

# Producing Project

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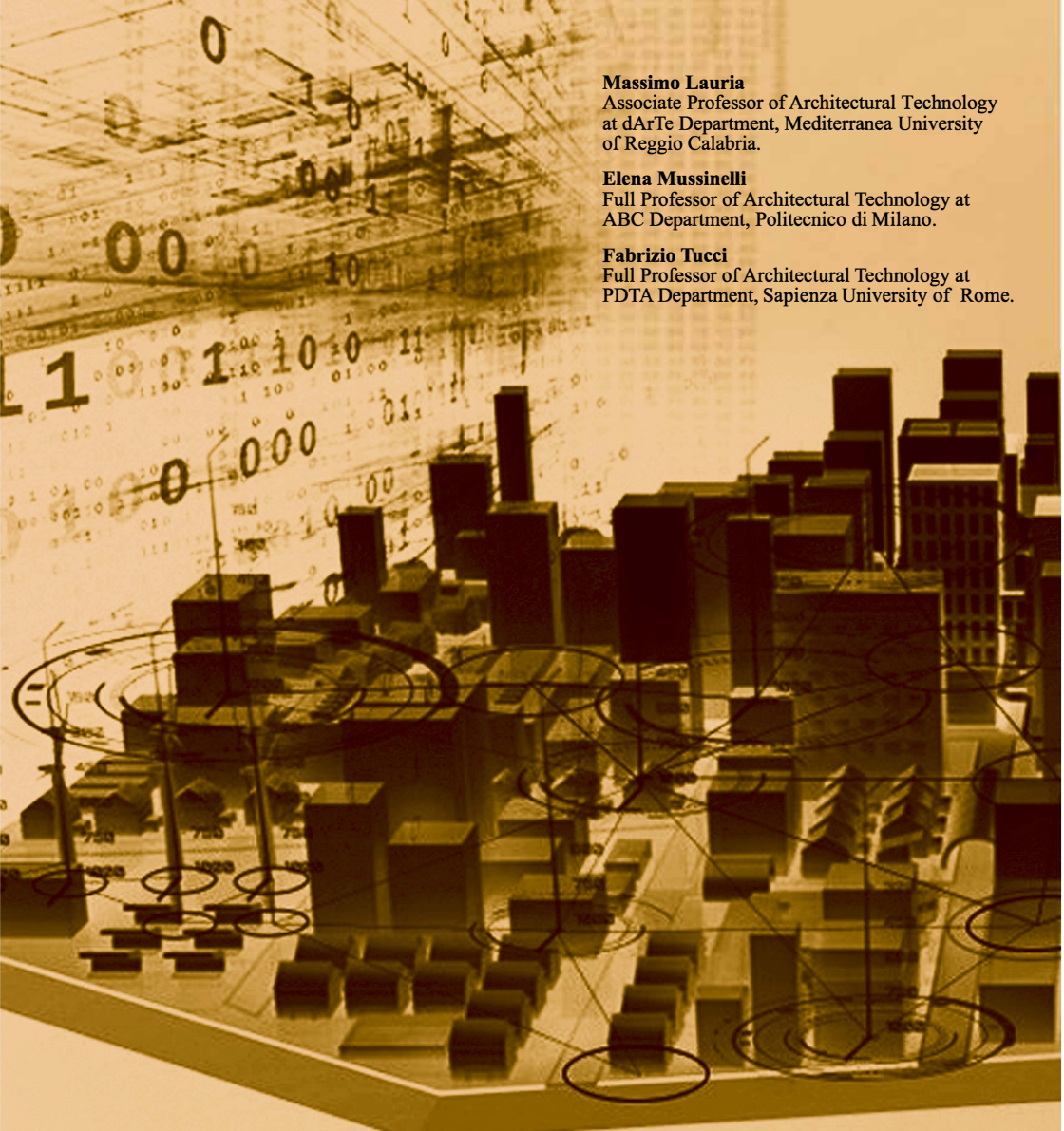


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The transformations created about the design activity by the several challenges started by the economic crisis, climate change and environmental emergencies, together with the impact of the Web and ICT on social and productive systems, highlight many critical issues, but also significant prospects for updating concerning places, forms, contents and operating methods of “making architecture”, at all levels and scales.

In this context, the cultural tradition and disciplinary identity of Architectural Technology provide visions and effective operating practices characterized by new ways of managing and controlling the process with the definition of roles, skills and contents related to the production chains of the circular economy/green and to real and virtual performance simulations.

The volume collects the results of the remarks and research and experimentation work of members of SITdA - Italian Society of Architectural Technology, outlining scenarios of change useful for orienting the future of research concerning the raising of the quality of the project and of the construction.

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**Massimo Lauria**  
**Elena Mussinelli**  
**Fabrizio Tucci**

  
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*dedicated to  
Roberto Palumbo*

## THE NEW SCENARIOS OF TECHNOLOGICAL DESIGN

*Maria Teresa Lucarelli\**

This publication on *Producing Project* is dense with content and interesting reflections. Its title, in its linearity and clarity, brings back to the long-standing cultural debate on the importance of new approaches to design, today urged by the increasing spread of ICT; leads back to the issue of the feasibility/buildability of the project and the need for a critical confrontation with the renewed needs of a constantly changing society. Transformation that, in the last decade, has undergone major structural changes following serious economic and environmental events, only partly foreseeable.

In particular, it references to the financial crisis of 2008 and the housing bubble that hit the construction sector and significantly reduced the project activity, aggravated by new scenarios induced by climatic changes and social emergencies. Phenomena all in rapid evolution and complexification, which are forcing us to rethink the “project” both on a cultural and technological level, also through new operating practices. However, the challenges that arise face emerging alongside significant critical issues, as Elena Mussinelli says «significant prospects for updating as regards places, forms, contents and operating methods of “making architecture”» (Mussinelli, 2018); perspectives that bring back forcefully to the centre the social and ethical role of designing which have to refer to an increasingly close relationship between design and construction. It is true, says Fabrizio Schiaffonati, that in a complex and changing reality «the project is searching for its own different identity compared to a past, even a near one, when it was placed in a sequential system where the actions downstream and upstream of its specific operating field were clear» (Schiaffonati, 2011). Considerations that place the emphasis on the slow but progressive passage of the design from a conventional, linear and sequential approach, to the integrated and interactive one of which Romano Del Nord highlights the innovative aspects, stating that «the use of sophisticated and advanced digital techniques in the development of projects becomes an indispensable imperative [...] going through the emphasis of the role of the methodological and operational

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techniques that have always constituted the cultural background pertaining to the Technological Area» (Del Nord, 2016).

On the theme of the project and its production, the Area of Architecture Technology has always taken an anticipatory attitude, aimed also at cognitive innovation, that is attentive to exploration and discovery, therefore to the research of which the project represents the place of experimentation and where, Giorgio Giallocosta notes, the «conception and implementation potential of architecture [...] they relate [...] to new ways of industrial production and to the growing diffusion of ITC» (Giallocosta, 2011).

A design research, therefore, that resting on deep theoretical bases and solid cultural and scientific assumptions, allows the Discipline to give concrete and innovative answers to the critical issues in progress. In this sense, the themes proposed in the publication - well centred on the problems currently affecting society, the economy and the environment - intend to represent the evolutionary framework that connotes the production of the project. The three thematic containers that constitute its structure - demand for services and supply of skills; project quality and construction quality; plan the project and invent the future through the interesting and diversified contributions presented, clearly in an osmotic relationship, highlight the current relevance of the debate, underline its continuous development, and pay particular attention to the new operating conditions introduced by “Industry 4.0”.

So, retracing the structure of the text, the first major theme “Demand for Services, Offer of Competences”, proposes a reflection on how we have to respond to the transformations that affect the construction sector and the construction market in our country still in serious crisis. What are, therefore, the possible evolutions in the organization of the offer and in the production of the project; what are the structures, dimensions, and skills of the design structures?

Many critical issues and opportunities can open toward new professional skills and a different entrepreneurial qualification in the sector. Undoubtedly, in the last decade, a greater attention to environmental and energy quality, safety, in particular structural safety, flexibility of spaces, maintenance of products and, last but not least, cost containment, has produced a significant transformation of demand and consequently of the design practice that calls for multidisciplinary and specialisms, in an appropriate articulation of skills.

The contributions of this section give interesting answers, certainly not entirely exhaustive compared to a changing landscape; however, they clearly reveal the need for new organizational structures and new professionals to respond to the growing requests aimed at managing “digital facilitators”; to encourage and/or strengthen the management of processes and projects, also in consideration of the inevitable transition to a single global construction market. A new architect, therefore, able to manage the various phases of the design and construction process with greater knowledge and awareness of the potential that lies ahead.

With the second theme, “Quality of the Project, Quality of Construction”, it is clear that technological innovation, strengthened by the aforementioned digital technologies, can encourage greater “quality” in design and construction in the face of new needs. If it is true that in our country building production is still linked to a poor quality construction tradition, it is equally evident that the sector cannot escape the logic of a very competitive market, especially international, where innovation here linked, in particular, to the production and quality of the project – has to necessarily measure itself against the scenarios posed by the digital revolution and the lines of action identified by Industry 4.0, in particular in the research and development sector.

The essays presented clearly show how the use of enabling technologies is increasingly affirming in design and not only in complex projects: big data, artificial intelligence, augmented reality, digital platforms including those of IT interoperability, used effectively for advanced management and decision making processes. Innovative methods that allow you to simulate the ideational, design and construction activities avoiding errors and interferences and reducing as much as possible the waste of time and the increase in costs; at the same time improving the coordination of skills in managing the information and data necessary for the production of the project (Russo Ermolli, 2018).

It is also important to understand how the integration between various innovative technologies, including parametric design, can allow the dematerialisation of processes through simulations and virtualisations in favour of an overall improvement of the building process and to the advantage of an optimisation of the design and construction quality. In summary, as affirmed by Mario Losasso «Multiple knowledge and to be integrated, induce the strong emphasis of IT procedures both in managerial techniques related to knowledge and in the upstream and downstream integration of the project, both in the interface and interoperability of the project and process between the various actors» (Losasso, 2017).

The third major theme “Designing the Project, Inventing the Future” which continues the reasoning on the production of the project in continuity and coherence, introduces the ideation phase of the design process where the transition from theory / research to practice is certainly more complex today, however capable of predicting and optimising the potential implementation of architecture and its future prefiguration.

Within this third container, the presented reflections and research results give an account of a cultural process specific to the Technology of Architecture. Here the intertwining of art and technique, culture and science, theory and practice, undoubtedly favours an innovation of the forms of knowledge capable of governing complex decision-making processes, of identifying and implementing transdisciplinary and interdisciplinary methods with intangible collaborative forms, to respond to the main challenges of the future. The “culture of the project”, in its strategic and above all political conception; the “social inno-

vation”, more than ever urged by the need to respond to old and new emergencies; the “predictive and anticipating function of the project”, indispensable to meet the needs, present and future, of an increasingly diversified; the “creativity” which underlies and enhances the architectural project, as a free expression of a cognitive process, are the four focuses developed in the last section, from which the evolution of the approach to design emerges clearly: from conventional, linear and sequential, to integrated and interactive, undoubtedly favoured by the growing diffusion of digitalisation.

The essays show a certain tendency to rely on digital technologies, the use of which however requires, in addition to in-depth knowledge, awareness of the eminently instrumental function; therefore not a fideistic acceptance but a change in the governance of the project which has to safeguard the cultural, ethical and intellectual value that underlies the making of Architecture.

*Producing Project*, to conclude, is undoubtedly a product of high cultural and scientific depth, which narrates a transformation, a renewed position of technological thought that does not renounce the assumptions of the disciplinary tradition, but grows in new proposals and opens up new perspectives. A reflection, therefore, on the contribution that Architecture Technology offers to promote and strengthen the design and construction quality.

One last general consideration: this publication is the latest in a series that SITdA, Italian Society of Architectural Technology, promoted and supported to testify to the intellectual, cultural and scientific richness it represents. A dense text, edited with skill and attention by Elena Mussinelli, Massimo Lauria, Fabrizio Tucci to which we owe a critical rereading of the various parts and, within the three large thematic containers, an appropriate organization by topics of the products presented. A complex editorial project, also the result of the work of a Scientific Committee headed by the Company’s Board of Directors, which has contributed to identifying the issues, strengthening them with their own contributions and reflections, bringing the testimony of distinguished authors, both domestic and foreign, to support the topics covered in the text.

A testament to the ability to network by promoting the sharing of results.

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## 1.4 THE DEMAND FOR QUALITY IN ARCHITECTURE: PROJECT COMPETITIONS

*Valeria Ciulla\*, Alberto De Capua\**

### **Abstract**

*The necessary condition for a good architecture is the support of an adequate procedural framework. The organisational modalities of an Executive Project and the planning tools that put the project competition in place are of particular importance. Currently, public architecture is the result of administrative decisions: pivoted on economic criteria, these decisions often result in construction interventions whose quality is close to zero. With a rigorous methodical approach, the shift from the planning phase to the actual project are analysed in their procedural and operational aspects; legal and normative aspects are also taken into account. Therefore, the competition procedure is proposed as an effective method of planning-project.*

*Keywords: Quality of Architecture, Planning, Project competition, Innovation*

### **La qualità della domanda nel progetto**

The construction of a public building, the changes that it provokes in the urban fabric, the implications it produces in the ecosystem, its ability to meet the social needs of its time, are all expressions of the evolution of a society in a given context. Bernard Huet believes that “since public spaces must have a regulating function, their shapes cannot depend on an isolated concept, or on a subjective creation” (Huet, 1999). Architecture should be the expression of actual needs, and call therefore for a conscious commission from the part of public administration. Already in 1945 Pier Luigi Nervi wrote:

«it is more than justifiable to consider the building activity as the most significant expression of a people’s ability, and the most relevant element to judge its spirit and its degree of civilisation. It is clearly impossible to elevate the building activity to the point that every construction becomes a work of art. [...] Set it would be of great moral, economic and social importance to orient our architecture towards the fulfilling of the following characteristics: a good economic performance, seriousness and aesthetic

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rigour, technical correctness; we are way too often far from this ideal today. In order to address our architecture towards such goal it is indispensable to make the client (especially if it is a public administration) understand the importance and delicacy of their function and their implicit co-responsibility in the final result» (Nervi, 1945, translated by the authors).

Though it was formulated in a cultural and historical period determined by social and urban needs which are radically different from our own, Nervi's proposition surprisingly fits the contemporary scenario. The international debate over housing quality and the requalification of urban peripheries have strengthened the idea that new organisational models are needed in the building process, and that the public administration and the actors who side it have a transversal role in every phase of the process. Within the demand cycle the client, as an organisational entity, has the following duties:

- to clarify in a correct and detailed way it needs and the expected performance levels of the intervention;
- to verify the congruence of the architects' and firms' response to such needs.

The project in fact, as a central productive event in the building process, is the final result of a decisional process: more precisely, it is the moment in which the demand is formally converted into the offer of services. Similarly, due to the importance of the project as a crucial determinant of the quality of the intervention, the management of this phase (i.e., of the formalisation and expression of demand) and of the subsequent phases of monitoring, directing and valuation, are fundamental in ensuring the correctness of the project itself, and the social and environmental value of the resulting architecture (Clemente, 2000). The concept of project quality in the building process has changed over time: while, initially, quality concerned primarily outcomes and outputs, today it pushes towards the qualification of productive organisations themselves. The shift from product quality to the qualification of project and management processes calls for the mediation between the client and the different actors that partake in the project itself and that determine its quality. Moreover, the client needs to consciously address the complexity of the contemporary building process, in order to properly exert its directing and monitoring functions: this need is reflected in its duty to formulate the demand for quality with definitional effectiveness, by codifying it in clear and exhaustive planning documents. These matters have always characterised industrial projects and planning, that is of design, where the success of the product has always been determined by the right answers to right questions<sup>1</sup>.

In the specific sector of architectural project and planning, it is therefore necessary to activate an innovative discussion over the identification of demand.

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<sup>1</sup> See, in this respect, Nicola Sinopoli's and Attilio Nesi's interventions in Tatano, 2007.

## The opportunity of competition procedures

The physical configuration that is to be produced after a demand is not the duty of the technical bureaus of administrations; quite the reverse, it has to be handled by the architects, especially through dialogue and mediation among different project proposals in the context of competition. Since the client/administration often lacks the adequate competences to define more than one project solution at a time, a path of planning/decision/project/actualisation need to reconsider the utility of competition procedures, provided that it aspires at pivoting the decisional process on the project.

The project competition often provides alternative solutions, whose level of detail is that of a preliminary project (a technical and economic feasibility project); by doing so, it pertains to the planning activity, and is clearly a modality of demand formulation which is based on an *ex ante* valuation. In addition, the competition modality promotes architectural quality as it stimulates professional improvement, competitive updating, and the search for innovative solutions<sup>2</sup>. Moreover, this particular historical moment is particularly favourable for reconsidering competition among the so-called “good practices”. The Framework Law on architectural quality acknowledges the architectural competition as an adequate tool to tackle the physical, functional, social and environmental decay of the built environment. Article 1 of the aforementioned Law states that:

«As a fulfilment of Article 9 of the Italian Constitution, the Republic promotes and protects the quality of architectural ideation and realisation, as it recognises its particular public relevance, also for the purposes of landscape safeguard, sustainable development and improvement of the urban environment’s liveability and of the quality of life. [...] Public administrations, in the context of their respective competencies and the ordinary resources that are devoted to such aim, pursue the following goals:

- to promote the project quality and the quality of the architectural work;
- to promote architectural competitions, especially in the form of competition of ideas and of project competitions, for the planning and project of interventions;
- to promote the participation of young architects to architectural competitions» (translated by the authors).

The architectural competition has been practiced for a long time. Ever since the Renaissance era, in Italy, the competition of ideas among architects has allowed the realisation of many important buildings and architectural complexes.

In 1401 a competition was called for the realisation of the door of the Florence Baptistery which marked the debut of Brunelleschi in the world of architecture.

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<sup>2</sup> See, in this respect, the “trilogy on architectural competitions”, referred to in the “References” sections and consisting of the following volumes: Giannello et al., 1999; Pizzolato, Varagnolo, 1999; Missori, Varagnolo, 2000.

This practice was subject to a decline until, in the past decades, it almost entirely disappeared, because of the crisis which has characterised the architectural sector in Italy; this has led to an architectural culture almost entirely centred on economic criteria. In the context of public works, in fact, the normative framework – developed through the political scandal known as “Tangentopoli” – has limited competitive procedures to a narrow range of interventions: this was not meant to satisfy the architectural quality of buildings, but rather to respond to the need of the Public Administration to contrast corruption and speculation phenomena through rigidly normed procedural aspects. For this reason, procurement contracts were preferred to architectural competitions; the former, in fact, selected the best project manager/architect and the best economic offer, while the latter selected the project directly and without mediations. Similarly, the old “De Lise” Code allowed different procedures to entrust the project, and it set two economic criteria, that of the most advantageous economic offer and that of the lowest price, as the criteria for establishing the winners of competitions in the form of open and restricted procedures, and of competitive dialogue. Currently, the Legislative Decree n. 50 of 18<sup>th</sup> April, 2016 (Code of Public Contracts, updated by the Legislative decree n.56 of 19<sup>th</sup>, April, 2017 – the so called Corrective Code) updates and regulates the competitive procedure in articles 152, 153, 154, 155 and 156. Regarding competitions, the European Community has emanated the EU Directive 18/2004, stating that “Project competitions are procedures aiming at providing the client with a plan or a project in the sectors of territorial planning, urban planning and architecture”. This dictate asserts in an unequivocal and decisive manner how competitions *are* – rather than *can be*, or *are among* – the procedures for attributing projects. From what has been stated above, it is clear that the administrative and political praxis in Italy still has not fully understood this statement.

The competition procedure can play a significant and decisive role in placing the “building programme” into being, and in providing depth to its contents – the building programme being the final, dialectic and fundamental moment of the project. What is relevant here is an approach to competitions as an important part of the decisional process, that is a substantial insight in planning choices and, subsequently, an ordinary procedure with a strong innovative vocation for the actualisation of transformative interventions. In particular, it is necessary to synergistically combine a place’s tradition and peculiarity with actions that are strongly innovative from a twofold perspective: from the environmental and the landscape perspective, and from the perspective of the architectural language. This is to be achieved with a constant attention to the public interest of places and spaces, since project way too often result from compositional exercises that are totally extraneous to communities’ needs in both languages and functions. The competition procedure, reversely, allows for qualitatively satisfying results, which are aligned with the requalification of public space and of architecture in general, as they are claimed by the citizens: re-

search is an intrinsic feature of competition, as it results from the mediation and dialogue of different professional expertises; as such, it can be a great opportunity (Gallione, 2008). Differently from what has occurred in recent history in different European Countries, where competitions have progressively become not only a legal prescription but also a cultural choice, in Italy competition is still thought of as a costly and complicated procedure. In order to favour competition practices in public interventions different actions have been put in place, which aspire at mitigating local Administrations' difficulties in handling the competition procedures. Among such actions is the programme "Qualità Italia – Progetti per la qualità dell'architettura"<sup>3</sup>, created by the Ministry for Cultural Heritage and Activities and Tourism (MiBACT), and the platform Concorrimi, developed by the Association of Architects of Milan.

### **From the Preliminary Document of Planning to the Document of Project Management**

In the context which has just been outlined, criticalities lie in the absence of a tool able to transfer programmatic choices to the architectural choices: something which translates in the project phase the urban and architectural quality that are outlined in the planning phase, the latter being the weak node of the building process. An updated and renewed Preliminary Document of Planning (DPP hereon) could serve the purpose. DPPs, in facts, are the fundamental tool to bring the planning activities to completion, while aptly setting the subsequent project phases. DPP, together with «every document that is necessary to the drafting of the project»<sup>4</sup>, helps the client communicate with the architects and project managers, providing guidelines on how to operate to develop the intervention drafted with previous feasibility studies. Therefore, DPP is a planning tool whose elaboration calls for an accurate selection of the information emerged throughout the planning phase, and which is therefore able to condensate the indispensable elements for a good understanding of the project needs and actualisation. Moreover, it is a "plural", evolving document, which indicates "what" and "how" the process of a project ought to be done; as such, it can be considered a project in itself (Gallione, 2008; chapters 2 and 3). The update of DPP, which has long been used by public Administrations, is a necessary and inevitable step: first, for what concerns the contents of the documents; second, because of the communication modalities and the definition of the document itself (Bedrone, 2004).

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<sup>3</sup> The programme, resulting from a joint action of the Ministry and Regions, aims at spreading the practice of project competitions as a guarantee and a place for dialogic encounter to realise quality public works. Moreover, it aspires at providing local Administrations with financial and technical support throughout the actualisation of competitions.

<sup>4</sup> Article 14 of the Regulation of Legislative Decree 163/2006.

Recently, the aforementioned Legislative Decree n. 50 of 2016 has introduced some relevant innovations regarding DPP. The reorganisation of the planning and project phases has determined a revision of the contingent documentations. More specifically, in order to “satisfy the needs of communities”, the scheme of the regulative decree introduces the “Framework of exigencies”. Such Framework aims at “ensuring the correspondence between the planned interventions, the needs of communities, those of the administration and of the users”, while allowing the architects and project managers to be fully aware of these needs, of the project goals and of the tools to achieve them. Article 3, comma 1 of the draft decree states that the institutions which call the competition are in charge for elaborating the Framework of Exigencies, as indicated by article 23, comma 3 of Legislative Decree 50/2016, to be published on the institutional sites of administrations. Article 3, comma 2 of the draft decree highlights different aspects which the Framework needs to feature: the general objectives to pursue; the needs the project aims to address; the specific qualitative and quantitative needs to be satisfied; possibly, the potential project alternatives. Article 3, comma 4 of the draft states that the administrations calling the competitions need to craft the Document of Project Management (Documento di Indirizzo alla progettazione, DIP hereon) which need to specify the features, requisite and project documents that are necessary for defining the different project levels, in accordance with the Framework of Exigencies.

The DIP should clearly state: the state of places, the objectives to be pursued, the technical requisites that the intervention should satisfy, the possible project guidelines, the financial limitations to be respected, the realisation system for the intervention; the selection procedure of the competition, the selection criteria, the type of contract.

«The Framework of Exigencies and the DIP, therefore, orient the project management in order to ensure the quality of the process and of the project, concerning the technical rules, the safety principles, the economic and environmental sustainability, finding the balance between global costs and benefits of the building, maintenance and management [...] and with reference to the lifecycle costs of the intervention» (article 3, comma 1, translated by the authors).

As a consequence, both documents implement the interrelation between planning and project that is necessary to the pursue of architectural quality. The decree further enumerates sustainability among the principles to be followed. The update achieved by the Decree has furthermore eliminated the professional role of the “Planner”, which had been introduced by the De Lise Code, but was never truly used, thus delegating to the Responsible of Procedures (Responsabile Unico del Procedimento, RUP hereon)

«the task of drafting the executive and definitive project in its technical and economic feasibility. External entities can be identified as supporting roles to the RUP in their coordination and monitoring activities over the project, without prejudice to the exclusive pertinence of the project to the architect» (Guidelines n.1, implementation of the Legislative Decree of 18th April, 2016, n.50, “General guidelines on the dele-

gation of services in the domain of Architecture and Engineering, Translated by the authors).

The “Planner” could have operated throughout the whole process, mediating between the language of architects and that of the Public Administration; it could have provided technical, historical and cultural insights on the processes of competitions (since the “Planning and programming and project management of public works – Title III of the Code of Contracts), and to subsequently shift to the specific management of competition processes. The role of RUP, as it has been outlined by Legislative Decree of 18<sup>th</sup> April, 2016, n. 50, will have bureaucratic control over procedural praxis. As indicated by the State Council, new modifications will have to be put in place in the new code, especially concerning the Title III - Planning and programming and project management of public works. It will be necessary, for instance, to elaborate the Framework of Exigencies according to an “analysis of needs” which will also be able to provide guidelines for the drafting of the “Document of feasibility of the project alternatives” (Gallia, 2017). In conclusion, in this historical moment, in which an important normative update is occurring, what is here proposed is to reflect on the complexity of the management of decisional fluxes, and on the necessity of a correct codification of the normative reference framework for a good project production.

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