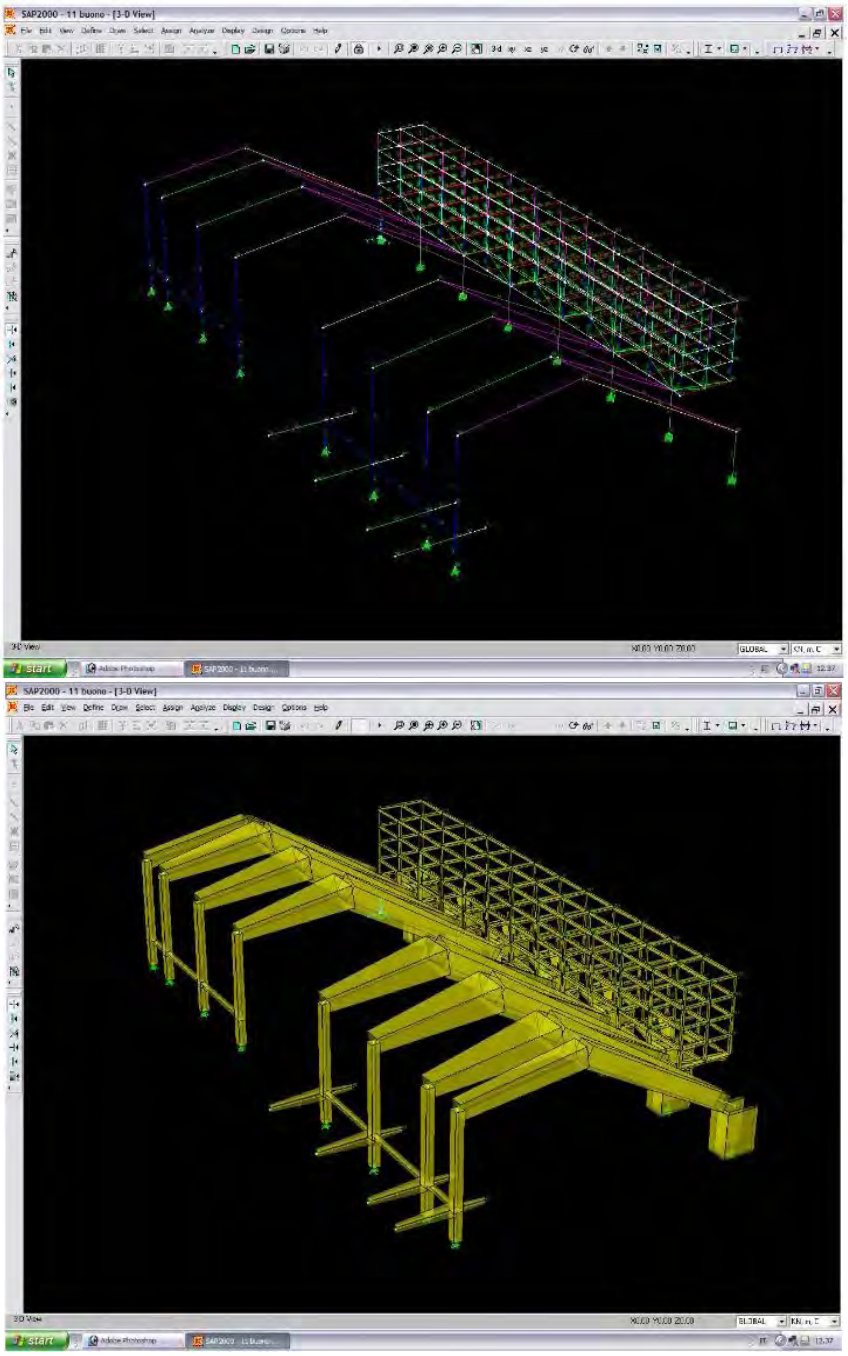
This research is worthy of publication on its own; this is not the place for a detailed examination – from the initial diagrams to the drawings produced – of the itineraries of this verification, which assumed the form of a true *structural redesign* of each known part of the project (Fig.49-52). I do however consider it useful to summarise its development and principal conclusions. Having established the hypotheses and conditions of calculation, as well as the building models of the diverse parts of the structure, we proceeded to redesign each element of the *adjacent bays*; after completing the calculations we produced a three-dimensional model as proof of the verification and useful to the refinement of the three-dimensional model developed during the first phase of deciphering the architectural drawings (Fig.53-54). The same was done for the primary bay (Fig.55-56), also modelled in 3D using true dimensions, widths and building methods, and for the office building, which includes an essential part of the main structure of the atrium. All of the primary elements of this immense project, as it can be deduced from surviving documents, when verified, validate the significant confidence expressed by the group of architects and engineers.

The pressure of the time constraints imposed by the competition, certainly did not allow for a technical verification as scholastically accurate as that realised by Cecilia Vodret – what is more *a posteriori* – yet the designers were certainly able, given their refined professionalism and intuition gained from experience, to define models, dimensions and proportions that are perfectly coherent with the realties of construction. To be precise, only the minor canopy demonstrates a few problems of coherence between architectural form and structural requirements. Evidently this part of the project was considered of lesser importance by its authors, who most likely imagined resolving it at a later date. Hence, for this minor, though difficult to ignore element of the project, we initially verified the deformity of the dimensions indicated in the competition drawings in relation to those recalculated by Cecilia Vodret under the guidance of Renato Masiani – i.e. the height of the brackets – (Fig.57); we then proposed hypothetical solutions, one using cable supports and another using extrados brackets. This made it possible to understand that designers of the calibre of the competition team would have had no difficulty in guaranteeing that the canopy was as slender as they had indicated. Using the proportions indicated in the original drawings, we also verified the feasibility of the architectural system used to enclose the atrium, composed of glazing and minor structures.

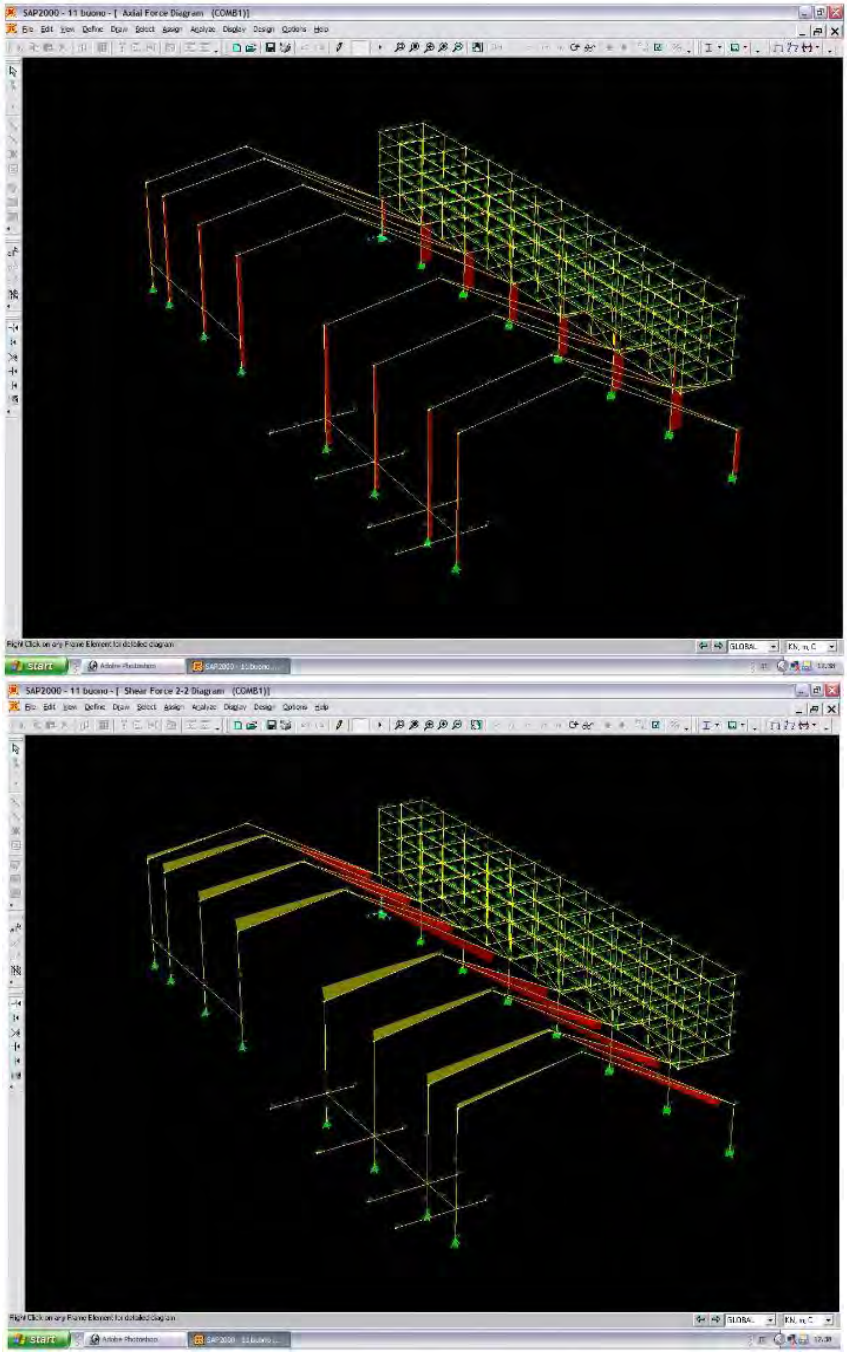
Finally, we looked at the technical feasibility of expansion joints that introduced no modifications to the rhythm of the bays and their form. Upon conclusion of the structural verification, the 3D virtual model was reconstructed in all of its parts and compared with the model developed using only the dimensions indicated in the architectural drawings (Fig.58). With the exception of minor adjustments, the new model confirmed, as if there was any need, the admirable control over the design and structures possessed by this team of highly talented professionals and, at the same time, refined my personal transcription, which was also compared to a physical model (Fig.59-60).

One Regret

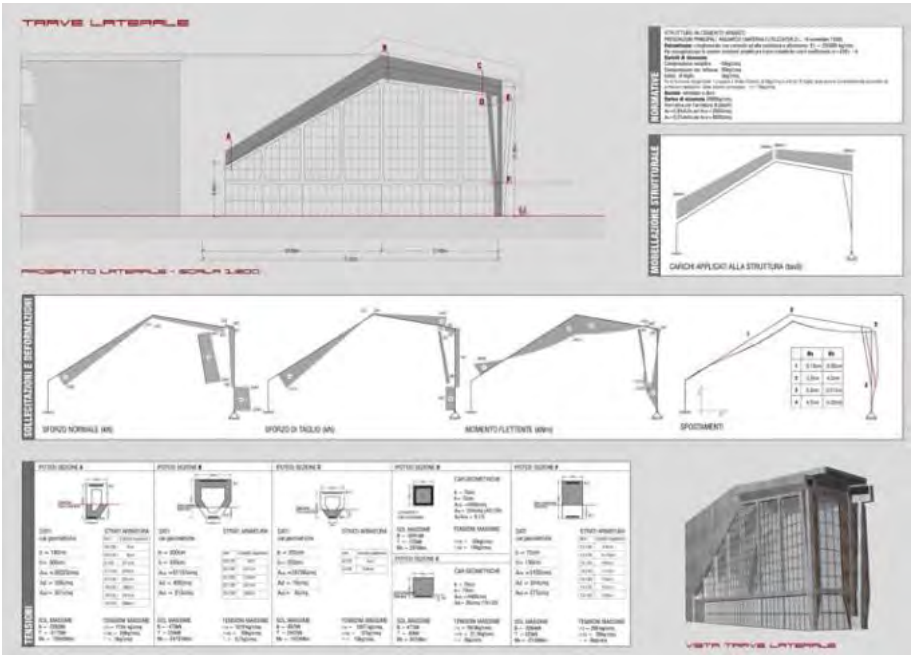
Having completed my verification, the project by Ridolfi, Quaroni, Cardelli, Fiorentino, Carè and Ceradini – developed by the

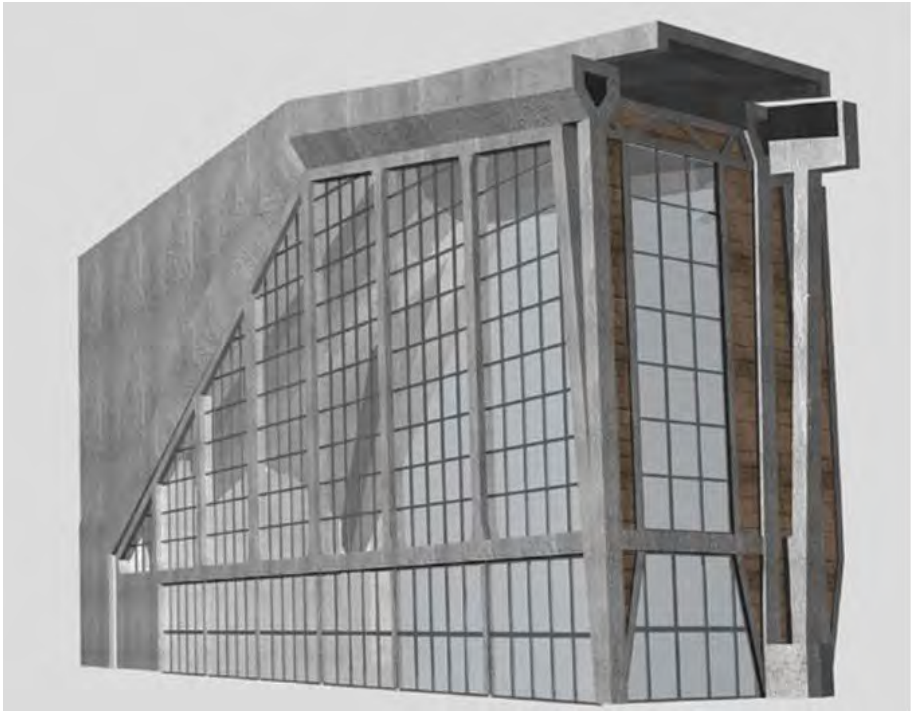


Figg. 49-50

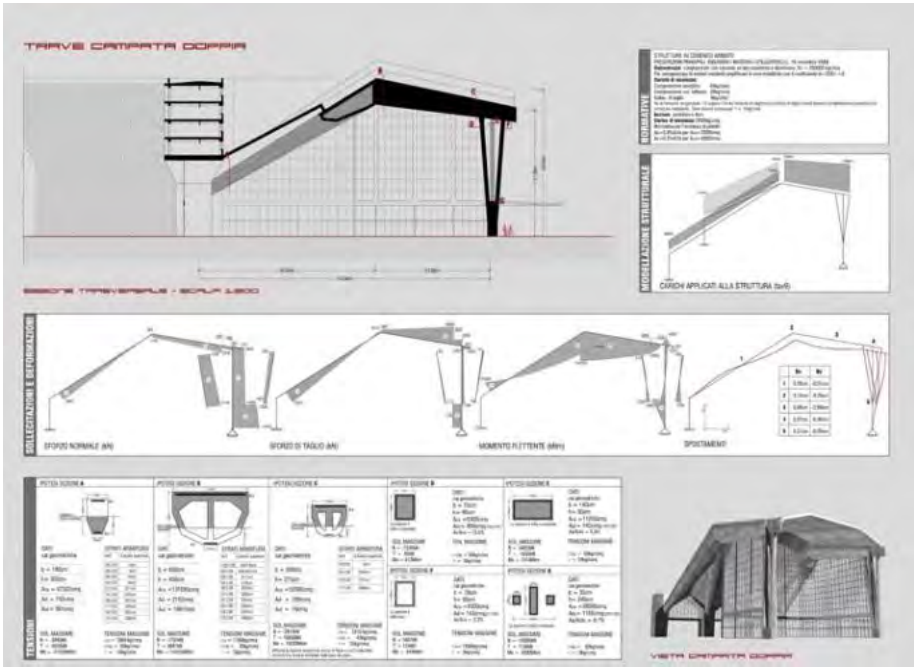

SAP2000 - 11 bozzo - [Axial Force Diagram (COMB1)]
SAP2000 - 11 bozzo - [Shear Force 2-2 Diagram (COMB1)]

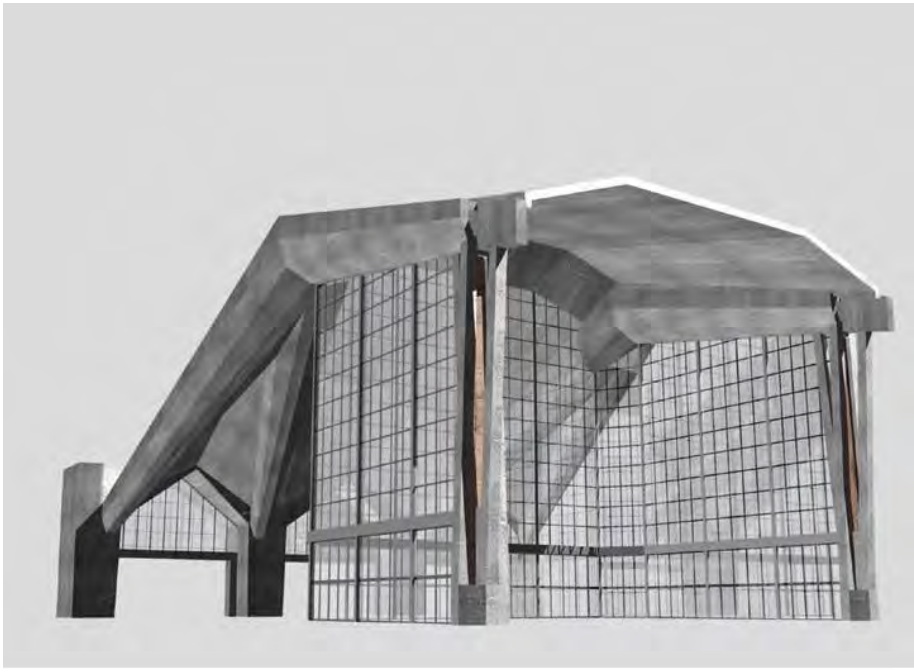
Figg. 51-52


TRAVE LATERALE
PROSPETTO LATERALE - SCALA 1:200
MODELLAZIONE STRUTTURALE
CARICHI APPLICATI ALLA STRUTTURA (kN/ml)
SOLLECITAZIONI E DEFORMAZIONI
SFORZO NORMALE (kN)
SFORZO DI TAGLIO (kN)
MOMENTO FLETTENTE (kNm)
SPOSTAMENTI
TENSIONI
VISTA TRAVE LATERALE



Figg. 53-54


TRAVE CAPPATA DOPPIA
NORMATIVE
MODELLAZIONE STRUTTURALE
SOLLECITAZIONI E DEFORMAZIONI
TENSIONI
VISTA CAPPATA DOPPIA



Figg. 55-56

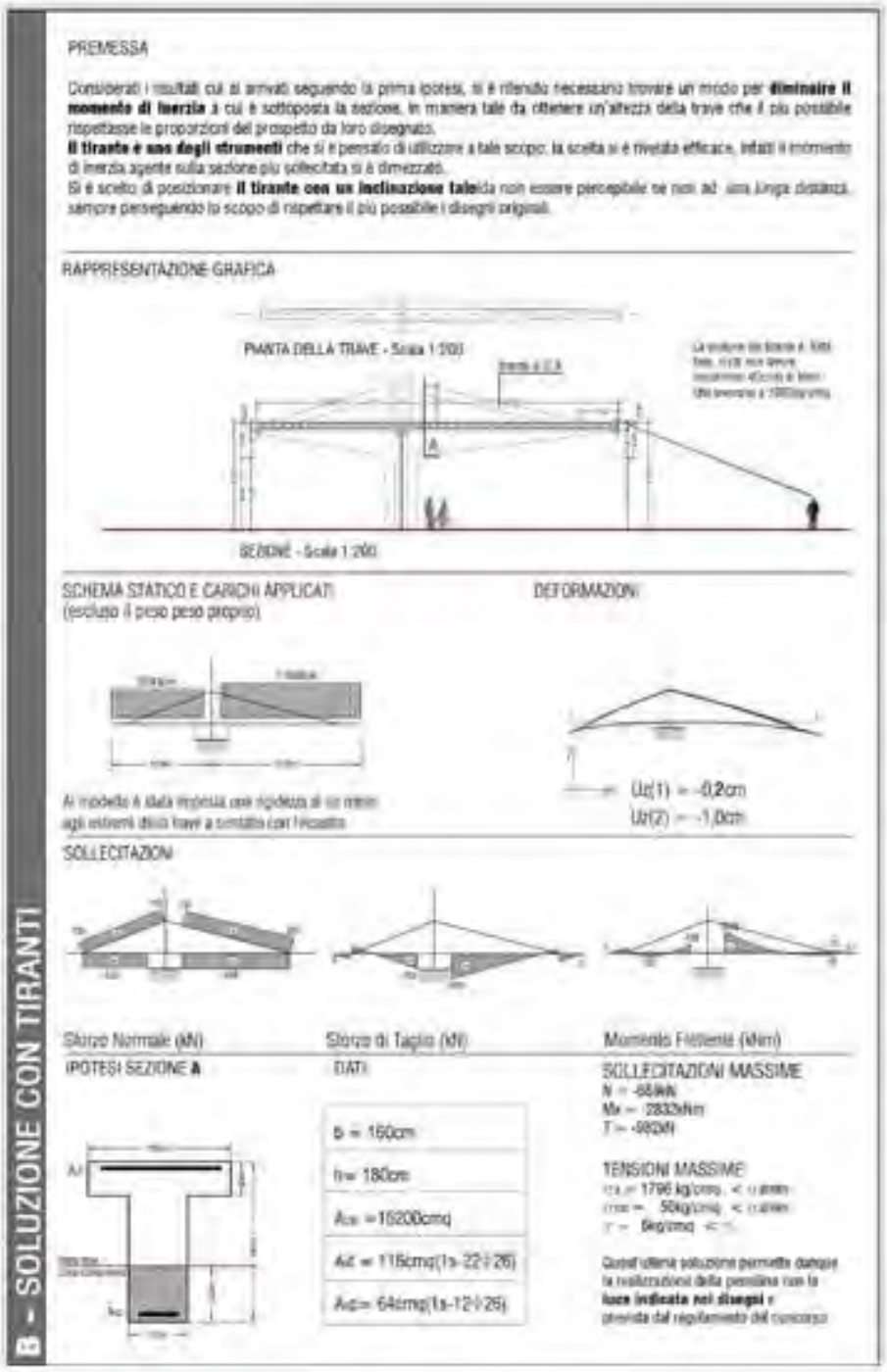

B - SOLUZIONE CON TIRANTI
PREMESSA
Considerati i risultati cui si arrivati seguendo la prima ipotesi, si è ritenuto necessario trovare un modo per diminuire il momento di inerzia a cui è sottoposta la sezione, in maniera tale da ottenere un'altezza della trave che il più possibile rispettasse le proporzioni del prospetto da loro disegnato.
Il tirante è uno degli strumenti che si è pensato di utilizzare a tale scopo; la scelta si è rivelata efficace, infatti il momento di inerzia agente sulla sezione più sollecitata si è dimezzato.
Si è scelto di posizionare il tirante con un inclinazione tale da non essere percepibile se non ad una lunga distanza, sempre perseguendo lo scopo di rispettare il più possibile i disegni originali.
RAPPRESENTAZIONE GRAFICA
PIANTA DELLA TRAVE - Scala 1:200
SEZIONE - Scala 1:200
SCHEMA STATICO E CARICHI APPLICATI
(escluso il peso peso proprio)
DEFORMAZIONI
Uz(1) = -0,2cm
Uz(2) = -1,0cm
SOLLECITAZIONI
Sforzo Normale (kN)
Sforzo di Taglio (kN)
Momento Flettente (kNm)
IPOTESI SEZIONE A
DATI
b = 160cm
h= 180cm
Ac= =16200cmq
Ac = 116cmq(1s-22+26)
Ac= 64cmq(1s-12+26)
SOLLECITAZIONI MASSIME
N = -65kN
Mx = -2832kNm
T = -982kN
TENSIONI MASSIME
Questa ultima soluzione permette dunque la realizzazione della pensilina con la luce indicata nei disegni e prevista dal regolamento del concorso

Fig. 57

Fig. 58

Figg. 59-60

authors almost with modesty, as if they wished almost to conceal its revolutionary identity – proved to have been conceived and designed from the outset to be built, to have been developed for a construction site. All of the premises of the project were outlined in the first drawing, and all of its problems were resolved in the original concept; this only heightens the disappointment at what did not come to be, at their not having been awarded the competition, and that such an extraordinary work was never realised. However, the transcription of the project must stop here, even if many important nodes remain in the shadows: the stairs for example, which are not clearly represented on the drawings, or the typology of the office building, for with there exist no plans but only scarcely detailed sections and the tentative image that appears in the axonometric. All the same, I now believe I better understand the reasons behind Carlo Aymonino's lasting admiration. This project, which considers the unity of spatial invention and structural intuition as the indispensable condition for imbuing architecture with the sense of Rome, of its history, of its modernity – or at least that dreamed of by its designers; this project which was intended as a grand collective set of spatial emotions and – symbolically – a theorem of the entire city, this project, had it been realised, would have had a much greater effect than that effectively constructed on the course of Italian architecture, but also on the mission of its authors and the very appearance of modern Rome, which would have been represented by this design at least as much as Milan is represented by the Velasca Tower and many other European cities by many other, though less moving, important works of architecture (Fig.61-62).

Note: the renderings presented were personally drawn by Lucio Valerio Barbera (with the exception of the renderings in Figg. 49-60, borrowed from the Graduation Thesis by Cecilia Vodret, Advisor: Professor Renato Masiani, Co-advisor: Lucio Valerio Barbera).

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Fig. 61

Fig. 62