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## “[...] Architecture is not a Martini”. Reflections about BIM

### “[...] L’architettura non è un Martini”. Riflessioni sul BIM

For many years the BIM is turning into the main design tool of the survey of existing environment and of the recovery of built heritage. In Italy, among the novelties of the Nuovo Codice Appalti there is the use of BIM, which constitutes a mean for the redefinition of the relationship between administration and enterprise above all for decreasing the variations and production and management costs. Such as many advantages, the BIM could bring also some risks and negative consequences, above all in the design phase, due to the contribution of different actors that contains in its inside. This study deals with some reflections about it and its risks and potentialities through the words of some Masters, and scientists of representation together with examples of recovery interventions made by BIM.

*Da qualche anno il BIM sta diventando lo strumento principale nella progettazione, nel rilievo dell’esistente e nel recupero del patrimonio edilizio. In Italia tra le novità del Nuovo Codice Appalti vi è l’utilizzo del BIM che costituisce uno strumento per una riformulazione del rapporto fra amministrazione e impresa soprattutto per ridurre le varianti e quindi i costi di produzione e conseguentemente di gestione.*

*Così come a tanti vantaggi, il BIM potrebbe portare anche a rischi e conseguenze negative, soprattutto nella fase progettuale, dovute soprattutto al contributo dei vari attori che esso contiene al proprio interno. Attraverso le parole di alcuni Maestri, di studiosi della rappresentazione e con esemplificazioni di interventi conservativi eseguiti con modalità BIM, questo studio riguarda alcune riflessioni su di esso e sui rischi e le potenzialità del suo uso.*

keywords: author, project, construction

parole chiave: autore, progetto, costruzione

In the spring of 1964, Peter Carter interviewed Ludwig Mies van der Rohe asking him for some questions; in particular, one was related to the relationship between shape and construction. To the question, "You suggested that in architecture the shape is not the basic reason of the construction, but a consequence of the structure. Since the modern technology makes possible to build almost everything, does not it allow us to invent new forms?" Mies answered: "According to me, today there are two general tendencies. One has a structural cornerstone, and you can name it the most objective. The other one has a formal cornerstone, which can be conceived as the emotive one. These ones cannot mix among themselves. Architecture is not a Martini".

For some time, anyway few, the BIM occupies the center of researches or experimentations of technologists, surveyors/draftsmen, structuralists, plant engineers, renovators/maintainers and of everyone who have, in one way or another, some capabilities on building. In that respect, if the acronym BIM, Building Information Modeling, inverting its characters would turn into BMI, Building Multidisciplinary Information, no one of the subjects involved would notice it because so much embroiled by the technology of the fascinating tool to lose the sense of meaning. The building, in its new multidisciplinary approach, becomes a common objective and, to that extent, it is that concept anticipating that of dwelling, and perhaps goes beyond it. However, do not dwelling come before building? .

Paraphrasing the thought of Mies van der Rohe, can all these skills turning around the BIM, mingle with each other as well as the ingredients of a cocktail? A Martini precisely?

The answer, compared to that of the German master, on the contrary, must surely be positive with a clarification, namely that the designer, the inventor, is the central and reference figure of the multiple actors of the design process.

This consideration stems from the fact that into a mechanism as complex as BIM, though apparently open, there is the danger that everyone can rightfully feel the designer losing so the sense of their own role (Fig.1).

Of course, it is not the true for everyone and a generalization would be not only superfluous but also especially inopportune. However, the risks, you know, are all around the corner.

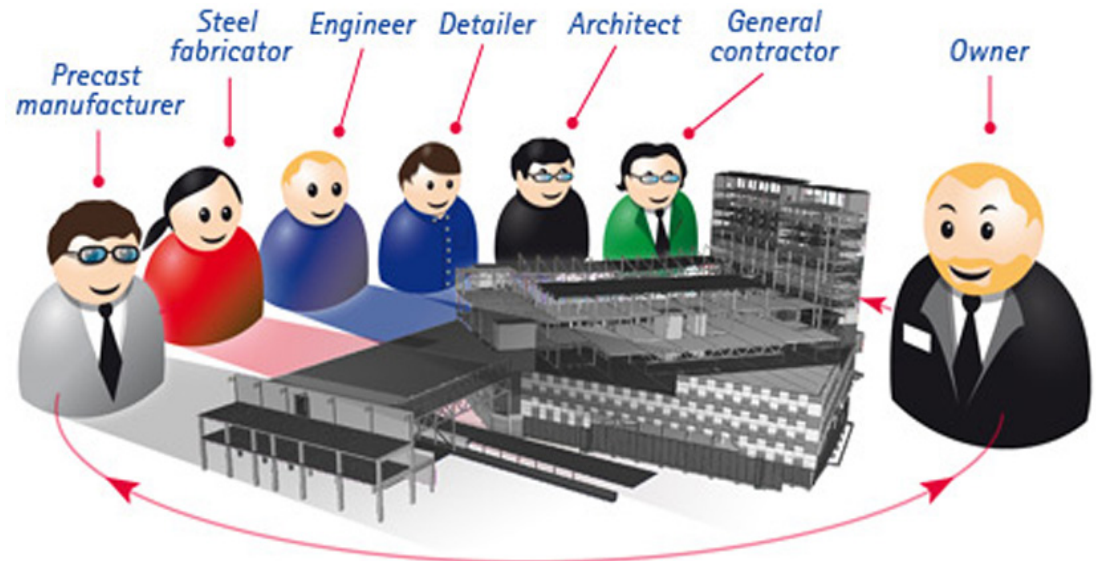


Figure 1. Advertising image of the Dowco Tecnology Services related with BIM solutions.

The thought of Mies van der Rohe, as regards the definition of the roles within a complex process, is useful when to the question "Can architects work in a team on larger projects?" he replied, "I do not believe so much to this sort of compulsion to the teamwork. The workgroup in our field is among architects, plant engineers and structural engineers. This is the useful teamwork. There is no point in working with other architects. What can they do? Who does what? I think it is better to have different projects and choose. After all, why should I discuss my ideas with someone else? The most important things, in any case, cannot be discussed. I prefer not to work with other people. I work with large companies of architects in different ways, but I do not argue with them my ideas. I would never do that. The same with the structural engineer. We tell him what we want and he tells us if it is possible. In the design field the structural engineers, with a few exceptions such as Nervi, do not know what they are doing". Mies reaffirms the central role of the architect, the figure around which must move the project experience. The conceptual problem of BIM lies in identifying the roles and coordination between the actors; but many

believe that it is just a very powerful software as well as, formerly, the CAD has replaced the pencil without never take off its record.

For example, an indiscriminate use of BIM could result in some of those distortions that the information revolution has previously created including one, more dangerous, the loss of sense. Just think to the fact that a poor, if not absent, architectural quality represented the counterpart of the possibility to realize rendering views with a high visual impact (Fig. 2, 3).

This statement is supported by the thought of Vittorio Ugo who, in one of his last illuminating essays, has very clearly outlined the insidious aspects of the digital, stating, "No one can dispute the extreme instrumental versatility of computers in the areas of firmatas and utilitas, practical elaborations, calculations, metric survey etc. Related to the venustas the things are differently, the ways of the project, the thought of the space, the interpretation of the monuments, the aesthetics, and the knowledge. Amazing special effects, rendering views, photo-realism, solid modeling... indeed they often hide a void content, an absence of criticism and an expressive poverty directly proportional to the preva-



Figure 2. Project for the new offices of the Capitaneria di Porto in Genoa. Archifax Architects Associated (retrieved from renderbrutti.blogspot.it).

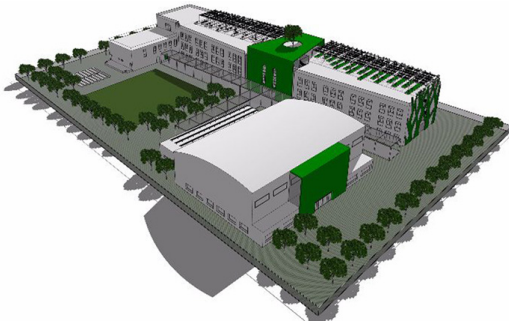


Figure 3. Primary school in Milan. Archifax Architects Associated (retrieved from renderbrutti.blogspot.it).

lence of the image on the form, of the *Darstellung* on the *Vorstellung*" .

To look at the potential figurative dangers of BIM just type on the web, in any of the search engine, the term itself and watching the images associated with it. What happens is, in some ways, very worrying, because we are in front of a production in which the science of representation, in the majority of cases, is not taken into account at all. Perspectives with improbable centers of projection or perspective sections with inclined plane and a point of view placed at an unusual height, spread uncontrollably (Fig. 4, 5). Sometimes we are faced with almost incomprehensible representations (Fig. 6). One wonders, in a philosophy in which the building is intended as a true mechanism, why parallel projections are not more commonly used rather than those central

<http://disegnarecon.univaq.it>

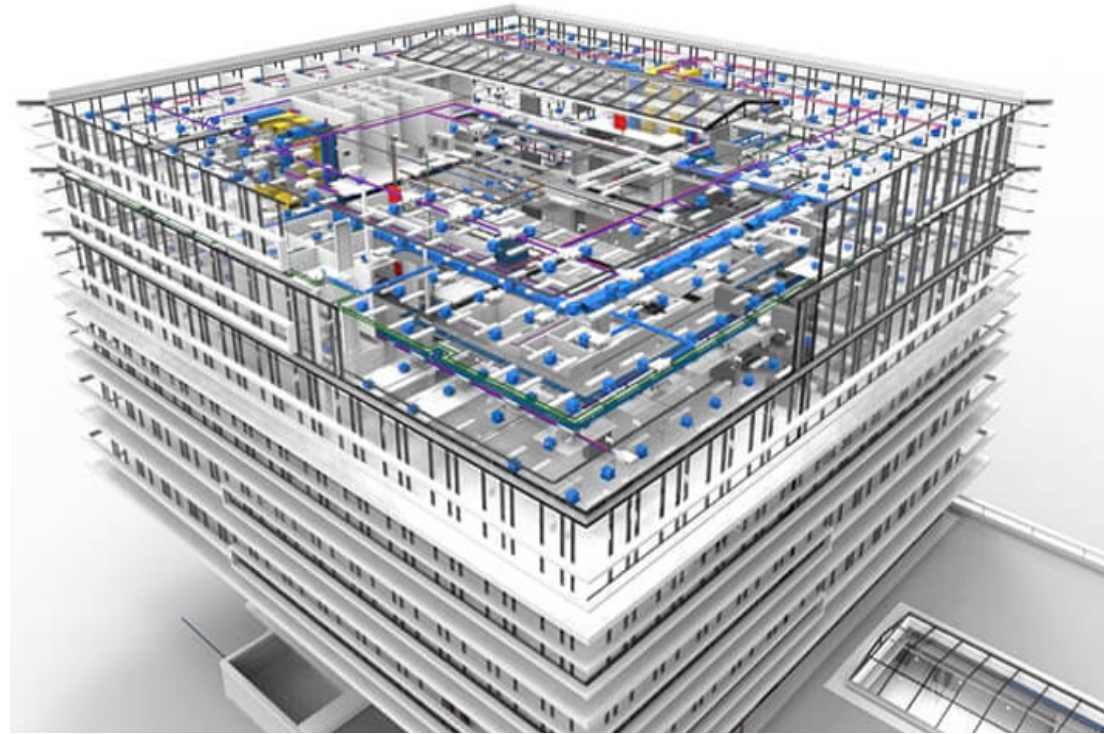


Figure 4. Gebouw 50, Building for offices of the Vauderlande Industries BV. Veccins 3D.

ones.

Looking at the various images related to BIM, one wonders what role assumes the representation in the elaborations of project proposals or if their own communicative character is left only to the software and its multiple operators. Some of the web images seem to provide information about the architecture manifesting themselves to the same way of representations of those ones of a pre-printed circuit! (Fig. 7).

Therefore, the problem is merely disciplinary. In this sense this conceptual problem is expressed by Vittorio Ugo who said "The representation has to be understood as the technical and conceptual structure that regulates and manages, in both directions, the complex relationship between the objectively heterogeneous areas of the words" (i.e. theory, criticism,

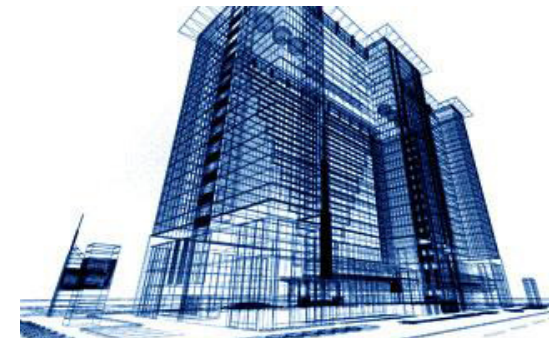


Figure 4. Gebouw 50, Building for offices of the

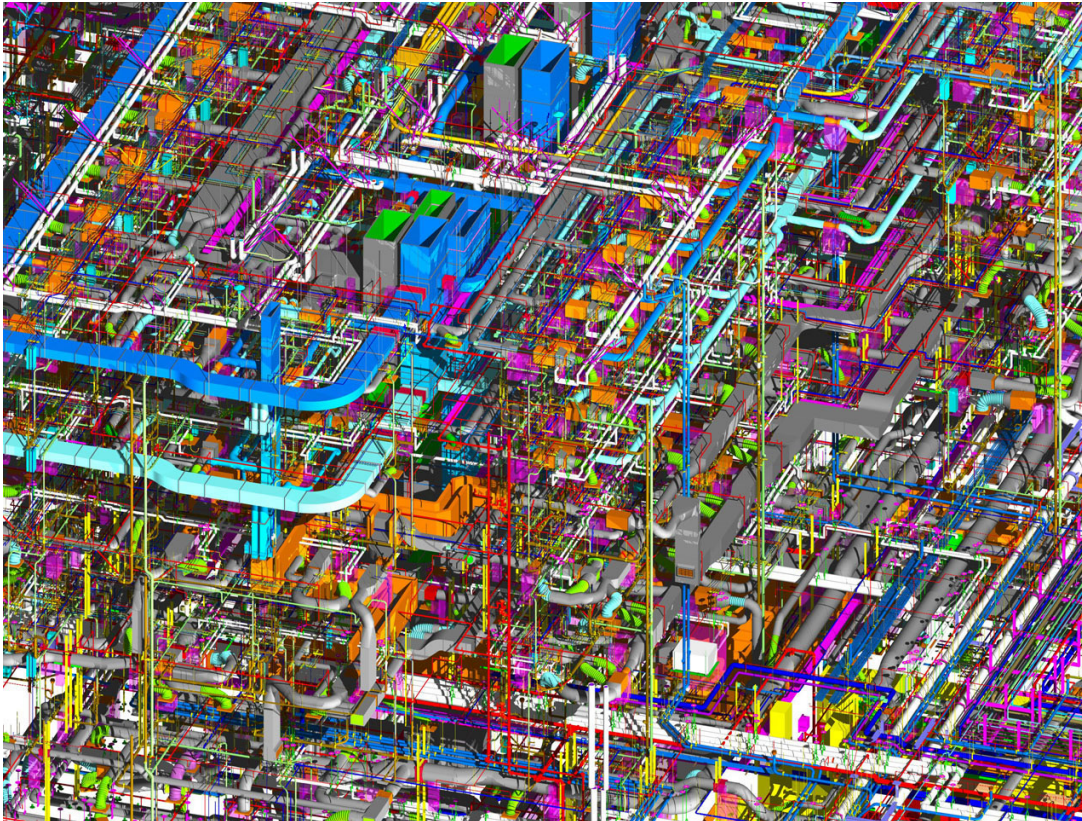


Figure 6. Palo Alto Medical Foundation. DPR Construction.

aesthetics, history...) and things of the designed and built architecture, considering also analysis and design as contiguous and integrated phases. The role of the representation neatly prevails on that merely communicative one. On the other hand, the polysemy of the term representation is source of several ambiguities: we have at least two different meanings, which instead the German language carefully distinguished. The former, *Darstellung*, limits the representation to the graphic-visual field, certainly reductive compared to the design strain of the same term "drawing"; the latter, *Vorstellung*, instead contains a conceptual and theoretical dimension and shows a representation as a

result of cultural elaboration and interpretation of the perceptive data, so authentic form of knowledge". These considerations can be understood as a kind of possible rejection of BIM by who is writing, as a stance assuming a real pre-established distance. It is not at all like that, if anything, it is absolutely the opposite because the BIM, as a tool, is certainly part of a creative process. "Technological development, with which the project - in architecture as in the visual arts - is confronted, in fact imposes choices. It is the evaluation of those values to be privileged, to wonder whether the project shall aim at the technological evolution control or instead limit itself to content or use it in a predomi-

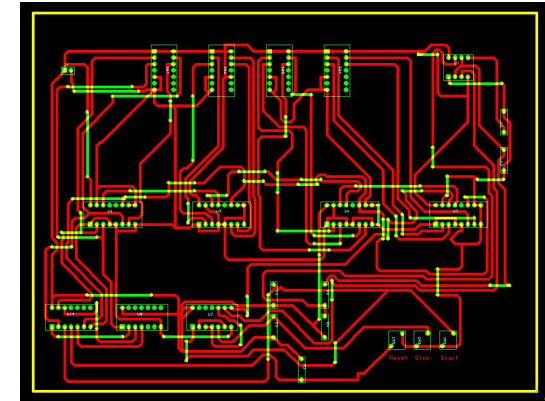


Figure 7. Drawing of a pre-printed circuit made by the students of the I.I.S. "C. Rosatelli" of Rieti.

nantly instrumental dimension; or, through a synergistic operation, if the project and the new technologies should be seen as a unitary and indivisible place of creative development".

It seems clear today that the BIM is both the unified place in the construction of the project and a real tool that goes beyond the creative moment; its strength is in the fact that it is the one and the other at the same time. Precisely because of this multi-character it is permissible to ask for some questions about the means and simply say, as Emanuele Severino, which prevent the means from becoming purposes does not mean suppressing the means, but to suppress their aim to become purposes.

In this sense Riccardo Migliari, in a masterly essay where gives rise to the questions about the risks of computer applications addressed to the perspective, identifies two corrective actions "Hordes of '3D artists', on internet, challenge each other in search of the perfect simulation, dedicated to the photorealism. No one looks at beauty, but everyone looks only to the perfection of the tool and the ability of the user who produce indistinguishable images from a bad photograph of a bad real world. There is something pathetic and creepy in this painful effort to give fantasies, often in romantic style, an increasingly true aspect, entirely neglecting the quality of the imagination itself, its poetic contents, its ability to allude without saying, its beauty (to use the same word of Russell). Therefore, today I believe

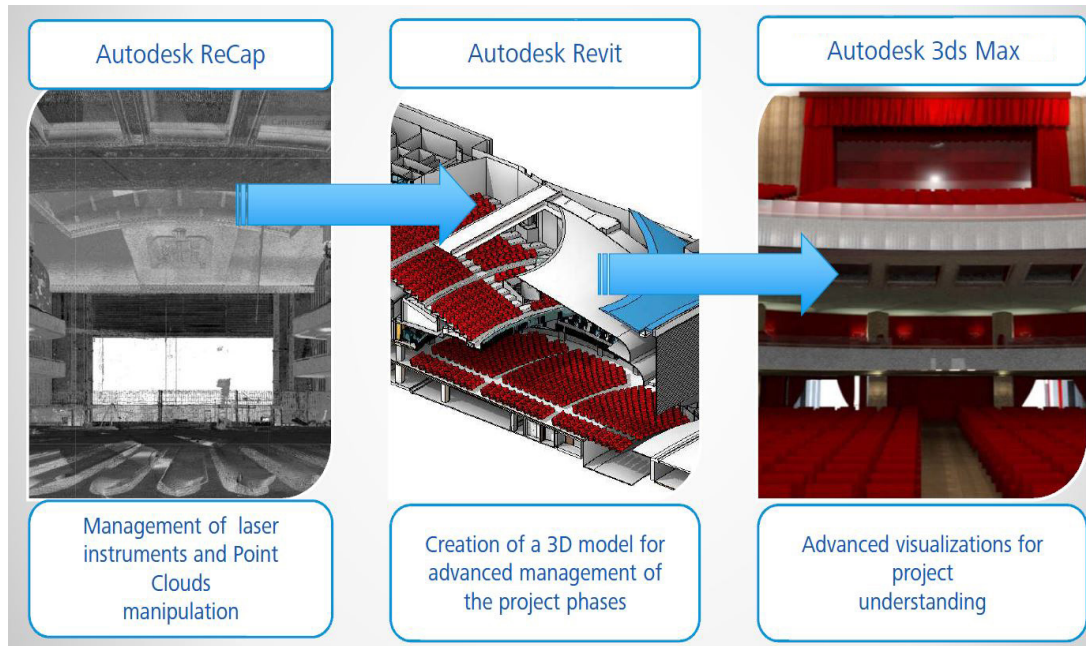


Figure 8. Scheme of the design process, starting from the survey, restoration of the Teatro Lirico in Milan made by Autodesk software.

that to save the perspective, one must consciously and persistently take at least two actions. The former is to recover the value and weight of the artistic judgment, in assessing and researching the expressive quality of an image, its ability to arouse emotions and convey messages, whatever is the technique used. The latter is to recover and develop all the theoretical contents and those discussed matters that the history of perspective has handed down to us". Substituting to the words of the scholar the terms perspective with the term architecture and history of perspective with history of architecture, you can deduce how many worries about the indiscriminate use of BIM are lawful, especially the loss of architecture's quality handed down by Vitruvius already since the Augustan age. However, this is another issue and I realize its superficiality because the fulcrum of the problem is in the authoritativeness of the author and in the future of man. It seems that today there is a risk of finding

themselves into the architectural project drawn up according to the new regulations, in the scene of Pirandello's *Six Characters in Search of an Author*, in which the reader and the public, in the stage version, had to identify the identity of the character. Authors without an author. If all these dangers, due to the possible indiscriminate use of BIM, may prevent the architectural project, its contribution in the survey and in the maintenance management of a building is different; the BIM is not only necessary but becomes indispensable. The BIM systems, in fact, allow controlling the monitoring of the life cycle of a building planning a management plan especially in relation to maintenance costs; its contribution is similar to that of a CT scan in the human body. Software like Revit, after surveys carried out with laser scanning methods, generate models which capture the state of the building and make manageable all the in-

formation of the elements that constitute it; building management thus becomes dynamic and its changes are recorded in real time (Fig 8).

To recover the existing heritage through new information technologies that help in the cost planning, means starting from the bottom, moving with small but decisive steps to prevent waste. This could really make a change, a real mutation of the state of things and doing, at least in our Country. Just think of a possible recovery of those commonly called cathedrals in the desert and all those historic buildings in disuse for many years that are part of the constellation of our territory.

This is the case, for example, of the restoration project of the Teatro Lirico di Milano opened in 1779 and destroyed by fire in 1938. It was rebuilt and reopened in 1939. Giuseppe Piermarini designed the original building while Antonio Cassi Ramelli took charge of the theater's reconstruction. In 1998, the Teatro Lirico was closed after the Milan City Council decided that it could no longer afford to operate and maintain the theater. A restoration based on a BIM allowed to half the expected costs for restoration, not a small thing (Fig.9-12). Ilaria Lagazio, BIM Senior Technical Specialist - Structure and Construction, Italy of Autodesk writes "The greatest benefit of BIM is not for the professional but for the construction company, this further complicates the situation. It is in fact during the construction phase that the higher initial commitment, the good design give the greatest benefits. In that phase the operator is able to benefit more from an integrated model, simulating a real virtual construction site and taking cover from any kind of inconvenience so to change through mouse clicks what previously had been solved with the jackhammer.

Actually, the construction company is the main beneficiary of a BIM methodology, which has the merit of leading the construction site from a craft installation to an industrial system to all intents and purpose. Moreover, if the construction site is the place where you exercise the greatest waste is obvious that there you can get the greatest reduction".

If the BIM benefits are very evident in the building restoration field, the issues about the project remain open. In this regard, Vittorio Gregotti, in one of his illuminating writings, says that "the categories of professionals who peripherally have to do with architecture



Figure 9. Survey with laser scanning of the outside of the Teatro Lirico in Milan (inthefold.autodesk.com).

have greatly multiplied: sales engineers, specialists on customer support, specialists on quality systems, specialists in inspections and tests, production engineers, industrial computing technicians, laboratory technicians, and then technicians for the "layout" of the tertiary, technicians for the controls of performances, costs, timing, construction site etc. Of course, the attribute of "technician" in this case is synonymous with specialist of programs and monitoring, it tends to sparkle reliable and "nobly" walks away from any form of materiality which is traditionally connected to the technical notion of building". The procedures of BIM swing between risks and be-

nefits, fact that is natural when any new system must have time to be verified in all its aspects and later settled to adduce the appropriate corrections. "That's why we live the technique hopelessly and without choices".

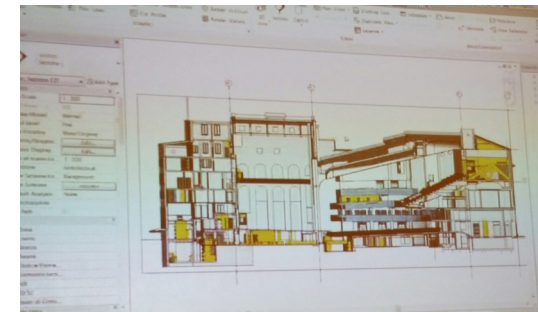


Figure 10. Section of the project of the Teatro Lirico in Milan.

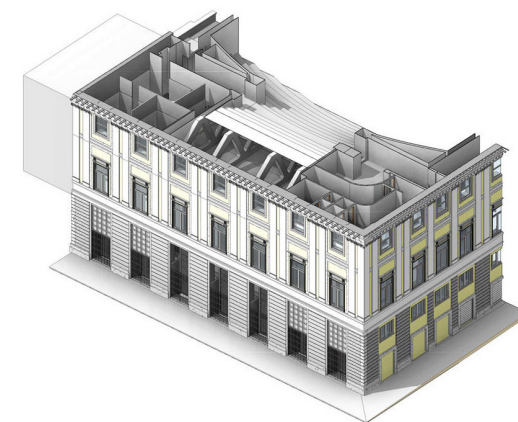


Figure 11. Axonometric cross section of the forepart made with BIM.

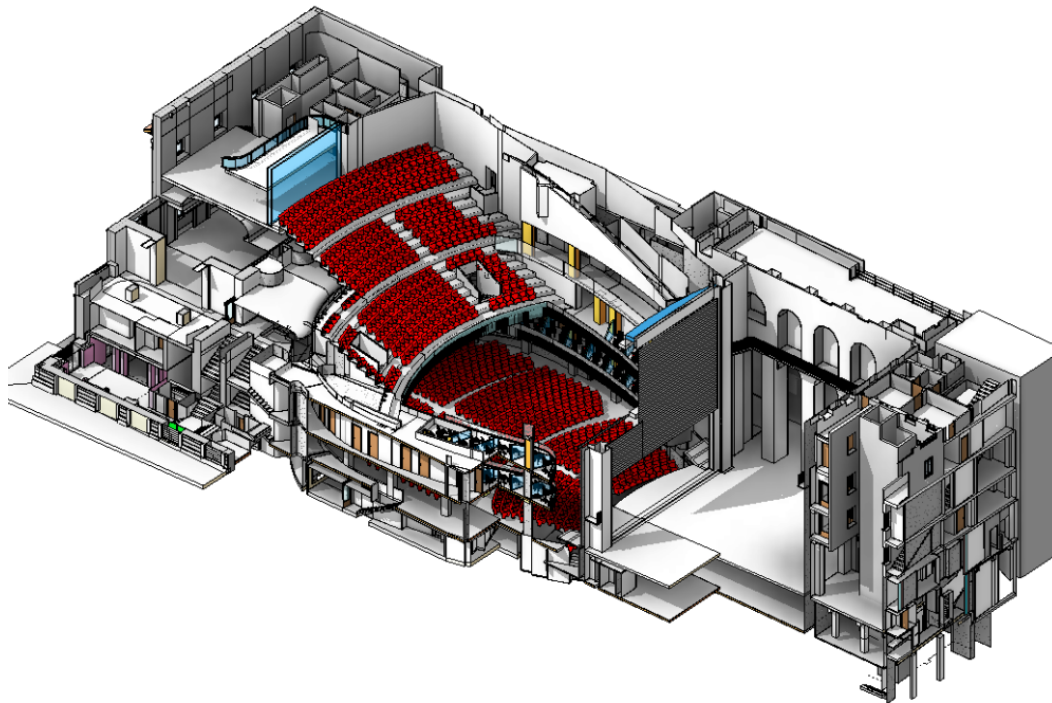


Figure 12. Axonometric cross section of the project.

**NOTE**

[1] Mies van der Rohe, L., *L'architettura non è un Martini*, in *Gli scritti e le parole*, ed. V. Pizzigoni, Einaudi, Torino 2010, p.276.

[2] We refer to the famous essay of Martin Heidegger *Building, dwelling, thinking*.

[3] Mies van der Rohe, L., *Nessun dogma*, in *Gli scritti e le parole*, ed. V. Pizzigoni, Einaudi, Torino 2010, pp.185-186.

[4] Ugo, V., *Sulla critica della rappresentazione dell'architettura*, Libreria Clup, Milano 2004, p.8.

[5] Ugo, V., cit., p.7.

[6] Sacchi, L., Unali, M., *Introduzione*, in *Architettura e cultura digitale*, ed. L. Sacchi, M. Unali, Skira, Milano 2003, p.7.

[7] Cfr. Severino, E., *Destino della necessità: katà tò chreòn*, Adelphi, Milano 1980.

[8] In particular, I refer to that taste today named 'Gothic'. Namely, that taste for the gloomy atmospheres, for stormy skies, for the many nightmarish characters of films and video games so many fashionable among young people. This is precisely the decadent taste that Mario Praz describes and analyzes in his essay *La carne, la morte e il diavolo nella letteratura romantica*,

essay *La carne, la morte e il diavolo nella letteratura romantica*, edited in Florence in 1948.

[9] Migliari, R., *Ha la prospettiva un futuro? (Has Man a future?)*, in *IKHNOS*, 4/2005, Lombardi Editore, Siracusa 2005, p.141.

[10] European Directive 2014/24/EU on Public Contracts clearly expresses the indication of introducing the Building Information Modeling within the procedures of procurement of the Member States.

[11] Lagazio, I., *La crisi dell'edilizia e l'opportunità offerta dal BIM*, in *INGENIO*, n.26/2014, Galazzano

(RSM), p.4.

[12] Gregotti, V., *Figure professionali, tecnica e materialità*, in *Architettura, Tecnica, Finalità*, Editori Laterza, Roma-Bari, p.105.

[13] Galimberti, U., *Psiche e techne. L'uomo nell'età della tecnica*, Feltrinelli, Milano 1999, p.13.

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