

Projecting decisions.

The architectural design practice in the folds of decision-making processes

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Elena Todella

Turin, 30th of April 2020

Summary

The decision-making processes of complex urban and architectural transformations – dependent on several implications and actors – have a high degree of uncertainty, in the process itself and in the outcomes. However, this kind of complexity is often accounted as a linear process of subsequent steps and decisions, from the cause to the effect, from the project to its execution. Since projects rarely move forward – undisturbed and without detours – to buildings, how is it possible instead to take account of their diversions, as constituent elements of the decision-making process? In order to witness the *folds* of architectural design, a shift in perspective makes it possible to grasp and to trace it in a pragmatic way, by following the practice.

The opportunity to unfold an architectural design process occurred for me in the involvement – over two years – in the project team of the *Masterplan* of Politecnico di Torino, an ongoing transformation process of its urban campuses, to outline alternative transformation strategies, expansion scenarios and qualification processes. Shifting the attention from the material products of architecture – such as buildings – to the processes of emergence, deviation, negotiation and finalization of projects, this work traces a taxonomy of several actors interacting in a complex process. Since not only drawings, models, and projects, but also note taking of project team's members, reports, meetings, e-mail and whatsapp exchanges, are examined – exploring the pragmatic connections between these practices and their outcomes – this research problematizes an internal and situated perspective, which it would not have been possible to report without having been *in the folds* of the process.

Consequently, the main aim of the research is an investigation – from the inside – on the role of some architectural design practices in relation to the ongoing decision-making processes, by exploring the connections between these practices and their results and effects. The hypothesis is that design documents played a

role in the decisions taken, and allowed, in certain problematic moments, to overcome the conflicts by negotiating different positions and needs.

In deepening these aspects, the thesis follows two different strands of research. On the one hand, by positioning within a disciplinary debate about the definition of architectural design research as a scientific field, through an investigation on practices informed by Science and Technology Studies, Actor Network Theory and ethnographies of architecture. On other hand, with an interdisciplinary interest towards methods of analysis on decision-making processes, with particular reference to the entities involved, their role in the process and their interactions, as in Soft Operational Research and Problem Structuring Methods.

In this, the main research question is addressed through the specification and deepening of several subtasks in which the overall objective is articulated. First of all, the thesis aims at following and narrating the process to capitalize an operative experience – starting from an internal point of view – in *theoretical* and discussable terms, to be reconducted to the above-mentioned intertwining among disciplines. Secondly, a further purpose in pursuing the exploration of the role of architectural design practices is defining a *methodology* to grasp architectural design practice in order to unfold and to trace the entities involved, their role and their interactions and to link them to the effects in the decision-making process. Finally, an ultimate end of this research is to provide an *operative tool* as a necessary condition to fully understand the significance of the research itself.

The research's aims – following the practice – are pursued by defining a mapping methodology of the process as a sequence of actions and effects with recognizable relations. Starting from it and trying to capture events that gain specificity in their own moments of occurrence, it seeks to define if – following and tracing the project operations in a process observed at the scale of daily practice – it is possible to identify some crucial points, operative strategies and tactics as they influence the decision-making level. Furthermore, reflections emerge on the role of architectural design practices in both embodying the entities unfolded in the process, and conducting instrumentally to realizable courses of action, in *projecting decisions* on the basis of spatialization.

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If I were to compare what carrying out this research meant to me, I would think of the 'ricercare', one of the oldest forms of instrumental music, well-known for organ compositions between the Sixteenth and Seventeenth centuries and originally performed with the lute. The etymological meaning reflects the nature of the composition, that means indeed to heavily seek all the development possibilities from a theme – as a polyphonic and essentially 'architectural' art. In providing me with the guidance to make this achievement happen, I would like to express my heartfelt gratitude to many people.

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Al mio nonno.

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Introduction

Urban and architectural transformations, once finalized, are often accounted as linear processes of subsequent steps and decisions, from the cause to the effect, from the project to its execution. "On the plate we put 200 million [...]", "Municipality, Region, [...] must be aware that in 6 years everything changes". These and other slogans that tell, just over two years ago, the transformation of Politecnico di Torino and its urban campuses. A success story, about a lot of money and decisive wins; however, a story that basically recounts of the arrival points, and where stumbling blocks, deviations and specific circumstances of this apparently linear path are not traced. Linearity appears when complexity is flattened in narrating the process, despite the high degree of uncertainty in the process itself and in the outcomes, on one side, and the fact that the decisionmaking processes of complex urban and architectural transformations are dependent on several implications and actors, on the other. Since projects rarely move undisturbed and without detours towards buildings, this research tries to take into account and to trace precisely these trajectories as constitutive elements, investigating the role of design practice and its products in the process. Working for two years in the project team of the Politecnico di Torino's Masterplan allows me indeed to unfold and recount another story, with an internal and situated perspective. And to report how those 200 million up to before were not necessarily destined for the transformation of the campuses; as no one remembered more than the nearly 80,000 square meters of possible expansion; or really realized that being a community of 40,000 people means representing requests of a "city within the city".

Shifting the attention from the material products of architecture – such as buildings – to the processes of emergence, deviation, negotiation and finalization of projects, this work traces a taxonomy of several actors interacting in a complex process. Examining not only the traditional designs, models and products of architectural practice, but also the notes of the members of the project team, the reports of the meetings, the exchanges of e-mails and whatsapp, and exploring the

pragmatic connections between these practices and their outcomes, this research aims to unfold and tell an internal and situated perspective, which it would not have been possible to report without having been in the folds of the process. Consequently, the main aim of the research is an investigation – from the inside – on the role of some architectural design practices in relation to the ongoing decision-making processes, by exploring the connections between these practices and their results and effects. The hypothesis is that design documents played a role in the decisions taken, and allowed, in certain problematic moments, to overcome the conflicts by negotiating different positions and needs. This means claiming that not – or at least not only – a lot of money, neither a huge availability of square meters are enough to start a transformation; instead there are recurring forms of practice in the projects themselves and in the way of acting and performing through them, that restarted a substantially blocked process and that consequently, if identified, can result likewise effective in future project circumstances. The research therefore aims to identify and understand what these strategies are, and how they perform in projecting decisions.

Research aims and contributions

In deepening these aspects, the thesis follows two different strands of research. On the one hand, by positioning within a disciplinary debate about the definition of architectural design research as a scientific field, through an investigation on practices informed by Science and Technology Studies, Actor Network Theory and ethnographies of architecture. On other hand, with an interdisciplinary interest towards methods of analysis on decision-making processes, with particular reference to the entities involved, their role in the process and their interactions, as in Soft Operational Research and Problem Structuring Methods. The first body of literature informed by STS and ANT reveals architectural design as a complex and ongoing practice, understood not as attributed or dependent on an intentional subjectivity – the architect, the client, the users – but co-produced through hybrid actor-networks that relate and evolve in these relations through time. In this sense, the outcomes of architectural design practices don't follow a linear and predictable path; instead, they depend on the above-mentioned complex interactions among entities, that can be investigated in the everyday practices of architects that precisely embed these - usually hidden - interactions. While ethnographies of architectural studios over the last two decades emerge as a research problem, in these studies decisions and effects on a large-scale and multisited complexity of projects – as the case of the Masterplan in a two-years engagement – are rarely taken into account. Moreover, the internal perspective as an architect, besides being an observer, sets out a shift in positioning from these studies. This kind of complex processes, moreover, in their long-term and urban scale re-shaping, actually call into question the decision-making level - even outside the studio - as the dimension in which effects are reached and can be accounted in the process. Indeed, especially thinking about their performativity – the way they act in the process – projects serve as an agreement – or not – among

parties in the process. The performativity issue opens up then to the decisional dimension of architectural design in urban complex transformation, and to the possibility for the project to reconcile several positions. A PSMs informed approach grasps the complexity of decision-making processes by exploring the mechanisms operating within them, to identify which relationship links the practices through which decisions are addressed to their outcomes. In doing so, PSMs focus on the interactions of people and models in reaching effects, through interventions in which participation and collective interaction among stakeholders is conducted. In particular, strategical approaches in dealing with uncertainties related to the future – as in Strategic Choice Approach interventions – aim at tackling complex urban scale transformations.

These two literatures have not yet come together to trace, account and *unfold* architectural design practices from within the decision-making process, that is the focus of this research. Therefore, the aim of the work is to explore the possible intersection of architectural design practice studies and decision-making methods, in order to grasp and to answer to the complexity of *projecting decisions* in the process of urban transformations. This intersection is intended as a critical positioning in the potential epistemological conflict between the two literatures: the one with an aim to describe and deeply follow the project practice in the process – in STS-inspired ethnographies of architectural practice – as materialized in socio-technical relations; the other with a will to strengthen human action – in PSMs-oriented interventions – in reaching effects in urban transformations.

Framing architectural design practice in a large-scale and multi-sited process – enlarging the spectrum of action of ANT-inspired ethnography of design, outside the studio – means here focusing on and tracing architectural design in terms of projects, as a set of inscriptions that travels in different tables – whose different levels can be witnessed with an internal perspective – and aims to be approved and subsequently executed. Moreover, by focusing on the project and its travel in decision-making process, the project action is therefore conceived to take place in an exchange system, with different levels of formalization, that cannot be reduced to the scale of the singular intervention – as in the practice of PSMs scholars – in order to be understood and grasped. Therefore, in this research architectural design project demonstrates a decisive power by including most of the diversions that await it in the whole decision-making process, in the lapse between the beginning of document production and the completion of the transformation. Moreover, these inclusions can be reconducted to the spatialization of problems and ways of linking the representation of spatial morphology to the issues and uncertainty to be grasped in the process. As a consequence, I would like to address the possibility of focusing on projects' performativity in reaching effects in their travelling through the whole decision-making process. This study aims then at contributing to ANT and ethnography of design with a further level of interest on the effects of architectural design practices traced through the chains of documents - witnessed from within - that cross a large-scale and multi-sited

process; in doing so, further contributions can be reached in PSMs approaches while enlarging the perspective to a socio-technical approach, that even allows to overcome the borders of intervention while aiming at grasping and understanding architectural and urban transformations in the whole unfolding of the process. Finally, a further contribution is in reflecting on the role of visual artefacts in the specific practice of architectural design. Indeed, on the one hand, STS-inspired accounts define those artefacts as intermediaries, constitutive of practices of both support and communication; on other hand, PSMs methodologies highlight the centrality of human agency, with an instrumental view of models as tools for mapping uncertainties about the future and for strategizing. In this research, further reflections emerge on the role of architectural design practices in both embodying the entities unfolded in the process, and conducting instrumentally to realizable courses of action, on the basis of spatialization.

In operative terms, this research – following the practice – traces the materialization of sequential design operations as they perform, describing their implications in the decision-making process. Starting from it and trying to capture events that gain specificity in their own moments of occurrence, it seeks to define if – following and tracing the project operations in a process observed at the scale of daily practice - it is possible to identify some crucial points, operative strategies and tactics as they influence the decision-making level. In this direct observation of the process the effort is then to pay attention to the ordinary and daily practices of architectural design and the related ways in which decisions are taken on real process through the interactions on projects, in their set of relations that would not otherwise be possible to see without a direct involvement in the process. The strategy of this thesis is then to follow architectural design practices and actions as they proceed from being produced and exchanged, through the decision-making process, until they are validated – and are then going to be executed. In this, the main research question is addressed through the specification and deepening of several subtasks in which the overall objective is articulated.

First of all, the thesis aims at following and narrating the process to capitalize an operative experience – starting from an internal point of view – in *theoretical* and discussable terms, to be reconducted to the above-mentioned intertwining among disciplines. This means to understand and explain – moving to a reliable perspective – how relations emerge among entities, in a not at all given way nor linear or clear. This perspective makes it possible to show the relations between documents, actions and decisions, in a process that could have seemed linear thus is actually made up of a series of conflicts, negotiations and deviations of which the internal perspective allows to be accountable. The performativity of architectural design devices and models is then a fundamental aspect of this study, and projects – as documents and inscriptions – result as the main object of observation and analysis. Indeed, the documents produced throughout the process are concrete traces of the actions carried out and their links; moreover, they

embody in their paths and transformations all the interactions among entities, the conflicts and negotiations, and finally the agreements occurred in the process.

Secondly, a further purpose in pursuing the exploration of the role of architectural design practices is defining a methodology to grasp architectural design practice in order to unfold and to trace the entities involved, their role and their interactions and to link them to the effects in the decision-making process. This means to identify a tool for description of the process, in order to trace it, make it shareable and return it in as general terms as possible. Thinking about projects and architectural design practices as something able to produce effects and act on reality, the aim is to trace – even graphically – their movements, their dynamics and actions in the system, in order to understand the chain of events that leads, or not, a project have effects in the decision-making process. In terms of methodology, therefore, there is here an interest in a visualizable theory of design, about what projects actually do: by investigating their performativity while circulating in a decision-making process, it means indeed to pragmatically reconstruct their effects. Even if it is impossible to foresee – and consequently to theorize – the outcomes of processes, it is instead likely to define a conceptual scheme that allows to understand the dynamics, giving an account of the different variables that can influence the outcomes, with an aim of projecting decisions – bringing forward effects in decision-making process through the projects produced.

Finally, an ultimate end of this research is to provide an *operative tool* as a necessary condition to fully understand the significance of the research itself. A practice-based research as the one carried out in this thesis aims indeed at mapping, analysing, tracing and investigating something to be even repeated in practice, then a creative artefact is among the main intended contributions to enlarge knowledge on the specific competence of designers in the decision-making process. This means not to consider all the points of view and to explicit the complexity of the world, but the ones linked to the production of projects, in a limited perspective that is the basis on which an interactive tool is produced – on the basis of the above-mentioned methodology to investigate the role of architectural design practices in decision-making processes.

Research methodology and case study

The interest of this thesis is therefore to reconstruct a framework of actions that defines the relationship between the design practices undertaken, the spatial dimension of the problem and the decisions taken in the process. To investigate the role of architectural design practices in the decision-making process, this research carries out empirical research inspired by ethnography; actually, it adopts an ethnographic perspective, without exactly conducting an ethnography. The direct participation and observation of the process – paying attention to the ordinary and daily design practices and the related decision-making processes –

aim to highlight architectural design actions in pragmatical terms, tracing how models and projects are produced, negotiated and disseminated. The challenge here is to methodologically establish researcher's position, as part of what is studied, without missing this embodiment in practice – instead emphasizing its specificities. In the research I use a qualitative approach to the collection and analysis of heterogeneous data – drawings, models, projects, notes, reports, even exchanges via e-mail or whatsapp. Starting from the collected data, the analysis does not purpose to conceptualize the architectural practice, but to reconstruct it and to retrace its concrete operations, how they take place and how they become meaningful, producing effects in the process. Moreover, the fact of operating on two levels, on practice and on observation of practice is a crucial point in this work; for this reason objectivity and generalizability cannot lie in the perspective, which is necessarily subjective, but in the method with which I interpret the data and the practice itself. The act of structuring the ways of recording and formalizing the work is then precisely the methodological object of the research, with the expected outcome of an operative tool – as a creative artefact.

I had the opportunity to research and unfold an architectural design process in this way, since I was involved over two years - from September 2016 to November 2018 – in the project team of the Masterplan of the Politecnico di Torino urban campuses. Indeed, after being a key player in the transformation processes of some urban sectors, in recent years there was a slowing down and some projects have stalled. To address these difficulties, the University Bodies activated in 2016 the Masterplan, to outline alternative transformation strategies, to define expansion scenarios and to direct qualification processes for existing spaces. The selected case is being implemented during the research held in this thesis, then provides an opportunity to follow architectural design practice "in-the-making". The Masterplan case study appears in itself to be of interest and relevance, since it is established as an experimental practice that interacts with the more traditional technical offices of the university to unlock the process of development of Politecnico di Torino's urban campuses. Nevertheless, it provides a specific contribution by exploring from within the travel of design practices as they relate to the decisions taken in the process, with implications in terms of space. In this sense, the model of action aimed in this research can be intended as a model in four dimensions - a space as it changes through time - of the spatialized strategies, in this case, of the Masterplan process. Finally, being a repository of several practices, this thesis provides also an account of a complex stratification of decisions and actions, which with different degrees of effectiveness, contribute to the trigger of the transformation. Reconstructing the development of a decision and/or a group of decisions - in which each project is the result of mediation between entities with specific outcomes – also means placing in hierarchy the multiplicity of initiatives that, operating on a conflictual terrain, contribute to the construction of the process. This action therefore allows, in part and ultimately, also to return and reconstruct a result in the action itself that is not simply related to negotiation issues. Indeed, something more and equally important is to be

sought, because it literally builds and shapes in the process; therefore a "positive" content, of architecture and architectural design, can be envisaged as a performative value for the construction of space – and not only in terms of decision-making and negotiations.

Plan for the argument

To meet such aims and objectives and to answer these questions, the thesis is structured in three parts and seven chapters. The first part establishes the theoretical framework for studying and interpreting architectural design practice in the folds of decision-making processes. The second part relates the research methodology through mapping the process of the selected case-study, that is here introduced. The third part empirically unfolds the process through selected paths to which the mapping methodology is applied.

Thus, this study poses the problem of *projecting decisions*, that is exploring the role of project – and projects – in the decision-making processes of complex urban transformations. Then, towards tackling the question of the role of architectural design practices in the decision-making process, I turn to two different bodies of literature. In the first part, I start reviewing these literatures by looking at the "running lab" of architectural design, that means accounting pragmatically the whole project process and practice, in order to trace and to follow the actions that finally leads to the project realization. Then, I focus on the decision-making process side of architectural design, by investigating if and how project practice has been explored and deepened in terms of negotiation.

The first one (chapter 1) comes from studies on architectural design, informed by STS and ANT perspectives and by ethnographic approaches on architectural practice. Here I face and contextualize the new wave of interest for studies on practice – in particular in the profession of architecture – with a trend that can be defined as an "ethnographic turn in architecture". These studies shift the attention from the products of the architecture to the processes of production of projects, and they understand architecture as a collective process of negotiation between human and non-human entities, in a sociotechnical system. In these works, the process is analyzed through observations, with the aim of describing without an aprioristic perspective and of untangling the complexity of reality. This body of literature is relevant for this work, since research is considered in continuous evolution and takes place simultaneously with the process itself, projects are intended as unfolding in the process and can be traced and investigated in a pragmatic way following a daily experienced practice. Nevertheless, a further level of analysis can be added to this literature through this thesis, while focusing on a large-scale and multi-sited process, on the one hand, and looking for the effects of the practices analyzed, on the other.

The second body of literature (chapter 2) derives from decision-making methods, in particular a group of techniques and practices – Problem Structuring Methods – employed for modelling and mapping the structure and nature of a problematic situation to be changed and solved. In defining the role of design practice in the decision-making process as an object of research, the investigation necessarily places itself in an interdisciplinary field, opening to decision-making analysis, and more precisely by investigating methods of structuring complex decision problems, as methods and approaches to manage the uncertainties of the present, in order to achieve effects in the future. Indeed, here the researcher can be involved both as an observer and as a facilitator, with the aim of changing reality and achieving effects, negotiating the conflicting positions of different actors. This body of literature is relevant for the purpose of investigating actions by linking them to their effects, with moreover a central role recognized to models, as tools with performativity in negotiation. Nevertheless, starting from a sociotechnical view of processes and overcoming the borders of interventions to deepen the whole unfolding of the process, a further level of analysis can be added to this literature through this thesis, enlarging the perspective of scholars while dealing with architectural and urban transformations.

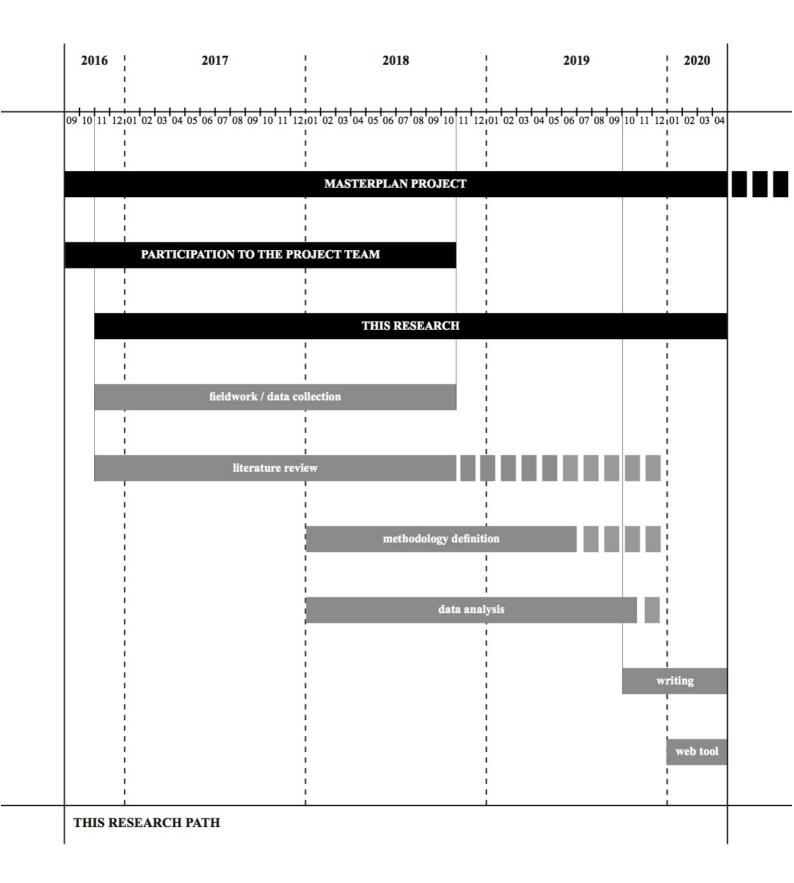
Starting from an operational analysis of the literatures intertwined in this work, the second part clarifies the perspective and specific actions in the research. On the one hand, it is shown the construction of the methodology with which to deal with the case study; on other hand, the case study itself is then introduced in its main characters, substantially highlighting the reasons why it lends itself to this type of investigation, as a multi-sited, complex and ongoing transformation.

The methodology is then described (chapter 3) and clarified in terms of actions carried out to answer the research questions, in an ongoing process in which the researcher is immersed, on the one hand, but whose structure and methods can be analyzed, on the other. Indeed, this research method aims both at analyzing the whole process and at deepening some explorations and paths; in addition, the researcher is alongside an actor and an observer of the process, with the aim of maintaining the designer's perspective and making it stronger and more effective than the goal of producing effects in the world. In summary, the work on the case study starts from a data collection made as an actor-observer, qualitatively, through fieldwork; the data collected are then analyzed with a content analysis, as an analysis specifically designed to extract synthetic data from textual or graphic sources, therefore through mainly documentary sources; finally, a visualization of each of the paths of the process is provided, not only as a translation of the results of the content analysis in a graphic sense, but also as a basis for further considerations through visualization. Moreover, an interactive web visualization of the - previously manually built - maps is proposed, as a tool and creative artefact with a general and replicable use.

The case study is then illustrated in its main features (chapter 4), as a necessary link between the theoretical inputs and the empirical findings. It briefly recounts the main phases and events in the process, in terms of the publicly shared accounts on it - generalist press, deliberations, authorizations, public presentations - considering and maintaining as a time and validity limit that of direct access to the process, therefore that of effective participation to the project team. It summarizes in this sense the main characteristics and key aspects that relates the specific case study to the general aims of the research; moreover, by giving an overview on the process it makes it easier to follow the paths deployed in the subsequent part on empirical findings. The Masterplan process has seen the project team engaged on several fronts and actually all the specific projects could potentially be analyzed through the above-mentioned methodology; however, a choice is made to focus on three specific paths, as specific projects' trajectories through which, even taking advantage of some interrelationships, it is possible to draw some stronger conclusions. Moreover, the structure of the subsequent empirical chapters and the framework through which the findings are presented is explained in concluding the chapter.

Observing the project as a system in action, the aim of the third part of the research is first of all to trace how the project team performs specific practices to obtain effects. Moreover, mapping, tracing and analyzing the course of action of the project allows to identify recurring circumstances in which this process – in its singularity – reveals some forms of practices, conditions of use, and performativities of the project, as a model of action to be deepened even for future architects' practices.

The selected paths are then unfolded as very different trajectories, which manage to cover the work cases in which the project team found itself acting in the Masterplan process. The first path about classrooms R (chapter 5) relates to an emergency that arose at the beginning of the work with the Masterplan Team, and which led to an intense and swift negotiation work within the project team and with the Superintendency to restart the project. Through the second path on open spaces (chapter 6) it is highlighted how a spatialization and visualization of already existing conditions was able to shift the power structures and the role of Politecnico on the urban scene. Finally, following the third path on a new Learning Center (chapter 7) it is interesting to see the entrance into the game of an external actor who finances the project, with concrete and pragmatic repercussions on the project dynamics and practice strategies within the project team. Through the spectrum of paths the aim is to study the circumstances of the ongoing process in an almost micro-physical way: starting from the collected data, the analysis does not aim to conceptualize the architectural practice, but to deconstruct and recompose the concrete operations that produce effects in the process, by mapping and making them shareable – in a specific and structure perspective – through visualization.



PART 1

Architectural design practice in the folds of decision-making processes

Chapter 1

The running lab of architectural design

The decision-making processes of complex urban and architectural transformations – dependent on several implications and actors – have a high degree of uncertainty, in the process itself and in the outcomes. However, this kind of complexity is often accounted as a linear process of subsequent steps and decisions, from the cause to the effect, from the project to its execution. Design and urban planning are often considered as related to buildings as specific artefacts, investigated mainly after their construction, and not *in the process* of project conception and negotiations. Since projects rarely move forward – undisturbed and without detours – to buildings, a whole body of studies has been developed to look at design studios with a shift in perspective, to grasp and to trace architectural design in a pragmatic way. Indeed, these studies assume the possibility to take account precisely of projects' diversions, as constituent elements of the decision-making process; this, in order to witness the *folds* of architectural design, by following the practice and the complexity of "architecture in the making" (Yaneva 2009a, p. 4).

Architectural design theory, in the last decades, has indeed been characterized by some important paradigm changes.² In fact, architectural design process, starting from the 1980s, became object of empirical attention, primarily through traditional sociological or anthropological approaches, linked to the analysis of the workplace

¹ In her book *The Making of a Building: A pragmatist approach to architecture*, Albena Yaneva, drawing on ethnographical material collected at the Office for Metropolitan Architecture (OMA) of Rem Koolhaas in Rotterdam – following architects' work in the period 2001-2004 – offers a novel account of "architecture in the making". The author studies the design process of a never built building, the extension of the Whitney Museum of American Art in New York, from an Actor-Network Theory perspective. During her witnessing, she observes the actors involved in the process, describing the difficulties met during the design process. In this sense, this work perfectly represents a first effort at investigating design process through a pragmatist approach as a research tool.

² Among the texts that retrace this paradigm change, mention should be made to: Yaneva A (2017) *Five Ways to Make Architecture Political: An Introduction to the Politics of Design Practice*. Bloomsbury Publishing, Londra (in Chapter 2, "How to Study Ecology of Practice"); Yaneva A (2018) *Editorial New Voices in Architectural Ethnography*. Ardeth 2: pp. 17-33.

context (Blau 1984) or to professional practice in engineering and architecture (Henderson 1991; Cuff 1992). Then, there has been a new wave of interest to practice in social sciences (Schatzki et al. 2001), and in particular in architectural and engineering professions (Houdart and Minato 2009; Yaneva 2009b; Jacobs and Merriman 2011), with reference to several participants to the project, through ethnographies and "thick descriptions" (Geertz 1973).³ This trend can be defined as an "ethnographic turn in architecture" (Yaneva 2017); in fact, these studies, shifting the attention from the products of architecture – as buildings and places – to the processes of project conception and negotiation, mean architecture as a collective process of negotiation between human and non-human entities - then as sociotechnical systems - and introduce ethnographic methods and tools within architectural research – as participant observation, interviews, conversations. Investigating the architects' practices – that is what they do on a daily basis – aims at giving priority to the pragmatic content of their actions, rather than their theories and ideologies (Yaneva 2005; 2017). Tracing ethnographically as models, projects, designs are produced, negotiated and disseminated, these "new ethnographers" aim to follow the design production and the architects as professionals in the act of a practice. In this perspective the operative dimension of architectural design process is understood and investigated as the place in which the real is "modelled" in material entities – as drawings, models, etc. – as a result of an intense work and exchange within such practices.

This body of literature approaches the design studio in the same way that Science and Technology Studies (STS) investigated the practices of scientists in the laboratory (Latour and Woolgar 1979), accounting science in the making.⁴ In both cases, the aim is to follow these "laboratories" to understand the material operations that accompany work; in this sense, Callon (1996) suggested the importance of Actor-Network-Theory (ANT) perspective to understand architectural design. Therefore, design studios are intended as laboratories, where design is generated and experienced. The above-mentioned new ethnographic wave of studies starts from STS and ANT scholars, in the sense they underline a fundamental focus on the relational networks of associations in social studies, on the agency of the single co-participants in the design process, and in general the research takes place at the level of the project action. Indeed, rather than considering "social" as a specific and identified realm and the context "in which" everything is framed, they start from

³ Clifford Geertz's expression "thick description" is used in anthropology (or better in social anthropology) to explain what means to do ethnography. It is then a matter of method, since thick descriptions are the object of ethnography, as interpretive and microscopic investigations in which to draw big conclusions from small things.

⁴ The STS seminal book *Laboratory Life: The Construction of Scientific Facts* is based on Bruno Latour's fieldwork as a participant-observer from 1975 to 1977 in Roger Guillemin's laboratory in the Salk Institute. The book is written with the sociologist Steve Woolgar, by describing the daily life of scientists and the way the conduct their work. The aim is to not accept preconceived explanations of scientific facts; instead, the authors aim at following an ANT perspective in tracing the way the daily activities of scientists result in the construction of those scientific facts. Moreover, many of ANT's core concepts are here expressed.

the point that society comes from operations of re-association and reassembling (Latour 2005). In these studies, instead of referring to external factors and abstract theoretical frameworks outside design, there is an attempt to grasp and to trace the connections that allow design works come into being (Yaneva 2009b) in a pragmatic way. Consequently, a series of detailed studies of architectural practices, as seen through an ANT perspective, avoid ideological interpretations and excessive perspectivism in architectural design theory. The purpose of these scholars is to re-establish the connections that reveal, in a pragmatic way, how architectural practice works and how projects acquire meaning in the practice experience.⁵

ANT scholars' ambition is not to run into further theoretical interpretations, but to study and analyze the architectural production in the way it aggregates and relates various entities. This, in order to avoid pre-given explanations of design, established scales, and recognized-by-all conceptual frames. The questioning of structured interpretations of architectural design theory in the institutional and academic sphere – such as merely ideological, formal or typological analyses – underlies indeed this field of studies, that avoid excessive perspectivism and interpretations. Then, these scholars tackle in a pragmatist way the practices of designers rather than their theories and their ideologies (Callon 1996; Yaneva 2005; 2009; Houdart and Minato 2009), by proposing explicitly a realist, pragmatic method as an alternative approach to the critical one. As they declare, instead of erecting "critical walls" of interpretations, they follow architects' – and practitioners' in general – in their daily routine and actions, to unravel everyday techniques and operations in design process and, in their view, to contribute to "a better understanding of architecture" (Yaneva 2010).

An ANT informed approach on architectural design theory is relevant for this thesis due to several arguments to be deepened:

- a shift from a research tradition that focuses on the architect as a category and being an architect as a specific role within society to an interest about the architectural design process and its products;
- a socio-technical perspective is assumed and both aspects the social and the technical are equally considered and analyzed;
- the process of projects production is considered with no linear progression from the beginning to the end, however it can be traced and investigated in a pragmatic way;

⁵ Actor–Network Theory (ANT) is a theoretical and methodological approach in social sciences that defines the social and the technical spheres as only existent in their mutual defining networks of relationships. As a consequence, none of these spheres exists in itself, nor can be used to explain social phenomena, that take place and are shaped through the interactions between the actants – humans and non-humans – involved. Moreover, methods carried out under the hat of ANT aim at empirically describe, more than explain; that means to avoid critical theory and essentialist explanations of phenomena. ANT developed in the context of Science and Technology Studies (STS), with the scholars Michel Callon, Bruno Latour and John Law among the most relevant.

• the researcher approaches and analyses the process by following the everyday practices, therefore research is a continuous in progress and occurs simultaneously with the process itself.

The research carried on in this thesis is qualitative and allows an interpretative approach and in close correlation with the context in which the phenomenon takes place, moving from the above-mentioned argument. Furthermore, the possibility of acting as both a researcher and a designer on the process opens up a reflection on the possibilities of observation and research in action, as in a running lab about reallife problematic situations (Latour and Woolgar 1979; Latour 1988). Nevertheless, an important divergence to bring forward between an ANT informed approach and this thesis is about perspective. Indeed, while those studies aspire to be aperspective, this has also the operational aim, by linking practices to their effects, to make designer's perspective stronger and more effective. Moreover, the internal perspective as both an observer and a participant to the practice allows the possibility to follow and to witness the large-scale and multi-sited process in the whole range of levels in which projects and decisions "travel", even outside the office. This means to explore and describe the role of architectural design practice in the decision-making process in a pragmatic way, on one hand, by maintaining thus the specific designer's perspective, on the other. Through the next paragraphs, the purpose is to tackle the arguments from which this research originates, in order to highlight and problematize its interrelations – or divergences – with an ANT informed approach. The first paragraph presents the shift in interest from the architect as a role, to architectural design as a process. The second provides a reflection around a socio-technical perspective in architectural design theory. The third introduces ethnography and ethnographic tools as methods from which to draw in order to develop a methodology for this research. Then, in the fourth paragraph the aim is to deepen the positioning of the researcher, involved both as a participant and as observer. In this, the will to add to designer's perspective in terms not only of description, but of action is envisaged.

1.1. From architects toward architectural design

In order to outline and articulate a view of architectural design practice, a first discussion on disciplinary research in architecture – done by architects – can be held, analyzing the shift in the set of research tools on architecture to qualitative methods, on one hand, and as an object of investigation to the processual dimension of architectural design, on the other. These two aspects are both present in this thesis, due to the aim of investigating how projects act in the decision-making process. This move of interest from products – buildings – to processes relocates the focus on designing and negotiating projects and the ordinary activity of architects, shifting the attention from architects toward the process of architectural design (Yaneva 2018).

Reflection-in-action as representing all the implications

To start with, from the 1980s the use of social sciences and ethnographic methods in architecture field revealed a potential for research, in different ways. One of the first works to focus on architects as objects of inquiry is Donald Schön's focus on architectural education (1983, 1987, 1992)⁶, from a perspective of a philosopher, on one hand, and professor in urban planning, on the other. More in general, Schön's exploration concerns the relationship between practice and academia, and consequently between knowledge acquired, in the one, and competences to be used, in the other. An important rift is here underlined between the above-mentioned arenas, as the knowledge produced in academia is not adept at describing and, consequently, understanding profession. While it is necessarily linked to what professionals learnt in academia, there is for Schön an evident gap between "research and practice, thought and action" (Schön 1983, p. viii). The attempt of answering to this inquiry is then retraced through a series of cases in which practitioners of different kinds – from architects, to managers, to psychotherapists, and others – are analyzed on the basis of what they actually do. The suggestion is that, when a practitioner has the experience and competence of a practice, knowledge is *in* the action itself. It means supporting the idea that, even if it is not usual for professionals to give an accurate description of their activities (their actions in everyday life), they actually have a spontaneous, intuitive and "tacit knowing-in-action" (Schön 1983, p. 49). Moreover, this tacit capacity to act on the basis of experience and previous cases lets the professional reflect and think about what he is doing while doing it. As a consequence, reflection-in-action not only guides the practitioner during his practice; in Schön's view, it allows to be a researcher through the practice, due to the fact that, if you can describe a situation and the different steps that led to a particular course of action, you can use this knowledge again in future projects. This means that practitioners can take advantage of specific skills related to a particular epistemology - that of architectural design. In the section about architecture field, the author uses an example of a design studio in which the professor interacts with a student, critiquing and suggesting modification to her work. During their exchange, the student explains the several problems encountered during the project, then the professor promptly reframes her formulations, step by step, in order to conduct her to reach a solution.

What is of interest here is the process of projecting revealed as a non-linear, direct or pre-ordered way of responding to problematic situation; what the professor's action embodies is otherwise the ability to adapt and negotiate with the project while carrying it on. The reflexivity of the professor – or the practitioner – allows

⁶ Schön, talking about practitioners in a variety of fields, uses a metaphor (1987) that is well-known and pretty much used also in the decision-making field (see chapter 2 of this research), the concept of a high ground, overlooking a swamp. He almost challenges practitioners, by saying that, on the high-ground, manageable problems are easily treated, while in the swamp stagnate messy and confusing problems. Then, the choice is up to the practitioner to solve the unimportant kind of problems, or the most complex ones, in accordance with his ability of reflecting-in-action.

then to respond to the problematic situation in order to tackle it, in a coherent and realizable strategy. In Schön's account, the professor/practitioner follows and responds to the project in its occurring; in this, all the actions and answers are based on the experiences he may refer to, through reflection-in-action, due to which he can somehow bring forward the instances and implications related to the project. However, the skills the professor put in place are not really transmitted out of him and result personified in the subject. Indeed, even if the professor is able to recall in the project the complexity of the world, on the basis of which the student can pursue a more realizable project, this complexity is not really grasped in order to be tackled and ordered for a future similar strategy. On one hand, the author starts to suggest a view of the project as a non-linear nor systematic way of acting in practice, since the professor and the student continue to discuss and to draw at the same time, in a gradual materialization of specific actions to respond to specific problems. The way of reflecting-in-action of the professor/practitioner then is not a work plan set up at the beginning, but a continuous response to the process: here Schön somehow begins to make it clear that design processes are not only an internal reasoning and conception of the practitioner, but something to be continuously negotiated and recalibrate during the process. On other hand, he keeps the position of a "subject-author" (Armando and Durbiano 2017, p. 27) that mediates and represents all the implications of the project, and then acts as a filter between world's complexity and project's conception.

The organizational dimension of the firms

With more focus on architectural practice than education, the work of the sociologist Judith Blau (1984) deflects attention from the built environment and architects' products, to focus on architects themselves. In her work, architecture as a profession is studied from a traditional sociological perspective for the first time, with a social scientist that attended the offices and the practices of architects in order to reach empirical findings on that work setting. Blau selects a large number of firms – 152 offices in all – to be the focus of her empirical research for a five-year period (1974-1979), in Manhattan. The range of questions that the author investigates moves from two layers, one related to individuals and their values, roles, and job experience, the other related to the whole organization, its projects, clients, and productivity. This, during the first part of her study; then, in the final part, due to the economic climate and the fact that some firms didn't survive to the crisis, the focus moves to the causes of failure of these. Consequently, the work relies mainly on quantitative data and statistical techniques, given the need for reduction of an enormous amount of data and surveys.

⁷ As suggested by reviewers of this text (Montgomery 1985; Sydie 1986), the book represents the first shift of attention from architects to their profession, remained nearly nonexistent until that moment in research.

However, what is interesting to notice is also the architects' insight about their profession as a practice and their role in the office. Indeed, what emerges is a significant gap and contradiction between the architects' orientation and conception, on one hand, and the real and actual working conditions of practice, on the other. With her sociological reconstruction of the pragmatic circumstances of practicing architecture in a firm, the diffused idea of a creative and artistic author/genius collides and is replaced by a more bureaucratic and collective view of each architect as part of a design team, as a gear in a wider system. In Blau's accounts, architects' practice is for once described and re-assembled in a pragmatic way, with a focus not only on the ideas and values of architects, but also on their role in a system, that is the organizational dimension of the firms and their functioning. However, the core of attention still stands in being an architect as a role, with its own values, functions and characteristics in the practice, but not directly ascribable to what architects actually do and the role of their doing in practicing. Undoubtedly it depends on the fact that the author is not an architect, but also that the typical methods of analyses in this work are statistics and sociological models – to wit tools that tend to draw trends and generalizations, rather than dwelling on the details of the practice itself.

Architecture as a social construction

In continuity with this concern on what is to be an architect, the architecture theorist, professor and practitioner Dana Cuff proposes a study in which architectural practice is investigated as "the everyday [...] work where architecture takes shape" (Cuff 1992).8 Cuff aims at a better understanding of the role of architects within their practices and firms, and more in general within society. The researcher follows three offices in San Francisco for a period of six months. In doing this, a series of interviews and observations let her assemble qualitative data about the firms, following their practices and the way architects interact and undertake relations with other types of workers in the office – engineers, analysts, draftsmen – or outside – maintenance, delivery, realization. In this overview, architectural design is displayed more as a collective effort in which architects and other actors interact to conceive and produce architecture, than and individual, creative and "artistic" attitude. That is considering architectural design as "a social construction" (Cuff 1992, p. 10) and a negotiation among parties. In aiming at reconstructing architectural design practice in action, Cuff carries on everyday observations through meetings, interviews, or casual conversations, following different activities with a copious notetaking.

⁸ Dana Cuff, being trained as an architect, is completely aware of the detachment between the real practice and what had been taught in architecture school. In her work she basically employs ethnography - participant observation, interviews, surveys, architecture literature. Instead, unlike most ethnography, she is somehow prescriptive, eliciting some changes in architectural education according to her findings and hence improve the quality of design work.

What is worth to notice is that this huge amount of data and notes results useful for the architects themselves, to trace and re-use several activities for other similar cases. Indeed, as already highlighted by Schön (1983), certain attitudes and actions are tacit and routine for architects; however, with a direct observation of their actions, Cuff advocates an empirical definition of the principles and reasons that guide those actions. An empirical perspective of this kind on architectural design means that the attention stands more in the process of design, than in the products of designing – as buildings and places. Moreover, the architect is shown as the medium through which different parties and interests can be translated into spatial form, through interaction. Then, even if, in explicating so, she maintains the view of architect as a role within society, this is a relevant shift in the sight of architecture as a collective and interactional issue, on one hand, and as a process to be qualitatively and empirically investigated, on the other.

The architect role is not "enough"

At a glance, the crucial shift these studies with a sociological and embryonic ethnographical matrix are carrying out is a closer focus on how architects work, even if with keeping the role and the predominance of architects (as subjects) – according to their being architects – in the process. One of the assumptions of this research on the *Masterplan*, by taking some ANT and STS paradigms, is precisely to somehow blow up architectural design practice, not taking for fact that architect's role is enough to ensure the feasibility of projects, that depends on a variety of other implications. In this sense, this thesis is directed to studies that consider the observation of everyday practices, the tools used by architects, their interactions with other actors in the process and that trace all these issues in a shift from architects toward architectural design. A focus on ANT perspective about how agency is shared with objects – or, in this thesis' view, projects – and distributed is then a mandatory step to follow, in analyzing these bodies of literature.

1.2. A socio-technical perspective on architectural practice

STS (Felt et al. 2017) investigate the interdisciplinary field of science and technology – in their meanings, practices, outcomes, hierarchies, and entanglements. Since the beginning of this body of studies, researchers deal with

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⁹ To be mentioned among the first in ANT field: Callon M. (1980) Struggles and Negotiations to Define what is Problematic and what is not: The Socio-logic of Translation. In Knorr K., Krohn R. and Whitley R. (eds.), "The Social Process of Scientific Investigation", pp. 197 – 220. Dordrecht Retdel Publishing Co.; Callon M. (1986) Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay. In Law J., "Power, Action and Belief: a New Sociology of Knowledge?" pp. 196 – 223. London: Routledge; Callon M. (1987) Society in the Making: The Study of Technology as a Tool for Sociological Analysis. In Bijker W., Hughes T. and Pinch T., "The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology", pp. 83 – 103. Cambridge: The MIT Press; Callon M (1991) Techno-economic Networks and Irreversibility. In Law J. (eds), "A Sociology of Monsters", pp. 132 – 164. London: Routledge; Law J. (1987) Technology and Heterogeneous Engineering: The Case of Portuguese Expansion. In Bijker, Hughes and Pinch (eds.), "The Social Construction of

the way people act, interact with and affect technology, on one hand, and how they are in return remade by technology itself, on the other, in a "co-production" (Latour 1993, p. 134; Felt et al. 2017, p. 1). In compliance with this view, research methods and approaches in STS field are above all deployed in practices, investigating problems as unfolded in processes, rather than as fixed entities. Then these methods aim at a recompose and redistribute, in researches on practice, the roles of the technical dimension, on one hand, and of the social one, on the other. In searching this, early STS scholars have closely followed and analyzed scientists' work in their laboratories (Latour and Woolgar 1979), and engineers' practices in their studios and workplaces (Henderson 1991). In reflecting on detailed studies of the work of scientists and engineers – understood as researchers and practitioners – the aim of these studied is to define their performances and actions in practice.

A relational perspective: inside outside

According with this, a peculiarity of STS and ANT informed approaches is the relational perspective they apply in analyzing and describing reality; moreover, non-human actors (Latour 1996, p. 2; Latour 2005, p. 90) have comparable roles than humans and contribute to the process' unfolding, in a changeable network of relations. Actually, ANT scholars' notion of network implies that nothing in the natural and social world exists outside the network of relationships and the network has not an aprioristic order (Latour 1996, p. 5). In this sense, with actants (Latour 1996, p. 2) they refer to both human and non-human actors, that are defined and take shape on the basis of their belonging to the network and their mutual relations. Thus, any explanation of social phenomena doesn't exist in itself, instead it starts with a consideration of all the actants involved at a same level and as important as others. As a consequence, more than explaining social phenomena, ANT aims at describing them (Latour 1996, p. 9); description that consists in a strictly empirical investigation of phenomena, in terms of actions, interactions and combinations of the different actants involved.

The shaping of actors with different roles in networks is defined by the philosopher, anthropologist and sociologist Bruno Latour as a "collective" (1993, p. 4) of humans and non-humans. This socio-technical mix of actors collects different kinds of roles and strengths interwoven (Latour 2005, p. 74) and involved in a process of mutual affection and reshaping. This radical relationality of ANT echoes what already said, that nothing has a given form and every actant is defined on the basis and pursuant to its relations (Law 2017): in this principle of generalized symmetry (Callon 1986; Latour 1993) the whole set of social relations – humans related – is produced within practices and together with technologies – non-humans related – in an entanglement. As a result, both sides of a possible former divide between the

Technological Systems: New Directions in the Sociology and History of Technology". Cambridge: MIT Press; Law J. (1992) Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity. Systems Practice 5(4), pp. 379 – 393.

social and the technical, humans and non-humans lead in a continuously situated and constructed assemblage. Giving the collapse of this divide, any preconceived distinction in ontological terms is avoided in ANT informed researches, since it results as simply relationally generated. If nothing can be assumed and exists outside the specific bonds that subsist in the collective considered, as in the laboratory (Latour and Woolgar 1979), an approach of this kind cannot be detached from a specific location and context – as practices are in itself. It has a relevant impact on researches, due to the fact that a view of this kind implies a situatedness of knowledge (Haraway 1988; Felt et al. 2017) and validity as practice-embedded and referred to the local context in which the research is driven (Latour 1983, 1999; Law 2017). This problematization, given the internal perspective assumed in this thesis, is practically assumed in defining the methodology to investigate the role of architectural design practice in the decision-making process. Indeed, by following a sole practice, as a "small site" through which theories about the "big things" can be activated and investigated, any speculation in this thesis is performative, aiming at defining without aprioristic sights the relation of the "inside" with the "outside".

Architectural practice as widening the collective

Among recent STS and ANT researches, some scholars aim at understanding and investigating architectural practice as not attributed to the solely action of a leading actor — as an architect. Thus, architecture processes in this perspective involve complex and hybrid networks, or collectives (Latour 2000, p. 25) of actors, in which objects and subjects, but mainly the technical and the social aspects are interwoven. The perspective deepened in this thesis results in contrast to the prevailing representation of the architect as a predominant role in the process, divided between the "autonomous spheres of technical competence and artistic creativity" (Armando and Durbiano 2017, translation of the author), thus starts from an ANT perspective to deal with architectural design practice. By aiming at defining the role of architectural design practices, as the perform in the decision-making processes of a complex urban transformation, a shift to a socio-technical view of design may enable to investigate these in a pragmatic and traceable way.

In questioning a view of architects as the only players involved in transforming reality, there is first of all an issue of widening the collective (Latour 2000; Latour 2005) recognized as involved in the process. Thinking in particular about the way projects travel during the decision-making process – by encountering several stakeholders, constraints, and detours – a urge is evident to relate and integrate

¹⁰ In his book *Politiques de la nature. Comment faire entrer les sciences en démocratie*, Bruno Latour argues for a different take on "political ecology" which must go through a careful redefinition of both the technical-scientific enterprise and the roles of the various "professional bodies"; moreover, he shows in practice how the issue of democracy also affects scientific laboratories. He uses Plato's metaphor of "the cave" to describe the role of nature and science in separating facts from values - as it happens with politics and non-scientists. Instead, he describes an alternate set of rules by which this assembly – or collective – might come together and be constituted. The collective involves both "humans and non-humans" – as an important aspect of ANT.

architectural design itself with other "actors" of various nature, to be included in order to strengthen the project itself. The collective to be considered expands in line with the implications and interactions of the decision to be taken: "inside the office of the Superintendency, the implications are known [...]. The uniqueness and rigidity of the vision guarantee a narrative structured according to hierarchically defined values. However, if you leave the office [...], the narrative and the hierarchical scale that presides over the decision cease to be unique." (Armando and Durbiano 2017, p. 70). This means that the architect's will is not "enough" to withstand the feasibility of a project; instead, the moving forward of architectural design depends on the ability of the project to articulate and respond to the whole range of implications and actors that are involved in and activated by the process. Then, architectural design depends not only on human actors, but on the whole socio-technical range of actants involved, being them issues of constraints, public opinion, money, and so on. Such a perspective entails abandoning the prevalence of the authorial and mythological function of a single architect, by mixing up it with several contributors to be involved and incorporate in the process of design.

Buildings as moving projects (or the "travel" of decisions)

With an interest in "what design does", the perspective in ANT-inspired accounts of architecture shifts from a static view of buildings, to the flow of their transformations in the process, since "a building is not a static object, but a moving project" (Latour and Yaneva 2008, p. 80); then, priorities in studying such a processes are displaced from investigating the more fixed aspects of buildings – technical, structural, distributive – to the more dynamic and contingent ones – constraints, diversions, procedures, failures. ¹¹ In this way, architectural design includes many actants rarely taken into account in researches on architecture, but that contribute in a meaningful way to the process (Latour and Yaneva 2008, p. 88). In such a view, the future of a building is not related to a linear sequence of conception, negotiation, decision and realization; instead, it is more a challenge of recursive adjustments in line with unpredictable actants that come into play.

This thesis on architectural design practices, while it aims at better defining the trajectories through which practices fall into effects on a decision-making level, assumes a view of design as no more a linear and straightforward process from conception to realization. Instead, projects are seen here as an assemblage of practices that progressively include all the contributors that "act" and have a role in the process, in a growing and changing arena. Moreover, even contingencies and unexpected circumstances play an important role and have to be considered, to ensure that the project doesn't grind. Nevertheless, this research has the opportunity to follow the "travel" of decisions, as they are reached, in the whole decision-

¹¹ This paper is a fundamental contribution to bring a shift in focusing more on the process – rather than on buildings – in architectural research field. Latour and Yaneva look hereat architecture and its projects as processes in motion and attributable to an objective consistency, instead of being static effects – buildings – of a subjective creation. The metaphor of "flight" makes explicit the assumption of the ANT, meaning the action as a concatenation of effects that are generated.

making process, with a specific perspective and context. Indeed, being the researcher admitted to a project team that continuously relates with actors involved at different levels of the decision-making process – inside or outside the office, in the university, up to the municipality – this "travel" can be accounted in its whole unfolding through time and space. This means that the researcher witnesses here and can account further levels of this "travelling" movement and is admitted mainly through informal and multi-sited arenas – to really grasp the whole unfolding of the process until the effects. In this sense, the research is directed to an investigation of architectural design actions in reaching effects, in order to take advantage of this knowledge and even, ultimately, replicate those actions (Armando and Durbiano 2017). A challenge is then to identify and frame as much as possible the courses of action of projects, as chains of assemblages deployed to reach effects.

Projects as "intermediaries"

All the above-mentioned concepts related to an ANT approach arise from the seminal Latour's (1987) work on scientists in their laboratories and the following studies on practices of engineering in their workplace. A first suggestion comes from Michel Callon, sociologist and engineer, to transfer these methods of looking to the design studios, as scientific laboratories, in particular for understanding the process of architectural conception (Callon 1996). 12 In an attempt to overcome more traditional sociological perspectives (Blau 1984) on architecture, deployed also as social contexts of negotiation among several actors and contributors (Cuff 1992), he proposes to focus on the material aspects of design – drawings, graphs, visualizations – in a network of non-humans related to humans in a network. As Callon suggests (1996, p. 29), a building is the unexpected result of a drift to which a series of actors contribute in an out of control way. What is more, those actors probably wouldn't have understood each other without the tools and visualizations of architecture, as he said without "intermediations". This relates to agency (Latour 2005), as something that makes a difference in the process, then everything with no traces nor effects in the process is not relevant for action. An ANT informed representation of the process as a description of actions, in a wide and composite variety of actors, identifies then agency is distributed, that means to avoid to attribute action preeminently to a single actor – as the architect – instead reasoning in terms of mutual relations of human practices and non-human objects. Researcher's aim is then "[...] to make more or less explicit which trials have produced which observable traces" (Latour 2005, p. 53).

This thesis is in line with a view of the project as something – a non-human – with an agency, when able to produce effects and act on reality. However, what is at stake here is the possibility to identify – to be empirically verified – projects, as documents, having a leading role in producing effects in decision-making

¹² Architectural design remains a completely unexplored field in STS analysis until 1996, when Michel Callon produces this seminal paper about the possibility of understanding architecture through an ANT-inspired methodological perspective.

processes. This puts into question the concept of generalized symmetry among human and non-human actors in the case of following projects, and even re-calls the already mentioned views of projects as "intermediaries" (Callon 1996, p. 33). In this research, projects – as documents – are indeed considered as both embodying the entities as the unfold through the process and conducting instrumentally to realizable courses of action. It is through projects themselves that the assemblages and collectives – of both humans and non-humans – are shaped and put into a form, then can circulate and conduct several positions into negotiation. Thinking about projects and architectural design practices as those "intermediaries", this work traces their movements and actions in the system, to understand the chain of events that leads – or not – a project has effects in the decision-making process.

Investigating project's performativity

Following a research perspective as the above-mentioned defines a system in which architects produce projects as documents and inscriptions, then this thesis wants to go in depth in the actions they perform. The concept of inscription comes also from Latour (1986), as a trace that witnesses the trajectory of the project, through a mix of texts and images that interact with the world: in these sense documents are the whole range of artefacts that can be followed and analyzed in their movements, on one hand, and in their effects, on the other. Supported by this ANT perspective, a specificity in architecture field can be highlighted; indeed, the practical and visualizing tools are something that other disciplines and practices don't have. Recalling the words of Callon (1996, p. 27-28), in the process of architectural designs supports and products let the negotiations and intermediations come into being, as a set of practices linked to the actors involved and supported through material devices. In his view, to become negotiable and discussable, different points of view must be made visible – I would say thanks to the peculiarity of spaces volumes and forms in addition to language. Since the studies of Latour on the laboratories, this problem of performance – or performativity – has been issued, as a way of problematizing the relationship between science, on one hand, and society, on the other. It is not possible for ANT scholars to define this kind of power relations aprioristically, however the threads of power are distributed and can be recollected in practice. The perspective assumed in this research relates to a view of projects as performing action aimed at producing effects on decisions, then analyzing their role means to determine their power in negotiation as both a support and a content itself of the communication, that would otherwise be unshared. Moreover, the focus on performativity of architectural design devices and models opens up further considerations in positioning this work in an interdisciplinary link with decision-making methods.

In relation to this view, the research held in this thesis recognizes a distance from the STS and ANT approaches. On one hand, it is evident how the aim to describe the generalized range of entities involved in the process is effective for scholars who produce descriptions around "the way the world works". Instead, architects produce projects in order "to change the world", then the perspective of a researcher/architect in studying architectural design practice is here necessarily different. Therefore, not all the actants are as relevant as projects – intended as performative documents. On the other, and as a consequence, a detachment is envisaged from description in itself, since as an architect – and not as a social scientist – the aim of this research is not only descriptive, but strategic as much as possible. This means not to consider the whole range of possible points of view to explicit the complexity of the world, but the ones linked to the production of projects, in a limited perspective – as the one proposed in the methodology. Thus, the ultimate goal in this thesis, even starting from a similar recounting and description methodology, is to direct that methodology to even strengthen the operative role of architects, in providing a tool to categorize, demonstrate or reuse certain knowledge.

To conclude with a reflection on the role of designers in ANT studies on practice, architects are the ones responsible to configure spaces and building, since they basically decide which actors – and actants – include or not in the process. It is then through design that the networks of relations between the actors involved are created and assembled. Therefore, while being an actor among others of the multiple participants to the process, an architect has somehow the possibility to shape the collective while being himself part of it, as a mediator and a facilitator of the network of relations. The everyday work of architects is in this sense investigated and examined by ethnographies of architectural practices, by describing the process of assemblage and relation of human and non-human actors in the studio (Houdart 2008, Houdart and Minato 2009; Yaneva 2005, 2009; Loukissas 2012).

1.3. The ethnographic turn in describing architectural design

The already mentioned – STS and ANT inspired – ethnographic wave of studies on architecture underlines a fundamental focus on the relational networks of associations in social studies. In these studies, instead of referring to external factors and abstract theoretical frameworks outside design, there is an attempt to grasp and to trace the connections that allow design works come into being in a pragmatic way. Consequently, ethnography of architecture is an approach that avoids ideological interpretations and excessive perspectivism in architectural design theory. About this, the anthropologist and professor in architectural theory Albena Yaneva, in the introduction of its well-known ethnographic account on Rem Koohlaas office in Rotterdam (2009b) 13, refers explicitly to critical theory formulations in architecture as something that aims at locating architecture,

¹³ Yaneva depicts here how architects and other actors of architectural design process progressively bring buildings into existence, in a continuous interaction with artefacts – such as foam models. Moreover, instead of focusing on projects, she underlines the concept of "trajectory" as a concrete link to the reality and materialization of projects – through the making and transformations of concrete artefacts, as foam models themselves.

buildings and design process in higher-level theoretical frameworks outside – as social factors, cultures, politics. Yaneva refers in general to the culture of architectural criticism that developed in the late 1900s - "under the hat" of a framework of critical interpretative matrix she brings feminism, neo-Marxism, postmodernism, psychoanalysis. What links all the formulations and critical theories is for the author the idea that an understanding of architecture, whether understood as a building or project, derives from its positioning within the space of cultural production – a space modelled by a highest level made by politics, cultural and social factors, etc. In this perspective, the interpretative categories are considered lateral or even higher than the procedural dimension of the project, thus overcoming the practices, infinitesimal, contingent and not deserving great consideration – or at least not suitable to allow a real reading of the meanings of the architectural work. This attitude, for Yaneva, falls then within a will of abstraction, of idealization, of definition of hidden fields in which meanings and values are stationed, searching for a richer and more significant understanding of architecture, by situating it in a social context in which it is considered to have place.

A pragmatist alternative to critical theory

This is the most problematic point for ANT-informed ethnographies of design, since critical theory in architecture covers the "symbolic" aspects, the ideas, the imagination, instead of practice and design experience. Instead, it doesn't focus on the infinitesimal, contingent and not worthy of great consideration everyday practices. Even in more recent research (Yaneva 2017)¹⁴, some problematic nodes of critical theory are explicit, in referring to perspectivism, as the existence of an objective reality – the building – and a number of subjective interpretations. For critical theory, by studying and understanding a multitude of points of view, it is possible to capture the nature of the architectural object. However, in this way, "by entering the realm of meaning the built reality is left out" (Yaneva 2017, p. 7). The alternative these scholars propose to a critical approach is to re-establish the connections that reveal, in a pragmatic way, how architectural practice works and how projects acquire meaning in the practice experience. ANT scholars' ambition is not to run into further theoretical interpretations, but to study and analyze the architectural production in the way it aggregates and relates various entities. This, in order to avoid pre-given explanations of design, established scales, and recognized-by-all conceptual frames. Then, they tackle in a pragmatist way the practices of designers rather than their theories and their ideologies (Callon 1996; Yaneva 2005; 2009; Houdart 2008; Houdart and Minato 2009), by proposing explicitly a realist, pragmatic method as an alternative approach to the critical one (Yaneva 2010). As they declare, instead of erecting "critical walls" of interpretations, they follow architects' in their daily routine and actions, to unravel

¹⁴ In this recent ethnographic account of architectural practices, Yaneva recalls an "ecology of practices" approach (see in particular chapter 2 "How to Study Ecology of Practice?") as a way to witness these practices in their specific setting. Indeed, in her view, it is through the engagement with a situation that we experience and take into account what matters in architectural research.

everyday techniques and operations in design process (Yaneva 2010). This thesis refers explicitly to these studies, in their interest to unfold the dynamics of architectural design practices in their everyday work. However, by retracing the specificities of these scholars' approach in dealing with architects in their studios, some relevant differences will be highlighted, in terms of aim of the study and positioning of the researcher in relation to the object of enquiry.

The studio as an environment

The environment that ANT scholars designate as the dimension of design operations and practices is the studio (Houdart and Minato 2009; Loukissas 2012; Yaneva 2009a, 2009b, 2017). The "laboratory" of the architectural design practice is the place for producing tools and projects – as "experiments" (Latour 2010) – since that is where an intertwining of ordinary actions between the various participants to architectural design is experienceable (Yaneva 2018). ¹⁵ Moreover, in line with the view of ANT about no distinction between the social and the technical – the macro and the micro – these researches capture events and actions with a specific meaning precisely in their moments of emergence (Yaneva 2017). As a consequence, they focus on the objects produced by architects – scale models, renderings, simulations, drawings – by tracing them ethnographically during the process of conception, production, negotiations and travelling between other actors.

Yaneva (2009b) follows for six months the Office for Metropolitan Architecture in Rotterdam, a firm related to the architect Rem Koolhaas. She presents an ethnographic account of the design routine in the studio, by collecting gestures, everyday techniques, interviews and photo documentations on a variety of projects, through participant observation. By writing a series of short stories, the anthropologist focuses in particular on the practices of model making – with foam models – and travelling of these models through several interactions in the office. As she underlines: "what looks like chaos at the beginning is more of a rhythm, or many distinctive rhythms" (Yaneva 2009b, p. 51). Indeed, these foam models and all the production in the office follow specific and recurrent trajectories, not being randomly dispersed, but all channeled through particular arrangements. Moreover, the traces of experimentation are kept, in order to remember the different solutions already faced during the process. Design is accounted as often beginning with a collective discussion and modelling, in line with a view of the practices as not single-authored, but as result of a network of interactions. An interesting characteristic to point out about models is that, being the main mediator not only in

¹⁵ It is the editorial of the second issue of Ardeth, the journal Architectural Design Theory first published in 2017 with funding from Politecnico di Torino (Department of Architecture and Design, DAD), Politecnico di Milano (Department of Architecture and Urban Studies, DAStU), Università IUAV di Venezia (Department of Culture of the Project, DCP) and Università di Roma La Sapienza (Department of Architecture and Project, DiAP). The journal invites a reflection around a theoretical discourse related to a practice such as the project in architecture – by proposing it as separated from architectural theory.

the office but also with the clients, in OMA they play a fundamental role in discussion and negotiation with stakeholders.

Other monographies are, on one hand, the work of the anthropologists Sophie Houdart and Chihiro Minato (2009), who follow the practice of Kengo Kuma; on the other, the work of the designer and ethnographer Yanni Loukissas (2012), who focuses on the multinational professional services firm Arup's computer simulations practice. In following Kengo Kuma practice in Tokyo, Houdart and Minato aim at recognizing and describing the agency of Kuma's practices in his routine and everyday activities. They don't describe generally architects at work, instead they trace a complex articulation of the engagement with the materials in their support to architect's practice. In Kuma's work, drawing, models, renderings - as material aspects - constitute the environment in which conception, discussion and negotiation of solutions deploys, as hybrid interactions that produce specific effects and supports in the process. The work of Loukissas on Arup practice refers to supports to the architectural process, by focusing on computer simulations as a technology of co-design for the actors involved - architects, engineers, other experts – that transforms the usual way of engaging and interact with others. In this sense, those new tools have profound implications in the way design works and somehow redefine the work itself. Again, computer simulations are enablers of codesign practices, in which not only architects, but a range of actors, can be involved.

Decision-making "outside" the studio

Therefore, all these monographs have in common a view of architectural design process as a complex result of networks of human and non-human actors interacting in the studio to produce projects – and then buildings. Moreover, what emerges is a relevant focus on how the "intermediaries" of design actually act in the process, based on empirical evidence detected in the practice of producing, negotiating and exchanging models and drawings. Tracing them ethnographically admits then to define the entities through which the problem is discovered, identified and recognized, acknowledged, constructed and gradually resolved. Following how models are produced, how they travel, are negotiated and stabilized in the architectural office, means for these scholars to unpack design practice. By focusing on the most frequently repeated moves and describing them as design operations, the aim is to help to understand what designers do and the implications of their doing (Yaneva 2005). These works don't invite the reader to figure out, between the lines, a conceptualization or imagine of architectural practice; instead, they punctually reconstruct and depict concrete operations of discussion and actions, in relation with objects.

Starting from this view, investigating the role of architectural design practices in this research means – in methodological terms – to pragmatically define projects' performativity in the interactions among participants to the decision-making process, in the different arenas where design practice occurs, by retracing their effects. This case of the *Masterplan* potentially adds some further dimensions, in

respect to the already-mentioned monographies, in terms of the large-scale and multi-sited character of the process – even in temporal terms, as a case of a two-years engagement. Moreover, the internal perspective as an architect, besides being an observer, sets out a shift in positioning from these studies, both in terms of availability of information and data on the whole process, and – above all – of access to the different levels and arenas in which decision-making occurs. These peculiar positioning and perspective direct the reflections and investigations on architectural design practice, calling into question further decision-making levels – even "outside" the studio – as the dimension in which effects are reached and can be accounted in the process.

Mapping the process

In operative terms, the methodological moves to conduct network-oriented ethnographies of architecture (Yaneva 2017, p. 45) include first of all look at what design practitioners do, through different arenas - formal interviews, informal conversations, chats or exchanges, participant observation, archival research, but also site visits, public presentations, exhibits and events. Ethnographic productions, based on these arenas, include reports, long descriptions, working papers, sketches, photos, and other techniques to take account and trace the process dynamics in their unfolding, as mapping methodologies. In this regard, Mapping Controversies (Yaneva 2012)¹⁶ is a research method that aims at tracing the changing positions of the actors and their trajectories in following debates around urban contested transformations. Computational design and digital technologies are employed to visualize the complex intricacies that architecture creates in connecting several actants in the process, through a mapping methodology that traces the mutual and changing relationships between them. By visualizing networks of actants changing in the process, the author explores, on one hand, recent debates – as the 2012 Olympics Stadium in London or the Welsh Parliament. On the other, she retraces already occurred and well-known controversies – as the Sidney Opera House. With an ANT perspective, any actor enters the network and assumes a position on the basis of its agency – its role. The process is then rebuilt in steps, by following the actants activated while the controversy develops. Then, in different moments, the relevance and the agency of a specific actant can change, and this method allows not only to describe it as in traditional previous ethnographies, but also to make graphically accountable these relations, unfolding complexity through mapping.

It is then clear the long distance between traditional description or account of architecture – mainly about buildings – and an interest towards processes and in describing – and visualizing – this kind of relations and implications. Investigating the role of architectural design practices in the decision-making process, this thesis carries out empirical research inspired by ethnography, without exactly conducting an ethnography. Then, here the tools of ethnography – mapping and describing –

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¹⁶ Mapping Controversies method will be further deepened in chapter 3, in comparison with the research methodology employed in this research.

are put in a perspective through a mapping methodology that relates practices – as design tools – to their effects in the decision-making process – as founding decisions. 17 In this sense, this research has the operational purpose to observe designers' moves, in order to grasp and understand the consequences and effects of design practices in decision-making processes, to increase awareness on the relations among a framework of actions and their effects. Ethnographers of architecture manage to maintain an anthropological distance with the research subject, and this is particularly true in the case of Dana Cuff (1992) and Yann Loukissas (2012), trained as architects, who retain a distance even from their own practices and experiences as architects. Nevertheless, in this respect, I would distinguish the research methodology proposed in this thesis due to abovementioned definition of a perspective – I would say more oriented to the effects – while ethnographers aspire to be a-perspective.

Finally, in methodological terms these ethnographic studies define the role of the researcher with respect to the object of study, which in this thesis is important and is to be methodologically founded. In this sense, these works are significant in the practice of researching in itself, in the balance between the insider's self-report and an outsider's observation of the day-by-day different activities experienced. This leads to the focus of the next paragraph, that is about researching in architecture as an "ecology of practices" (Stengers 2005; Frichot 2017). Researchers who aim to unpack the ecology of practices of architectural design have also to ask themselves how design can be read "from within" (Yaneva 2018). This means asking how architects can be ethnographers of their own practices, how can they be both the object of enquiry and researchers able to advance knowledge in the field.

1.4. From observation and description to action

In this research on the *Masterplan*, the direct observation – while participating – of the process allows to highlight architectural design actions in pragmatical terms, tracing how models and projects are produced, negotiated and disseminated. Starting from the collected data, the analysis does not aim at conceptualizing the architectural practice, but at reconstructing it and restore its concrete operations, how they take place and how they produce effects in the process. As already explored, this research starts from a model of action that in many respects 001 corresponds to what is analyzed by the "new ethnographers", conceived in terms of entity in action instead of static things, and in which the researcher acts in the process, as in a running lab.

Moreover, there are several aspects that leads this research reflecting on the role of the researcher in the process:

¹⁷ This perspective will be deepened in the methodology section in chapter 3.

- the research occurs simultaneously with the process itself;
- the issue of the role of some architectural design practices relates to designer's projects production, on one hand, and can be traced and investigated in a pragmatic way as a researcher, on other hand;
- this type of research is qualitative and allows an interpretative approach and in close correlation with the context in which the phenomenon takes place.

As a consequence, the possibility of acting as both a researcher and a designer on the process opens up a reflection on the possibilities of observation and research in action. The main difference from traditional ethnographers is foremost that here I am both a running actor and an observer of a practice, while those researchers are basically observers. This opens up a necessary reflection about this specific positioning between practice and research on practice, in terms of perspective.¹⁸

A creative ecology of practices

A perspective as the just appointed, related to the application of STS and ANT to architecture, is linked to the so-called "ecology of practices", a concept developed by the philosopher of science Isabel Stengers (2005, 2010; the concept is also taken up in Yaneva 2017). 19 Stengers, starting from a claim of legitimacy in the science field, defines the possibility of a knowledge of reality, not investigated from an intelligible point of view, but focusing about how we experience it and interact with it. This opens the possibility of considering practices precisely in what makes them different, rather than abstracting what they have in common – as we tend to do actually in the field of scientific research (Stengers 2005). In this sense a "creative" ecology of practices, as expressed in the work of the architect and philosopher Hélène Frichot (2017, 2018), is then pursued in this thesis as an operative modality that builds its limits of exploration in relation to the direct observation of the practice itself; which is legitimated also in the interaction with the object of the observation; and that in relation to the approach used to study the object, redefines its own boundaries. In Frichot's view, ecology of practices allows to intend practice as "non-neutral tool for thinking through what is happening" (Frichot 2015, p. 3), that means to start from what is happening in local contexts, focusing on particular problems and investigating a practice's relation amidst a situation.

¹⁸ This crucial point about positioning the researcher is here explained in terms of perspective; it will be then deepened in chapter 3, in methodological terms.

¹⁹ This concept has been anticipated in 2005 and then developed in the first tome of *Cosmopolitics* (2010). For Stengers – influenced in her work by Deleuze and Guattari, Latour and Whitehead – the ecology of practices involves a complex ensemble of interaction between human and non-human beings. It presupposes a constructivist approach, process oriented and focused on how things are produced – rather than a deconstructive one, more focused on critics. As a consequence, it refuses a primacy of "truth", that would deny the validity of other theories and practices outside.

STS and ANT inspired methods in architecture research

OBJECTS

- · symmetry between humans and non-humans
- human/non-human negotiated relations in a network
- architecture and projects not as static objects (buildings), but as moving processes
- architecture as a collective process of negotiation and interaction shared with
- sketches/drawings developed and used through interactions
- \bullet processes of design thinking and negotiation / the entire web of moves that are

traced by the action of design

SUBJECTS

• all actors/actants of the network, including non-human entities

PROCESSES and MODEL OF ACTION

- an actant (human or non-human) can associate or dissociate with other actants
- there is a distributed agency throughout the system
- dynamic and entangled assemblages of the social and the technical
- \bullet processual dimension and assemblages continually produced in practice
- a chain of effects generates the conditions of projects and architecture

AIMS and OUTCOMES

- · network mapping and description
- investigation of relations and how power flows within the networks
- · practice-oriented studies of science and technology

RESEARCHER'S

PERSPECTIVE

CONTEXT

- · daily-basis observations of everyday practice
- running labs and qualitative research

THEORY

- · technology and science are integrated to produce new knowledge
- social and technical aspects are equally considered and analysed

APPROACH

- · narratives and description to unpack and unravel reality
- \bullet to follow how actors/networks come together to act as a whole
- \bullet to investigate and describe how actants (human and non-human) are interrelated in practice

FOCUS

- \bullet dynamic and relational aspects of the different entities in action
- · each object/entity as a transitory condition of a system of actions
- the role of visual representations

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STS and ANT model of action and research perspective.

Moreover, an ecology of practices means that the way you circumscribe your methodologies to deal with the problem is in itself an act of problematization: the way you frame it and tackle it do not exist independently of you.²⁰ Considering one's research practice as an ecology poses a fundamental issue of objectivity and scientific nature of the research – since architecture traditional studies enhance a divide between the material and the social spheres, that means a separation between objective and subjective (Yaneva 2012). However, in following the folds of practices in their day-to-day deployment, this bifurcation necessarily shall lapse in the practice itself. By following, tracing, accounting and visually mapping its dynamics, the researcher pragmatically describes what happens, how the actors and networks transform, while having no complete status of an object nor of a subject (Yaneva 2012, p. 3). Then, configuring architecture as the result of an ecology of interconnections, the objective/material is linked with the subjective/human. In this sense, a matter of being embedded or "situated" (Haraway 1988) precisely counteracts any ambition of objectivity – in a general sense – by suggesting that scientific knowledge depends instead on partial, situated and embodied views of reality. Then, objectivity is in the critical positioning itself.

A practical strategy of positioning

However, the above-mentioned positions recount a vision, more than a practical strategy. The challenge in this thesis is to methodologically establish researcher's position, where he is part of what he is studying, without missing this embodiment in practice – instead emphasizing its specificities. Indeed, researchers embodied in a situation are able to unpack the process and take account of the *folds* of a situation. The role of practices in the process can be deployed, making visible the invisible (Stengers 2005, Frichot 2017, Doucet and Frichot 2018), precisely because of the involvement and direct experience in a running lab, like scientists when "setting up trials and instruments so that the invisible actors – which they call microbes – show their moves [...]" (Latour 1983). In this immanent engagement from within a situation as it unfolds, a further development of the thesis is then a methodological structuring of this positioning, supported in practice. The issue is then how the interpretation and analysis of data can be considered – in methodological terms – more or less objective and reliable, in particular due to the ordinariness of the specific case study. Indeed, the ongoing process is relevant as an opportunity of action perspective of which the researcher analyses structure and modality and the peculiar value of this work aims at being located not in the object of observation, but in the methodology and the tools employed to grasp its complexity.

²⁰ These concepts are deepened in the special issue of Architectural Theory Review, curated by Hélène Frichot with Isabelle Doucet. In their editorial "Resist, Reclaim, Speculate: Situated Perspectives on Architecture and the City" they explicit the aim of discussing theory of architecture as a practice, that means to resist the division between the two spheres by drawing attention to the specificity of situations. Indeed, practices are always intertwined with these specificities and with situated problems. Their effort is inspired by radical feminist thinkers - a direction that is not deepened in this research - including Donna Haraway, Isabelle Stengers, Jane Bennett, Rosi Braidotti, Maria Puig de la Bellacasa, and Karen Barad, as an invitation to tell "alternative" stories by resisting certain taxonomies and conceptual categories.

This research, characterized by the interaction with reality and with the specific context of action of the Masterplan, needs therefore some further considerations regarding the functioning of its specific ecology of practice. The practice is first of all distinguished from researching on that practice, precisely because of the first's sole objective of responding to a specific and contingent request or need – as tacit research carried out in practice (Till 2007). Instead, once having carried out some action, an approach that reflects and describes the logic of the method itself can be useful in terms of replicability (Frichot 2015). This point will be problematized in the methodology section, however a reflection can be anticipated around the categories of applied researches in architecture – practice related researches – that are usually distinguished in academia between practice-based and practice-led research, on the basis of their findings (Candy 2006; Sequeira 2011).²¹ Indeed, if the contribution of knowledge of a research is a creative artefact, we refer to practice-based research; instead, when a deeper understanding of a practice is the main goal, the research is practice-led. I would suggest that the majority of the researches already mentioned - from an STS and ANT perspective - aims at producing knowledge around the nature of a practice. As mentioned in literature, therefore, this kind of works are basically produced in text form, as in ethnographic accounts. Instead, in this thesis one the expected main contribution aims at being recognized through a creative product, as a necessary condition to fully understand the significance of the research itself.

In conclusion, a further reflection on the methodology this research follows can be made in terms of, again, the internal perspective of the researcher. This perspective makes it possible indeed to show the relations between documents, actions and decisions, during the whole unfolding of the practice in its multi-sited character. Then, a process that could have seemed linear from a different perspective of observation is actually made up of a series of deviations, that the internal perspective – on the different levels of formalization in decision-making – allows to be accountable. Architectural design as a process of producing and negotiating projects – that travel and deviate – has the ultimate goal to be realized. By assuming completely this perspective, a practice-based research on this issue is outstretched at defining and framing designers' actions to reach effects – as a model of action (Armando and Durbiano 2017). In this sense, the performativity issue related to projects – as documents and inscriptions – serves as an agreement and opens then to the decisional dimension of architectural design and to the possibility for the project to reconcile several positions.

²¹ Adopting a distinction made by scholars in Anglo-Saxon circles, research that takes the nature of practice as its central focus is called 'practice-based' or 'practice-led'. It is then carried out by practitioners – artists, designers, curators, writers, musicians - and, often, within doctoral research programs. They differentiate in terms of outcomes of the research. Indeed, if a creative artefact is the basis of the contribution, the research is practice-based; in this case, a full understanding can only be obtained with direct reference to the creative outcome – in the form of designs, music, digital media, performances and exhibitions. If the research leads primarily to new understandings about practice, it is practice-led; then, the results may be fully described in text form.

Chapter 2

The decision-making process of architectural design

The shift of attention from a subject-author, in architectural design process, to the process itself and the architect's work entails a deepen investigation around the performativity of projects. To get a sense of the particular challenges of studying architectural design practice – in particular in a large-scale and multi-sited process - it is then relevant to enlarge the range of the discussion and analysis towards issues of decision-making, declining it into an operative dimension. This brings to a literature that offers approaches to investigate what occurs in the processes of conflicts, negotiations and social interactions between multiple individuals and entities - with the aim of investigating how projects can bring together and reconcile different perspectives and positions. Over the last fifteen years or so, a current topic of research and practice emerged, in response to real and "badly structured" problems and dependent on interaction of different types of actors, for which there are various supportive methods known as Problem Structuring Methods (Mingers and Rosenhead 2004; Mingers 2011; Ackerman and Eden 2011; Ackerman 2012; Tsoukias et al. 2013). These studies are based on the concept of wicked problems, particularly difficult to handle, as object of negotiation and problem-structuring (Rittel and Webber 1973; Schön 1983, 1987; Friend and Hickling 1987, 2005). Then, in this chapter there is an attempt to explore some PSMs' paradigms and categorizations – as the wicked problem concept in itself – in order to intertwine this body of literature with the studies already analyzed in the previous one. The general purpose, in pursuing the exploration of the role of architectural design practices, is indeed defining a methodology to grasp

¹ Operational Research – from which PSMs derive – develops as a modelling practice aimed at helping people tackle real-world problems. As Colin Eden declares in its work *Operational Research as Negotiation* (1989), scholars in this field progressively gain interest in investigating and analyzing the features of socials negotiation that determine action. In this sense, Eden's work can be considered one of the advocates of a shift from Hard OR to Soft Or, as explained in the following paragraph. Particularly interesting, from the very beginning of PSMs research, is indeed the use and development of visual interactive models through which directing interactions and guiding negotiation in a group of individuals – in order to construct an alternative and negotiated nature of the problem, then a different social reality.

architectural design practice – based on this intersection of literatures – in order to *unfold* and to trace the entities involved, their role and their interactions and to link them to the effects in the decision-making process.

At the heart of this focus on decision-making methods is a recognition of the constitutive role played by an intertwining of negotiations in design practice. As already investigated by scholars interested in architectural design theory, even trying to model and to direct a project of decisions – considering the project as a translator for the actors' negotiations – is doomed to fail (Armando and Durbiano 2017, p. 159). Indeed, in the process there are several constraints, diversions and contingencies that somehow climb over the subjective possibility of the actors to express intentions and free decisions. An alternative to test in this thesis is to widen the range of actors involved in the process without an aprioristic definition, investigating how projects are part of chains of effects deployed in practice. This, with an aim of framing practices' role in projecting decisions - in the sense of bringing forward effects in decision-making process through the projects. Indeed, in its interaction with the real world, the project is not a result, but a continuous and cyclical process that contains all the conflicts and social and technical negotiations that generated it. Understanding design production as a process and a continuous flow of transformations (Latour and Yaneva 2008) allows to consider its path and continuous movement, tracing the plurality of concrete entities that in space and time combine to influence the outcomes, as in the PSMs interventions. Moreover, it can be assumed that – dealing with architectural and urban problems – "a more structured approach in the process of choosing alternative transformations could have an impact on the quality and the results of the project" (Todella et al. 2018).²

Among designers, a number of researchers declare to deal with a kind of wicked problems (Cross 1982; Buchanan 1992; Coyne 2004), especially in situations of conflict or difficult to resolve; actually, architectural projects – in particular in their preliminary phases – intertwine often inextricable questions, in a complex system of ramifications and implications and in a context of indeterminacy and uncertainty (Buchanan 1992; Armando e Durbiano 2017). The main assumption is indeed the recognition of the existence of a state of uncertainty relating to future action. In fact, in the decision-making process, as in the design one, some common elementary

² Together with the tutors of this research, some first attempts have been made in investigating the possible interfaces among architectural design and PSMs practices; moreover, these have been discussed in international contexts. Among these: Todella E., Lami I.M., Armando A. (2017) Architectural design and planning talk to each other: a dialogue via Strategic Choice Approach (SCA), 17th International Conference on Group Decision and Negotiation; Todella E., Lami I.M., Armando A. (2018) Experimental Use of Strategic Choice Approach (SCA) by Individuals as an Architectural Design Tool, Group Decision and Negotiation, 1-16; Lami I.M., Todella E. (2019) Facing urban uncertainty with the Strategic Choice Approach: the introduction of disruptive events, in "The science of futures. Promises and previsions in architecture and philosophy", Rivista di Estetica, anno LX (2), pp. 222-240.

operations are recognizable, such as: the perception of a problem; exploration of a possible solution; commitment to action (Friend and Hickling 1987, 2005). Furthermore, usually both decision makers and designers undergo a certain pressure to arrive at a decision or a design solution, but at the same time it is not clear what kind of actions they should undertake, with some degree of conflict (Friend and Hickling 1987, 2005). Hence the need for some form of coordination or negotiation to adequately explore the problem. In particular, "the problem for designers is to conceive and plan what does not yet exist" (Buchanan 1992). Designers always try to describe and control what is yet to happen, by imagining the implications of choices, the possible consequences of different alternatives, and their potential links and associations (Armando and Durbiano 2017). Even if the final result and the future are unknown, for PSMs scholars it is still possible to investigate strategic ways and approaches to manage the uncertainties about future events and consequences of choices made in the present (Friend and Hickling 1987, 2005; Mingers and Rosenhead 2004), in order to reach the final effect. A PSMs informed approach on architectural design theory is relevant for this thesis due to a number of issues to be deepened:

- an interest towards formalized categorizations in framing actions to reach effects within decision-making processes, through problem structuring;
- a socio-technical perspective is envisaged on decision-making processes, with particular interest in the use of models as instrumental in tackling negotiations and reaching decisions;
- the researcher faces urban uncertainty and deals with the future, therefore there is a shift in attention from structuring the problem to reaching the effects in the decision-making process.

Furthermore, architectural design research and PSMs' research take place in a context of continuous research, due to the fact that research is carried out in parallel with the process itself: both processes are like running labs (Latour and Woolgar 1979; Yaneva 2009b) dealing with problem situations in the real-world. Moreover, decision-making methods aim at operatively transforming reality, not only at describing and better understanding its functioning, then PSMs can be a starting point to frame a model of action for a research on practices. Through the next paragraphs, the aim is to highlight and problematize this thesis' interrelations with a PSMs informed approach, even referring with the already mentioned ANT perspective. The first paragraph presents the shift in decision-making methods from the purely mathematical and quantitative way of dealing with problems, to problem structuring. The second provides a reflection around the concept of wicked problem and its practical consequences in a decision-making process' analysis, then relating to the third one, on a socio-technical perspective in PSMs. Then, in the fourth paragraph is deepened the idea of performativity of projects as a way of responding to urban uncertainties and to deal with the future, in decision-making processes.

2.1. Dealing with decision-making through problem structuring

The analysis of complex real-world processes – involving multiple actors, perspectives, skills, roles, interests and resources - aims at structuring and better coordinating all the entities taken into account, in order to obtain results and solutions to problems, and to promote present actions. This is an interesting and current topic of research and practice, in the scope of which several scholars have introduced formal methods, aimed at supporting decision makers in improving the way they make decisions. Among them, Problem Structuring Methods (PSMs) are extensively used, in order to tackle and deal with problematic real-world situations in decision-making processes (Ackoff 1974; Eden et al. 1983; Mingers and Rosenhead 2004; Rosenhead 1996). This group of methods and techniques is used to model and/or to structure a problematic situation that some people involved want to change, in order to negotiate about how to carry out these shifts in the present (Rosenhead 1996). Furthermore, PSMs offer a way of representing (usually with models) possible alternatives scenarios in tackling problematic situations; these alternatives are then investigated in their compatibility with possible future configurations of the environment, or system, or situation in which they could occur (Mingers and Rosenhead 2004). In this way, PSMs deal with the future of social reality, not only by describing, but also trying somehow to construct and structure it, in order to finally modify the real world. PSMs scholars, on one hand, and designers in architectural and urban transformations, on the other, try to deal with the problem of future – aiming at structuring the present actions and practices – in order to reach material effects (Armando et al. 2015). In this sense, compared to well-structured problems, architectural and urban transformations need to be defined in a more strategic way (Rittel and Webber 1973; Mingers and Rosenhead 2004).

Operational Research for "well structured" problems

But what are these "well-structured" problems, in addition to whom PSMs have been developed to deal with the "ill-structured" ones? Mention has to be made to the fact that PSMs can be also called Soft Operational Research (Soft OR), in contrast to the traditional Operational Research (OR), developed since the 1940s to solve problems principally on the basis of mathematical techniques (Trefethen 1995). The origin of OR is due to military needs during the Second World War, aimed at solving important strategic and tactical problems related to national defense. In the second half of the 1930s, the United Kingdom works on a radar project for localizing and intercepting aircrafts; in this regard, the supervisor of the project uses for the first time the expression "operational research" by referring to the final report on the project. Moreover, in the civil sector, OR dedicates at improving and enriching techniques in the industrial sector. OR was initially developed as a very practical and multidisciplinary activity, with the goals of solving problems using any method and data that were appropriate or available. Once established in the academic world – particularly in the United States – it became increasingly dominated by mathematical techniques.

The standard formulations of the OR methodology (i.e. formulate, model, verify, solve, implement) take as a basis the possibility of a unique and undisputed representation of the problematic situation under consideration. Within these boundaries, the standard approach of the OR with its powerful techniques can be extraordinarily effective (Rosenhead 1996); however, outside of such definition and uniqueness, the traditional OR approach stops working completely. Hard OR is then characterized by a formulation of problems in terms of a single aim, hiring a single decision-maker with abstract objectives, from which concrete and feasible actions can be deduced, and in an attempt to remove future uncertainty. In general, the Hard OR has always been limited to problems for which a consensual formulation can be indicated in terms of performance measurement or in general of measures, constraints and relationships through which an action has consequences. Then, it is particularly suitable for purely technical problems — or in which the social component has been heavily hierarchized — for which negotiations between different entities involved are not necessary.

Problem Structuring Methods

In such a context, analysts in OR field actively debate – during the 1960s-70s – the limitations imposed on the practice of dealing with well-defined problems, not suitable instead for solving social problems, in which information related to many stakeholders and decision makers with conflicting values. It was therefore for this different type of problems, in a sense "ill-structured", that Soft Operational Research (Soft OR) and its methods began to be defined (Mingers and Rosenhead 2004). These Soft OR methods are intended as a facilitation of traditional OR, by assuming subjectivity, the existence of multiple points of view and qualitative analysis as main characteristics (Rosenhead e Mingers 2001; Franco and Montibeller 2010). The main methods known as Soft Operational Research (or Problem Structuring Methods, PSMs) are then developed by academics and practitioners in response to practical commitments with real problems (Mingers 2011) – involving complexity, uncertainty and conflict. The situations in which the PSMs are employed (Mingers 2011) are in fact those in which the problem itself is not well defined and the resolution requires the generation of a degree of agreement. In this sense, methods of this kind are usually characterized by (Rosenhead 1989) a formulation of problems in terms of several alternatives, an integration among technical and social aspects and a recognition of future uncertainty, keeping options open for later resolutions.³

³ There are three methodologies, different in applicability and in the quantity of published articles: SSM, SCA and SODA (Mingers and Rosenhead 2004). Soft Systems Methodology (SSM) tries to build ideal conceptual models, to then compare them with the perceptions of the current system and trying to propose modifications (Checkland and Scholes 1990). Strategic Options Development and Analysis (SODA) brings out and registers problematic situations using the cognitive mapping tool (Eden and Ackermann 1996). The Strategic Choice Approach (SCA) aims to facilitate the identification of relationships between apparently unrelated sectors. Participants try to clarify situations and resolve uncertainty by raising and comparing alternatives to make strategic decisions (Friend and Hickling 1987). The latter will be deepened in chapter 3.

Thinking about urban transformations and issues, a decision to draw up a plan, or define a transformation of the territory, implies a huge commitment in the management of discussions, negotiations, agreements, complex problems that are difficult to solve. This research on the *Masterplan* frames architectural design practice in a broader level of analysis "outside" the studio – in a large-scale and multi-sited process that intertwines with decision-making. Since the aim in this thesis is defining a framework of actions to be recognized in the way practices reach effects in decision-making, a focus on PSMs responds to two orders of issues. On the one hand, looking at some formalized categorizations in framing actions – as they reach effects – within decision-making methods is useful in defining the methodology of this research. On other hand, this research aims at contributing in the field by broadening the reflection, in the specific case of architectural and urban problems, to the whole deployment of effects in the process, overcoming the borders of interventions.

Researching in a "running lab"

A further similarity between PSMs and the research on architectural design in this thesis is related to the research context in which they take place. Indeed, in this thesis the research is a continuous "in progress", due to the fact that it occurs simultaneously with the process itself; nevertheless, PSMs act as similar running labs about real-life problematic situations (Latour and Woolgar 1979; Latour 1988; Yaneva 2009b). Moreover, they both intend as object of inquiry the cyclic and continuous process of conflicts and negotiations (Armando et al. 2015), deployed through social interactions among multiple entities for facing the problem situation. Finally, the process is grasped and interpreted as an opportunity for learning and negotiation – rather than the technical solution of a problem. Indeed, the essential difficulty regarding complexity is not so much in its resolution, but in the search for an approach to tackle it. In this sense, in the definition of this thesis' research question as the role of the design practices in the decision-making process is enclosed the link to decision analysis, and precisely to methods that deal with problem structuring rather than problem solving.

Another issue related to PSMs is their strategical dimension – unlike the OR (as explained in Rosenhead 1996) – as implication in terms of commitment for action to transform reality. Then, investigating architectural design practice, this research traces several practices in their reaching effects in decisions, with a focus on their performativity. Moreover, in doing so, it refers to architectural design in its production and exchange of documents (Ferraris 2009)⁴ – or "registered acts" – where decisions, and even strategies, are embedded into the drawings. As a consequence, investigating the spatial dimension of architectural design – as spatialization into the exchanged documents – could even add a further level on the

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⁴ "Documentality" is a theory about documents and registered traces, driven by the philosopher Maurizio Ferraris (2009), in which documents are intended as social objects – within the ontology of social reality framework. This theory will be deepened in chapter 3.

research through PSMs, when dealing with architectural and urban transformations. Indeed, if projects – as documents – are identified as actants and entities in action with a performative power, then they are able of producing effects. This implies that a strategy, through documents, is a spatialized and anticipated representation of future effects, through diagrams, models, maps in the project. In other words, architectural design practice can be intended as "a form of war action, albeit to the sound of documents" (Armando and Durbiano 2017, p. 212). In this sense, the level of analysis that this research deepens around the "travel" of documents in the decision-making process aims at broadening the strategizing objective of PSMs, looking at the whole process of documents exchange.

Structuring as "dividing" the social from the technical

In conclusion, PSMs offer mechanisms to address complex problems, represent the problematic situation in a structured way and develop solutions (Lami et al. 2014), then their keyword is "structuring" (Franco 2006). Since PSMs scholars consider complexity as unresolvable when accompanied by disorder, the path to the resolution of this complexity is found with approaches that can transform disorder into some order, structuring problems precisely and representing them, with models. Nevertheless, scholars in PSMs are more oriented to the possibility to avail of models as instrumental methods of helping decisions, than seeing the whole process as a system of complex relations to be analyzed and faced in their detours. This depends, I would suggest, on the fact that interventions are conducted in iterative and participatory workshops, in which those complex relations are modelled in a somehow "simulated" context. This happens through a somehow punctual and crystallized forum, in which a synchronic version of the problem is represented and faced, then the whole range of entities involved in an urban transformation – whether they are constraints, or unforeseen related issues – can't be really included in the discussion.

Differently from STS-informed approaches, PSMs in a certain way are at risk of facing problems – in particular urban and architectural problems – by dividing the social and the technical sphere. Indeed, PSMs interventions invest substantially on social aspects related to the decisions of the actors, on the basis of their power and interests. What is critical for this thesis is the way PSMs presuppose a decisionmaking dimension founded on subjects-actors who freely express themselves according to their intentions; indeed, this vision implicitly assumes that once the decision has been made – once structured – it can be executed. This depends on the link with OR tradition, born as a very deterministic and linear way of dealing with problems, through powerful actors-decision makers – the general, the captain of industry, or the planner. I would suggest that, through this thesis, further reflections can be reached in focusing on a possible specificity of architectural and urban problems for PSMs applications. Then, this "structuring" could be reached not separating the social from the technical; this implies looking at visual artefacts not only as instrumental for interventions, but as embodying issues emerged through time even before – or after – an intervention, in the whole process.

2.2. Problem Structuring Methods to tackle wicked problems

The above-mentioned "risk" of facing urban problems by dividing the social from the technical, in PSMs field, is evident in the definition of wicked problems. For PSMs scholars, the so-called wicked problems are those for which there is no clear arrest rule, then we cannot say with certainty that we have 'finished' with the problem and found an exhaustive resolution. In fact, working more could lead to a better solution, since there is no single right answer and every new attempt can be important and significant (Rittel and Webber 1973). In this sense, every formulation of a wicked problem corresponds to a solution (Buchanan 1992). In comparing a problem of easy resolution and a problem of this type, PSMs tradition takes a metaphor (Schön 1987) by identifying, on one hand, as a "high ground" the problems of great technical interest, but of limited social importance; on the other hand, by defining like a "swamp" the disorderly and confused problem that resist a technical resolution. Moreover, wicked problems — as already mentioned — are of greater social importance compared to those relatively controlled problems that the OR has been able to deal with technically and methodologically from the beginning.

Urban transformations as wicked problems

The definition of this kind of problems as wicked comes from the design theorist Horst Rittel and the urban designer and theorist Melvin W. Webber (1973), in the field of planning. It is important to start from the assumption that there is no definitive formulation of a wicked problem, since its description – in terms of acquirement of more information – is basically inherent to the solution itself. Actually, the formulation is the problem in itself. As a consequence, there is no stopping rule in understanding the problem to reach a solution, it is always possible to better understand and define it. Moreover, there are not conventional criteria to define a right or not answer and solution to a problem, because it is impossible to produce an unambiguous evaluation in this sense. This leads to a uniqueness of each wicked problem, as none of them can really produce knowledge useful in solving another one; moreover, each problem can be a symptom of another bigger one. In this perspective, there is no 'given' problem, simply waiting to be solved, because there is not necessarily objectivity, it could have many possible descriptions and definitions (Rittel and Webber 1973; Buchanan 1992; Rayner 2017), being the result of decisions and judgments.

Then, first of all, PSMs are conceived to tackle this wickedness and – as mentioned—to structure the process and the interactions among parties to overcome conflicts and reach a solution. Indeed, essentially subjective decisions determine the nature of the problem to be addressed; consequently, the answer – or the answers – to the problem will always be dependent on a potential conflict, often exacerbated by the high levels of uncertainty that the actors commonly have to bear considering and structuring a problem of this kind. In PSMs literature, architectural design and

urban transformations are traditionally considered wicked problems⁵, as complex issues in a dynamic social context; indeed, design studies have received much attention during the 1960s-70s, when this definition is proposed. Such unstructured problems have to manage multiple actors, multiple perspectives, conflicting interests, key uncertainties and cannot be tackled in sequential steps of definition, analysis and solution. Nevertheless, designers and design theorists, following Rittel and Webber's definition, reflect and write about the assumed wicked nature of architectural design and the kind of problems that designers tackle (Cross 1982; Buchanan 1992; but also, more recently, Ritchey 2013).

Wickedness as overcome in structuring

However, I would highlight how, even if PSMs usually consider architectural design and urban transformations as wicked problems, even from the beginning of the diffusion of this concept in the field of design studies, some specificities have been highlighted that become a useful argument to start criticizing it. First of all, PSMs aim at structuring and better defining wicked problems, with a representation of it that can be communicated, discussed and shared. Instead, as expressed in design studies tradition, the designer's aim seems to basically produce the solution. An essential difference is that a problem-focused strategy aims at discovering the rule and enlarging knowledge on an issue; instead, a solution-focused strategy aims at achieving a desired result and producing a solution (Cross 1982). I would suggest that a research on architectural design practice shouldn't ignore none of these aspects: on one hand, architectural design's and architect's task is to produce effects; on the other, a deeper understanding and structuring of those problems to be faced could be useful in operative terms. As a consequence, one of the main aspects of wickedness for a problem – the fact that it doesn't have an exhaustively describable set of solutions and none of them can really produce knowledge useful in solving another one - is thus crossed.

Secondly, the wicked nature of problems implies, as mentioned, that non necessarily the way of defining them is objective; thus, the answer and solution depends on specific and subjective positions. Designers, moreover, seem usually to actively construct and even invent solutions starting from the problem faced (Cross 1982) and design fundamentally concerns with the particular and the specific (Buchanan 1992). In this view, what designers do basically depend on a sort of tacit

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⁵ In their seminal paper, *Dilemmas in a general theory of planning* (1973), Rittel and Webber define planning problems as "wicked" problems, distinguishing them from "tame" problems on the basis of ten characteristics. The term is increasingly used in the research literature, in general, but is particularly relevant for researches on environmental and planning problems – as open-ended and complex ones. To deepen researches about the concept of wicked problem in planning researches see: Wilkin L., Sutton A. (eds.) (1986) *The Management of Uncertainty: Approaches, Methods and Applications*, Nato Science Series D 32(1), Springer Netherlands; Cross N. (1982) *Designerly Ways of Knowing*, Springer-Verlag, London; Buchanan R. (1992) *Wicked Problems in Design Thinking*, Design Issues 8(2): pp. 5-21; Coyne R. D. (2004) *Wicked Problems Revisited*, Design Studies 26(1): pp. 5-17; Ritchey T. (2013) *Wicked Problems. Modelling Social Messes with Morphological Analysis*, Acta Morphologica Generalis 2(1): pp. 1-8.

knowledge (or "designerly ways of knowing", as suggested by Cross 1982), that sentences the wickedness of architectural design problems to remain there and be solved on the basis of pure contingencies. I would advise that this wickedness doesn't arise, for several reasons. In terms of subjectivity, architectural design in itself – while doing – is effectively specific and situated, maybe even contingent; what can be done instead is researching and enquiring on architectural design practice, that can be analyzed, described and faced in a socio-technical and a pragmatic way. Then, the wicked problem concept has been probably preserved because it is a description of social reality and without a consequent well-grounded theory of design. I would instead say that PSMs, with their aim at structuring, actually go in direction of problematizing and reversing this wickedness.

STS' problematization of wickedness

This concept of wickedness is criticized and problematized in STS studies⁶, since it relates to the mutual roles of science and technology. Indeed, STS scholars aim at understanding the complex relationships between these spheres and bridging them through diverse disciplines and practices. Basically, the effort of STS studies is exactly to solve – even reconsider – the so-called wicked problems. Being aware of the complexity of architectural design and urban transformations, since the results of our actions in those contexts can be unpredictable (Westerlund and Wetter-Edman 2017), causes uncertainty and messiness (Law 2004). However, an STS informed understanding of messiness is possible (Turnbull and Hoppe 2019). Indeed, STS literature shows since the late 1960s that practices – scientific practices in particular – can be recounted in terms of problematization of this relation between science and technology, in a pragmatic manner. Moreover, implicitly also Rittel and Webber's article suggest this emerging problematic relation (Turnbull and Hoppe 2019), by focusing in that case on the relationship between science and politics. As already explored in the previous chapter, STS scholars avoid any preconception about the way this relationship works; instead, it is only possible to experience an issue/problem from a particular, situated perspective (Haraway 1988) in which this relation is deployed in practice. That means to say that "we always

⁶ To go in depth in these critics of the concept of wicked problem from an STS point of view: Westerlund B., Wetter-Edman K. (2017) Dealing with wicked problems, in messy contexts, through prototyping, The Design Journal, 20; Turnbull N., Hoppe R. (2019) Problematizing 'wickedness': a critique of the wicked problems concept, from philosophy to practice, Policy and Society 38(2): pp. 315-337. In the first paper, the wicked problem concept is recalled as a way that Rittel and Webber (1973) found to define complex situations where a linear step-by-step design process is not decisive; although, in answering to this complexity and non-linearity, they propose to assume each problem as a particular engagement. In this sense, it is only possible to understand that complexity by explicitly dealing with the particular situation. The second paper refuses the concept of wicked problem in itself, by defining it non consistent both on philosophical and practical levels; instead of a general definition of wickedness, they reframe it in terms of "degree of problematicity". This means – and this is a common poi with PSMs – considering the structuredness of problems, not in ontological terms, but in practical, in an effort to structure the unstructured ones.

know from somewhere, there is no God's eye view presenting complete knowing" (Westerlund and Wetter-Edman 2017), indeed any designer who conducts a complex and messy process addresses and negotiates specific questions in everyday design practice.

In this sense, the charge of subjectivity that makes a problem "wicked" for PSMs scholars is no more considered as a mess, thus an inherent characteristic of sociotechnical problems. In STS view, we should switch from a will of objective knowledge to an acknowledgment about "multiple, located, partial perspectives that find their objective character through ongoing processes" (Westerlund and Wetter-Edman 2017). What is important in architectural design is to be able to explicit the perspective and relationships that guide and argument a scenario or a project. As a consequence, the concept of wicked problem is not a specific ontological class of problems, thus a questionable rhetorical labelling of problems (Turnbull and Hoppe 2019) that can be instead interpreted and faced in terms of sociotechnical relationships – as envisaged in the following paragraph) Moreover, I would suggest that PSMs have in embryo a – more or less conscious – STS informed approach to deal with sociotechnical problems, in which the problematization is not ontological problems (Turnbull and Hoppe 2019) but lies in the structuring.

Architectural design practice from STS to PSMs

In conclusion, if the manner of tackling complex situations and problems stands in structuring the problem, both PSMs and STS scholars actually do it. However, STS approach it with a declared and aware socio-technical gaze, while PSMs are mainly based on a dichotomy between subjects – decision-makers and stakeholders – and objects – problems to be solved. I would suggest that this is one of the reasons why this wickedness remains substantially latent; therefore, a socio-technical influence on PSMs can be advocated. Indeed, through this thesis one of the aims is to understand, in methodological terms, the implications of a socio-technical approach informed by STS for PSMs interventions. On one hand, architectural design practices are approached here through a methodology inspired by ethnography; on other hand, the research even relates to the different levels of decision-making – even "outside" the office – encountered in the process. In this sense, a socio-technical view of practices, on the whole process, can add on PSMs' understanding on the specific architectural and urban problems.

Finally, PSMs can add two further levels of problematization, since they not only aim at representing and describing the problem, but they operatively aim at reaching effects. Then, these methods, in observing and analyzing a problem, provide the researcher precise taxonomies and categorizations of entities — e.g. boundary objects — in their reaching effects. Moreover — as explained in the last paragraph of this section — PSMs even problematize the issue of future, defining different sources of uncertainty, thus they try to manage it and to structure somehow the ways of facing it. Then, these ways of interpreting the process are deepened in this research.

2.3. A socio-technical perspective on decision-making modelling

As already mentioned, the main aim in PSMs field is structuring (Franco 2006), since the essential difficulty with respect to complexity is not intended in its resolution, instead in the approach to tackle it. Typically, they are able to provide analysts with "better access" to strategic problems (Rosenhead 1996), those involving multiple and relatively independent decision makers, but also with various technical implications. A way of doing it is to represent the complexity of the problem graphically (Rosenhead 1996). Therefore, PSMs offer a way of representing the situation, through a model or models, which allows participants in the process to clarify their intention, to converge towards a potentially problematic common problem and to agree on the commitments that can at least partially solve it. In order to arrive at a shared strategy, it is therefore important to reach a common understanding of the unsolved problems affecting the different aspects and stakeholders. This means examining the consequences of pending decisions regarding alternative strategies and interventions (Lami et al. 2014); the existence of multiple perspectives makes it necessary to systematically explore the space of possible solutions.

Modelling as representing the problem

These models are able to capture different perceptions of the situation, to help generate consensus or to facilitate negotiations (Rosenhead 1996). To do this, a PSMs' model must (Mingers and Rosenhead 2004): allow different alternative perspectives to be brought into conjunction with each other; be cognitively accessible to subjects with a range of different backgrounds and without specialist training; operate iteratively, so that the representation of the problem is suitable to reflect the state and the phase of discussion between the actors, as well as vice versa. The interventions are conducted in groups, they are participatory and interactive and operate in a non-linear way, switching between the different steps of the method freely (Rosenhead 1996). The relationships between concepts, activities or stakeholders, similarity or influences, or even between options are – often – graphically represented. By modelling these relationships, PSMs' models are designed to help the participants to establish the structure of the problem (Franco 2006), by allowing people involved to clarify it and to identify potentially feasible commitments in order to solve it (Mingers and Rosenhead 2004).

PSMs aim then to investigate how stakeholders and models are interrelated in practice to produce certain effects in the world, by focusing on the process – actions, behaviors and interactions during the process – or on the products that are made – registrations, inscriptions, models. The exploration of decision-making complexity, in particular with respect to the outcomes of the processes, relates to the interpretation and categorization of the mechanisms operating within them – as relationships that link the ways in which decisions are addressed and the outcomes. These categorizations are partially assumed in this thesis, that aims precisely at accounting the roles of practices as they can influence their outcomes.

Models in group decision and negotiation

The main technology in PSMs are models, as a device to guide negotiations (Eden 1989), used to graphically represent relationships between issues, actions or stakeholders, and relationships between several courses of actions. The general aim of modelling relationships is to help participants to represent the problem situation and its structure, negotiating in group interaction and consequently committing for action (Rosenhead and Mingers 2001; Franco and Montibeller 2010; Tavella and Lami 2018). Indeed, in PSMs' view models enable participants to mutual understand their perspectives and then to agree on solutions (Ackermann 2012; Ackermann and Eden 2011; Mingers 2011; Rouwette 2011; Tavella and Lami 2018). In particular, through models it is possible to define, visualise and the discuss the different perspectives of participants involved (Tavella and Lami 2018). PSMs literature offers in this sense examples of practices – and research on those practices - in which participants and models are mutually intertwined in dynamics of knowledge creation, negotiation of perspectives and action implications. In this sense, PSMs interventions can be intended as processes of subjects interacting with and through objects, in order to achieve some decisions – then in a socio-technical system. Indeed, a socio-technical perspective is already into question in PSM field, in particular in the area related to group decision and negotiation studies.

An interest in understanding the so-called micro-processes between social, behavioural and material entities emerges (Ackermann et al. 2018), that means focusing on their relationship and agency in practice. In this direction, researches in group decision-making context focus on support and modelling practices and routines. Their aim is investigating the use of models, by groups of individuals, as mediating objects that represent and perform in the process (White et al. 2016), intertwining with and coordinating the practice. This socio-technical perspective influenced by ANT focuses then on models and their performativity in interventions; however, since PSMs have a humanist approach and orientation, the aim is mainly to understand the effects on people involved of these models (White 2016), in terms of knowledge, interaction and action. Even if models are considered as actants (Law 2004; White 2009) to be explored in their role and relationship with subjects, actually they are considered instrumentally as tools through which subjects interact, in a different status. In fact, these interventions aim at influencing people involved, even thanks to the models used "as objects, that shape the way that people frame problems" (White 2016). In respect to this, a contribution of this thesis is instead directed in reflecting on the role of visual artefacts in the practice of architectural design, in both embodying the entities unfolded in the process, and conducting instrumentally to realizable courses of action.

Nevertheless, PSMs interventions and architectural design practice have in common a modelling approach; in architectural design, the visual artefacts are aimed at clarifying the several implications of various choices, by relating them to the spatialized dimension of the problem. Basically, in architectural design process each step of negotiation about an issue is materialized through projects (Todella et

al. 2018), as documental traces. Then, as in PSMs the practice is both conducted and analysed on the basis of their models, in this research on architectural design the practice can be similarly considered on the basis of the "traces" it leaves.

Models as boundary objects

In order to analyse these "traces", it can be useful to start from the way scholars in PSMs categorize and define models and their performativity in facilitating or constraining group interactions. In these interventions, models are seen as potential boundary objects (Star and Griesemer 1989; Eden 1992; Pidd 2003; White 2009; Franco 2013; Tavella and Lami 2018), as artefacts through which individuals in a group can interact and discuss. Boundary objects can play an intermediation role at the decision-making level, during interaction among stakeholders, by creating knowledge and directing actions. According to the literature (Franco 2013, based on Carlile 2002, 2004), models as boundary objects act in three specific ways, with equally specific effects: they are able to "transfer", in order to develop shared language between participants; they "translate" to develop shared meanings; moreover, the "transform", with the aim to develop common interests among parties. These actions relate to reality, in the sense that models represent reality with the final goal to understand and then to transform that reality (Franco 2013, based on Pidd 2003); in this sense reality can be transferred, translated or transformed by models, as in the following cases.8

As an example of the first case, causal mapping is a visualizing tool to deal with causal interrelationships among a set of individual and social concepts, in which a base common language is established to communicate and define relations among entities related to an issue. This map – as a specific model – represents a new way of communicating between stakeholders, as a more structured procedure that can help participants to access others' perspectives and reducing what can be identified as a "syntactic" boundary. The model aims here at transferring or communicating knowledge and has the effect of producing a shared language. Moving to a second example, a decision graph consists in representing specific issues with labelled circles, in order to identify connections between problems and to analyse them in a correlated manner. This diagram presents the structure of the relationships between the elements of a complex problem, as a concrete visual object around which

⁷ As Franco (2013) suggests, boundary objects may include objects such as repositories and standardised forms (Star and Griesemer 1989); sketches and drawings (Henderson 1991); prototypes (Carlile 2002); or more abstract objects such as narratives (Boland and Tenkasi, 1995). What is of interest in this paper, is that models are considered as a type of technology, with specific roles and associated effects; this offers then a concrete example, for this research, to understand a theoretical framework to deal with a practice, not with an ontologically aprioristic definition, instead extrapolated thanks to the practice itself.

⁸ Another interesting point, for this research, is in the way the author (Franco 2013) deploys his practice via empirical case vignettes; then, building on the generated insights, it is possible to define a framework that analyzes the dynamics of the different cases. In return, case vignettes can be useful in the report of the analysis, in illustrating the particular theoretical conceptualization gained. In other words, the use of empirical examples let the researcher better understand, first of all, his own findings and then highlight or unpack them for the reader.

organising perspectives and consequences of action. In this case the model aims at traversing a "semantics" boundary, by translating perspectives between those involved, with the effect of creating shared meanings and interpretations among participants. As a third case, again a decision graph can help managing the conflicts generated among stakeholders with different perception of the consequences of particular actions, through negotiation and by allowing group members to share a common perception. The model helps managing a "pragmatic" boundary, with the effect to resolve the anticipated implications and differences among interests, by transforming perspectives, knowledge and interests between those involved. In synthesis, a boundary object performs three possible roles (Franco 2013, based on Carlile 2002, 2004): it transfers knowledge to help communication among parties; it translates knowledge to share specific meanings and differences among those involved; it transforms knowledge by changing or negotiating conflicts into actions. To conclude on this concept, the models developed in PSMs perform as boundary objects when they enable participants to transfer, translate and transform their perspective, in order to achieve negotiated agreements on the problem. Moreover, models must also enable groups to take this knowledge – transferred, translated and transformed – for action implications, that means to transform reality.

Action implications as effects

Models perform roles that help group members to specify, visualise, discuss and share their perspectives on a problem; moreover, since modelling transform the way this problem is intended in order to face it, new knowledge arises in this changing (Eden 1992; Franco 2013). Therefore, models act also as visible and mnemonic devices between participants, helping them in sharing, elaborating and negotiating their knowledge. They then perform a role in interaction, reframing conflictual decisions thanks to the influence of "invisible products" (Friends and Hickling 1987; Todella et al. 2018), such a shared problem definition, learning and consensus about the problems and how to approach them (Todella et al. 2018). This interaction builds a sort of better shared reality, since individuals can easier dialogue by referring to those visible and mnemonic devices. As a consequence, on the basis of the interaction on models, it is the possible to formulate plans and project; this means that knowledge creation has action implications (e.g. agreement on solutions, involvement in policies), which are one of the main intended outcomes of soft OR workshops (see, among others, Eden 1992; White et al. 2016). Indeed, participants negotiate different perspectives, and then agree on courses of action to address the problem of concern (Tavella and Lami 2018).

According to this view, in PSMs field models are conceptualised and categorized on the basis of their effects in the process, that means the way they act – their

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⁹ This third role has also been intended as "transitional", "facilitative" or "negotiative" by other scholars (Eden 1992; Eden and Ackermann 2001, 2004; Franco and Montibeller 2010). Indeed, this is the most socially complex kind of boundary, in which different parties and interests need to be negotiated.

performativity and agency. ¹⁰ PSMs scholars answer to a number of relevant questions related to models' effects, as technology (Franco 2013), as the way they help to create knowledge, the type of interactions they imply, the actions they can afford to those involved. This means that in PSMs research – on PSMs practices – an analytical framework clearly articulates the dynamics of these interventions, by relating different roles played by models to the effects on people involved. In comparison to STS studies, PSMs research provides then not only a description of the entities involved in a process and their role, but also a categorization of the way they perform and produce effects. Anyway, these effects are intended more in relation to the future actions of people involved, than in terms of space transformation. The interest of this research, in the specific realm of architectural design decision-making processes, is then to pay attention to the way visual artefacts perform in the process by linking decisions to their spatialization.

2.4. Facing urban uncertainty to reach effects

Looking at some PSMs methods and perspectives is then a starting point to understand what happens in the Masterplan process, referring in particular to the entities involved and their roles. Since actions and negotiations, in the decisionmaking process of architectural design, are articulated – and nested – through the projects, this research aims at framing the actions performed through projects, in relation to their implications. Indeed, an assumption to be verified in practice is that the performativity of a project in reaching decisions is all the stronger, the more it includes and considers the different issues and irruptions emerged through the whole process. This does not imply that the expected results will be surely achieved, due to the continuous and possible deviations that may affect the process underway (Yaneva 2012; Armando and Durbiano 2017) – as a common structure-condition of both decision-making and architectural design process. However, the role of models - projects and documents here - as representation, negotiation and mediation tools is central and can be framed with the ultimate goal of strengthen it. As already explored, this research starts from a perspective that in many respects interface with PSMs methodologies, together with:

- the purpose of evaluating and investigating those actions by linking them to their effects, on the other;
- the need to deal with uncertainty, trying to problematize and even overcome the impossibility to predict and calculate what might happen in the future.

¹⁰ To deepen researches in this sense: Lami I.M., Tavella E. (2018) On the usefulness of soft OR models in decision making: A comparison of Problem Structuring Methods supported and self-organized workshops, European Journal of Operational Research; Tavella E., Lami I.M. (2018)

Negotiating perspectives and values through soft OR in the context of urban renewal, Journal of the Operational Research Society. These studies – among others – highlight a widespread gap in evaluation of PSMs applications in reaching effects in decision-making processes.

PSMs and the role of models in decision-making processes

OBJECTS

- · models as boundary objects
- models as a type of technology that facilitates or constrains group interactions
- models as negotiative and mediating devices
- models as representation tools
- · micro-processes and interaction between social, behavioral and material entities

SUBJECTS

- subjects as the core of soft OR
- · subjects in cooperating activity systems
- · group as the key entity in decision-making

PROCESSES and MODEL OF ACTION

- \bullet all actors/participants/individuals cooperate and work together in networks, connected through the objects
- problem structuring (not solving) through model supported interactions
- assumption of subjectivism and different views of the world (intersubjectivity)
- interventions are not fixed, but dynamic and entangled assemblages of the social and the technical continually produced in practice

AIMS and OUTCOMES

- · agreement on solutions to modify reality
- negotiation of perspectives/values and identification of new/creative options
- knowledge production
- evaluation of actions/effects

RESEARCHER'S PERSPECTIVE

CONTEXT

- real-life problematic situations considered as wicked problems
- one-shot workshops as main unit of analysis (experimental context)

THEORY

- interventions as complex relations between the social and the technical
- social and technical aspects are equally considered and analysed

APPROACH

- group decision support of actors in connected networks to modify reality
- to investigate how stakeholders and models are interrelated in practice to produce certain effects in the world
- to describe the micro-processes between social, behavioral, material entities

FOCUS

- interventions' construction and dynamics
- the use of models to produce certain outcomes
- the empirical evaluation of outcomes/effects

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PSMs model of action and research perspective.

Conversely, one of the main differences between PSMs research and this research can be seen in the perspective on the process, since these researches on interventions have usually one-shot workshops as main unit of analysis, in an experimental context – in some way separated from real-world, that is a critical point in the field.

The "specificity" of space

Another peculiarity in architectural design research is a "specificity" related to space. Indeed, the difference between PSMs an architectural research is the fact that the project, moving from policies, tackling conflicts and negotiations, and taking shape into documents, produces some clear material effects (Armando et al. 2015), that is what we can see in the physical places considered. These, as points of arrival of institutional actions, are practical and concrete outcomes of the interaction between several entities, including people, documents and space as social objects (Ferraris 2009). This spatial implication in architectural design decision-making processes, I would suggest, distinguishes them from other decision-making processes that do not include this dimension or that do not, however, deal with it directly. Decision-making processes are often constructed and modelled independently of the characteristics linked to space and above all to the project, which is the practice with which effects are obtained with respect to space – despite its autonomy from space and material effects.

It is therefore an element of novelty and interest to understand if the specific spatial practice of the designer, in the form of projects and drawings, is able to influence the process – modifying the positions of the actors involved, transforming the problem, building the agreement – precisely on the basis of spatialization. Indeed, projects – in the processes of physical transformation of space – continuously intersects with decisions, involving actors and automata, as bureaucracies, procedures, rules. The interest of this thesis is therefore to understand if in complex decision-making situations, as occurred in the *Masterplan*, is possible to identify the relationships between the project actions undertaken, the spatial dimension of the problem and the decisions taken in the process.

Strategic Choice Approach in planning under pressure

A perspective as the just expressed, related to urban and spatial problem, is already present in PSMs studies. Indeed, many researchers apply PSMs – in particular Strategic Choice Approach (SCA) – in the problem context of urban transformations and different types of planning situations (Friend 1993; Giangrande and Mortola 2005; Bialecka-Colin 2007; Mingers and Rosenhead 2004). Moreover, some first attempts have been made to explore the possible interface between PSMs and architectural design (Tavella and Lami 2018; Todella et al. 2018). In fact, suggestions have been proposed related to architectural design thinking, as structuring the process in analogous ways to PSMs practice (Tavella and Lami 2018) – even if there is not any formal description of architectural design process in these terms.

As just mentioned, SCA is a planning approach mainly used in urban transformations, centered on the management of uncertainty in strategic situations. In particular, it is developed by John Friend and colleagues (Friend and Hickling 1987, 2005) during the 1970s at the Institute for Operational Research, a mixed company between the Operations Research Society and the Tavistock Institute of Human Relations. It is initially created within the public sector organizations – in particular local authorities and city planning departments; it is then influenced by the Tavistock social approach and the concerns of professional decision makers. It is documented in Friend and Jessop (1969) and in Friend and Hickling (1987, 2005), including many applications. In SCA, the decision-making process includes then three main stages: the perception of a problem; the exploration of a possible solution; the commitment to an action. Therefore, planning is intended primarily as a means to remedy uncertainties regarding future action. In fact, what makes it problematic for decision makers is that they are under pressure (Friend and Hickling 1987, 2005) to make a decision about the future, but at the same time it is unclear what actions they should choose.

This method is perfectly suited to any situation in which one or more decision makers are finding it difficult to choose how they should act in response to some particular decision problem in which they are currently involved. Developing the view of planning as a process of strategic choice it is further helpful to see the process as a continuous shift between the different and complementary ways to deal with the decision-making (Friend and Hickling 1987, 2005). That method does not lead to the drafting of plans as rigid system requirements, but it identifies the actions and projects to be implemented in successive phases of an incremental and continuous process. SCA has indeed been applied to several planning situations (Tavella and Lami 2018) and has similarities with the processes in which architects and designers are usually involved. 11 Indeed, in the minds of the pioneers of SCA, the method is intended as "a useful framework for reflection and learning as well as action" (Friend and Hickling 2005, p. 343). Then, SCA allows an expression of the problem in more accessible forms (Friend and Hickling 2005, p. 87), through models used as an exchange object to generate effects and produce consequences in the process, within the group and among the participants – the so-called "invisible products". The future of social reality is then a core issue in SCA – and in PSMs in general – since decision-making processes occur in a regime of so-called "genuine uncertainty" (Ritchey 2013) and impossibility of prediction about what might happen in the future.

¹¹ To have an account of other research context in which SCA has been used: in local community development, such as to guide the choice of land use strategy (Friend 1993), to define the preliminary plan for the rehabilitation of sub-urban neighbourhoods (Giangrande and Mortola 2005), or in participatory workshops to define the masterplan for an urban regeneration (Bialecka-Colin 2007); or in environmental policies, as a multidisciplinary approach for sustainable solution for energy-efficient buildings (Fregonara et al. 2013).

Tackling uncertainties related to the future

In dealing with it, PSMs not only describe, but also try to somehow structure this future; moreover, since any form of planning is uncertain in respect to alternative courses of action (Wilkin and Sutton 1986; Lami and Todella 2019), these approaches try to manage and tackle this uncertainty in explicit ways. This is the same problem architects and designers face every time they design, due to the necessity to conceive something that doesn't exist yet (Buchanan 1992). Even designers, indeed, try to deal with the future, by anticipating the unknown implications and consequences of possible courses of actions. In this sense both SCA and architectural design strategically face the uncertainties of possible futures linked to the present actions (Friend and Hickling 1987; Mingers and Rosenhead 2004; Armando e Durbiano 2017).

In this sense, an awareness in managing uncertainties¹² is the first step to respond to them in practice; moreover, a categorization can help in determining the aim of the actions to be carried out in order to better understand and then solve each specific uncertainty. In SCA three types of uncertainty are identified (Friend and Hickling 1987, 2005). Uncertainties about working environment (UE), with a need for more information. Uncertainties about related decisions (UR), with a demand for better coordination. Uncertainties about guiding values (UV), with a request for clearer objectives. Then, each of the three has related requests (Lami and Todella 2019), in order to reach some specific and agreed effects in the future, from which to start developing actions and taking decisions (Wilkin and Sutton 1986).

To conclude, this categorization is interesting for this thesis, since the definition of three different kind of uncertainty can be associated to the several steps through which designers deal with the future in a project, by managing key uncertainties and their related implications (Khakee and Strömberg 1993; Lami and Todella 2019). Indeed, a project too has to overcome some administrative, cultural,

¹² This reflection on the "uncertainty" concept and condition, in architectural design process, will be deepened in chapter 3, about the research methodology. As a first suggestion, starting from studies in psychology field (Zinchenko 2007; Ma's 2009; Kornilova and Kornilov 2010), it is possible to define different attitudes in dealing with and tackling uncertainties. In the field of scientific progress, research tends to activate planning, forecasting and verification tools, to issue certificates and certifications, or to establish procedures and hierarchies, with the general objective of reducing uncertainty. This is also what the PSMs do, which aim to structure the problem and guide the action by minimizing the uncertainties involved. However, if on the one hand scientific progress constantly reduces uncertainty, on the other hand science understands in itself the very idea of uncertainty and considers it in its theories and methods. In some ways, it is possible to accept uncertainty by making an adaptive flexibility choice resulting from a negotiation with the uncertainty itself. In this sense – and this point is very close to architectural design practice – It is even possible to seek and identify a rather strong positive link between the ability to tolerate and integrate uncertainty and a creative attitude. Here we mean creativity as "the ability to reorganize the available knowledge, information, cues, facts and/or skills in a person's reservoir to generate new ideas or useful solutions" (Ma's 2009, p. 39). It is not an interest of this research to enter in a psychological dimension, but in pragmatic terms this link with creativity and unpredictability of future in architectural design is

somehow envisaged in the next chapter.

technical assessments – the technical – but also it is subject of related decisions, discussions, debates – the social.

In this sense, architectural design process is here investigated on the basis of the performativity of documents in overcoming uncertainties and the undertaking actions and transformations. To conclude, since designers should consider "the predictable and unpredictable conditions of action, necessary to move from a project into a real transformation of the world" (Armando and Durbiano 2017), this means that dealing with project's implications and possible deviations is similar that tackling uncertainties in SCA (Lami and Todella 2019) and can be object of further investigation. As already said, architectural design is a process in which projects are produced and negotiated in order to produce effects on reality, and researching on it goes in the direction of defining a framework to define actions performed through the project. As a consequence, a taxonomy of uncertainties can be helpful to categorize the implications and deviations to be faced in architectural design, in order to include them in the process and reach the desired effects.

¹³ Further reflections in this sense are presented in the next chapter.

PART 2

Mapping the process for projecting decisions: a research methodology

Chapter 3

Perspective and actions in a process of negotiation

This chapter aims to describe the research approach and to clarify the methodology to tackle empirical research, aimed at capturing the complexity, dynamics, and unpredictability of architectural design practices and their travel in the decision-making process. The researcher itself is here a primary source of data collection, to investigate direct experiences by extracting perspectives from fieldwork. An assumption in the research – anticipated in the previous chapters – is to consider architectural project as a documental product capable of producing effects on physical transformations. Following the theory of documentality by the philosopher Maurizio Ferraris (2009, 2013, 2017), the project translates intentions into effectualities: it is a trace – as a social object and registered act – that produces concrete effects in the real world. This vision, then, brings reflections on the role of the project, in its technical, symbolic and political dimension (Armando and Durbiano 2017).

Further considerations on the shift in researches on the project constitute the essential reference context for this research, together with a reflection on the related role of architects and architectural design practices. As already explored, architectural design practices are here investigated in a process of interaction between actors, human and non-human, participating in the project as a sociotechnical system. The urban question can in this sense be considered as a sociotechnical problem and the architectural project as a product of testing and measurement laboratories around controversies (Yaneva 2012; Armando and Durbiano 2017). Socio-technical controversies (Latour 2010) are intended as the chains of effects that make up the collective: every time a dispute arises, an enlargement of the collective occurs, then greater diversions allow the widening of the possibilities (Armando et al. 2015). The project, from this point of view, can have a decisive power only by including most of the diversions in the decision-making process, in the time between the beginning of document production and the completion of the transformation (Armando and Durbiano 2017).

The design practice is set in this thesis in an operative dimension, and then the decision-making dimension breaks into the picture (Armando and Durbiano 2014). It is thus intended that the value of the project passes through a social agreement, signed by the actors and institutions involved in the transformation envisaged for the project, whose subjective will is mediated by collective negotiation processes: in this way, the project becomes a recognizable agreement in the form of a contract (Ferraris 2009). If we describe and consider the project as a set of inscriptions that aims to be approved and subsequently executed, the project action will be therefore conceived to take place in an exchange system, with different levels of formalization. It has no a priori value, but as a product of exchange and relative social recognition. Therefore, the project gains a negotiating character and it is possible to investigate where the design practice is effective and relevant, that is where it is possible to link the role of some design practices to the effects in the decision-making process. Often, however, the projects have no effect and the designer does not guarantee that they will see this through to the end. It is therefore assumed that the effectiveness of the project is verified not so much on the paternity of the design product, as on its ability to trigger processes that involve different spheres and the highest degree of consensus. It means passing from the *cogito* to the cogitamus of Latour (2010). The idea of the scientist as a solitary thinker makes no sense, in a context in which the scientific debate in society, in its growing uncertainty, implies networks and interconnections, and necessarily involves a plurality of actors and institutions: the *cogitamus* therefore realizes itself making science and its processes more accessible. In the case of decisions with respect to urban transformations, design and project are intended as a spatializations of data and problems usable in a common dialogue. It is therefore possible to investigate how the project made the difference in the decision-making process, to define if the reference to spatial morphologies can influence the simplification and consequent comprehensibility, through drawings, with even a change in the perception of the problem and the consequence of a vision and common consideration of the problem and its possible solutions.

This research therefore aims to explore the mechanisms that operate within the *Masterplan* processes, to identify or at least hypothesize which relationship links the ways in which decisions are taken – through or thanks to the project as the object of decision – and the outcomes of the same. Is it possible a deeper understanding of what happens within the processes, or rather of the characteristics of the project which, in the interaction, influence the conditions of the agreement and therefore the exchange – in terms of relations between the different entities involved? In this sense the project, at its various scales, is here assumed as an activity that continuously intersects, on the one hand, with the decisions of actors and free subjects, on the other, also with automata and systems of rules and automatic agreements, in a socio-technical system. This research therefore intends to carry out an analysis of the relationship between the decisions and the spatial dimension of the problem through the project, to understand how the design products placed on the table modify the conditions of the agreement and the process.

003

This research

OBJECTS

- · projects as technical and social objects
- projects as documents (sets of inscriptions) capable of producing effects
- · inscriptions and traces
- processes of intellectual technologies production

SUBJECTS

- the decisions of the actors and/or subjects around the table
- the spatial dimension of the problem through documents and/or drawings

PROCESSES and MODEL OF ACTION

- \bullet the focus of analysis is the model of exchange/negotiation as a theory of action
- not only to describe, but to be in action in design research on ongoing processes
- processual dimension of the chain of projects' effects (conflict and negotiations)
- · a sociotechnical approach to architectural design research
- project's reference to spatial aspects simplifies understanding
- project's value as a product of exchange and relative social recognition

AIMS and OUTCOMES

- to include most of the diversions of decision-making process in the project
- \bullet to modify reality through (effectual) projects
- · dynamic and relational aspects of the different entities in action
- \bullet to explore the relationship between how decisions are taken through or thanks to the project and the outcomes
- \bullet to understand how design productions influence the process.

RESEARCHER'S

PERSPECTIVE

CONTEXT

- \bullet running lab in action
- · multi-sited ethnography
- \bullet architects both as observed objects and researchers

THEORY

- social and technical aspects are equally considered and analysed
- \bullet project as an effect of a series of interactions among agents of different nature

APPROACH

- \bullet descriptions of architectural design practice and links with decision-making
- to pay attention to documents, that could have effects regardless the decision of the actors, at a certain moment of the decision-making process

FOCUS

- entities/objects/projects as transitory conditions of a system of actions
- · a situated perspective/entanglement/ecology of practices
- visual mapping/representations of a model of action

003

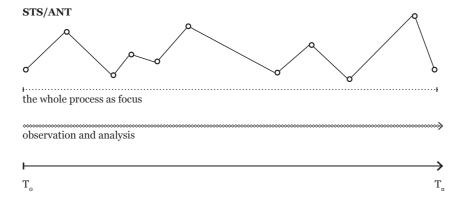
This research model of action and research perspective.

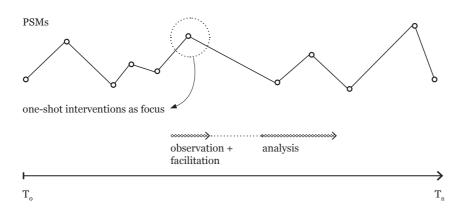
Considering the process of design practice an arena in which material and social entities collide is a basis for analyzing interaction on material traces and supports, which in the specific case of design production are projects and designs, to understand if there are and which are the relevant and recurring elements able to influence the outcomes. This means maintaining that in the folds of the action of a process there are crucial points to understand what the power of architectural projects is, that the microphysics of architectural design processes, of production and exchange of artefacts and architectural drawings, has a special role that is not often seen. If therefore the complex urban transformation of the Masterplan, with the disciplinary and interdisciplinary characteristics and implications mentioned above, is the process and running lab object of this research, it is therefore appropriate to go in depth and to study some specific points, including:

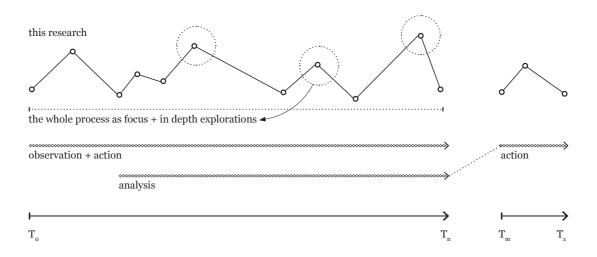
- if I am an actor in that process, how I structure my position in research action - in terms of data collection, data analysis, presentation and discussion;
- whether it is possible to propose a framework of analysis for architectural design practices and actions, in the way they reach effects in decisions.

The act of problematizing the object of study is an attempt at a practical – rather than a theoretical – argument about the possibility of analyzing a process in which I took part. First of all, a first step is to consider the data collected in the field – together with everything that could be accessed thanks to the internal position of the process – like archive materials, which I therefore propose to analyze, describe and consequently interpret. What is important is to structure the methods of recording and formalizing the work methodologically. Moreover, there is also a large body of literature that tends to justify partial perspectives on the research object in theoretical terms, as already mentioned, since practices refer to specific, situated problems. The ongoing process of the Masterplan, in this sense, is configured as a case of action in which I am immersed, on the one hand, but of which I analyze the structure and the methods, on the other. It is therefore necessary to understand the ways of representing and of mapping the process in progress by those who experience it from within, by working on the projects that have to be analyzed. Starting from the action and research models on ongoing processes 001-003 described and summarized so far, it is possible to define a schematization of the different types of process, to understand and identify the main differences in terms **004** of scale, time and researcher perspective.

Starting from STS and ANT approaches, here the whole process – or some parts of it – is the focus of investigation. Basically, the process is grasped through observations, with the aim of describing "how the world works" without an a priori perspective. Indeed, objects and subjects are intertwined, and their agency is configured as a chain of hybrid effects, without a fixed or predefined, neither envisioned, system of causal effects. In terms of scale, the whole process is the realm in which description can carry out the research in order to disentangle the complexity of reality, intended then as a process of subsequent and related effects







004

A comparison among this research model of action, STS' and PSMs' perspectives.

(diachronic). The researcher is here external to the process (an observer). Moving to PSMs approaches, in these field researchers operate mainly through one-shot interventions. The process involved the researcher both as an observer and a facilitator, with the aim of "modifying the world", by negotiating the conflictual positions of different actors. Indeed, the decision-making dimension is based on subjects and actors who freely express themselves according to intentions, assuming that once the decision has been made, it can be established and executed. In this sense, in terms of scale, the workshop or intervention is the basis of the analysis to understand the micro-processes related to the different entities involved, then the temporality is really related to this one-shot approach (synchronic). The researcher is here internal to the process (as both an actor/facilitator and observer). Moving to this thesis, the aim is to both grasp the whole process, and to go in-depth with some explorations and paths. The researcher is involved first of all as an actor in the process, that then tries to analyze and map through a parallel observation of the same. Indeed, the research seeks to maintain the designer's perspective, and to make it stronger and more effective by investigating tools for knowledge, but also for action. In this, the approach combined a view of the process as a whole with reflections on episodes, and synchronic and diachronic perspective as complementary elements to investigate the process.

This leads to investigate whether it is possible to propose a model of analysis of the project action, that conceives visual artefacts' role in the process, as a sequence of actions and decisions with recognizable links. Then the aim is to trace — even graphically — the role the projects play in the decision-making process, how does it favor, hinder or lead to defining certain choices. The possibility of following an ongoing process from an internal point of view, therefore, allows to map, trace and analyze it live. So, one of the aims of mapping and representing the process could be a dual focus: on one hand, on process morphology, on other hand, on project actions morphology. This, with the ultimate intention to identify in what points this process, in its singularity, manifests some typical, recursive, repeatable and generalizable conditions of use of the project.

3.1. Positioning the researcher in practice

The possibility of acting as a researcher-designer in the process opens a reflection in the research on the methods of observing the process and the practices in action. A reflection on the concept of researching through design is relevant for this research (Till 2007), since it assumes a need for architectural design to "speak", that means to communicate the tacit research carried out in practice. Actually, I would suggest, the research in this thesis is not properly a method of researching through design, even if the aim is to explicit, categorize and even let the designer repeat some tacit actions carried out in architectural design practice. It is thus appropriate to discuss about the differences between both terms – and practices – of "research" and "design". The main aspect of design is indeed to define and implement a

specific solution to a real world's issue or problem; about research, the aim is to produce knowledge that can be used in other areas and situations. In this sense, this research action on architectural design practice differs, first of all, from the practice itself in order to produce and acquire new generalizable knowledge – in the first case – with respect to the sole objective of responding to a specific and contingent request or need – in the second. Indeed, "for an investigation to exist there has to be an intentionality of study, interpretation and reflection about the act of doing" (Sequeira 2011). As mentioned in the previous paragraph, in this research these dimensions are both present, with a shift between the act of doing – the work in the *Masterplan* project team – and the research on the practice.

Problematizing the internal perspective

The internal perspective in the process allows then to identify relationships between documents, objects, micro-actions. So, a process that from a different perspective of observation may seem linear and clear, in reality is constituted by a series of conflicts, negotiations and deviations that the internal perspective allows to account for. The insider's point of view on the process allows us to see many episodes, often decisive – which usually escape certain formalized return methods – and to catch a "background noise" that otherwise escapes. In particular, the role of practice and of the project in the process can be unfolded, making "visible" what is "invisible", precisely by virtue of involvement and direct experience.

The direct observation of the process, paying attention to ordinary design practices and related decision-making processes, aims to give priority to the pragmatic content of the actions of the project team – tracing how models, projects, designs are produced, negotiated and disseminated. The goal is to study the circumstances of the ongoing process in a micro-physical way: starting from the collected data, the analysis does not aim to conceptualize the architectural practice, but to reconstruct it and return its concrete operations, how they take place and how they acquire meaning and produce effects in the process. A challenge in this sense is to stress the idea that a qualitative collection of data – interviews, observations, field notes, more generally fieldwork – and in general an empirical approach may be less structured and objective than other types of research. What is important instead is to methodologically structure the methods of registration and formalization of the work – as explained in the next paragraphs – that is precisely the position of the researcher with respect to the object of study. In fact, the ways in which I order and analyze the materials to which I have access – diagrams, maps, diagrams, texts – are themselves the object of research and constitute a generalizable and incremental result of research, in terms of method.

The threads of "power" through chains of documents

Furthermore, following the practice means to expose and to trace the materialization of subsequent operations in the design practice, by focusing on performativity of design documents and by describing their implications in the decision-making process – even reaching some considerations on recurrent and

repeatable conditions of use of the project. Indeed, this research not only somehow detects the "power" of documents in deploying a chain of effects, that means maintaining the designer's perspective and making it stronger and more effective – instead, in ANT informed studies power becomes something disseminated, distributed between objects and people. Moreover, I would suggest that in a research on architectural design, once this dissemination is recognized and mapped, as a researcher-designer a re-condensation has to be reached, to reconstruct the path until the effects, starting from that networks. For this reason, documents are the core of this research, because they are full of power, and by mapping them all and looking at where they lead us, we are able to keep the course in the bundles of detours that make the action proceed. Therefore, seeing and understanding all the threads of power – on documentary basis – can be important to tackle architectural design practice, in terms of defining how things proceed, what are the nodes in which a decision and a bureaucratic mechanism engage each other and trigger an important effect, or make a binding project, or block it, and so on.

Documents are the protagonists of architectural design processes (Ferraris 2009; resumed and structured on architectural design project in Armando and Durbiano 2017): in the interaction between different subjects, documents are the form in which social objects are presented. By social objects they are intended "things like money and works of art, weddings, divorces and joint custody, years in prison and mortgages, the cost of oil and tax codes, [...] research, lessons, degrees [...], wars, humanitarian missions, taxes, weekends [...]" (Ferraris 2009). These objects crowd our daily lives and are made of inscriptions on some medium, so the importance of inscription is the characteristic feature of documentality; more in general, to produce an object it is not enough that an act is uttered; it must be registered. The rule of social objects thus becomes "object = registered act" (Ferraris 2009) and the fact of being registered acts indicates that these are acts which we can trace in the form of recordings of any kind – registration is not necessarily identified with writing in the proper sense.

Performativity of documents

Architectural design project is a document – an inscription – capable of producing effects on the future on decisions, first, and on physical transformations, then, by associating other documents. Projects are, therefore, intended as social objects (Ferraris 2009; Armando and Durbiano 2017) and the main entities on the basis of which a model of action can be analyzed, recognized and proposed – as a process of exchange of documents. Moreover, performativity is the capability of documents – through textual and graphic acts – of producing effects, not necessarily material, on reality, binding the collective of actors involved in a process to their own prescriptions – e.g. think of a project drawing or an urban planning rule. In this research, documents and their performativity are the main focus of investigation. Then, by shifting the attention from the products of architecture – as buildings – to the process, I trace a taxonomy of multiple actors with different ontologies that interact in a multi-sited and large-scale process. In this, not only drawings, models,

and projects, but also note-taking of project team's members, reports, meetings, e-mail and whatsapp exchanges, are collected and examined, exploring the pragmatic connections between these practices and their effects. In other words, in this participation and observation of the process, I pay attention to the ordinary practices and design operations in architectural design, to identify some crucial points that influence the decision-making, that I witnessed specifically as a participant and an observer in this ecology of practices.

Starting from the collected data, a content analysis is the basis to recollect all the different projects in the whole process of the *Masterplan*, to investigate the way they produce effects in the wider decision-making process. Then, what do the *folds* of this particular process – on an almost daily basis observation and participation – allow me to see? The socio-political and technical-scientific relations between them are analyzed and ordered with a process scheme – as explained in the next paragraphs – that diagrammatically represents the mutual links between projects and decision in this sense. I then propose a mapping methodology to analyze the projects, starting from the literature, on one hand, but also suggesting a personal perspective in managing the data.

An issue of objectivity

To further positioning the researcher, a reflection can be carried out about the outcome imagined for the research, that is a process scheme as a hypertext linking projects and decisions. Indeed, it relates to an issue already mentioned in this work, about scientificity and objectivity of a research of this kind. Discussions inevitably arise about the scientificity of architecture, in terms of research methodologies and relevance of the results; the idea that scientific knowledge is able "to approach the 'truth' of the world" (Sequeira 2011) is traditionally diffused, with a tendency to consider as valid mainly disciplinary or theoretical researches in architecture field. This leads to an effort to make humanistic disciplines as much as possible more scientific and more objective (Sequeira 2011), with the objective as hierarchically "superior" to the subjective. In answering this, many researchers push the boundaries of the discipline by searching suggestions in human sciences or other disciplines, as more stabilized than architectural research, generating studies comparable to those of non-architects. In reaction to this need of part of the human sciences to legitimize itself as a hard science, scholars in architectural design field (Candy 2006; Sequeira 2011) reflect on the possibility of researching differently from scientists precisely thanks to the fact of speculating on the action in a theoretical way, on the basis of a practice. In this sense, indeed, disciplinary research tends to theorization, but its results can be practically useful, on one hand; on other hand, applied research related to practice tends to have practical results, but can reach also theoretical aims (Sequeira 2011).

The fact of operating on two levels, on practice and on observation of practice is a crucial point in this work; for this reason objectivity and generalizability cannot lie in the perspective, which is necessarily subjective, but in the method with which I

interpret the data and the practice itself. During this research the issue of objectivity and generalizability has been much debated, with many colleagues and professors, since it is a matter of disciplinary foundation of researches in architecture.

Practice-based or practice-led research

Nevertheless, in this section of positioning the researcher in respect to the research itself I start from an opposition between practice-led research and practice-based research (Candy 2006). The first leads primarily to create and enhance new understandings about a practice; it relates to the specific nature of a practice and can also have operational results and findings useful for that practice. A research of this kind can be basically textual, without including a creative work. In the second case, a creative artefact is the main contribution to knowledge; it relates to a production of knowledge not only through the practice, but through an outcome relate to this practice. A research in this direction demonstrates its contribution in terms of creative outcomes, therefore even if the findings can be textually described, a full comprehension can only be reached through these outcomes. In the first case, there is a researcher who observes the practice and describes it, with the aim of a better description of a thing that already exists. In the second case, the researcher is in a running laboratory and uses the practice to conduct research, trying to study through production and having as an objective an active and strategic knowledge. This means to obtain an artifact that did not exist before – which could also be a theoretical model – and which can provide a tool, even for describing.

In other words, there are the findings on one side and the inventions on the other, so we can distinguish the possibilities of scientific research in this sense: the science of description has as its maximum aim to see and discover something that is there, but was not seen, describing it; the science of strategic action, on the other hand, is not to show, but to build something that was not there and that works — also to describe — like a "prototype". It seems therefore that the content of the description is not the matter of enquiry; instead, it is the form of description that is invented, as a new tool and a "prototype". Trying therefore to consider this thesis outcome as a prototype, an instrument to be able to read a similar or even dissimilar process — which therefore produces knowledge as a hard science — perhaps this problem of generalizability decays.

Generalization as a matter of replicability

Indeed, the question of the replicability of this prototype arises more than anything else; this is a difference with architecture ethnography, which describes and in function of the stratification of textual productions acquires legitimacy and generalizability. This leads to another consideration, not only in terms of finding or invention, but also among particular and general. Indeed, by reasoning in terms of replicability of the prototype, the possible criticality linked to the case study's singularity – with the impossibility to really generalize – again doesn't hold. As already said, the generalization lies in replicating the model and the methodology, which can be used to study many other cases. In this sense, a specification must

also be made about the case study's choice – although this point will be further explored in the next chapter. Therefore, the object of study of this research has become the content of the *Masterplan* project because, wanting to question the intertwining of the design and decision-making dimensions in architectural practice, the opportunity to participate in an ongoing process was fundamental. Strengthened by the above reasoning, however, the fact that it is a university masterplan and not another object is not particularly relevant for the purposes of the research application; in terms of research this work will add more knowledge in terms of research method on a case like the one used, than in terms of content and how university masterplans are made in the world.

To conclude, the central question is what form this "prototype" could take, which makes it unique and replicable. What are the suitable categorizations to make sense of the empirical material? How do I define the actions I observe in practice? These issues are covered in the next paragraphs, nevertheless some considerations can be anticipated. In terms of fieldwork, a first step is reasoning about data collection. It is then possible, first of all, to define a taxonomy of entities, then of the categories with which the practice is confronted, each with a different performance spectrum from the others. Defining a taxonomy is a first generalizing act, insofar as a series of elements are classified, which have interacted in a certain way, in a certain context and in a given time. A second step is to define an analysis framework that allows to translate the reality of the facts into measurable and falsifiable terms. In this sense, the method of data analysis becomes an intellectual technology of representation of the process. Finally, starting from the assumption that such an objective lies in the sphere of the aforementioned practice-based research, a representation issue related to the methodology is the last step that defines the work. This direction is also pursued in terms of the realization of an interactive web tool for mapping, that aims at being precisely an operative replicable "prototype".

3.2. Data collection in a multi-sited process

The data for this research were collected within the participation to the *Masterplan* activities over an almost two-year period – from September 2016 to November 2018). This internal perspective to the ongoing process has been framed in terms of positioning the researcher in the process, in respect also to PSMs scholars, on one hand, that very often pretend to disappear trying to analyze the decision-making process as objectively as possible, even if they actively participate to interventions; on other hand, in relation to STS and ANT informed approaches, in which the researcher is an observer with an aim of description from an outside perspective. In this case, the aim is to completely assume the internal perspective, not as a theoretical one, but more a practical: being part of the real ongoing process entails an access to everything in terms of data, as a somehow "privileged" party in respect to an ethnographer, an anthropologist, or a researcher who had not access to all the process and meetings. The closeness to the field from where observations and

interactions are obtained is here emphasised; the researcher is embedded within the subject matter and aims to follow and to trace knowledge and practices within specific contexts. The challenges are then: to understand how to use the large amount of accessible data according to objectives that help tackling the research question on the role of some practices in the process; moreover, to completely assume and exploit this internal position in a methodological sense.

Fieldwork as source for data collection

Adopting the position of the actor-observer, I use a qualitative methodology in order to grasp the complexity of the process, through the projects' and decisions' travel. Fieldwork is here considered as an important origin for data collection; moreover, the researcher is a fundamental source of extracting and investigating perspectives and topics from direct experiences. The main methodology of data collection is an in-depth case study – the *Masterplan* – with a focus on local and concrete experience and interpretations, as opposed to general, or universal theoretical knowledge. According to Yin (2009), case studies permit exploration, description and explanation of events in strict relation with the everyday context in which they occur. In this sense, case studies provide exemplars that are crucial at making disciplines relevant to contexts. It is instead emphasized the practical realities of the case study, in the everyday contexts in which it occurs and without a clear boundary between the phenomenon and its context (Yin 2009; Stengers 2005; Frichot 2017).

As a consequence, the selected case in this thesis is not an exemplar nor a famous case; thus, it is a practical example that adds to the understanding of the role of some architectural design practices in the decision-making process, from an internal point of view. The purpose is then to explore the architectural design practices of the project team involved, and to comprehend the specificity of such designs in strict relation with the decision-making process, developing deeper comprehension of the decisions made through the design practice. In doing this I adopt an ethnographic orientation, without exactly carrying out an ethnography. The analysis also aims to understand the variety of social and technical actors involved, aiming at comprehending the associations and relations created during the processes of conflict and negotiations among them.

The internal perspective in the process allowed to collect a large amount of data, all over two years on a practically daily basis; however, as it is impossible and peddling to tell the full story, the aim is to tell as much as might be collected through observations and interactions, with a particular focus on what is *in the folds* of the process, behind in the backstage to which I have access in this particular process. The sources for data collection during the participation to the process as project team's member (from October 2016 to November 2018) are:

- meetings' observations and note taking (e.g. Masterplan Project Team, with stakeholders, with university members, with City Council);
- office work (drawings, models, drafts, presentations, reports);

e-mail, whatsapp exchanges and informal discussions.

Through the period of the research, I also analysed articles, books, brochures, institutional reports, and other related documents on Masterplan project. Moreover, even if the ongoing process is the main focus of the research, in specific moments archival research is used to detail some parts of the past process, then articles, books and publications about the ongoing process are also collected and analysed. Such various research and analysis of available texts and images helped in providing a generic, broad overview of the case study. Basically, the data collection is documental, featured with almost visuals and texts, or more in general inscriptions (Ferraris 2009). Tracing these inscriptions is a way of mapping the process, in a multi-sited research action that travels through different arenas: plenary meetings with the administrative and governing bodies of the Politecnico; operative meetings with the Masterplan Team members; office work, drawings, models, drafts, presentations and reports; meetings with stakeholders and external interested parties, like Superintendence and City Council; site inspections and observations; e-mail and whatsapp exchanges between the Masterplan Team's members. All these data are collected by the researcher and then triangulated by using the note 005-006 taking of the other MPT members, to enrich the overall research content without affecting it by his own input or pre-conception.

A qualitative and interpretive approach

Collecting data according to different types of inscriptions allows to start deconstructing and codifying this experience in pragmatic and reusable terms and can lead to a generalization in terms of method and research tools, on the one hand, and of actions and practice, on the other. Researching on the Masterplan, it is in fact possible to sift through the daily practice, pointing to the identification of strategies, specific tactics and problems response operations, unpacking the process and linking the project actions to the effects in the decision-making process. This in-depth case study allows then to research typical, recursive and possibly generalizable conditions of use of the project, through the description, interpretation and restitution in terms as general as possible of the ways in which the project was used, trying to abstract from the data collected if and how it has implemented strategies in the process. Moreover, in terms of perspective, this research aims to recount in detail the many interactions and processes that the Masterplan Team experienced on daily basis: observing meeting, participating in casual conversations, exchanging e-mail and whatsapp messages, working on projects and drawings, and so on. Throughout these interactions (Groat and Wang 2013, p. 215) the research investigates the dynamics from the point of view of the participants (actor in the process), on one hand; at the same time, such insiders' perspectives have to be balanced by an outsider's observation (observer). Consequently, this research can be defined as qualitative research, involving an interpretive approach and then attempting to make sense of the selected phenomena by using a collection





005-006Note taking of MPT members (photo by the author).

of a variety of empirical materials (Groat and Wang 2013, p. 218). In this, the researcher not only involves empirical research to ground the work, moreover playing an important role in making sense of the collected data, intentionally embracing methods focused on interpretation (Groat ad Wang 2013, p. 219): so, this kind of research depends on, rather than rejects the researcher's interpretation of the collected data.

In these analyses I decided not to trace all the participants, partly for privacy reasons, partly for the fact that I would like to argue that is more important and relevant the role, and the institution, in terms of effect in the ongoing process, than the specific person or actor. Due to this reason, I clarify the classification I adopt in 007 the empirical chapters – and in the maps. All the process around the *Masterplan* project – including the design, discussions, and decisions – are intertwined, even if each of them could have its specific actors; moreover, there is no way to understand one of these processes without tapping into the others, neither to take the views ad a certain actor without incorporating the others. Therefore, through the investigation of the interactions of such processes and actors, the architectural design practice emerges in a variety of ways and in a multiplication of reality.

3.3. Following inscriptions through content analysis

How do practitioners make into being a realizable course of action, in spite of the uncertainties it poses, in a practical sense and with a focus on making? To analyze they entwine with the tools that constitute their everyday activities, it is possible to focus on their engagement with visual artefacts, as performative objects that give form in advance to something that is "not yet" (Comi and Whyte 2018). In particular, by addressing the Masterplan case study, this analysis traces the unfolding of visual artefacts, presentations, and documents in general, enrolled in recursive architectural design practices to respond the progressively emerging requests and problem in the process.

In the analysis, I follow an interpretive approach characterized by back-and-forth iterations between data and findings, and by intertwining of visual and verbal techniques, by tracing artefacts across multiple episodes. One of the main characteristics of qualitative research strategy is that transcript, documents, visuals or artifacts must be "reduced" to "data" (Groat and Wang 2013, p. 245), which means that some categorization must be identified to capture the multifaceted and holistic qualities of the phenomenon. Content analysis is a tool for understanding and deeply analyzing data - especially in social science research (Carley 1993; Duriau et al. 2007; Wambui et al. 2015). It is a research methodology to determine textual meaning, paying attention in general on meaning "behind" the text itself, through the systematic classification process of coding, identifying and interpreting themes (Tavella and Lami 2018). Moreover, content analysis is meant to deeply uncover individual and collective social aspects and structures – behaviors, values,

Label	Category	Institution	
MPT	Masterplan Team members, the operative working group, in its	Politecnico	di
	changing hierarchy and composition	Torino	1.
PT	Project Team, the plenary working group instituted to work at the <i>Masterplan</i> project	Politecnico Torino	di
ED	Building and Logistics Area, an administrative structure that deals with the university's real estate assets, in terms of management services, logistics, space planning and project validation	Politecnico Torino	di
PS	Strategic Planning Area, an administrative structure that deal with interdepartmental centres and technological platforms; experimental laboratories and decentralized poles; budget and administration	Politecnico Torino	di
R	Rector of the university	Politecnico Torino	di
VR	Vice-Rector for Building and Logistics	Politecnico Torino	di
DG	General Director of the university	Politecnico Torino	di
PR	Pro-Rector of the university (the deputy of the Rector)	Politecnico Torino	di
SA	Academic Senate, that represents the community made up of staff and students, promotes scientific and cultural discussion and contributes to outlining the strategy for research and training	Politecnico Torino	di
TC	Teaching Committee, that is the preparatory commission for the coordination of didactic and training activities	Politecnico Torino	di
RD	Rector's Delegate for culture and communication	Politecnico Torino	di
DV	Vice-Rector for Didactic	Politecnico Torino	di
BD	Board of Directors, that performs strategic functions, operates in compliance with the principle of financial sustainability of the activities and supervises the integrity of the University	Politecnico Torino	di
SR	Students' Representatives in the University Bodies	Politecnico Torino	di
С	City of Torino offices and officers in the urban sector	City of Torino)
S	Superintendence of Archeology, Fine Arts and Landscape for the Metropolitan City of Torino	Superintenden	су
F	Cottino Foundation, that is a private philanthropic entity that makes its own economic and planning resources available for the realization of initiatives of collective social interest	Cottino Foundation	

007

An overview of the actors involved (this organigram is valid between October 2016 and November 2018).

intentions, attitudes (Tavella and Lami 2018). Qualitative data analysis techniques are suited for textual data and that use of content analysis is documented in literature (Onwuegbuzie et al. 2009; Wambui et al. 2015; Erlingsson and Brysiewicz 2017). In fact, content analysis is useful for analyzing texts with rich social information, by creating a word-by-word or assertion-by-assertion coding and by investigating underlying themes in transcriptions; therefore, this rich social information is reduced with content analysis (Rabiee 2004). Content analysis consists then in a qualitative analysis, to capture specific themes through recurring codes (Fern 2001; Duriau et al. 2007; Onwuegbuzie et al. 2009; Tavella and Lami 2018) and aims at interpreting the content of the text to reveal its deeper meanings (Duriau et al. 2007). Such an analysis seems logical to analyze the collected data in this research, due to the fact that it helps the analyst reducing the content of the data to small and measurable units; moreover, it can be applied to different types of texts, such as written texts, oral texts, iconic texts, audio-visual texts, hypertexts, in a variety of empirical data that is also the case of analyzing the *Masterplan*.

The essential starting point for an analysis of this kind is a transcription of meetings' observations and note taking, e-mails and whatsapp exchanges; this operation concerns all the materials of the two years of observation. Indeed, each e-mail, whatsapp and note taking is transcribed in a unique document of all transcriptions, becoming the primary source for further interpretations; moreover, the whole process is completely traced in chronological subsequent steps. This collection constitutes, first of all, an archive and a complete chronological documentary source of the whole process, in terms of interactions in specific arenas, design practices and productions, and decisions. Firstly, all the meetings are collected in a table with a chronological sequence – here some excerpt of a typical transcription (e.g. classrooms R). Secondly, all the interactions through different arenas (meetings, e-mails, whatsapp) are traced in a same chronological transcription. Starting from this chronologically ordered archive, the approach of analysis consists of four steps.

The first action is to "cut" the whole process in episodes: for each episode observed in the field, data are organized into tables that matched transcripts (divided into email, whatsapp, note taking) with time, participants, and arenas. The episode is a point of departure for drawing connections. This enabled the researcher first of all to highlight and separate the aspects strictly related to one specific project. This first move coincides with the beginning of content analysis, in which it is necessary to explicitly think and define the types of unit and the cutting process, that is the basis for identifying the population and reporting analyses.

Starting from here, a first step in this content analysis is therefore to deeply read (and re-read) the transcriptions and texts to get a sense of the whole (Wambui et al. 2015; Erlingsson and Brysiewicz 2017). According to Gheyle and Jacobs (2017) and to Krippendorff (2013), it is possible to identify different ways of separation (or "unitizing"):

Date	Participants	Arena and Topic	Transcriptions
30/11/2016	MPT, Superintendency	Meeting with external actors (classrooms R): site inspection	-
30/11/2016	Vice-rector, Prorector, General Director, Edilog, MPT	Plenary meeting (Rectorate): design discussions about classrooms R, dialogue with the Superintendency; hypothesis of CRT meetings for OGR and open spaces on the classroom side R	161130_incontro plenario aule R
13/12/2016	Edilog, MPT	Operative meeting (Edilog meeting room): work in progress about classrooms R	161231_MP_work in progress ott-dic 2016

800

A chronological trace of all the meeting (in this case, about classrooms R).



e-mail

MPT (to PT)

[...] a short email to tell you that yesterday morning's meeting with the Superintendent, as you already know, went fairly well. The shared hypothesis resulting from the dialogue is to try to develop a general design solution that foresees the conservation of the facade of the *classrooms* R on via Borsellino, and its integration, as would be desirable, in the project developed by Politecnico; a new meeting with the superintendent will take place around these proposals.



whatsapp

MPT chat

13/11/16, 11:49 - ADR: So, the glass part is very limited

13/11/16, 11:50 - CB: That's right ... The wall is 9 meters high and the overall structure 16

13/11/16, 11:51 - CB: I'll show you the dimensions of the possible new sheds

13/11/16, 11:54 - GD: Do we have a section?

13/11/16, 11:55 - ADR: Nine at the ledge or at the upper end of the masonry shed?

13/11/16, 11:58 - ET: It's 9 at the upper end of the shed and 6 at the cornice

13/11/16, 11:59 - ET: We have a section, stil



note taking

15/11/2016

- photographic survey of *classrooms R*: we have some photos, better to do more (must have a good number of photos)
- historical research (last time we had sketched an A4 file): it should be expanded, it should be a written report signed by MPT
- as-built (we have everything, it just needs to be tidied up)

009

Different kind of transcriptions (classrooms R).

Episodes	Participants	Arena and Topic	Quotes from e-mail	Quotes from whatsapp	Excerpts from note taking
10/11/2016	S, PR, MPT	Meeting with external actors: alternative scenarios' discussion	-	-	-
	MPT (to PT)	e-mail	[] informal meeting with the Superintendent in a short time; prepare a rough solution	-	-
11/11/2016	ED, MPT	Operational meeting (Edilog meeting room): work in progress materials' discussion	_		(ADR) make us available a series of operable materials in order to start developing the agreed proposal

010

The "cutting" of the process in episodes (classrooms R).

PROBLEMS	PRODUCED ARTEFACTS/ PROJECT- RELATED DOCUMENTS	DECISIONS/ DECISION- RELATED DOCUMENTS	PRACTICES
PROBLEMS/ INSTANCES / NEGOTIATIONS/ CONFLICTS	DESIGN TOOLS	FOUNDING DECISIONS	OPERATIONS TO DEAL WITH PROBLEMS

011

The sampling (classrooms R).

- physical (e.g. time period, articles containing keywords);
- syntactical (e.g. single words, sentences, quotations);
- categorical (e.g. everything referring to a class or category);
- propositional (e.g. all sentences including an actor expressing its position on a topic);
- thematic (e.g. all freely generated narratives).

In this case, the first aim is to reduce and analyze the whole process through different specific projects that constituted it and contributed to the reaching of effects in the decision-making process; indeed, the chosen unit to start the coding process is a *categorical* one. In doing this, each project is identified as a category and followed through the different textual sources to recollect the partial story of each one (e.g. *classrooms R*, *Learning Center*, for more details see the next chapter). Then, after identifying the units of analysis in the excerpts (quotes from e-mails, whatsapp or fieldnotes) related to each project (e.g. *classrooms R*), it is necessary to establish the type of sampling to be carried out in each project's related transcriptions. In this case, the identified units of analysis – used to check the transcriptions – are "problems", as instances, negotiations and conflicts; "produced artefacts" as project-related documents (design tools); "decisions", as decision-related documents (founding decisions); "practices", as operations to deal with problems.

Then, a sampling means to define a set of criteria of selection about the textual excerpts to be analysed for each category (each project here), so the text is divided up into smaller fractions – meaning units – based on the research focus and aims (Onwuegbuzie et al. 2009; Tavella and Lami 2018). According to Gheyle and Jacobs (2017), this research allows a kind of *relevance* sampling, that consists in selecting all textual units that contribute to answer given research questions. To focus on the role of some architectural design practices in the decision-making process means then to follow the textual and visual materials, to identify specific moves and operations in architectural design process in which different media are used as tools for reaching effects in the decision-making process, with these resulting units of analysis:

- problems, instances, and requests emerging from the different arenas of discussion, during interactions, and subsequent negotiations and conflicts;
- all the produced artefacts and/or project-related documents or information, as media and tools for reaching effects;
- all the decisions emerged and the decision-related documents or information, as effects of the design practices;
- practices and operations to deal with the problems, as emerging through the exchanges and the produced artefacts.

The next step is to go in depth with the interpretation and deepening of those excerpts, reordered by this framework of units of analysis, and to formulate codes

PROBLEMS	PRODUCED ARTEFACTS/ PROJECT- RELATED DOCUMENTS	DECISIONS/ DECISION- RELATED DOCUMENTS	PRACTICES
PROBLEMS/ INSTANCES/ NEGOTIATIONS/ CONFLICTS	DESIGN TOOLS	FOUNDING DECISIONS	OPERATIONS TO DEAL WITH PROBLEMS
		nota prot. n. 9605	
		160629_MP_delibera CdA.pdf	
Superintendency indicates the need to safeguard the buildings that are part of the OGR complex overlooking via Borsellino (part II of Legislative Decree 42/2004)		nota prot. n. 2705	
confirmation of the Superintendency regarding the preservation of the building		prot. n. 4379	
		the Superintendency requests to redesign the classrooms	
	161110_aule R_dossier.pdf		can you do a historical research by tomorrow morning to understand something more and bring two documents to the Superintendent?

The formulation of codes (classrooms R).

PROBLEM/	PRODUCED ARTEFACTS/ PROJECT- RELATED DOCUMENTS (*)	DECISIONS/ DECISION- RELATED DOCUMENTS	(*) PRACTICES
INSTANCES/ NEGOTIATIONS/ CONFLICTS	DESIGN TOOLS	FOUNDING DECISIONS	OPERATIONS TO DEAL WITH PROBLEMS
		nota prot. n. 9605	
		160629 MP delibera CdA.pdf	
! request to preserve the building (SUPERINTENDENCY / PRESERVATION)		nota prot. n. 2705	
request to preserve the building (SUPERINTENDENCY / PRESERVATION)		prot. n. 4379	
! need to redesign the classrooms (SUPERINTENDENCY / PROJECT)		the Superintendency requests to redesign the classrooms	
→ SUPERINTENDENCY / PROJECT → SUPERINTENDENCY / PRESERVATION	161110_aule R_dossier.pdf		(A1) consulting and putting into relation present and past information: the historical research is necessary to understand the value that the Superintendency recognizes in the project and to recollect the as built of the classrooms

The labelling in interpreting codes (classrooms R).

(Erlingsson and Brysiewicz 2017), described with labels. A series of codes are synthesized and specific labels are created for problems (e.g. request to preserve the building) and practices (e.g. (A1) consulting and putting into relation present and past information), on one hand; on the other hand, an identification code linked to a specific artefact is established both for project productions and decision documents. It is important, in this phase, to retain the core meaning of the text, even if meaning is here condensed in a shortened version. Moreover, in this interpretative step, for each category some further details are specified in order to define a brighter framework of analysis – even these details are detected through the content analysis of transcripts, therefore the interpretation is founded on transcriptions:

- problems: they represent the irruptions that influence or otherwise divert the process. Each issue occurs a number of times in the process and, through content analysis, is labelled with a short phrase and a word/couple of words that relates to the actor who lets the problem emerge and the topic in short (e.g. request to preserve the building, SUPERINTENDENCY PRESERVATION). There is a moment when they break in for the first time (!), then other times when they continue to emerge and a moment when they are included in a document (\rightarrow) ;
- produced artefacts: they are documents, then the table is linked to a folder of project-related documents and productions;
- decisions: again documents, then the table is linked to a folder of decisionrelated documents;
- practices: the operations emerged to deal with the problems are labelled and represent the way an artefact perform. This is the reason why at this level of interpretation they are divided from the other three units of analysis and related to each design tool (*) - in this sense they represent the performativity of those documents.

To resume, in analysing data I follow an interpretive approach, defining multimodal views of episodes in which, for each episodes, are defined participants, arena of 010 discussion and general topic, and the source is stated – indeed, the transcripts are precisely referred to the episode and to the arena, e-mail, whatsapp or fieldnotes. This is the starting point to interrogate and analyse each episode in terms of the already mentioned units of analysis – problems, project-related or decision-related documents, and practices. Moreover, this multimodality (Comi and Whyte 2018) is referred to the fact that not only transcripts are labelled, but also artefacts and documents produced are inserted in this system. Through this analysis, for each episode is then possible to relate a framework of labelled problems to the production of a set of visual artefacts, produced through and enrolled in specific practices to deal with the above mentioned problems; moreover, all these aspects, as an input or as an effect – in a cyclical way – have some founding decisions traceable through documents. As it is becoming increasingly clear, all these relations are too difficult to be referred only in textual or descriptive ways; indeed, this is the reason why a graphical and more explicit way of visualizing those relations is necessary. The next

013

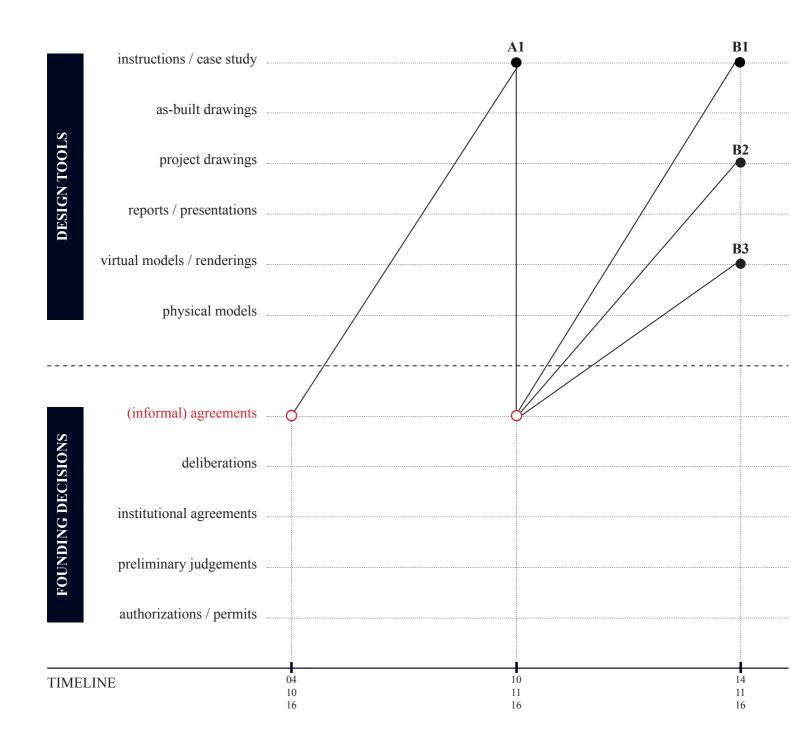
step of content analysis is traditionally to compare and order the codes and to group the ones that appear to deal with the same issue into themes (Wambui et al. 2015; Erlingsson and Brysiewicz 2017), abstracted from data by identifying the underlying concepts. In this case, the uncovering of relationships between codes – problems, produced artefacts, decisions and practices – is then carried out by interrogating them with a visual mapping – as explained in the next paragraph.

3.4. Mapping the process as projecting decisions

014

In this methodology, the visuals are first of all a complementary way of framing the collected data on the basis of the analysis carried out; secondly, they become a further interpretative tool to shape and then understand the relations among elements, in form of maps. Then, what do the *folds* of this particular process – on an almost daily basis observation and participation – allow me to see? I show here the mapping methodology I use to analyze the projects, starting from the model of action and researcher perspective extracted from the discussion about the literature, on one hand, but also suggesting a personal perspective in managing the data, on the other. The visuals are complementary to content analysis in understanding the setting through which elements are grouped, themes are pointed out, and arguments are shaped and illustrated. Maps are built by linking the emerging aspects in visual relations, to reach a more comprehensive understanding of the collected and analyzed data. The perspective I follow in building the maps is then defined at two different scales: as a hypertextual archive of the whole process, on one hand; and as a specific perspective that focuses on episodes. First of all, the opportunity to witness from the inside the whole process allowed me to have access and to trace all the different entities involved – in terms of documents – as an overview. This corpus is then organized from a perspective directly deriving from the research question around the relation between practices and decisions. Indeed, the scheme aims to trace this relation by focusing on: design tools - as social objects (instructions, as-built drawings, project drawings, reports, models and presentation) (e.g. A1, in the figure); founding decisions – as institutional objects (agreements, contracts, authorizations, permits) (e.g. nota prot. n. 9605, in the figure).

However, there is a further category – that I suggest it is crucial to be followed being *in the folds* – that relates what I define here as "informal agreements". As already mentioned, in this research the projects are understood – starting from Ferraris (2009) – as documents in action with a performative power. It has then to be specified that this notion of "formality" is here assumed as an increasing degree of institutionalization of a document exchange (e.g. one thing is if I exchange a report with the Vice-Rector by e-mail, or in an operative meeting, another is if I present an official document in the Board of Directors and it results in a deliberation). I put these "informal agreements" among the decisions categories as I assume the "informal" with a same consistency of the "formal", when registered – with only a different level of constraint, of institution, of juridical performativity.



O14 An exemplification of mapping the archive of the whole process through a dichotomy between design practices and founding decisions.

Following the proposed perspective, the map defines a concatenation of documents of two types: those related to productions, therefore of projects and *social objects*, capable of instructing discussions and conveying the representation of scenarios and objectives; those definable as founding acts, therefore of decisions and *institutional objects*, which involve codified agreement, formalization and approval procedures. This traced taxonomy of documents is deduced in practice, starting from the boundary of documents intercepted in this specific case and/or traced through fieldwork – potentially it could be increased if compared with different arenas. Then, they are defined as follows:

- founding decisions: informal agreements; deliberations; institutional
 agreements; preliminary judgements; authorizations and permits. It will be
 here an aim of the research to understand how much the informal
 agreements those that I can see in the folds of the process being a
 participant weigh in comparison to the other codified decision-making
 ones;
- design tools: instructions and case study; as built drawings; project drawings; reports and presentations; virtual models and renderings; physical models. It will be interesting to note, with respect to the different artifacts produced and exchanged in the process, if they have different performances and/or if the same type of document changes its way of acting in the process based on recognizable factors.

Secondly, the opportunity to access from the inside the whole process allowed me to maintain a deep perspective on the process, to go in depth on the investigation of this relation between projects and decisions. Here again, the map with this particular perspective allows to read the diversions in the exchanges between design practices – as productions and projects – and founding decisions – as effects and decisions. Moreover, these details lead to visualize:

- the problems and needs identified through content analysis, that are the specific requests emerged from the exchanges. These interactions are traced and synchronically represented in the amount of time between two design productions (e.g. during the period of time between the production of A1 and that of B1/B2/B3, in the figure). The requests are firstly indicated under a number of diagrams in which actors are linked through different arenas in which they interact: these correspond to the codes identified in the previous paragraph and are shown in the map with their label phrase when they break in for the first time (!) in an exchange. Secondly, each of the recurrent problem can be included in a document, so in this case appears near the circle related to that artefact and with the short label identified (e.g. (!) SUPERINTENDENCY / PRESERVATION);
- the different strategies and operations that the architect carried on, to deal with the identified problems and to reach effects. In this case, to each code in the map (e.g. A1, B1, B2) can here be related a drawing that appears as a pop-up that again, with the synthetic extrapolations through the content

015

012

analysis is defined on the basis of the link between design productions and the specific problems highlighted above (e.g. (A1) consulting and relating present and past information).

016

First, the map shows the different types of exchanges and arenas for discussion and negotiation — starting from which it will be possible to define a framework of specific problems and requests that emerged from the exchanges. In graphical terms they are diagrams in which the actors are connected according to the different arenas in which they interact — whether they are plenary or operative meetings, meetings with external actors, inspections, exchanges via e-mail, or conversations via whatsapp. This perspective allows to grasp the conflictual dimension of the irruptions and deviations — that is a series of unexpected problems affecting the process. It is possible, through these maps, to trace some aspects related to the exchange through conflicts and negotiations:

- the irruptions can be traced back to intentional acts of the actors involved, so that a human dimension has the power to act and influence the process.
 Dimension that, precisely by virtue of the subjective intention of the actor involved, it is difficult to foresee (e.g. the Superintendency defines a constraint on the facade of the classrooms R);
- the irruptions may not necessarily derive from human subjects, but also from non-humans, so the agency of some actants can modify the process. Even in this case, the unpredictability remains (e.g. the entry into force of a new regulation on the subject of minimum green areas).

Therefore, the problems that emerge unexpectedly interrupt the linear course of the process, so the project must take on these irruptions to continue its course of action – that is, it must deviate. As already differentiated in the content analysis and in the map, the irruptions therefore affect the process both when they first emerge, both with the need to be included – hence with the negotiation they imply. The irruption is usually something that emerges in the process without being possible to predict it in advance from the perspective of the project's action; through the identification, classification – whether deriving from humans or non-humans – and definition of the agency of the irruptions in this process, this research aims therefore to identify possible strategies to manage this type of uncertainty.

Secondly, the map shows the different design productions and practices, traced and interpreted with respect to their performativity, or based on the way they act and the objectives they have in the process. These practices, in the map, are clearly connected to the irruptions – as already said, when they are included – and to the consequent decisions, as effects of the practices themselves when the documents fall into a decision – even to material effects. It is possible, through these maps, to trace some aspects related to the specific strategies to answer to the aforementioned irruptions:

016

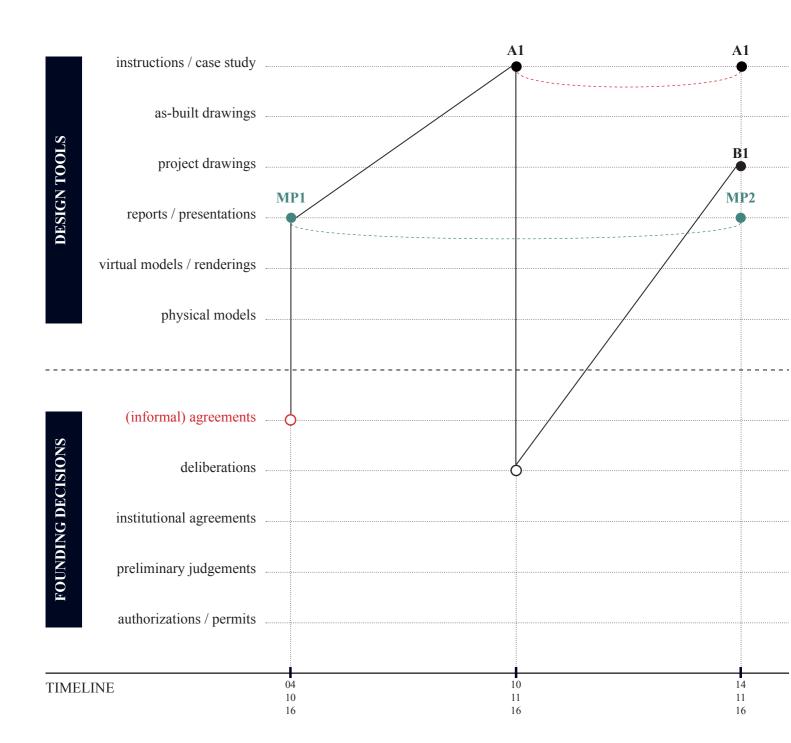
The design practice carried on through a specific artefact.

- the specific design strategies and operational tactics in response to defined problems/issues can be identified, by describing their implications and the reached or not - effects;
- among the different practices all the things architects produce can be defined a potential consequentiality between artefacts and if exists a different degree of definition towards the decision;
- in terms of model of action, focusing on the most frequent moves also allows considerations on typical, recursive and possibly generalizable conditions of use of the project.

It is then important to go in depth in some details of the elements in the map, all defined in order to be used in the analyses. A specification can be made among project-related documents, since there is a distinction between the ones related to a specific project – the black circle – and the others related to the whole masterplan - the aquamarine circle. This can be useful in terms of relevance of some practices and decisions, but also in order to keep the links among projects through a series of common documents. Moreover, between document are traced a series of trajectories - as "strong" vectors - when the project remains the same, as a translation – a red dotted line for the specific project, an aquamarine dotted line for the masterplan – or when the document is included in another one, as a nesting – the black line. The "weak" vectors – not a translation, neither a nesting – are not represented, even if of course all the documents in this map are linked as part of the same project. Another distinction is made in terms of decision-related documents – the empty black circles – when the decisions are taken in an informal context – the empty red circles. Indeed, an interest of this thesis is to highlight if and how an informal dimension of negotiation – the folds of the process – influence the effects, in different levels of formalization of the exchange – traced by e-mail, whatsapp exchanges, or fieldnotes and reports of operative meetings.

Finally, in the actors diagrams all those signs related to the documents circulated is referred to a specific arena of exchange, that means to be able to define which are the contexts in which conflicts and negotiations, controversies or decisions take place in the process. The arenas identified in this process are:

- plenary meetings: this category includes the meetings in which the discussion is at a more formal level and includes the wider community (e.g. Board of Directors, Academic Senatus);
- operative meetings: in this category fits the large number of meetings, in which the project team encounters several actors to inform the process and the projects, without the "formality" of a plenary meeting;
- with stakeholders: this category includes the meetings with external actors (e.g. City, Superintendency);
- site inspections: visit to the place of the project, can be the project team on its own or together with other actors in the process;



The documents and trajectories identified through the mapping methodology.

Exchange Arenas and Participants

MP Masterplan Team
PT Project Team
ED Edilog Office
PS Projects and Strategy Office
R Rector

Vice-Rector (construction)

PR Prorector

SA Academic Senatus

TC Teaching Committee

RD Rector Delegate

DV Didactic Vice-Rector

BD Board of Directors

SR Students' Representatives

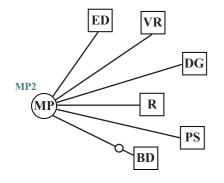
Superintendency

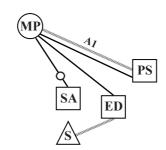
City

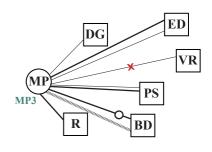
Foundation Cottino

plenary site inspections
operative e-mail
operative whatsapp

Examples of Actor Diagrams







018

The arenas of exchange of documents.

- e-mail: in this category are included the e-mail exchanges of the project team with the actors encountered in the process;
- whatsapp: these exchanges are basically among the project team.

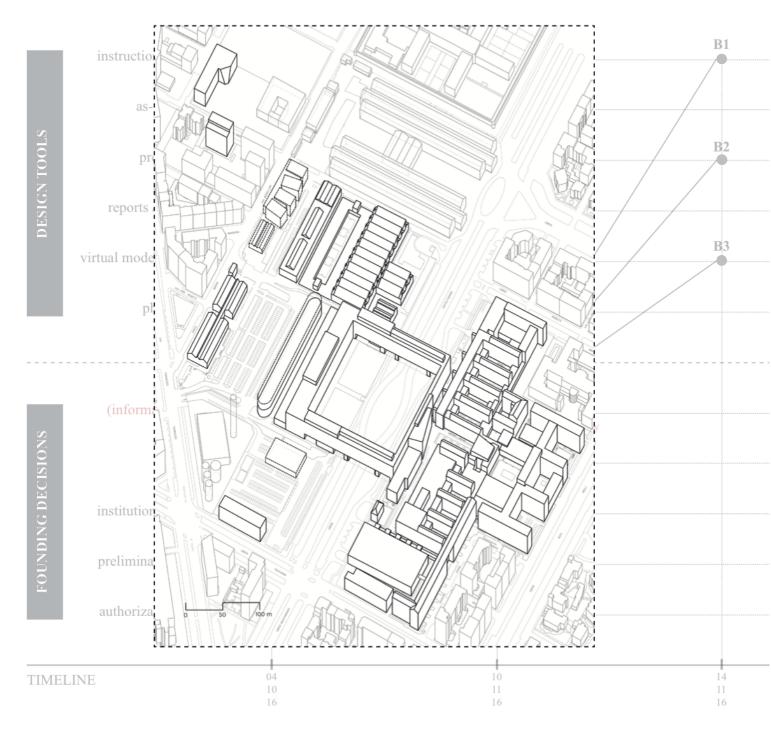
The last element imagined as a pop-up in the map is the spatialization of decisions made. Indeed, the kind of instances that emerge from the documents, are included 019-020 into projects and then formalized into decisions, can be related to physical aspects (e.g. to preserve the original wall on the main street) and spatialized into a threedimensional scheme of the Masterplan – and a focus on each project – that takes account of each decision with an influence on space. In this sense, the threedimensional model changes in parallel with decisions, at the scale of the single process or of the whole Masterplan: this level is interesting as it shows the spatialization over time of the Masterplan strategies, that means to highlight how the specific results in the process influence the potential transformation of space.

In this way, the map acts at a basic level as an archive, to take into account the complexity of the process as a whole, and it constitutes an ex post method for rereading the case. First of all, there is this dimension of retracing the practice and defining a method, with the descriptive and deconstructive force of mechanisms. Nevertheless, there is the assumption of a perspective, that is related to the relations and exchanges between the inscriptions produced by the architects and the consequent institutive acts. The research hypothesis, however, points to the possibility of a further interpretative level, starting from the specific folds of the process, therefore from the situated and subjective perspective on the specific case; perspective that, according to this return methodology, is punctually traced in its construction. This map therefore becomes the basis for some interpretations regarding the role of design practice and the designer in a complex process like this - through some generalizations (e.g. the sequence of media to progressively socialize and then institutionalize the project; the kind and maybe the number of deviations before arriving at a founding decision), after having seen in practice how the project action proceeds.

To summarize, this overview allows to follow not only the course of the events, but the way design practices and productions act and connect in a related way to move the process through decisions, that is projecting decisions. So, this visual presentation and mapping of the process of the Masterplan is a way of narrating and representing architectural operations, also trying to carry forward a research action across scales. In this, I try to:

- follow and narrate the process to capitalize an experience in operative terms;
- identify specific moves/operations in architectural design, with projects as tools for reaching effects, to deal with a framework of problems, emerged in interaction;
- make them describable by identifying a tool for description of this kind of processes.

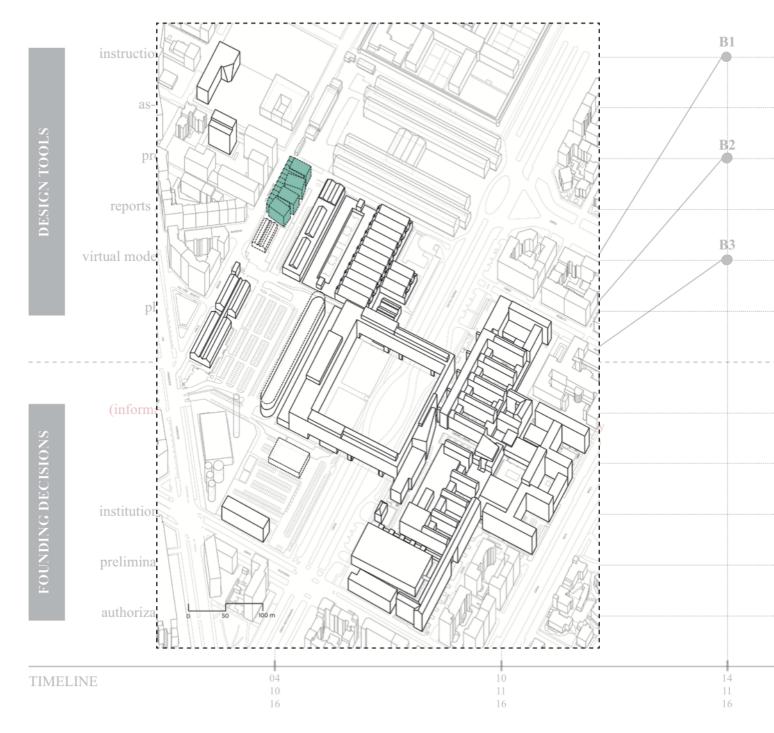




The boxes in the map relates to a popup that represents the spatialization of decisions made through design practices – here about the Masterplan.







The boxes in the map relates to a popup that represents the spatialization of decisions made through design practices – here about a single project. Therefore, in this work drawings, models, reports, and in general design practices are considered as negotiation tools as both embodying the entities unfolded in the process, and conducting instrumentally to realizable courses of action, on the basis of spatialization. Starting from it, the process is shown and analyzed as a sequence of actions and decisions that have recognizable links, in order to trace the related roles of the different entities involved in the process. It has to be said also that texts and comments will be integral part of the empirical chapters (while here I focus on the construction and use of the maps). In terms of perspective, a duality is assumed between design productions and founding decisions, as social and institutional objects that are exchanged and negotiated in different arenas. Furthermore, the inside perspective in the process is completely assumed, on one hand, since it is declared and is essential in terms of collected data; on other hand, this kind of mapping tries to move from the singular and specific case, to define a replicable map of analysis of potentially different processes. Finally, these maps aim to be a tool to investigate what architects do, how projects operate, not only retrospectively, but with the possibility of projecting decisions: indeed, they potentially could serve an architect as an example of situations in which different media have been used with specific effects or have had consequences, so it may decide to use the same strategy, the same sequence of media, to address specific problem with defined and recognized instances. In this way, it would be possible to deal with not only projects itself, but also the exchanges and actions' models aimed at reaching specific effects that an architect can investigate.

3.5. Tackling uncertainties, controversies and deviations: a comparison

This mapping methodology is necessarily intertwined – through analogies and differences – with a number of maps and tools already mentioned in the previous chapters, that can be deepened in relation to the above-mentioned methodology, in order to define its boundaries. In particular, this paragraph focuses on the way other methodologies deal with uncertainties (Strategic Choice Approach), controversies (Mapping Controversies) and deviations (Shenzhen Diagram), in order to recognize similarities or even criticize them in relation to this model.

Strategic Choice Approach

Starting from Strategic Choice Approach (SCA, Friend and Hickling 1987, 2005), it is a method among PSMs in which artefacts are used as an exchange object to generate effects and produce consequences in the decision-making process, within the group and among the participants. It generally begins with the identification of a series of related decision problems and consists of four phases (Friend and Hickling 1987):

• shaping mode: first of all, the decision makers take into consideration and study the various decision areas in terms of their interrelation and relative

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importance or urgency. Decision areas are intended as the practical and specific problems identified in the general problematic situation. Moreover, it constitutes a crucial way of investigating linkages between the decision areas and the possible connections between one field of choice and another;

- designing mode: within each decision area, a set of options is identified and discussed, as feasible alternative solutions and possible courses of action available. It is therefore possible to consider compatibilities and combinations among options, to arrive at a series of potentially feasible scheme of actions to carry out;
- comparing mode: the alternative decision schemes are then compared in pairs, with their evaluation in terms of different criteria comparison areas identified by the participants, usually qualitative. These judgements are subject to uncertainty, deriving in part from the context, in part from the values and the different scopes of stakeholders involved. In this, the consequent need is the management of these uncertainties;
- choosing mode: lastly, this mode concerns the need to make decisions, to reach agreements between the different stakeholders and to commit for action through time. Here the previously identified uncertainties need to be addressed; in fact, each uncertainty area embodies different types of relevant doubts and disagreements. The agreed combination of future explorations to reduce uncertainty is expressed in a list a commitment of actions and explorations.

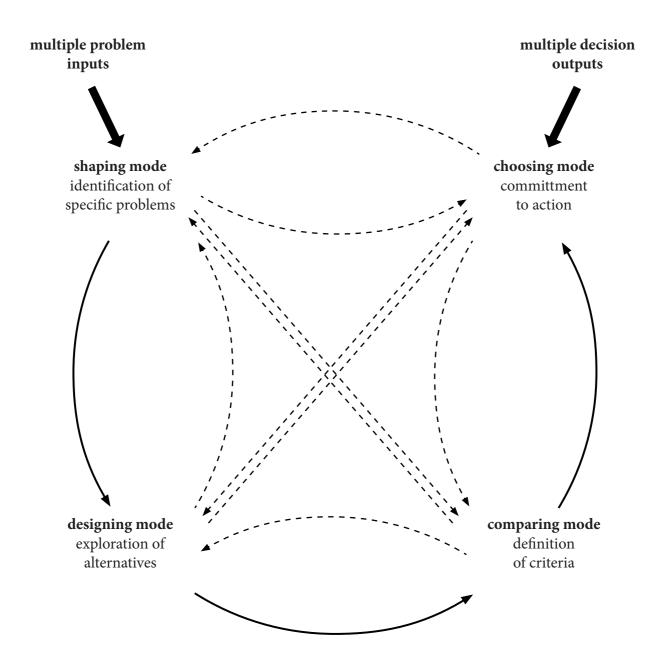
SCA applies to problematic situations where decisions need to be made "under pressure", generally in the problem context of urban transformations and different types of planning situations. The method, I would suggest, models a series of phases that are found in the practice of interfacing with ongoing decision-making processes, so that a phase of definition and structuring of the problem is followed by a proposal for possible alternative solutions, which are compared with each other, with the aim of an informed choice.

The shaping and designing modes are attributable to actions that exist in the architectural design practice process and that are also recognizable through the methodology of this research. In the shaping phase, the identification of decision problems is similar to the extrapolation – through content analysis – of issues and problems related to a project, as defined in my methodology. The main difference, however, is in the scale of observation and action, since in SCA all the problems are defined synchronically, in a moment where all the actors are together around a table and somehow "out of time" – in an experimental context, more than a real ongoing process. In my methodology, problems are traced as they appear in the process, so it is possible to define their paths and to highlight both their influence in the process and the intentionality of those who bring them out – subjects and objects. It is indeed important, in terms of action, to recognize a taxonomy of problems and situations in which they arise, so it is then the work and practice of

the architect to recompose and integrate them into the process. In the designing phase, the definition of alternative solutions resembles the design process in itself, since the architect usually deal with problems by producing projects that solve those problems; then, design tools are the way architects deal with problems. In this case again, in SCA a collective response to problems is defined synchronically through discussion, therefore "outside" the process in progress, at a time when everyone stands around a table to make decisions. Hence, some similarities are recognizable among these phases in SCA and certain perspectives in my methodology, that are the definition of problems and issues to be solved, on one hand, and the design tools and practices employed to tackle the problems. However, the perspective to trace these dynamics are deeply different, since in this research on architectural design practice the focus is on the chains of these elements in the whole process: in both cases the productions are used to deal with the problems that emerged and respond, but in my methodology they derive from interception and constant recording of an ongoing process, while in SCA the phases - however cyclical and retraceable materialize synchronically in an intervention, without the diachrony of the real process.

I would then suggest that the comparing and choosing mode are retraceable in some other elements of my mapping strategy: the comparing issue relates to the tracing of conflicts, negotiations and discussions; the choosing moment can be associated to the founding decisions' dimension, that is the moment in which choices are made in the decision-making process. Thus, also in this case the temporal dimension is different, since the uncertainties identified in comparing mode are all discussed "in theory" more than in practice, synchronically; as a consequence, the choices reached during SCA application are mainly commitments for explorations to be done in order to reduce those uncertainties, more than decisions, agreements or contracts that aim at guiding future actions.

As already said, SCA is one of the PSMs with most parallels with architectural design practice; however, what I think is the main difference is in using or not these categorizations – the different modes – in practice. Indeed, during an ongoing process, architects are embedded in practices with these modes, and act differently dependently on the different moment in which they are; they of course propose solutions to be discussed, or compare different strategies, or recognize a new problem to be solved, but all these actions are distributed over time and in an action that gradually finds itself interfacing with different actors, but not all at the same time. Consequently, I would say that these phases do not "exist in themselves" and/or can be recognized in architectural design process, on one hand. On other hand, further reflections could be made from an SCA point of view to broaden the analysis to the whole process, in which this unfolding of "phases" naturally occur in architectural design process – even to instruct the punctual interventions.

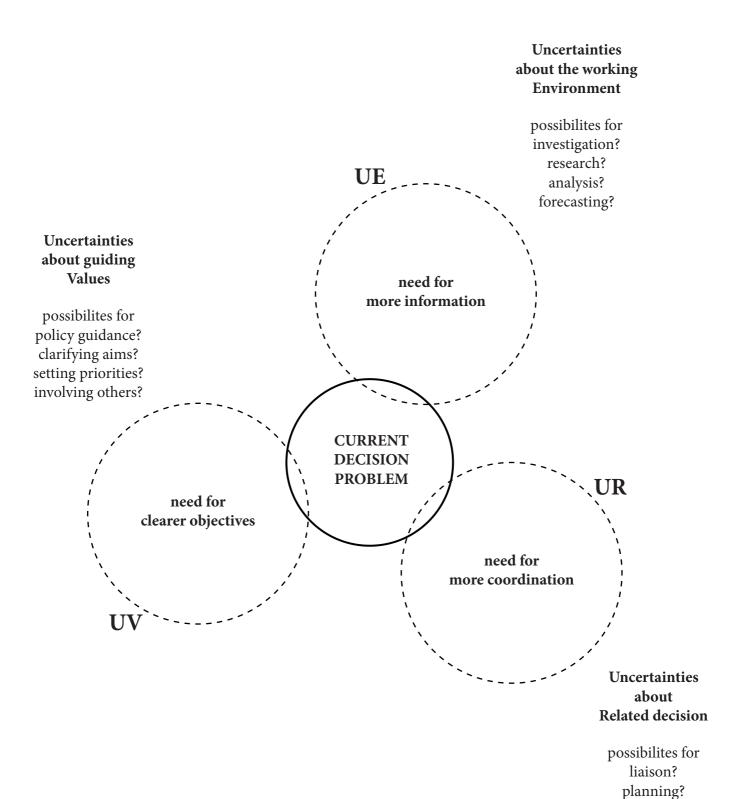


021Strategic Choice Approach phases of application. Adapted from: Friend and Hickling (2005) *Planning Under Pressure.*

However, a useful element to be discussed in its operativity relates to the concept of uncertainty, that in SCA method emerge during comparing mode – as conflicts and discussions (Friend and Hickling 1987; Khakee and Strömberg 1993; Lami and Todella 2019):

- uncertainties about working environment (UE) are related to external
 circumstances and a kind of technical solution and need more information
 to be faced. This kind of uncertainty can be dealt with by responses of a
 relatively technical nature such as surveys, forecasting exercises, costing
 estimations, etc. then the explorations are primarily of a technical and
 economic nature:
- uncertainties about related decisions (UR) are strictly linked to the interconnections between different decisions and choices, sometimes conflicting, and request for negotiations and better coordination. This type of uncertainty demands for an exploration such as application tools, forms of negotiation, collaboration or joint planning, etc. on the relationship between the current decision and others that seem to be interconnected, in order to collaborate and negotiate agreements;
- uncertainties about guiding values (UV) could deeply influence the course of the process, due to their connection with politics and social topics, so there is a demand of clearer objectives. This is the kind of uncertainty which requests for a more political response such as to clarify why the contrast between the values of a community have arisen, to clarify what is the real object of the dispute from, for example, a higher political authority.

Here again, these uncertainties emerge during interaction among actors in SCA application; however, in practice and during an ongoing process, they can be also recognized in architectural design. As an example, the discovery of a land to be reclaimed imply some uncertainties (UE) related to the fact that, by law, an underground parking needs to be located in order to build new buildings. Therefore, it will be necessary to better understand the precise position of the pollutants (in order to modify the project), to investigate the costs related to the reclamation (to relocate the parking, if necessary), and so on. As a consequence, the need to realize an underground parking, mentioned before, is necessarily linked to the reorganization of the open spaces and to the transformation of traffic infrastructures (UR), then is related and influences the whole project. Then, the request by the Superintendency to maintain a portion of a pre-existing building (UV), due to the historical value of the project can block a project and affect the subsequent choices to transform a building. In this sense, the different kind of uncertainties basically represent a possible way to categorize the irruptions, that influence or otherwise divert the process, mentioned in the mapping methodology; as a consequence, these categories are recalled in the empirical chapters to define a taxonomy of irruptions in the processes analyzed – even with a possibility to challenge and transform this categorization.



negotiation? broader agenda?

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The uncertainties identified in SCA and the related specific needs. Adapted from: Friend and Hickling (2005) Planning Under Pressure. To conclude on this possibility, it then is necessary to highlight a difference in SCA and this research approach – that is also important in terms of aims and objectives of using this categorization. Indeed, a bifurcation exists between SCA or PSMs in general, that aim at handling uncertainties somehow making them "more certain", and architectural design practice, that rides and exploits it, puts it into action, making it effective more than certain. In line, in this research I identify some irruptions that can be related to SCA codification; however, the peculiarity is to reflect on the way artefacts and design tools relate to these irruptions – as uncertainties – to reach effects in the process. Nevertheless, SCA codification is useful to recognize what kind of uncertainties irrupt in the process, linking them to the way they are faced.

Mapping Controversies in Architecture

Moving to Mapping Controversies (Yaneva 2012), it is a research method that aims at tracing the changing positions of the actors and their trajectories in following debates around urban contested transformations. The visualization is demanded to computational design and digital technologies, that trace the mutual relationships among actants in a process with an ANT perspective. The map let the researcher trace the changing agency and role of each of these actants, not by describing it, but with a visualization and analysis tool.

In this method, the declared aim is to study a design process abandoning the limit of an historical investigation and a linear account based on it; thus, the author aims at entering the controversy to open the "black box of design process" (Yaneva 2012, p. 64) to be interpreted. The concept of controversy relates precisely to the uncertainties and implications that a process – a building, a design project, a plan – undergoes, in the interaction with a heterogeneous assembly of actors. As in ANT tradition, the aim is to define a multiple object – a socio-technical one – as the product of a number of relations among actors mobilized in the process – and not outside. Mapping the controversy means to trace the movements of the actors involved, in their changing positions and opinions, that is to follow the process in the making. In particular, in this mapping tool semantic web tools and design skills are intertwined to trace dynamically the entities, thanks to a parametric modelling that animates the controversy, on the basis of specific concerns.

The actors – the left column – present in the visualization space are those traced and who act in the controversy – with a number that indicates the counted instances in the source data where the actor appears. Each actor is then accounted, as individual, institution or non-human, and classified on the basis of its role and name. Moreover, it has associated a number of concerns – e.g. cost, legacy, community – that are visualized in the map. All the actors and concerns are visualized in the same interface – a 2D space – and linked with lines, that represent the engagement of each actor with a specific concern. These actors then change size according to the number of their connections. Engagement itself is punctually traced thanks to the links associated to each line – indeed, by clicking on it, the

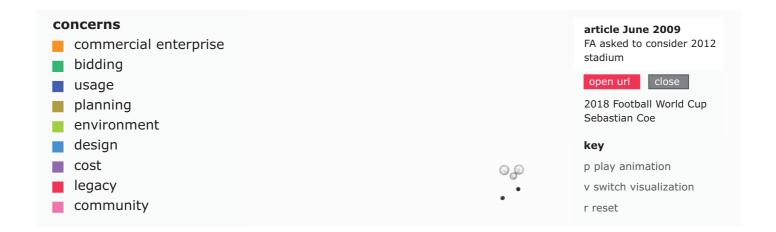
database of articles, quotes and webpages is accounted and shown. The main feature of the maps is the possibility of regrouping and clustering the heterogeneous actors gravitating around a concern, through time; indeed, each concern can be hidden or shown to allow different focuses and perspectives on the controversy. Finally, the timeline enables to see these trends in a period of observation. Then, with *Mapping Controversies* methodology the building is represented in the form of a cosmogram (Tresch 2005; Yaneva 2012), that means as a product of an infinity of relations.

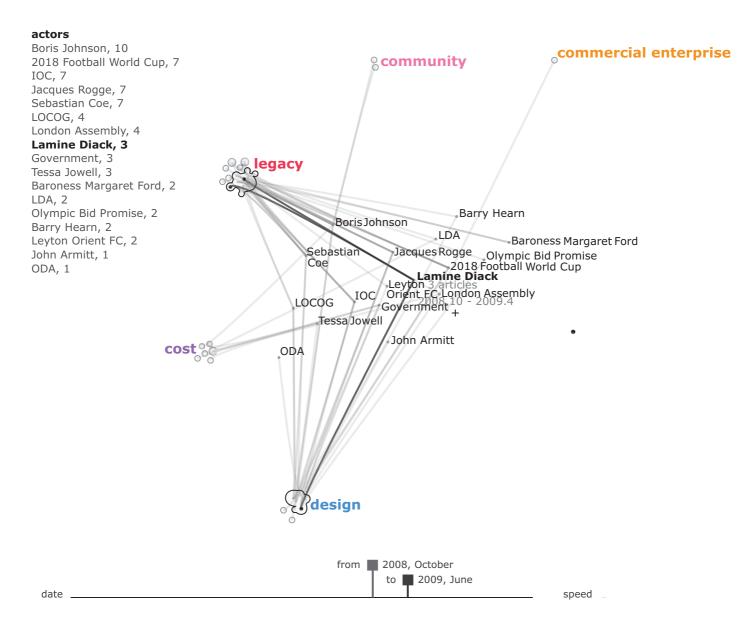
In practice, this methodology represents the set of actions – always referring to agents – that produce a transformation, connected in a network of implications that can be measured and cataloged (Armando and Durbiano 2017). Then, by following the controversy, this mapping method aims at tracing and describing situations that are rarely taken into account; in the same way, in this research the aim is to immerse in a complex dataset that is *in the folds* of the process to give account of an internal point of view, by tracing what is said, what is written and what is done – through the project. Moreover, both methodologies aim at following not so much "what design is, but what design does" (Yaneva 2012).

However, the main difference is in the purpose to follow – or not – as many viewpoints as possible. On one hand, in both cases the procedure consists in tracing a multi-layered and diachronic view of the process – the actors and their relations, the documents/artefacts and their effects – in arenas of negotiation and conflict. On the other hand, the adopted perspective is the dividing line among the two. Indeed, in pursuing the concept of cosmogram, the controversy mappings represent buildings and architecture as the product of an infinite number of relationships, with a description that potentially tends to infinity. The mapping aims to describe all the actors and perspectives, with the stated objective, for example, of informing public decision-making processes on an urban scale (Yaneva 2012, p. 102). This research, instead, adopts as a premise a duality among design productions and decisions, in terms of documents to be traced. In line with the research question about the role of architectural design practice in the decision-making process, in reaching effects, the aim is more strategic than descriptive; that means adopting a partial and internal perspective to define the conditions under which projects are produced and associated with others, producing - or not - traceable effects on the decisionmaking process.

Shenzhen Diagram

A method for assessing the effects of a project is to produce process maps, in which the main action sequences that produced the transformation are traced back to the decisions that determined them – from effect to cause. An example is the Shenzhen diagram, used for an exhibition to understand the levels of interaction of design documents with each other and their implications over time (Armando et al. 2015): the diagrammatic representation of decisions, negotiations, projects and effects, has as the objective of translating and relating everything that appears in the process of carrying out a project.





Mapping Controversies visualizing space (Adapted from: Yaneva (2012) Mapping Controversies in Architecture, p. 99.)

The Shenzhen diagram has the structure of a Cartesian plane with the origin at the top left, defining on the ordinates the diachrony of the process and on the abscissas the sequence of some phases that are associated with the progress of the process – decisions, conflicts and negotiations, documents design and material effects. The traced sequences are between recorded activities – hence documents. The diagram is based on the concept of deviation with respect to the linearity of the process, in fact if the projects did not undergo deviations, they would proceed linearly from the decision, to the project, to the realization (Armando et al. 2015; Armando and Durbiano 2017). Aware of the fact that the design processes are often subject to obstacles and resistances – the deviations precisely - the "conflicts and negotiations" phase represents the most relevant element of this method of returning the process. The deviation column represents the modifications that the project must undergo before making it feasible, granting and satisfying the problems and uncertainties that emerged during the process – or vice versa it can stop, failing to meet the needs that emerge.

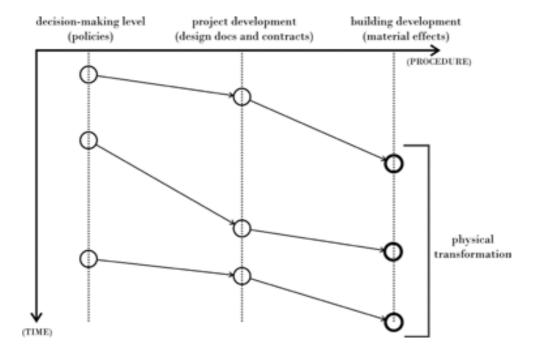
uncertainties that emerged during the process — or vice versa it can stop, failing to meet the needs that emerge.

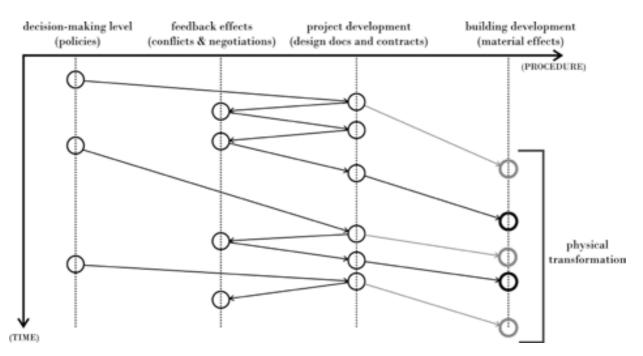
The mapping methodology developed in this research owes much to the Shenzhen diagram, in terms of both similarities and refined differences. The first similarity lies in the graphic visualization, for which both refer to a Cartesian plane; moreover, what is represented and considered concerns the actions performed and traced through the documents, together with their effects. The processes are therefore defined in their documentary dimension rather than in the subjective dimension of the actors' intentionality — characteristic, for example, of some diagrams relating to the power and interests of the actors characterizing the process. In both cases, then, the chains of events are represented by dots — the documents — and lines — the actual relationships between actions/documents. What differentiates the Shenzhen diagram and the mapping in this research is, on the one hand, what is considered as

effects, on the other, the scale of the analysis.

As effects, in the Shenzhen diagrams the material effects are considered, therefore the effects of the project on the physical space in terms of realization; in this research, the effects considered are traced in terms of decisions and their repercussions on the design of the physical space – and only in some cases to realizations. In both cases, however, the effects are referred to and referable to a three-dimensional map of the transformation. In terms of process observation scale, both diagrams trace the processual evolution of the projects. In the case of the Shenzhen diagram, however, the project configurations are not explicitly referred to, in the sense that changes in the project do not correspond clearly to the process trajectories. The mapping in this research instead tries to enter into the merits in the individual cycles and sequences of effects, trying to explain the composition of each project action. The desire to make these actions explicit in this research also derives from the recognition of this limit declared by the authors themselves; consequently, the fact of punctually tracing and linking the single documents to the map, to the scale of the single discussion, allows to enter into single episodes too.

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Linear top-down sequence (above) and deviated one (below) in Shenzhen diagram. (From: Armando et al. (2015) A Narrative of Urban Recycle. Watershed, p. 48). The limit, in order not to arrive at the above-mentioned description that tends to infinity, is however given by the partial perspective on the project documents and related to decisions related to the project. Finally, both diagrams have a retroactive ex post narrative ability; the intent of further researches started form this thesis is to even imagine the possibility of extension to ex ante prefigurations.

3.6. Interactive visualization tool

The development of the methodology, as described in the previous paragraphs, starts from operations carried out manually – data collection, transcription, analysis through content analysis, and construction of maps to read the cases from a specific perspective. However, this reflection and definition of a step-by-step research and analysis action was a useful investigation to set up an interactive web map based on the same principles. The analyzed projects are then made available and readable in the next part of the work even through the respective interactive maps. The web 025-026 in its functions and possibilities is presented in this video: https://www.voutube.com/watch?v=OM2tXrMdODU&feature=voutu.be.

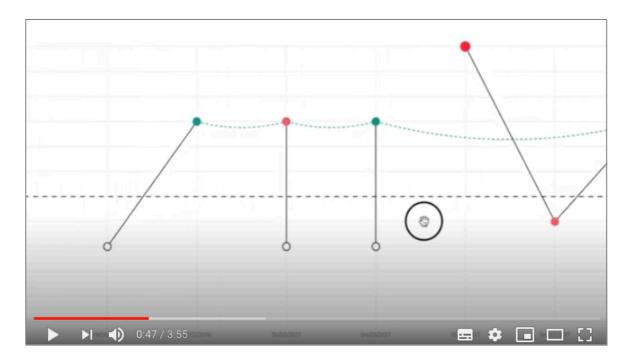
This paragraph aims at exploring the different section of the interactive web map – the dashboard in particular – in order to make users able to navigate in the specific maps of each project.² The map is built thanks to the insert of a series of dots as "events", that correspond to the design tools and founding decisions mentioned in the paragraph about visual mapping. Through the dashboard, it is possible then to add an event and insert a description – the decision made in the case of the founding 027 decisions, the performativity in the case of the design tools. The typology section relates to the choice among founding decisions - informal agreements; deliberations; institutional agreements; preliminary judgements; authorizations and permits – and design tools – instructions and case study; as built drawings; project drawings; reports and presentations; virtual models and renderings; physical models. Then, it is possible to define the tool type that determines the appearance of the dot in the map, in terms of project-related documents – specific of the project, in black, or about the whole process, in aquamarine - and decision-related documents - formal or informal. What is more, if the project responds to an irruption, it is possible to insert and describe this – then the dot is red. Moreover, a further information can be added in linking the project-related documents to the 028 subsequent; in particular, a document can be repeated as the same - even if its performativity can change – or can be included in other documents. Finally, each event has the possibility to be enriched with a preview of the documents – that appears as a pop-up in the map – and with the whole document, that can be attached in this section. In the map, all the above-mentioned information is inserted as popup information that emerges when the mouse moves on the visualization space.

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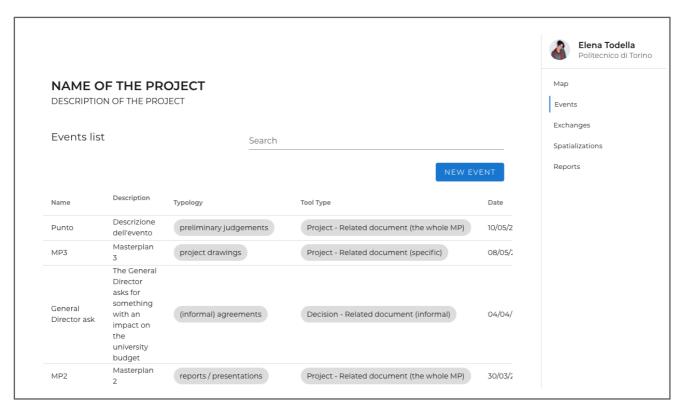
¹ The map is powered by DEM Future. Further technical details will be added in the "Appendix B"

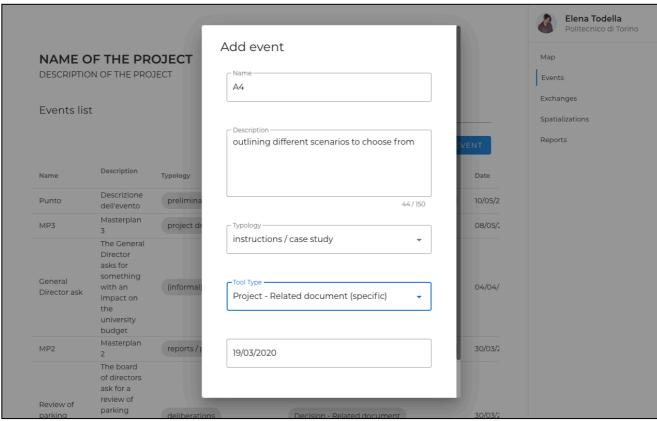
² In the "Appendix B" are illustrated the instructions to use the maps.



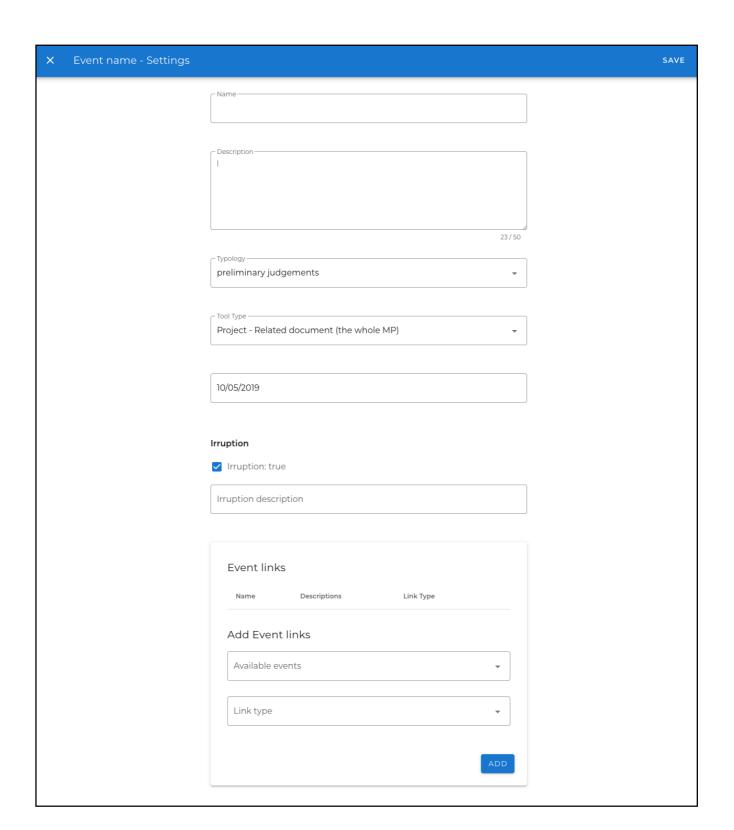


025-026Screenshots from the video that illustrates the web tool functions.

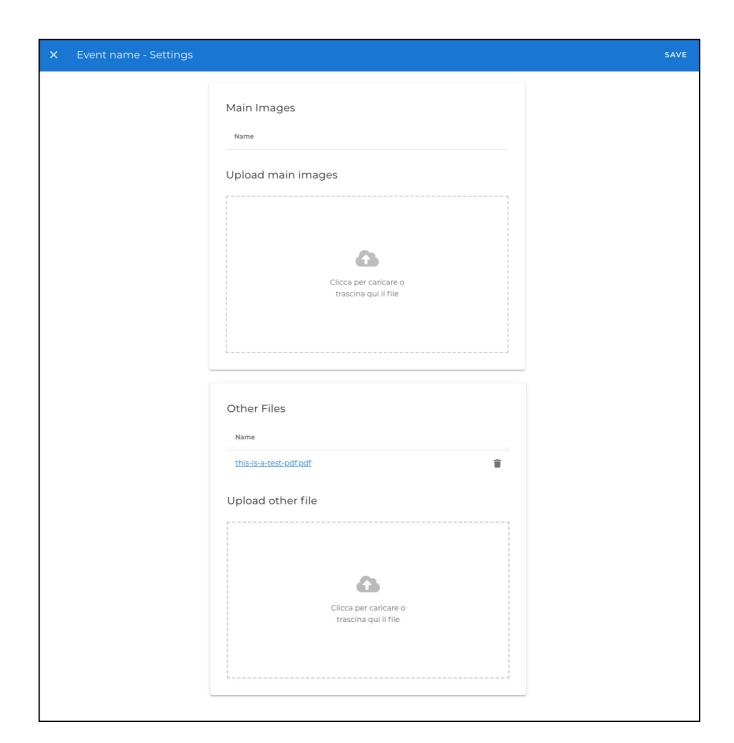




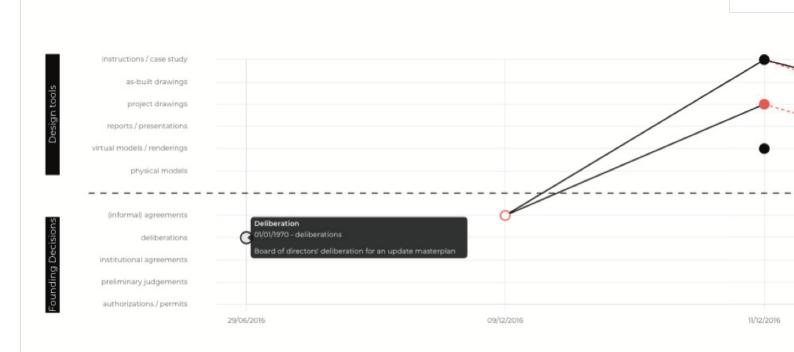
Creation of an event – project-related or decision-related – through the dashboard.



Details of an event – in terms of links or irruptions that interest it.



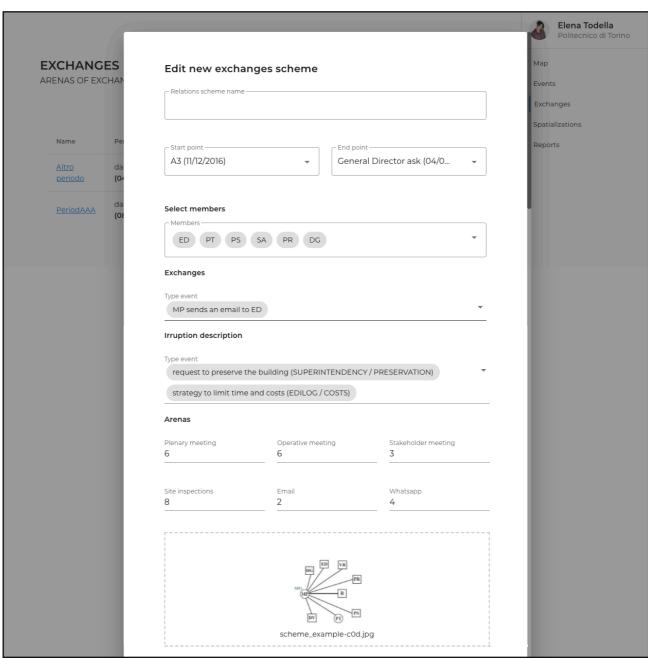
Possibility to link a preview image of the document and the whole document to an event.





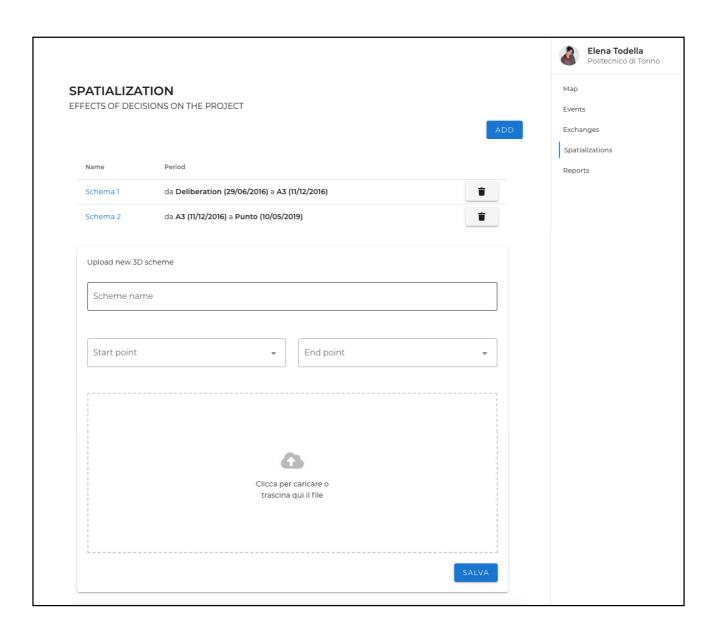
Each event appears in the map with all the related information in a synthesis.





031Definition – and counting – of the exchanges between two projects,

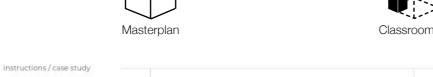
within which irruptions emerges.

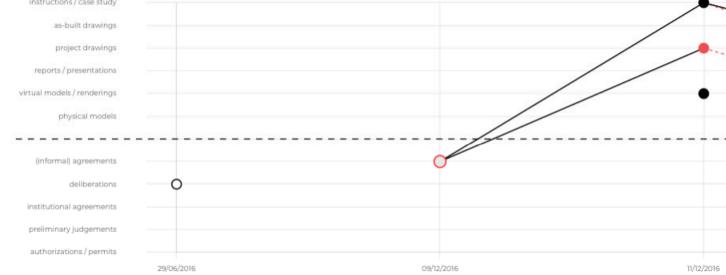


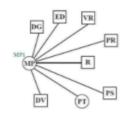
Possibility to link a spatialization of the decision made in the process to a period of time.











ED PT PS SA PR DG

Exchanges

 ED send message to PR

Arenas Plenary meeting: 6 Operative meeting:

Operative meeting: 6
Stakeholder meeting:

3

Site inspections: 8 Email: 2

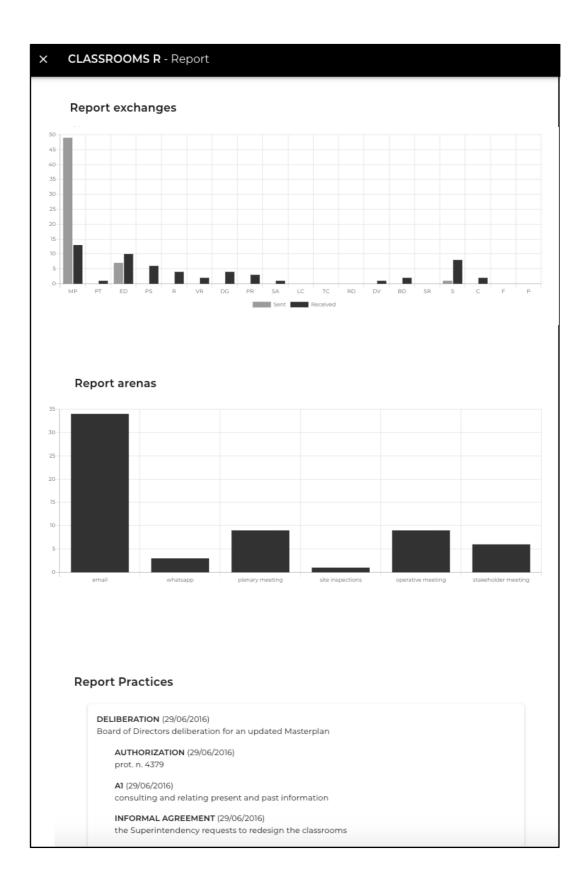
Whatsapp: 4

! request to preserve the building (SUPERINTENDENCY / PRESERVATION)

strategy to limit time and costs (EDILOG / COSTS)

033

In the interactive version, at the top the spatializations of the Masterplan changes automatically with the timeline; the same occurs at the bottom with the actor diagrams.



Possibility to produce a series of report about the actors' roles, the arenas of exchange and the "travel" of documents.

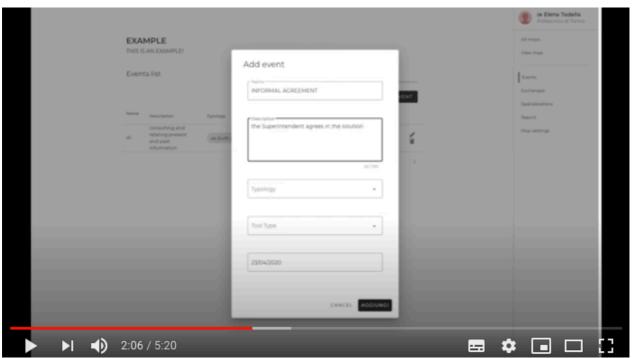
In the exchanges section it is possible to trace the interactions among the actors through different arenas – plenary meetings, operative meetings, meetings with stakeholders, site inspections, e-mails, whatsapp. As already said, the diagram is traced and synchronically represented in the period of time that occurs between two different project productions. In this section it is possible to select through the dashboard the actors involved, then to list the interactions among them; the system counts how many exchanges occur among two specific actors and the number of times a specific arena has been used. Moreover, all the decisions made are related to a three-dimensional synthetical spatial model, that changes over time together with the decisions. This is a four-dimensional model of spatialized strategies: in 032 certain moment the decisions are referred to the whole *Masterplan*, in others they are related to the specific project. Finally, both these dimensions of exchanges and spatialization are shown in the visualization space as changing on the basis of the timeline, so it is possible to trace their developments through time. What is more, 033 all these aspects can be observed as a trend to an overview level of analysis, but also by going in depth with specific episodes of the process.

In summary, the visualization space in the map consist in a two-dimensional plane, where documents are inserted in a framework of design tools and founding decisions – with a series of dots put on parallel lines. By clicking on each dot, it is possible to find details about each document; moreover, it can be reached the specific document attached to that dot. The timeline control can be altered manually by dragging with the mouse on the screen. It is preset to show different threedimensional models and different actor diagrams, as they change through time. The map can be navigated with the mouse, by scrolling the timeline.

This web interactive mapping is fundamental for this research, since it allows to trace all the elements identified through content analysis not only manually, but with a specific correspondence in terms of links and attached files; in this sense, the maps allow to make visualizable and understandable the whole amount of data taken into account and categorized in sight of the analysis. Moreover, at this level, it can be a tool for architects and designers to trace and take account of the process by organizing all the documents in an archive – even if oriented through a specific perspective – and retrace the ongoing process while dealing with it. Nevertheless, the map let the researcher – as explained in the empirical chapters of this work – to carry on analyses in the framework of entities as identified through the methodology – as explained in the last paragraph of the next chapter.

It has to be specified that the web tool acts not only as an interactive archive on the basis of which visualizing and navigating the whole amount of data to grasp on the basis of the research question. Indeed, it allows also to report a series of analyses 034 extracted from data. First of all, it is possible to define how an actor sends and receives documents in the process, on the basis of the exchanged documents; in this sense, it is possible to understand the different roles in the process in practice, that means with respect to the practices. Secondly, it is shown the movement of the





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Screenshots from the video that illustrates the dashboard structure.

process across different arenas, as an account of the multi-satedness of the practice of architectural design. Finally, specific information related to the "travel" of documents can be accounted, in relation to the document itself – if it remains or not and acts in different ways in the process – and in relation to a decision – what is the document on which a decision is made. The use of the map through the dashboard is not allowed with a "user" account, then an overview of its structure is punctually 035-036 traced in this video: https://youtu.be/lnzBOUu9aVw. It is moreover possible to visualize and navigate the web tool as a "user" through this link, to follow the paths accounted in the empirical investigation in the next part of this work: https://projectingdecisions.net/. The instructions to access the page are reported in the "Appendix B" of this thesis.

To conclude, some further functions are done here manually, on the basis pf the interactive maps, in the empirical chapters. It will be part of ulterior and subsequent research the possibility of implementing these other levels of data analysis as reports in the web tool. Moreover, among the effects of transforming the whole accounted process of building the maps in a web tool, some feedback and even changes in the theorization of the methodology in itself has been a consequence. Then, further considerations related to this interface with informatic discipline will be deepened in the conclusions section, in terms of contributions and feedbacks.

Chapter 4

Following and mapping different paths

The opportunity to *unfold* the process of a design practice was presented to me with the involvement – on an almost daily basis, during the first two years of the PhD – in the Project Team of the *University Masterplan* (Masterplan di Ateneo) of Politecnico di Torino, an ongoing transformation process for the development of its urban campuses. The case of the transformation of Politecnico's campuses through the *Masterplan* project is indeed an opportunity for analysis and study of an ongoing urban transformation process; those projects are only partially completed, therefore, there is the possibility of having direct experience and participate in the construction of the related decision-making process.

After a long season in which Politecnico was a pioneer and fundamental actor in triggering processes of transformation and regeneration of urban areas, in recent years the relations with the city administration, local authorities and external institutional actors have indeed shown some signs of cracking misunderstanding. To tackle these difficulties, the governing and the administrative bodies in Politecnico responded in 2016 with the activation of the University Masterplan project, to outline strategies and policies for transforming and growing university campuses, defining scenarios for expanding offices, and orienting the processes of optimization and qualification of existing spaces. Methodological objective is to establish and coordinate a dialogue with the various instances – internal and external to the University – involved in the planning and participating in the decision-making processes, also promoting the launch of new discussion tables and discussions with public actors and local authorities. In this perspective, plans and drawings are used as negotiation tools, with the aim of making the masked or underlying conflicts evident, and of guiding the debate in a case of complex urban transformation. In the Masterplan group's work, it is fundamental the spatialization of data, strategies and policies to make the terms of the discussion more readable and clearer. Therefore, the translation of different instances into the design of volumes and spaces, through foreshadowing of possible morphologies (e.g. the representation of the building capacity still feasible in the empty spaces of the Engineering Campus), makes the different strategies debatable and arguable with the numerous interlocutors of the project. Starting from such a working approach, some blocked or difficult procedures have been clarified in their assumptions and addressed towards some possible lines of action. The *Masterplan* has indeed the objective of making certain passages clear and visible, looking for elements that make it possible to change Politecnico's position in the city tables.

What is interesting in this process is to see the role of architectural design practice in the ongoing debates on the project itself, then the specific decision-making processes in which the project is the object of exchange, negotiation, agreement. The Masterplan is therefore a privileged object of investigation in questioning itself on the role of some architectural design practices in the ongoing decision-making process, since it is structured very much in line with this type of investigation and to be studied in these terms. The Masterplan itself has the will, at a certain time of the process problematic or blocked, to claim the need for certain skills and specific architectural knowledge in the management of some urban transformations, to see how this factor can intervene in the process, in particular considering that some forms of expertise have not always been part of it. Indeed, among the reason why the project is born is that, in the course of the process in the past, there were a series of inertias of design drawings that remained latent, and that somehow blocked and harnessed the process and led to the need for this intervention. In fact, in the process, our action as project team has tried to go into the merits of some problematic points through a series of specific planning actions and practices and, in general, with an implicit discussion – even of conflict – on the type of skills and planning that are necessary to design the city on that scale, which is among the questions to be answered with this research.

Nevertheless, the ongoing process does not want to be a case study as much from the point of view of the contents of the specific process, as it is a case of action perspective of which the researcher analyses structure and modality. This condition, being part of the project team and then wanting to analyse the process as an observer, implies that the researcher is *immersed* in the actual ongoing process and in the research lab. On the one hand, there is action and production, as an actor in the process; on the other the description and mapping of some issues, as an observer. It has been defined which modes and methods are possible in order to pursue a mapping of the action and a description of the processes of this type, but something more can be added in terms of paths followed by the research.

As already said, this research takes me into the documents – as inscriptions (Latour 1986) – that characterize the decision-making process of architectural design practice. The purpose is then to explore the role of architectural design practices, by looking at the documents themselves, to comprehend the specificity of such designs as the perform and act and to develop a deeper comprehension of the decisions made through the design process. This is achieved, first of all, with a deconstruction and coding of this experience in pragmatic and reusable terms and

the definition of a method – with generalization objectives and consequent possibilities for innovation; on other hand, the analysis also aims to understand the variety of social and technical entities involved, comprehending their relations and associations in a process of conflicts and negotiations, in order to recognize and even re-shape these intertwines and interactions to reach effects in architectural design practice. In other words, in the case of this research on the Masterplan, despite the contingency of the case study and the limited perspective, a number of evidences are to be considered in terms of methodology proposed; so, the investigation of the individual case can provide tools and methods of investigation - maps, sequences, diagrams - replicable in terms of research, starting from comparable conditions. Nevertheless, there are different types of actions, possibly related to different types of problems, that can be intended in terms of possible generalizations. Indeed, it is possible to sift through the daily practice under study by focusing on the identification of specific strategies and tactics, or problem response operations, unpacking the process and linking actions to the effects in the decision-making process. In this sense, the search for typical, recursive and possibly generalizable conditions of use of the project is conceivable, through the description, interpretation and restitution in as general terms as possible of the ways in which the project has been used, trying to abstract if and how it has implemented strategies in the process. In parallel to the research method, it is therefore possible to search for an instrumentality of observation, identifying tools and practical modes of action that can be reused in the design to achieve certain objectives, with an operational will.

To conclude, in this chapter I trace first of all a brief overview of university masterplanning, as a necessary step to contextualize typical problems and needs. Then, the case of Politecnico di Torino is presented, in order to define the peculiarities and reasons of the new *Masterplan* need, from the beginning of the project with the institution of a working group, to a recollection of the previous expansion and project, until the upgrade of a new Program Agreement. Moving to the characteristics of the project which let it be an interesting case study in terms of complexity of the decision-making process related to architectural design, the role of the project team, the work methods and the time schedule are deepened, in order to generally grasp the dynamics of the process. Therefore, the specific strategies and tactics used by the project team – and the awareness in using them to respond to certain specific problems – is also highlighted. To conclude, three paths for this research are isolated in their possible contribution to the research question.

4.1. University masterplanning and action strategies

The *Masterplan* process requires to broaden our reflection and framework for university transformations in relation to cities in the last decades. In fact, framing the type of specific complex process, object of this study, can better allow to delimit the field of action of the methodology to processes comparable under some specific

points of view. In recent years, universities' relation with cities has become a deeply explored topic (Perry e Wiewel 2005; Wiewel e Perry 2008). Universities' activities in the city therefore contribute to the built environment, with implications in terms of strategies, goals and practices. In fact, at both the international and national level, campuses increasingly act as transformative actors not only for the neighborhoods in which they are located, thus for the city. This transformative aspect evolves with visible effects not only in terms of knowledge and technological transfer, but also in terms of urban role of universities in changing cities (Barioglio et al. 2018). The expansion of universities originally led to the demand for more space (Bender 1988), a phenomenon generally linked to the suburbanization of campuses, to which universities respond with "semi-cloistered" spaces in the middle of the city; or by dispersing university sites across the city; finally, with the so-called parks established in the urban periphery. However, more recently there has been increasing pressure about the opening of university campuses to the city, not being able to ignore a strong physical interdependence between the two institutions (Barioglio et al. 2018). Consequently, universities become increasingly protagonists of negotiation and redesign processes of their borders, in continuous relationship with cities and administrations. It is therefore possible to trace recognizable trends in the development of urban campuses related to the Masterplan, in terms of problems emerged, strategies and development models.

An international overview

Starting from USA and Canada tradition (Perry and Wievel 2005), a discussion can be made about the way universities engage in real estate practices of urban spatial development mixing – and answering to – the requests and needs of both academy and city. Coming from a tradition of universities as pastoral and as ivory towers (Bender 1988) – at least perceived as such – in isolation, in recent years an awareness in researchers is arisen in investigating more deeply the practices of university real estate development. Indeed, universities are usually one of the main actors in a city, both in terms of providing – and benefitting – of services, and in terms of properties. As already mentioned, the main reason of expansion is linked to the continuous growth of the academic community, so universities need more space for their activities. Moreover, this a continuous request, since the research activities basically expand. To solve this need of space, in most cases, new classrooms, offices, laboratories and so on are searched in the existing locations – since the construction of whole new campuses is rare. With a similar logics, when it is possible and the expertise is available inside the universities, they organize themselves to implement internal structures to tackle the project; nevertheless, sometimes is the case of a partnership with a private developer, even if there is no lack of expertise, thus the private sector can operate more quickly or provide capital.

A common feature of processes of this kind is complexity, in terms of being able to conduct the project from the initial concept to the effect without obstacles and detours; what is more, many difficulties are related precisely to the interaction with cities and administrations. Indeed, universities are subject to local regulations and

laws like any other organization, even if they are almost unique institutions that offer a very specific – and irreplaceable – service to the community; then, most of the time process can crash due to procedural issues and problems. Moreover, rather than making strategies in terms of collaboration between institutions, in most cases contacts and discussions are episodic and instrumental to solve contingent problems. Moving to Europe and other countries around the world (Middle East, Asia and Latin America, starting from Wievel and Perry 2008), it is interesting to highlight an almost identical situation. In Europe, universities are traditionally part of cities' development in economic and physical terms, therefore researches and studies related to urban projects start to investigate the role of universities in this framework of transformation, with a particular focus on the relations with city administrations in land development practices. The main reason of expansion in recent decades is, even in these cases, to meet the demands of growing number of students, linked to the requests in terms of new technologies, and innovations in research, in general. As a consequence, universities are primarily driven in their development by where space is available - inside or outside the universities themselves. In relation to the "inside" availability, another fundamental issue is obsolescence of existing spaces; indeed, not only the space, but also services and innovative equipment are often related to the needs of expansion of universities. Nevertheless, it is not always easy to achieve this inside the current stock and universities need to negotiate with local government to find opportunities.

Tackling emergency from the "inside"

These researches are relevant for the case study of the *Masterplan*, since there are a number of similarities with these trends recognized at an international level. In fact, even in this case – as will be explained in detail in the next paragraphs – the need and emergency from which the process arises is the awareness of having to respond to the growing number of students to avoid the closed number of access to the university. Furthermore, since it is a university dedicated to technical subjects - including some also related to the built environment of construction, civil and architecture - the decision that is taken immediately is to manage the process internally, taking advantage of the expertise present in university. Furthermore, even in the case of the Masterplan, there is first of all a series of research outside its own spaces, before understanding if and how to exploit the internal availability - in any case given the issues of reuse and obsolescence. In some cases, then, the opportunity for collaboration with private individuals is sought or seized, which then turns out to be interesting not only in terms of funding, but also in terms of research and training project. As already pointed out, the development process often is a long and winding road, with many obstacles.

Certainly, since the collective involved in the transformation is wide and at different levels inside and outside the university, this is equally true in this case; nevertheless, relations with city government become a major issue, since the only way to implement the transformation in the necessary terms is to review the masterplan in force at the time of the start of the process. In this sense, the implementation of the

interventions depends in equal measure on the ability to keep together the decision-making dimension within the university and that of city governance, in a dialogue that is constantly negotiated through the project by the project team.

Some national sights

Although these parallels are recognizable and relevant at the international level, it is also necessary to frame the theme at the national level to recognize some similarities more attributable to structural and procedural elements of the specific Italian case. In fact, universities, as institutions that occupy urban spaces, are often key players in urban transformation processes (starting here from Urban@it 2016; Cutroni and Percoco 2018; Barioglio et al. 2018). This is even evident a substantial crisis, since the implementation of policies and the interventions of other actors on the urban agenda are not decisive in comparison with the university. Universities, on the contrary, precisely because they can produce significant impact in terms of urban planning, are consequently able of having effects in terms of both economic and social impact on the territory. In fact, in addition to the increase in university structures in the large cities where they are already established, many other small or medium-sized companies set up universities in their territory; consequently, not only the universities of Turin and Milan, but also those of Parma, Matera and Venice have taken on an important role in local urban agendas. Role that, in addition to allowing them to affect the overall urban quality, has given rise to some processes including innovation with respect to the urban project.

This is the case of Venice, inserted within a new urban vision also thanks to the intervention of the university in the Santa Marta area (Urban@it 2016). In particular, a new university residence – inaugurated in December 2019 – is built in an area already owned by the Venetian university. In concert not only with the Ministry for University and Research, but also with the city of Venice, the intervention allows a recovery in the urban context in which the residence is located, in a refined continuity between university residents and city residents. In Parma, the urban transformation strategy is implemented for projects on a small scale and often intertwined in a network, both in physical terms on the territory and in terms of the actors involved, among which an important role is that of the university (Urban@it 2016) – one of the main actors together with the municipality. In particular, the action is implemented through projects, such as in the case of the university's Mastercampus Strategy, in which a progressive series of interventions aims at the growth and urban qualification of the Science and Technology Campus. The project continues for endowments that add to the services available for the community, academics and citizens – a photovoltaic garden; a vestibule for the Congress Center; a bike shelter point. Finally, the case of Matera intends the university as an important launching opportunity for future transformations of the city (Urban@it 2016). The new campus of the University of Basilicata inaugurated in October 2019 – is located in the buildings of the old hospital complex and testifies to the importance of the role of the university in the area, especially in the internal areas and in historically more disadvantaged regions.

Urban "containers" as opportunities?

However, there are also critical aspects at national level (Cutroni and Percoco 2018), so the university, despite the need – and the consequent action – for new spaces and expansion projects, still suffers from a certain degree of isolation. Universities remedy the shortage of spaces by redeveloping buildings and areas of cities, as real estate operators, triggering articulated processes that complete not only a physical offer, but enrich the available services; however, still too often there are "enclosures" – more or less physical – which do not allow to exploit or fully develop possible interactions and synergies. This is also due to the – already noted at the international level – widespread lack of real consultation and strategy with the cities, for which the university function tends to be considered and compared to one of the different lands uses to be regulated. Nonetheless, the university is often seen as a potential solver of problems, even very large ones for administrations, so very often former barracks, slaughterhouses, tobacco factories, psychiatric hospitals and industrial areas – as urban "containers" – seemed like opportunities. On the one hand, the idea of solving a problem of urban voids, on the other, the possibility of answering a question with the existing building stock. Contrary to what was expected, this often generates problems related to procedures, to the necessary urban variations, to the costs of recovery or restructuring, so that some situations instead of being resolved became complex.

To conclude, even the case of the *Masterplan* embodies this kind of problems, first of all being within an ex industrial area, then a portion of the city which according to the original masterplan has become precisely "container" of an expansion of the university. Furthermore, this conformation poses a series of very spatial issues relating to the aforementioned "enclosures", so that both on the physical, very practical level, and in terms of procedures and regulations, it is very difficult to imagine a campus truly open to the city. Finally, as already highlighted in international cases, the lack of a recognized and relevant specificity relating to the university actor means that some procedures and some laws, however valid and useful in other cases, are too restrictive for such an actor, also bringing to block its transformation processes – which is why the *Masterplan* working group is set up.

Consequently, a process such as that of the case study of this research embodies a series of characters that make the question relevant with respect to the role of some architectural design practices in the decision-making process – all the details mentioned below will be explored in the next paragraphs. First of all, the establishment of a working group that claims a specific architectural competence embodies in itself the will to investigate whether the elaboration and implementation of a practice – in this case within the university – could have a relevant role in the decision-making process of expansion and transformation of the Politecnico di Torino's urban campuses. Secondly, the case study, precisely by virtue of being limited to a series of recurring actors, also very recognizable and attributable for the most part to the university institution, allows to delimit in some way the field of research. In this sense, investigating from within, with an active

participation and with a limited number of entities, allows to delimit both the research and, consequently, the validity of some of the findings. Finally, the possibility of having access to the long period of the transformation in progress allows to account for some effects – in the terms intended by the research request – that are recognizable and attributable to the established practices.

4.2. Unlocking Politecnico di Torino's Masterplan

The *University Masterplan* case presents multiple points of interest in relation to the aim of this research. Indeed, it first of all shows a process that, at the time of the study, is being implemented; therefore, it represents an opportunity to follow the design processes in the making and the *folds* of the related decision-making level. Moreover, being a really clear example of a masterplanning strategy in a university context, further ideas in terms of similar paths and strategies could be extracted. In this paragraph I go further in framing the process in its context of both university and city planning, starting from the institution of a working group to unlock a process with some difficulties; the definition of a first framework of needs to be tackled; a step backwards to the previous masterplan strategy in relation to the City Development Plan; and an overview of the process until the definition of a new Program Agreement. The reason for choosing such a project is the fact that entails specific technical and social aspects in a bounded and accessible project – being a participant to the project team and a researcher.

The institution of a working group

The *Masterplan* working group is established by the administration of Politecnico di Torino in 2016, to define a strategy of development of its campuses in relation to the city.¹ Indeed, Politecnico is facing a new season of growth, interaction with the territory and openness to internationalization; at the same time, however, the limited space dedicated to teaching, to research and to the establishment of mainly private partnerships constitutes one of the main constraints to a further development phase, which the university intends to pursue². Furthermore, the issue is clearly present and denounced not only internally by the university, but by the local press³, as a spokesman for a critical condition of the university in finding an answer – even looking for rented spaces outside its own locations – to an ever-growing students' demand. As a consequence, the Board of Directors highlights the need to reach the definition of a strategy that, on the one hand, pursues the qualitative improvement of the existing spaces, on the other hand allows a quantitative growth of the same.

¹ Report of the Board of Directors (29/06/2016), University Bodies, Politecnico di Torino.

² Among the programs and projects launched by Politecnico: Politecnico di Torino (2014) *Piano Strategico Orizzonte 2020*, Torino; Green Team Office (eds.) (2016) *Sustainability Report*, Politecnico di Torino.

³ This topic is widely addressed by the generalist press. Among the others: Fabrizio Assandri, *Nuovo boom di aspiranti matricole al Politecnico*, in «La Stampa», 30/08/2016, Torino news; *Il numero chiuso non basta. Il Politecnico costretto a diventare più "severo"*, in «La Stampa», 29/09/2016, p. 54; *Il Poli cerca aule alla Sandretto e alla Gam*, in «La Stampa», 22/12/2016, p. 47.

In addition, a quantitative increase in endowments is a condition for avoiding choices such as the decrease in the number of students enrolled, the educational offer, or relationships with businesses and external partners. To reach these aims, the Rector therefore proposes the formation of a Project Team – with the participation of teachers from the two Architecture Departments ⁴ – for the elaboration of a project of programmatic and functional development of the university, in integration with local policies. The *Masterplan* elaboration has the main original objectives⁵ of:

- outlining the possibilities of development, optimization and qualification of the spaces in relation to their consistency, their locations, the urban opportunities in the surroundings, but also the qualification of the processes and internal skills;
- offering visions and scenarios that allow to design the future of the university. Therefore, through interaction with the competent internal structures, the Project Team can access the information necessary to evaluate the needs of users and the use of existing spaces or the potential of those that can be acquired;
- explore and compare the different settlement opportunities with respect to the city and the territory and provide suggestions to the governing bodies regarding stakeholders to involve.

Masterplan's organization and roles

The *Masterplan*, in essence, is not established to identify solutions, but to define a framework of possibilities, so as to allow the governing bodies to plan the processes – decision-making and implementation – most suitable for each initiative. Consequently, although the name appears to be substantially associated with spatial issues, it encompasses and aims at a strategy that must lead to the redefinition of the space program – therefore modifying the previous masterplan in force – but which more generally intends to establish a practice of interaction and sharing, both internally and with the main territorial interlocutors. In particular, this practice of sharing and discussion is imagined as derived from the realization of each prefiguration in forms and dimensions, so as to be the subject of discussion in the university – then the *Masterplan* main feature is to *spatialize* needs and possibilities. In terms of organization and roles, the governance of the *Masterplan's* development process is articulated, at the time of its establishment⁶, in:

• a steering group, made up of members of the University government, external subjects of strategic importance and representatives of the student component;

⁴ Department of Architecture and Design (DAD) and Interuniversity Department of Regional and Urban Studies and Planning (DIST).

⁵ Report of the Board of Directors (29/06/2016), University Bodies, Politecnico di Torino.

⁶ *Ibid*.

• a project team, coordinated by the Vice-Rector for Building and Logistics, composed of teachers and collaborators, integrated with sectoral internal skills of the university – historical, transport, management, evaluation, urban planning, structural, energy, technological.

The work of the Project Team starts from a framework that holds together the existing urban spaces – the main campus in Corso Duca degli Abruzzi and in Corso Castelfidardo (mainly Engineering), Valentino Castle and via Morgari location (Architecture), Lingotto (Master courses) and Mirafiori (Design and Communication) – the ongoing transformations – Torino Esposizioni – and the potential ones – Officine Grandi Riparazioni and ex Westinghouse areas. A brief overview⁷ of the history and development of Politecnico offices just mentioned is in this context necessary and instrumental to define the selection of processes that will be analyzed in the empirical chapters.

Politecnico di Torino urban campuses

Regio Politecnico di Torino is established as an institution in 1906, deriving its origins from the Application School for Engineers – built in 1859. The Savoy residence of Valentino is transferred to this institution, to give rise to a school modeled on similar European polytechnics, which initiates relationships both with these and with both local and national industry. The Valentino Castle is located on the banks of the Po and is the main seat of the Architecture Departments; the building is built in several design phases starting from the mid-sixteenth century, owned by Savoy after a complex process of sales and exchanges, up to the final donation. ⁸ At first characterized, as a river residence, by the main view towards the

⁷ An overview of the history of the Politecnico campuses can be reached through a not entirely organic literature, thus extensive. As a sample here: Politecnico di Torino (1984) Beni culturali ambientali nel Comune di Torino, Vol. 1, Società degli ingegneri e degli architetti in Torino, Torino p. 365; Marchis V. (1999) Politecnico: un ateneo tra società e innovazione, in Nicola Tranfaglia (ed.) Storia di Torino. Gli anni della Repubblica, Vol. 9, Einaudi, Torino 1999, pp. 673-710; Gibello L. (1999) Politecnico di Torino, in Comoli Mandracci, Vera - Olmo, Carlo (a cura di), Guida di Torino. Architettura, U. Allemandi, Torino, p. 199; Martini A. (2008) Politecnico di Torino, in Giusti M.A., Tamborrino R., Guida all'architettura del Novecento in Piemonte (1902-2006), U. Allemandi, Torino, p. 283; Spinelli C. (2008) Edifici per il Politecnico di Torino, in Bonino M. [et al.] (ed.) Torino 1984-2008. Atlante dell'architettura, U. Allemandi, Torino, tab n. 61; Martini A. (2008) Cittadella Politecnica, in Giusti M.A., Tamborrino R., Guida all'architettura del Novecento in Piemonte (1902-2006), U. Allemandi, Torino, pp. 330-331; Spinelli C. (2008) Spina 2. Cittadella Politecnica, in Bonino M. [et al.] (ed.), Torino 1984-2008. Atlante dell'architettura, U. Allemandi, Torino, tab n. 25; Fassino G. (2008) Mirafiori e Centro del design, in Bonino M. [et al.] (ed.) Torino 1984-2008. Atlante dell'architettura, U. Allemandi, Torino 2008, tab n. 55; Ferrando M. (2009) Campus all'italiana: alta formazione, ricerca, imprese e finanza nella Cittadella politecnica di Torino, Il Sole 24 Ore, Milano; Fassino G. (2010) L'edilizia universitaria, in Regione Piemonte, Osservatorio regionale per l'Università e per il Diritto allo studio universitario (ed.), I numeri del Sistema universitario in Piemonte: azioni, risultati, prospettive, Torino, pp. 244-313; Chiorino C., Fassino G., Milan L., Rosso M. (2016) Guida all'architettura. Torino, DOM publishers (here: Cittadella p. 85, Torino Esposizioni p. 123, Lingotto p. 138, Mirafiori p. 184). ⁸ It was given as a gift by Duke Carlo Emanuele I to the young daughter-in-law Cristina, daughter



The main areas of exploration of the Masterplan project.

Po – to which it connects with stairways and gardens – the Castle then reverses its relationship with the territory and the city during the nineteenth century. In fact, being no longer the seat of the court and having assigned a military function, in 1850 the building is ceded to the state property; after which, on the occasion of the Industrial Exhibition, it is further transformed in 1858. Then, it hosts the Application School in 1859, the first academic year of which is inaugurated in 1861. In the last twenty years of the twentieth century, the Castle requires interventions, to adapt the complex to needs and spaces for the Faculty of Architecture, after the transfer of Engineering and Administration to Corso Duca degli Abruzzi in 1958. In parallel, the conservative restoration of the monument's architectural and artistic heritage begins; the Castle is also recognized by UNESCO in 1997 as a "world heritage site". In this sense, the creation of additional spaces is hardly compatible with the restrictions and rigidity of the complex, however the so-called "new wing" is completed – as a reorganization of the basses built in the south courtyard of the Castle – and the renovation of the nineteenth-century wing, the "Chevalley". Valentino Castle is currently home to the two architectural departments of Politecnico – Department of Architecture and Design and Interuniversity Department of Regional and Urban Studies and Planning – and is subject, during the work of the Masterplan, of a project expansion towards Torino Esposizioni¹⁰, linked on the one hand to the growing need to allocate new students, on the other to the desire to unify the architectural and design disciplines in one place – which is located in the Mirafiori headquarters.

Subsequently, the Faculty of Engineering is transferred to a building in the city center – occupying the entire block between via Giolitti, via San Francesco da Paola, via Cavour and via Accademia Albertina, the current Piazzale Valdo Fusi – bombed and largely shaved on the ground during the Second World War. After the war, instead of rebuilding the building, it is made the decision to transfer and expand the university complex; after a long debate between Turin's architects and engineers on the new headquarters of the Royal Polytechnic School¹¹, in 1950 begins the construction of a building in Corso Duca degli Abruzzi, inaugurated in 1958. The project is carried out by the university's technical office – coordinated by a commission of teachers, in particular the Milanese architect Giovanni Muzio – and from the Fiat design office. The system of buildings of which it is composed, initially designed for classrooms, laboratories, offices, over the years has been expanded in elevation and extension, to meet the changing educational and management needs – creation of study rooms, green areas, areas dedicated to services. In particular, starting from 1980s, the need for new spaces then emerges

⁹ Politecnico di Torino (2010) *Politecnico di Torino verso la rendicontazione sociale. I luoghi e l'ambiente*, Corporate Image Unit, Politecnico di Torino.

¹⁰ Some further details will be added in the subsequent paragraph, about the next phase of Masterplan Team's work.

¹¹ For more details: Gaetani M. (2018) I progetti e la costruzione della nuova sede del Politecnico di Torino in corso Duca degli Abruzzi: una cronologia (1939-1958), in Politecnico di Torino (ed.) Il Politecnico di Torino e la costruzione della città nel Novecento: la sede di corso Duca degli Abruzzi nel sessantesimo anniversario della sua inaugurazione, Politecnico di Torino.

1859 The Application School for Engineers is established. The first locations is Valentino

Castle



1906

Politecnico di Torino

institution is

established

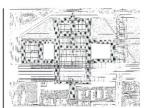
1990 At Valentino Castle the so-called "New Wing" is built, in the southern border

1994

The Preliminary Project of the "doubling" of Politecnico in the forme OGR area is approved

1995

With the PRG the
"doubling" begins, with an
expansion beyond the
railway beam which has
become viale della Spina
(masterplan of Gregotti
Associati Studio)



1999

Revision of the project for the doubling of the Polytechnic which provides for the recovery of part of the OGR

1869

It is added to the Castle a new wing, on the South side, on the project of Eng. Pecco

1958

The new Complex of Corso Duca degli Abruzzi is inaugurated



1992-1994

Completions of expansion towards Corso Castelfidardo (1984-1992) and the "urban window" along the wing on Via Peano (1984-1994)

1997

Valentino Castle is registered by UNESCO in the World Heritage List, in the serial site of the "Savoy residences".

2002

Lingotto headquarters inauguration. Project: Renzo Piano Building Workshop



2008

Starting didactic supply in Verrés

2008-2012

End of teaching provision in decentralized locations (Aosta, Ivrea, Vercelli, Alessandria, Chivasso)

2015

bando per l'affidamento della redazione dello studio di fattibilità degli interventi di "Recupero e rifunzionalizzazione del complesso di Torino Esposizioni nel Comune di Torino".



1999

Starting didactic supply for decentralized offices (Biella, Alessandria Vercelli, Mondovì, Aosta, Ivrea, Chivasso)

2004-2010

Renovation and expansion of Cittadella: "Ex Fucine", "Ex Tornerie", "Underground Court" "Overrides and landing wing, "GM center and parking", "New Cafeteria-MixTo"



2011

The Cittadella
Politecnica of
Design and
Sustainable
Mobility comes
into operation
in the former
Mirafiori
barracks



2016

Cittadella
Politecnica:
"Residenza
universitaria
Carlo Mollino".
Inauguration
of the
"Energy Center".

2016

Project Team establishment about the Masterplan of Politecnico di Torino

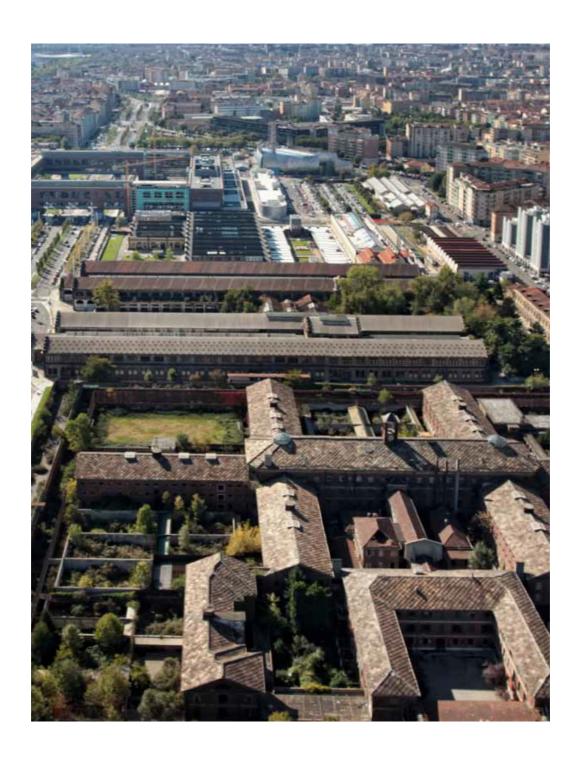
038

A synthetic overview of the development of Politecnico locations – not only in the city.

and the first extensions are made, up to the General Regulatory Plan of 1995 with which the so-called "Politecnico's doubling" begins — on the masterplan of the Gregotti Associati studio — beyond the avenue created on the site previously occupied by the railway. The construction of the so-called "Cittadella Politecnica" begins in 1997 with the acquisition of the former "Officine Grandi Riparazioni" — an industrial complex of the late nineteenth century for the maintenance of locomotives, railcars and rail cars. Thus, a consistent and constant expansion of the main building of Politecnico begins, intended mainly for the Engineering Departments and for some Architecture courses; when the Masterplan is established in 2016, the "Cittadella Politecnica" project is the most problematic and needs to be unlocked through the intervention of the new project team.

Moving to Lingotto, built in different phases between 1916 and 1930 based on a project by Giacomo Mattè Trucco, is basically an icon of modern architecture and a symbol, to date, of the season of reconversion of the Turin industrial areas. In fact, after having produced vehicles for FIAT until 1982, the plant becomes the subject of an international competition for the redevelopment of the structure, for which the multifunctional pole project by Renzo Piano wins - with exhibition center, auditorium, hotels, offices, restaurants, shopping center, museum and helipad. Politecnico's area – originally dedicated to Automotive Engineering, today more generally to the Master School – is located here in the northern head of the building and is spread over several levels with classrooms, laboratories, offices and a Great Hall. To conclude, the Mirafiori Design Center is built on a portion of the former FIAT factory following a 2006 Program Agreement between local authorities, the Turin New Economy Company (TNE) and the Turin Polytechnic. The industrial buildings have been converted into research, educational, libraries, exhibition spaces, covered atriums and green areas, for the Department of Architecture and Design and in particular for the Industrial Design course. Both areas, Lingotto and Mirafiori, are sites of possible expansion for Politecnico at the time of the establishment of the Masterplan; in fact, in the adjacent spaces, transformations are underway or in anticipation, for which the university intends to become an interlocutor with the public actor - this is the case of the TNE area still to be developed, in Mirafiori, and the former MOI area near the Lingotto. 12

¹² At the time of writing this research, some important developments are underway in particular with respect to the Mirafiori TNE area. The development of the Masterplan process at the Politecnico has also led to a different strategic vision of the relationship between the campuses, but also with other areas of the city. The vision for some "Platforms", proposed in 2019 by Politecnico, goes precisely in this direction. In fact, the two Engineering and Architecture campuses are included in a wider territorial system, including the "Manufacturing 4.0 Platform", in the areas of Mirafiori TNE. These "Platforms" represent an evolution of the model of Cittadella Politecnica, built to bring companies closer to the university within the campus. With the "Platforms", this model evolves, with physical places – not necessarily inside Politecnico – where there is already an aggregation of resources on certain issues, promoting the relaunch of these topic and ensuring the contiguity between the public settlement and consolidated private production companies.



O39 Aerial image of the Officine Grandi Riparazioni: Michele D'Ottavio, in Rivista MuseoTorino, special of January 2011, Torino.

Cittadella Politecnica as the focus of this research

An organic work on the actions and projects related to the *Masterplan* process could have included in depth the whole complex intertwining of interactions and correlations between projects of different locations, with a panoramic and as a whole restitution of the process. However, since the aim of this research is to unpack the architectural practice in as much detail as possible, focusing on the role and performance of some productions in the decision-making process, I choose to limit 039 the analysis to the Cittadella Politecnica area – and in particular, as will it be explained in the following paragraphs, to a selection of projects. Going deeper into the brief overview just reported, it is therefore necessary to take a further step back in the development process of Cittadella Politecnica, starting from the origins of the Officine Grandi Riparazioni (OGR) and going through the "doubling" project of Politecnico; in fact, it is in these origins and in the subsequent developments of the masterplan that the problems and emergencies for which the working group on the Masterplan was set up start. The rise of the railway workshops is closely connected to the development of the railway network, with a series of structures that are located outside the city walls, but close to urban centers.¹³

O40-O41 By observing the OGR plan it is possible to identify its dependence on the functional and distribution schemes according to which the work is organized; in fact, the complex is characterized by a series of independent sheds, located in a single area – a feature that, even in the redevelopment of the area, often leads to reasoning in terms of objects, rather than as a whole. Another important element is the architectural relevance of the realizations of these workshops, a relevant expression of the technical-constructive panorama of the period, of the use of steel and cast-iron for large factories. This is well demonstrated by the current protection constraints, also placed on the buildings of the OGR – which in the case of the work of the *Masterplan* have also proven to be relevant during more than one recovery intervention. The OGR complex, with the Boario Forum, the Carceri Nuove and the Lamarmora barracks also more generally constitutes the block of services and infrastructures "outside the walls" that developed in the urban expansion of the late nineteenth century.

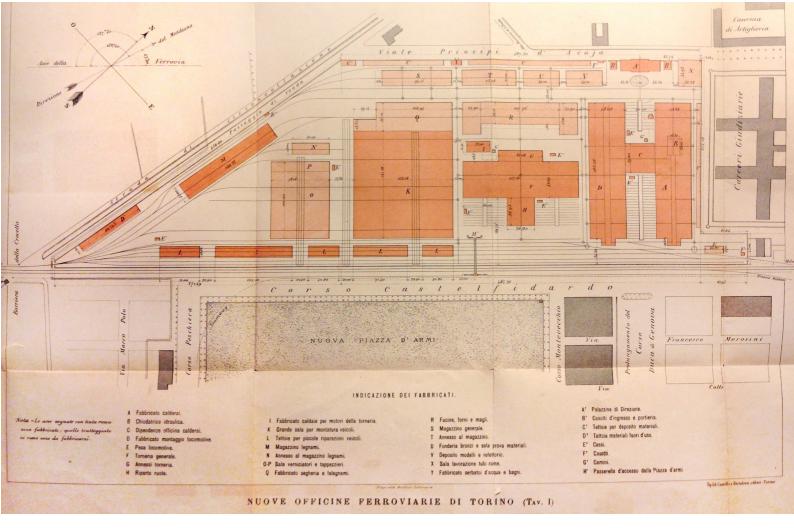
The new General Regulatory Plan

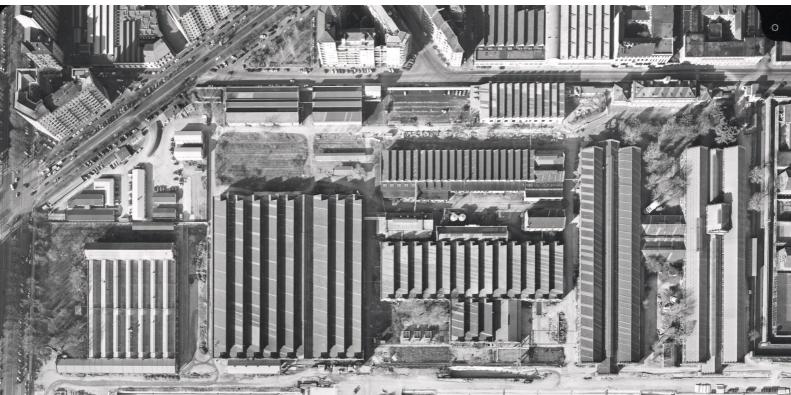
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This area becomes of interest to Politecnico di Torino from the 1980s, while the city administration sets out to plan the transition from a strong production connotation to an overall regeneration, starting the preparation of the new General Regulatory Plan (PRG), approved then in 1995.¹⁴

¹³ To go in depth with the research: Ragazzoni A. (1895) *Le nuove officine delle strade ferrate (rete Mediterranea) in Torino*, Tip. e Lit. Camilla e Bertolero; A.A.V.V. (1993) *Torino in Europa*, catalogo della mostra "Torino in Europa", 14-15 ottobre 1993, Lingotto S.R.L., Torino; Magnaghi A., Monge M. (1982) *Guida all'architettura moderna di Torino*, Designers Riuniti, Torino; Taroni S., Zanda A. (1998) *Le cattedrali del lavoro*, Allemandi, Torino.

¹⁴ The General Regulatory Plan of the City of Torino is approved with deliberation of the Regional Council n. 3-45091 (21/04/1995), then published on the Official Regional Gazette (24/05/1995).





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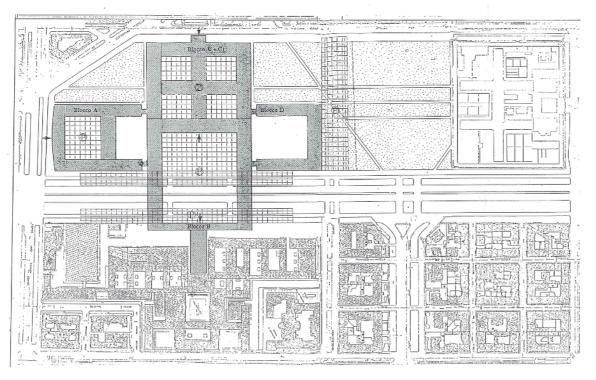
On the top: General Plan of OGR (1895), in A. Ragazzoni, Le Nuove Officine delle Strade Ferrate, Camilla & Bertolero, Torino 1895, tav, I. On the bottom: aerial view of OGR area in the '90s, Politecnico di Torino Archive.

At the same time, in 1987 the university's Board of Directors express the need to build, in expansion of corso Duca degli Abruzzi's location, a large university complex that meets the needs of teaching, research and innovation. The request is implemented by the city in 1989¹⁵, by inserting the university expansion project as a priority for the new General Regulatory Plan. Contextually, the task of drafting the new urban planning tool is entrusted to the Gregotti Associati Studio; the same studio, between 1991 and 1994, is assigned with the project for Politecnico di Torino and completes the preliminary project ¹⁶ for the extension of the main location of Politecnico, which is then approved in 1999. ¹⁷ The so-called "doubling" arises within the framework of the structure of the PRG ideated by Gregotti Associati, in a context of wider redesign and transformation of the so-called Central Spine. This consists of a large avenue obtained on the site previously occupied by the railway, which therefore no longer divides the Politecnico and the area of the former OGR, the more it is a connecting element – at least in the intention of the PRG.

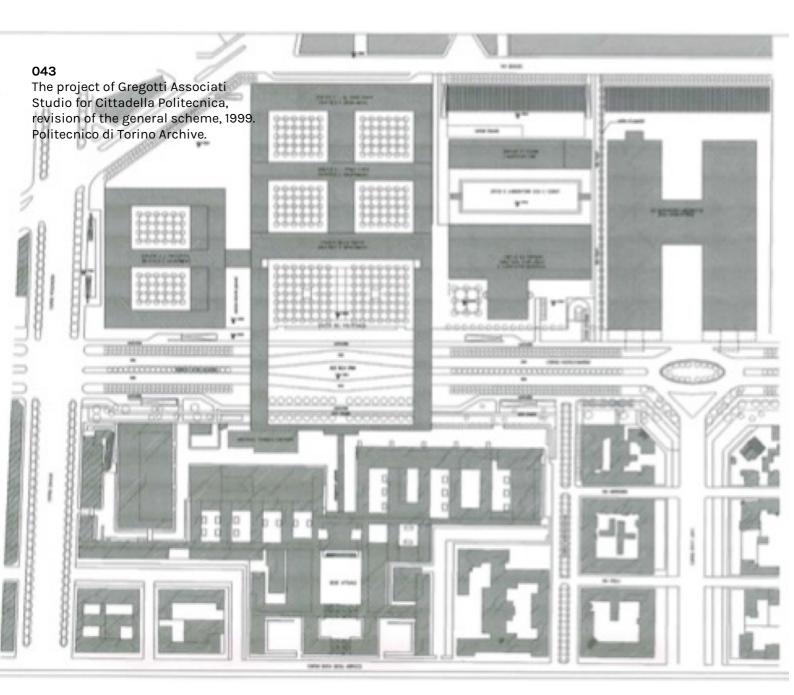
The Spina Centrale is one of the synthetic physical images (De Rossi 2008) used by the PRG to bring some morphologically analogous systems to the historical Turin, according to a process of recovery and reinvention. In particular, the Central Spine retraces four large disused industrial areas (Maggiora 1990; Comoli e Gambino 1991; Cagnardi 1995; Bazzanella et al. 1998; Politecnico di Torino 2001), in a single overall design and according to a general logic of replacing the existing structures – a vision then put to the test of the complex urban framework, leading to some changes compared to the original project (Molinari 2004; De Rossi 2008). The OGR area is part of the so-called Spina 2, affected by a phase of complete functional decommissioning and transfer of the large nineteenth-century services – the already named Boario Forum, OGR and Carceri Nuove - then replaced by a new urban centrality. In Spina 2, therefore, an erasing logic prevails, for a rewriting with large isolated architectural blocks and lowered onto a pre-eminent open green space (Molinari 2004; De Rossi 2008); logic that, at the end, is overcome by an idea of safeguarding and progressive recovery of pre-existences. Many historical preexistences of the area are maintained – the "Carceri Nuove" building bound by the

¹⁵ Programmatic Deliberation about the new General Regulatory Plan (18/12/1989), Città di Torino. ¹⁶ Also defined as Masterplan", approved in Services Conference (15/12/1994).

¹⁷ For a detailed study: Torino Sviluppo SpA (1989) Ricerca per la realizzazione di uno studio di fattibilità tecnico economico relativo alla riorganizzazione edilizia del Politecnico di Torino, Politecnico di Torino Archive, Politecnico di Torino; Gregotti Associati Studio (1990) Politecnico di Torino. Schizzi, Politecnico di Torino Archive, Politecnico di Torino; Gregotti Associati Studio (1991) Politecnico di Torino. Studio di Fattibilità. Aule provvisorie e fasi di realizzazione, Politecnico di Torino Archive, Politecnico di Torino, 19/09/1991; Gregotti Associati Studio (1991) Politecnico di Torino. Studio di Fattibilità. Nuovo Ingresso e Sala Riunioni in Viale Castelfidardo, Politecnico di Torino Archive, Politecnico di Torino, 30/09/1991; Gregotti Associati Studio (1991) Politecnico di Torino. Studio di Fattibilità. Schemi di utilizzazione, Politecnico di Torino Archive, Politecnico di Torino, 30/09/1991; Gregotti Associati Studio, TEKNE s.c.a.r.l. (1995) Politecnico di Torino. Realizzazione della espansione della sede di Corso Duca degli Abruzzi sulla contigua area delle ex OGR. Lotto funzionale B, Politecnico di Torino Archive, Politecnico di Torino; Gregotti Associati Studio (1997) Revisione Generale del progetto di Raddoppio, Politecnico di Torino Archive, Politecnico di Torino.



O42
The project of
Gregotti
Associati Studio
for Cittadella
Politecnica, 1995.
Politecnico di
Torino Archive.



Superintendency, as well as the H-shaped building of the OGR, as one of the most important examples of Turin industrial architecture – and the Politecnico itself decides to maintain and reuse in the "doubling" some of the former OGR buildings – initially the Tornerie and the Fucine. In 1998, a PRIN for industrial areas is presented, which partially modified the structure envisaged by Gregotti and Cagnardi for Spina 2, outlining more and more like a large avenue characterized by a series of cultural functions – the so-called "citadel of knowledge" (De Rossi 2008; Torino Città Universitaria 2012; Barioglio 2017), with the large containers of OGR, the Carceri Nuove, and the new construction sites in the northern sector of Energy Center and in the former Westinghouse area.¹⁸

From the "doubling" to "Cittadella Politecnica"

Furthermore, this portion of the city is endowed with conditions of high urban, regional and international accessibility, as it is located around the interchange node between the underground, the railway link and the high-speed line, represented by the new Porta Susa station. In this context, the Politecnico's "doubling" project is also profoundly modified in its implementation, so that the maintenance of some pre-existences has a discrepancy in scale with respect to the new buildings; in this sense, there is a certain inertia in configuring itself as a closed fence towards the outside, rather than a place for spreading knowledge.

It is following these variations that the concept of simple building expansion – "doubling" – is progressively substituted by that of "Cittadella Politecnica" (De Rossi and Durbiano 2006; Spinelli 2008; Bagnasco and Olmo 2008; Torino Città Universitaria 2012), which aims at a strong interrelation between the university and the social and economic structure of the city and beyond. The project aims, in fact, to connote the Politecnico area as an attractor for investment in research, technology transfer, services and social aggregation, as well as urban redevelopment. To facilitate implementation, in 2000 an agreement is signed between the Politecnico, the City of Torino and the State Railways – owner of the former OGR area – in which the City acquires the areas, free of charge, and ceded them with perpetual free use right to the university. It is in this context that the Polytechnic meets the support of the Piedmont Region, Province and Municipality of Turin, thanks to the Program Agreement signed in 2006 for the financing of part of the interventions. The agreement defines for "Cittadella" a modification in the spatial articulation of the buildings and in the temporal organization of the program implementation phases; the general project is divided into six implementation phases - some of which have already been carried out at the time of signing the new agreement – and

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¹⁸ For further information on the transformations of Spina 2 and Cittadella Politecnica: Molinari A. (2004) *La riqualificazione della città compatta. La* spina *centrale e i programmi complessi di* Spina 2 *e di* Spina 3, in Regione Piemonte, "Valutare i Programmi Complessi", pp. 155-166; De Rossi A., Durbiano G. (2006) *Torino 1980-2011*, Allemandi, Torino, pp. 34-44, 59-72; De Rossi A. (2007) *Dalla cittadella dei servizi alla cittadella della conoscenza*, in Comba M., Olmo C., di Robilant M. (ed.), *Un grattacielo per la Spina. Torino. 6 progetti su centralità urbane*, Allemandi, Torino, pp. 13-18; Ferrando M. (2009) *Campus all'italiana: alta formazione, ricerca, imprese e finanza nella Cittadella politecnica di Torino*, Il Sole 24 Ore, Milano.

is represented in the annex to the Program Agreement. The agreement redefines, after a decade from the start of the expansion project, the guidelines in collaboration and integration with the local authorities involved; in particular, the parties intend the expansion project not only as a venue for education and university research in the strict sense, but as a place of attraction for important investments, services to the territory and urban redevelopment. 19 As required by the "Cittadella Politecnica's Manifesto"²⁰, this must open to the outside, with spaces designed to reconnect urban functions with the university; spaces are therefore envisaged for production, management, service to businesses and citizens, both connected to research and teaching, and in close relationship with local institutions, to promote collective action. Among the strategic objectives we find, for example, integration with the urban fabric of the city, through the offer of services: a large library, urban and regional services, exhibition and seminar spaces, university residences, entertainment and social places; the creation of relationships with the industrial system and the definition of figures of high research professionals, who can indeed indifferently be destined for academic careers or businesses; integration with local contexts to position and diversify the educational offer, creating regional poles for attracting talent from outside.

A matter of updating the Program Agreement

During the following decade, until 2016, Politecnico di Torino manifests new and different needs and implements a series of updates to the Program Agreement, aimed at allowing some interventions – including the creation of large and medium-sized classrooms, the need for a new structure for children, and for new laboratories. These updates are part of the masterplan framework approved in 2006, as they do not entail changes to the planned built area – for a total of 168.314 sqm – but simply a different succession and articulation of the intervention phases. Specifically, at the time of the establishment of the *Masterplan* the phases already carried out are A, B and C, while D is under construction and partially completed; in parallel, the university faces a new season of growth, interaction with the territory and openness to internationalization, so the theme of spaces and their quality certainly constitutes one of its strategic nodes.

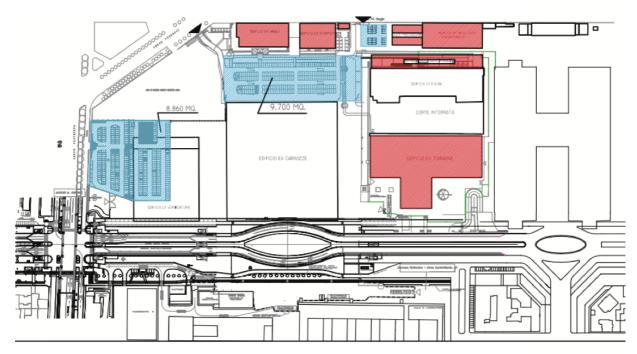
However, at the same time, the Politecnico's strategic planning and campus management policies – in particular about the Citadel – shows some signs of slowing down and difficulties (Barioglio 2017), in relation to the city administration, local authorities and institutional actors. In particular, Cittadella Politecnica – the case study of this research – is the protagonist of this slowdown, so even in the local news are highlighted needs and emergencies related to the search for classrooms spaces²¹, up to clashes with the Superintendency regarding

¹⁹ Program Agreement among the City of Torino, Piedmont Region, Torino District and Politecnico di Torino (20/03/2006).

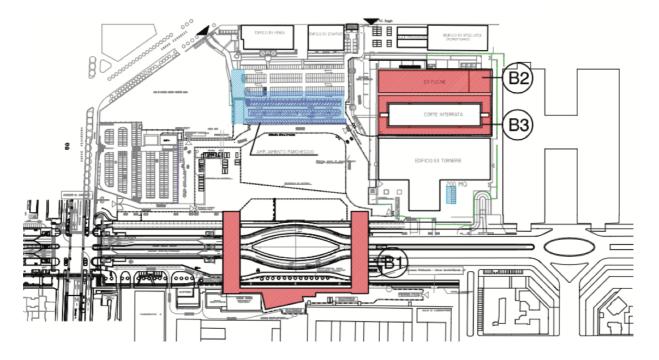
²⁰ *Ibid*. Annex n. 4.

²¹ Fabrizio Assandri, *Il Poli cerca spazi per evitare la stretta al numero chiuso*, in «La Stampa», 03/02/2017, p. 42.

PHASE A - already carried out interventions

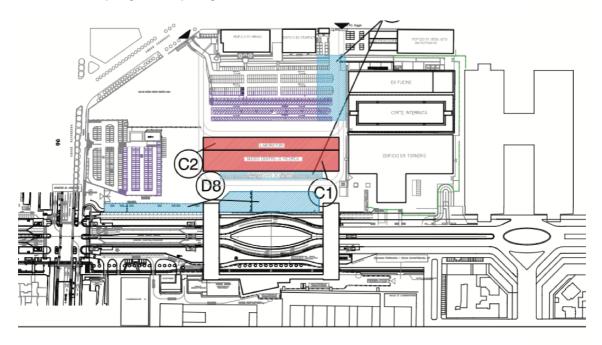


PHASE B - ongoing interventions

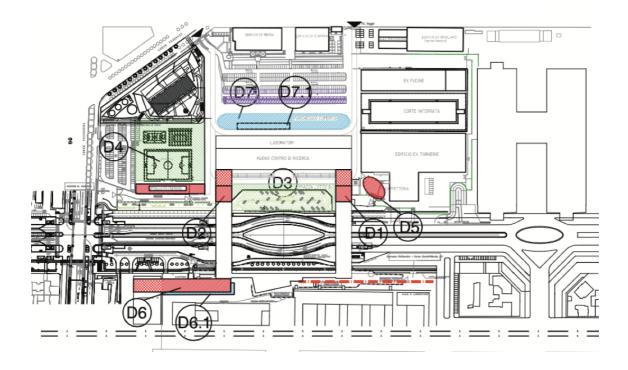


Program Agreement among the City of Torino, Piedmont Region, Torino District and Politecnico di Torino (20/03/2006). Annex n. 5 (phases A-B).

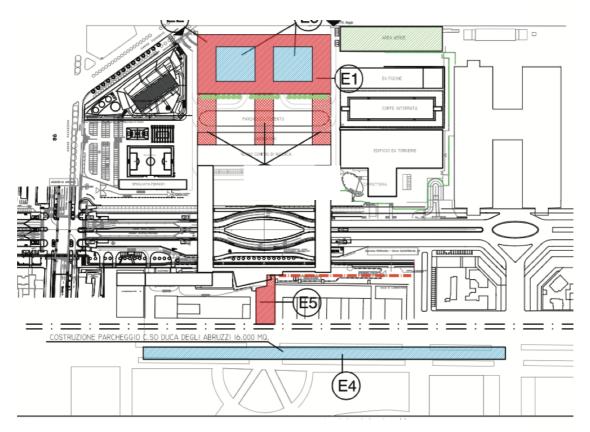
PHASE C + anticipating PHASE D (parking)



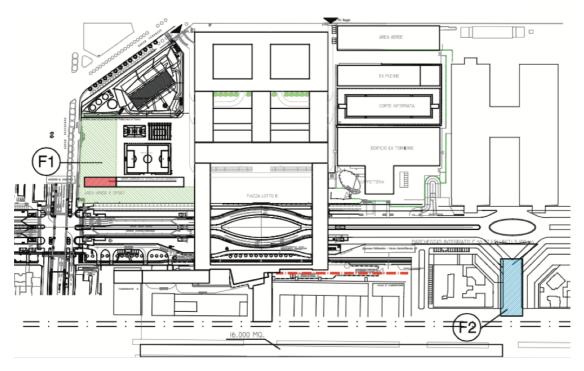
PHASE D



Program Agreement among the City of Torino, Piedmont Region, Torino District and Politecnico di Torino (20/03/2006). Annex n. 5 (phases C-D).



PHASE F



Program Agreement among the City of Torino, Piedmont Region, Torino District and Politecnico di Torino (20/03/2006). Annex n. 5 (phases E-F). conservation constraints of the buildings of the former OGR area.²² In a delicate moment in which the need to expand has become an urgency, these difficulties contribute to stop the planning process, for which the governing bodies – as already mentioned – respond by activating the *Masterplan* project, to outline a strategy of transformation and growth and guiding the related decision-making processes.²³ That of the *Masterplan* is therefore an ongoing laboratory (Barioglio 2017) which, on the one hand, aims to recompose and put problematic systems and opportunities in operational terms – on the building and urban scale; in this, the role of the working group has necessarily changed during the process, from a more negotiating perspective to a more targeted project action.²⁴ Furthermore, the working group maintains a difficult balance between action strategies and tactical operations (Barioglio 2017), solving contingencies, but immediately placing them in a long-term programming framework.²⁵

4.3. Re-composing a framework at two speeds

To cope with the abovementioned new season of growth and development, the *Masterplan* is established in 2016 as a "place" where the various requests expressed by the members of Politecnico di Torino's community are transformed into concrete prefigurations. In practice, the process is configured as a table of dialogue and sharing in which the spatialization of instances, needs and opportunities makes it possible to highlight not so much solutions, as alternative prefigurations of future and possible scenarios. In addition, the goal is also to clarify the conflicts and implications of each design choice for the internal bodies of the university. In addition to providing support internally, the *Masterplan* also aims to share, mediate and coordinate development projects with local stakeholders – the City of Torino, the Metropolitan City, the Piedmont Region, the Superintendency, economic and social bodies and actors, etc. – thus contributing to urban development from an environmental, cultural, economic and social point of view.

In the process, it is possible to somehow identify – at least during the period of participation, from September 2016 to 2018 – two different phases in terms of approach through the *Masterplan*.²⁶ The first phase can be defined until July 2017, when an initial formalization is made by the Board of Directors. The first period of activity sees a two-speed action: on the one hand, there is a necessary and essential collection and general re-composition of data, requests, problems and needs; on the other, it is immediately necessary to advance and elaborate prefigurations that, even

²² Emanuela Minucci, *In via Borsellino la Soprintendenza boccia il Politecnico*, in «La Stampa», 10/11/2016, p. 65; Fabrizio Assandri, *Tra Soprintendenza e Poli lite sul cantiere. L'impresa si arrabbia*, in «La Stampa», 11/11/2016, p. 54.

²³ Report of the Board of Directors (29/06/2016), University Bodies, Politecnico di Torino.

²⁴ See paragraph 4.3.

²⁵ See paragraph 4.4.

²⁶ In this chapter, it has to be specified that all the sources and documents referred are in the public domain – deliberations, reports, plans, agreements – also with an aim to distinguish this accessible level of the discussion from the internal and empirical perspective of empirical chapters.

starting from partial analyses, begin to resolve the most pressing emergencies. In this sense, the working group first of all establishes and coordinates a dialogue-exchange with the entities involved at different levels in the design and participating in the decision-making processes — university bodies, departments, Edilog (Building and Logistics Technical Offices), the City Administration, the Superintendency and other interested local actors. In addition, starting from an initial collection of needs and an investigation of unexpressed potential and opportunities, the *Masterplan* produces strategic-operational documents foreshadowing possible transformation scenarios, to be used as a negotiation tool among actors. During the first official meeting with the Project Team²⁷, a series of analytical and design contents proposed by the working group are presented in this direction—analyses of the educational and research offer, analyses of the University spaces, analyses of the territorial systems. Moreover, as first opportunities:

- opportunities and critical issues: the inadequacy of the existing spaces to
 meet the quality and innovation needs of an international university,
 together with the lack of organization of the existing structures in the
 various locations built and remodeled in parts in different ways and at
 different times lead to broaden the gaze towards sensitive areas of
 transformation, such as the former MOI, Torino Esposizioni, the H-shaped
 building of the OGR and the area and Westinghouse;
- the university spaces: reorganization and qualitative improvement of the existing spaces with respect to the distribution and architectural configuration; creation and adaptation of spaces suitable for new forms of teaching and research ("spatializing interdisciplinarity"); redefinition of the relationship between monofunctional and mixed or collective structures (research centers, libraries, etc.); qualification of open spaces and the relationship between inside and outside; reorganization of the services adjacent and internal to the university (reference to innovative examples for teaching and research spaces: in this case, a series of virtuous case studies are presented in support);
- relationship with the city and the territory: general guidelines for the urban distribution of the offices (new centralization, bipolarity among Cittadella Politecnica and Campus Valentino); openness to external interlocutors: stakeholders and non-academic partners, companies and new sectors of knowledge production, public actors, civil society, tertiary; offer of internal services with public value; involvement in the social and cultural life of the city through complementary programs.

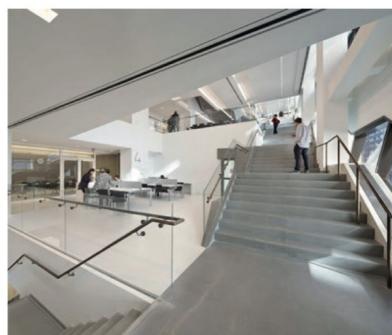
Contextually to the first plenary meeting to present the project, there are some emergencies that break into the process, so that the urgent condition relating to the lack of spaces for teaching uses becomes among the operational fronts of the first

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²⁷ Report of the plenary meeting with the Project Team (22/12/2016), University Bodies, Politecnico di Torino.













months of work. In particular, within the framework of the transformation project of the former changing rooms – the classrooms R, the first path in empirical chapters – Edilog's group requests support from the Masterplan Team (MPT) in dialogue with the Superintendency, which has blocked the process by binding the existing facade. In addition, the lack of classrooms requires the search for a temporary and feasible in a short time solution, so as not to reduce the number of students enrolled at Politecnico. In summary, the working group – especially in the initial research activities – supports Edilog in the evaluation of temporary solutions for the construction of prefabricated classrooms.²⁸

In this emergency context, the process necessarily deviates – in part – from what predetermined, directing the efforts of the working group not only towards what is foreseen by the first plenary meeting – in terms of analysis and design scenarios – but also to a timely response and "by objects" to the contingent emergency. In this sense, the two-speed action mentioned above is subject to some interference that necessarily affects the process. The first months of work see the working group unraveling between these different interconnected levels of the project, with a particular effort aimed at solving emergencies - so the diatribe relating to classrooms R is resolved with the redefinition of the project, and in a very short time starts the design of the temporary pavilions designed to host new classrooms. At the same time, the MPT continues to experiment within the dichotomy between analytical and design explorations: on the one hand, collecting and systematizing data, through a synthetic representation and the reconstruction of a cognitive and comparative framework of the spaces of the university's metropolitan locations; on the other, with a "by scenario" approach to answering the demand outlined. ²⁹ The demand is therefore to be understood as the re-composition of a framework of needs - around the topics of teaching, research, departments, library - referring to temporal scenarios and developed in relation to different growth scenarios; the offer is configured as the construction of comparative prefigurations for possible 049 development and transformation.

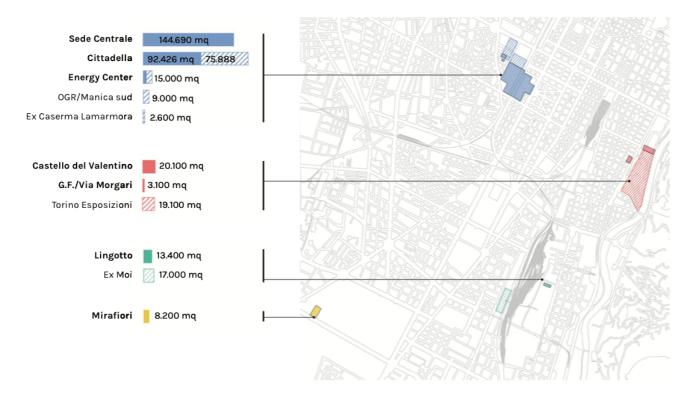
The "discovery" of the available building capacity

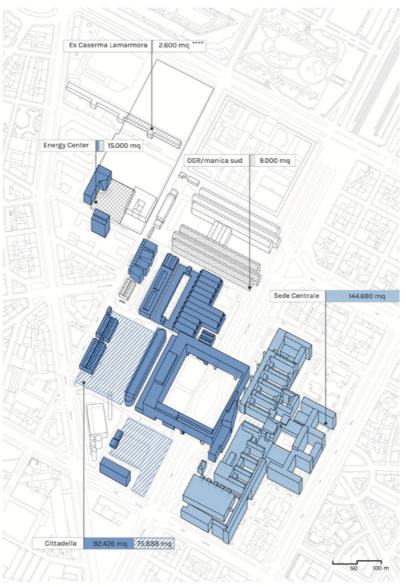
In this framework of actions, but above all in a context of declared emergency and search for spaces by Politecnico, even outside of its offices, the MPT underlines a fundamental opportunity dictated by the Program Agreement still in force for the Cittadella. In fact, attention is drawn to the residual building capacity within the 050 area³⁰ – approximately 75,000 square meters – which would allow to contain many of the emerging space needs, however requiring the problem of creating parking lots according to local and national standards. Indeed, with the construction of a new underground car park, Politecnico can carry out various different explorations

³⁰ *Ibid*.

²⁸ Report of the plenary meeting with the Project Team (22/12/2016), University Bodies, Politecnico di Torino.

²⁹ Masterplan Team's Presentation, attached to the Report of the Board of Directors (30/03/2017), University Bodies, Politecnico di Torino.





O49 Construction of comparative prefigurations for possible development and transformation. The example of Cittadella Politecnica.

Report (30/03/2017).

on the spaces inside the Cittadella and on the possible development of all or part of the more than 75,000 square meters still feasible – this point will be deepened in the second path in the empirical chapters. Among other things, in declining temporally the possibilities of development through the residual cubic capacity, some functions are hypothesized, in particular a library on the Spina, which will then remain and will be further investigated during the process. In summary, during the first Board of Directors some lines are drawn on the progress of the work, entrusting the group to pursue the general development of the project; approving the construction of four prefabricated classrooms to respond to the emergency regarding the current classroom and requesting Edilog to review the project for the underground parking in Cittadella.

What can be considered as the conclusion of a first phase for the *Masterplan*'s working group is the formalization³¹ of July 2017. The study presented³² starts from the extensive building capacity of the area of Cittadella Politecnica and from the first project explorations aimed at depicting the maximum cubic capacity achievable. The first stages of development of the area are therefore hypothesized and analyzed through a chronological study that traces the intervention proposals year by year – with relative indications of surfaces and the need for parking areas as required by current legislation. The study in stages allows careful monitoring of the relationship between new buildings and the need for parking: in particular, the theme explored of the multistory underground parking to be built in Cittadella is the basis for the development of subsequent initiatives. This proposal allows to start a process of reorganization and re-project of the open spaces – to be followed in the second path in the empirical chapters – currently largely occupied by flush parking. To strengthen the prefiguration of the possibilities related to the "unlocking" of the quantities achievable thanks to the underground parking, an additional level that the work group associates with the realization scenarios is a prefiguration in terms of repercussions on the classroom available – the third path of the empirical chapters. The logic of the sequence of interventions is therefore enhanced by the corresponding study on the saturation of the classrooms – evaluated year by year – which aims to eliminate the emergency relating to the lack of space for teaching.

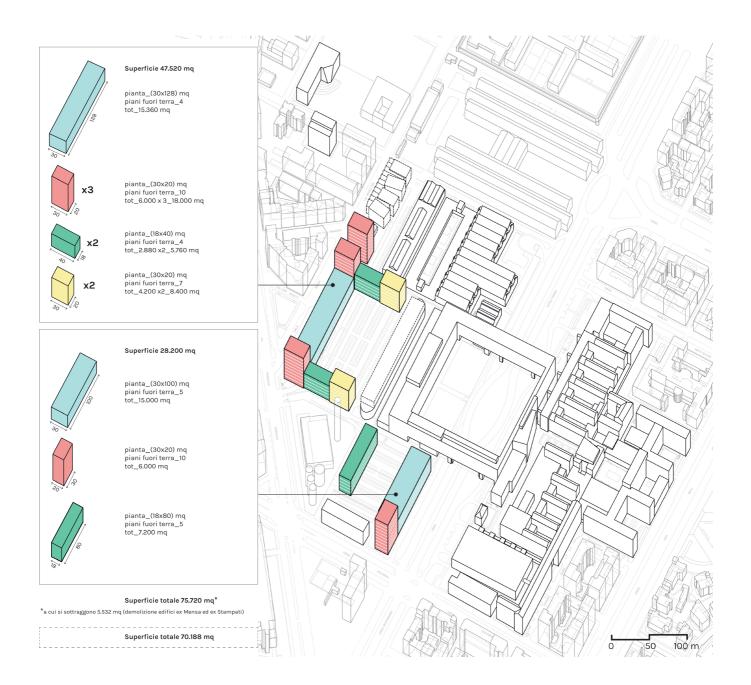
Unlocking development possibilities

Furthermore, the declination in stages of the building capacity allows to reflect on some possibilities and opportunities in terms of spaces to be realized. First of all, the possibility – mentioned a few months before – of a new university library is deepened: as an opportunity, first and foremost, to reorganize and centralize the book heritage, facilitating their accessibility and expanding the consultation spaces; moreover, a library is seen as an opportunity to "campus making", with spaces for seminars, student teams, sharing and study also open to the city.³³

³¹ Report of the Board of Directors (20/07/2017), University Bodies, Politecnico di Torino.

³² Masterplan Team's Presentation, attached to Report of the Board of Directors (20/07/2017), University Bodies, Politecnico di Torino.

³³ Masterplan Team's Presentation, University Bodies, Politecnico di Torino (20/07/2017).



An exemplification of the realization of the residual building capacity within the area of Cittadella Politecnica – approximately 75,000 square meters.

Report (30/03/2017).

Secondly, some initial investigations are proposed for the design of a new building on Via Borsellino – the focus of the third path in the empirical chapters – for educational purposes, in order to respond to the strong criticality of lack of space for teaching and study. The Board of Directors then mandates the working group to continue the activities, in particular: activating the formalization process of the Masterplan for an update of the "Masterplan Cittadella Politecnica" with the City of Torino; reviewing and finalizing the project for the underground parking; deepening the scenarios on the library; starting the design of the new building on via Borsellino for educational purposes – new classrooms R2. The plans for the expansion of Cittadella go hand in hand with the first developments of the project for Campus Valentino on the Po axis, launched with a call for tenders promoted in 2015³⁴ and already budgeted for future investments by Politecnico – this path is not deepened in the empirical chapters. This first phase of the Masterplan therefore concludes with a declared investment of almost 80 million euros over a twenty-year period³⁵ in the two main urban locations of the Polytechnic of Turin.

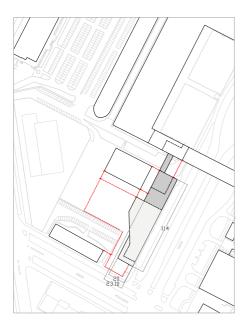
To conclude, the first results of this initial phase of the *Masterplan* are trackable on two levels. Starting from what has just been said, in terms of strategy of action, a trend towards re-centralization emerges (Barioglio 2017), after a season of significant dispersion of the locations in the territory. Condition, that of centralization, that allows to concentrate the efforts in terms of both spatial expansion in the area and management and coordination of teaching and research. Turning instead to methodological considerations, the *Masterplan* in this first year of activity does not define solutions, but a framework of possibilities and design alternatives for the expansion and transformation of the main buildings; this, in order to provide University Bodies with tools to make informed decisions. With this in mind, the scenario tool (Barioglio 2017) is used to systematize and synthetically return frameworks of possibilities, often alternatives, and to spatialize design strategies and actions, making the terms of the discussion evident and arguable through the design of spaces and volumes.

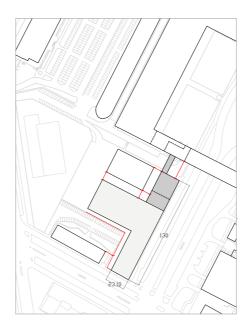
4.4. A role that changes from negotiation to action

In the wake of the Board of Directors' mandate, in July 2017, a second phase of the Masterplan project starts, which sees the team working on different design strands in parallel, both with work tables inside the university – to coordinate explorations on the underground parking fronts and new buildings for the library and classrooms R2 – and external, in particular with the City to facilitate the formalization process of the new "Masterplan Cittadella Politecnica".

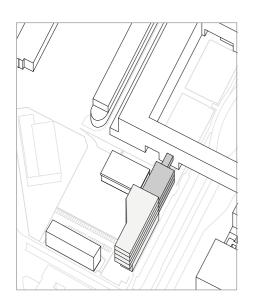
³⁴ Among the generalist press: Andrea Rossi, *Torino Esposizioni 98 milioni per il rilan- cio*, in «La Stampa», 02/07/2014, p. 49; *Torino scommette su cultura e ricerca*, in «Il Nuovo Cantiere», 15/11/2015; Luigi La Spina, *La cultura mette in moto lo sviluppo*, in «La Stampa», 17/02/2017, Torino news.

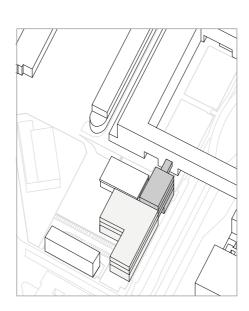
³⁵ Stefano Parola, *Così il Poli cambierà volto. Investimento da 80 milioni*, in «La Repubblica», 23/07/2017, Torino news.

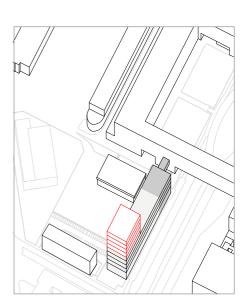












O51First explorations around a new university library on the Spine 2, open to the city. Report (20/07/2017).

What emerges more clearly at the start of this second phase of the work is the need for supporting the Campus Valentino project, for which the feasibility study has been entrusted in the meantime.³⁶ The process for the re-functionalization of the Torino Esposizioni complex in Valentino park aims at the construction of a campus in the area which starts from the Castle and reaches the complex, integrating the university functions with those of a new civic library. Politecnico is assigned spaces for the construction of an Architecture, Design and Planning Campus – with the placement of classrooms, study rooms and teaching laboratories, research laboratories, ateliers and offices. The goal, more generally, is to create a public and cultural space capable of integrating training and advanced research activities in the field of architecture, planning and design. The theme of the Valentino Campus is discussed during the first public sharing of the Masterplan, which takes place at the Castello del Valentino with the Architecture departments – some members of whom are part of the Project Team in this first phase.

The Masterplan's public objectives

In addition to reiterating the need to create a discussion table in the city for the formalization of the new *Masterplan*, the interventions that emerge after the first year of explorations and prefigurations are also discussed on this occasion – the underground parking; the wing for a new library; the new classrooms R2.³⁷ This is the first context in which the team publicly reflects on the practice just started, so the working model, which involves administrators, teachers and researchers in a single process – with a managerial style, enriched and supported by technical and scientific skills – is definitely presented as unique on the national scene.³⁸ The public discussion is relevant for this research, since the point is made on the process, reflecting on the practice in progress and in relation to the ongoing decision-making processes; the *Masterplan* is here intended as:

- a work of reassembling of individual projects, of different policies, of an overall view: the university's programming policy has weakened, after a long season of a pioneering role in urban transformations, then the process is started to recompose a framework of actions to trigger the blocked transformations;
- a strategy founded on spatialization of policies: the shaping of intentions allows to seize the opportunities and to overcome the conflicts, translating the different strategies in more questionable and more arguable terms, with a spatial restitution understandable by different actors;

³⁶ Assignment by SCR-Piemonte S.p.a. – the client company of the Piedmont Region – to the Temporary Project Grouping of the feasibility study: ICIS S.r.l. (group leader), Rafael Moneo, Isolarchitetti S.r.l., Tecnimont Civil Construction S.p.A., Onleco S.r.l., IREN Energia S.p.A., Ing. Giovanni Battista Quirico, Arch. Marta Colombo.

³⁷ Masterplan Team's Presentation to Architecture Departments (04/10/2017), Masterplan Archive, Politecnico di Torino.

³⁸ *Ibid*.

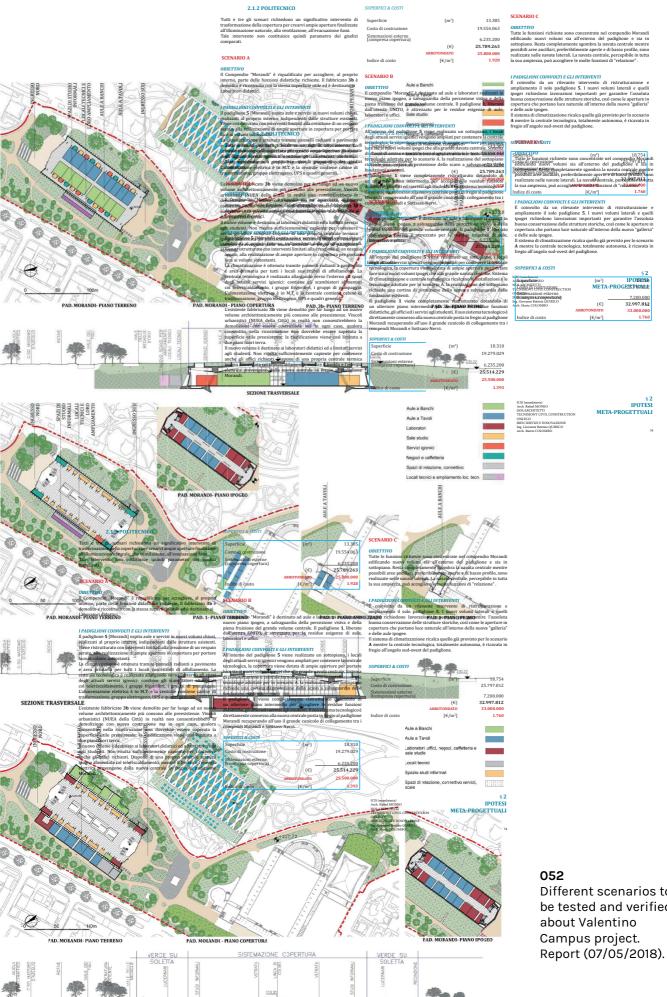
- a place of shared decisions: the sharing between all the components of the university, but also with external actors City, Region, Superintendency aims to minimize the clashes at the institutional level, looking instead for permanent tables among project cultures and administrative bodies;
- a chance to develop university building policies: after years of dispersion and multiplication of the universities' locations, both locally and nationally, the trend is a "re-centralization" from a spatial point of view, which allows to recompose also teaching and research levels;
- an awareness of being "a city in a city": Politecnico has 35,000 "inhabitants", so that not only study and research are matter of interest, but also the issue of living the university and the quality of life;
- a statement of the role of Politecnico in the local context: the process produces a progressive awareness of the role of Politecnico as one of the main economic and construction actors in the area, which produces enhancements and local development for the city.

A further opportunity for public presentation, open to citizenship, occurs in February 2018³⁹, during a conference organized by the Department of Architecture and Design at Valentino Castle. The focus is on the role of university in building the city, to contribute to the discussion on the future of the city. By proposing an overview of physical transformations and investigating which institutional actors take part in it, the aim is re-composition of an overall vision of the present and then the future of Torino. The conference is an opportunity to discuss with the City the main strategies and projects scheduled in Politecnico's development plan - not without controversy⁴⁰; moreover, it is the first time in which the new Rector attends a public event about a so crucial argument about the university. The Masterplan has changed its governance since 2018, as the Rector redefines his working method with the various internal bodies of the university. 41 In fact, he proposes a direct link with some brainstorming and strategy development groups; one of these is precisely the Masterplan, which therefore responds directly to the Rector, while the involvement of the research team that has so far taken the field remains – as Edilog, Green Team, and Strategic Planning Office. What changes is the investiture of a Manager, as the direct referent for the Rector in the interaction with the different skills involved. Hereinafter, even the governance and the working team progressively shift from a negotiating practice to a laboratory in action – through projects, more than scenarios and strategies.

³⁹ Stefano Parola, *Il neorettore e il masterplan del Poli "Ecco i miei piani per l'ateneo futuro"*, 22/02/2018, Torino news; Federico Parodi, *Torino, le riserve del vicesindaco sul masterplan del Poli: "Non mi piace il progetto del parcheggio"*, in «La Repubblica», 22/02/2018, Torino news.

⁴⁰ The appointment is part of a series of meetings entitled "Torino. Arguments for a possible future. Meetings on the themes, methods and places to re-design the city" dedicated to a place or theme on which the DAD has spent its energy of analytical research and design synthesis in recent years.

⁴¹ Poliflash Magazine, *Presentata la squadra di governo del Rettore Guido Saracco* (16/03/2018), Politecnico di Torino.



SEZIONE TRASVERSALE

Different scenarios to be tested and verified

"Campus Valentino" requalification

This shift – together with the ability and the competence to move forward to action – emerges in the following months, with an acceleration in envisioning and projecting, more than re-composing and negotiating points of view. It is noticeable during the first Board of Directors with the new governing team, where a series of ongoing projects and new explorations are presented – as intertwined in an overview for the two urban campus chronological development. Earting form the process for Campus Valentino requalification, the MPT is supporting and monitoring the activities of the temporary project team (RTP), on the one hand, and the intentions of the city, on the other, in the development of the feasibility study; on that point, the Board of Directors is called to evaluate the first proposals for implementation in progress, addressing the requests to be carried out in the discussion between RTP and *Masterplan*. The main intention with Valentino Campus is to recollect in a same location all the disciplines in planning and architecture field, at the moment dispersed all around the city – in line with the already mentioned will of re-centralization.

Anyway, as already mentioned, this project is not a focus in the empirical chapters, except by the fact that transferring all the architecture students in Valentino Campus would mean to release spaces in Cittadella Politecnica – reaching more acceptable crowding levels in waiting for the development of that area. To conclude in this, the proposal of the MPT for accompanying in a profitable way the RTP is to exploit the internal structures of Politecnico to carry out some technical, environmental and structural checks, in the evaluation of the alternative scenarios in progress proposed. The Board of Directors therefore approves the activation of the necessary and preparatory insights for future decisions on the complex.⁴³

Transforming through related projects

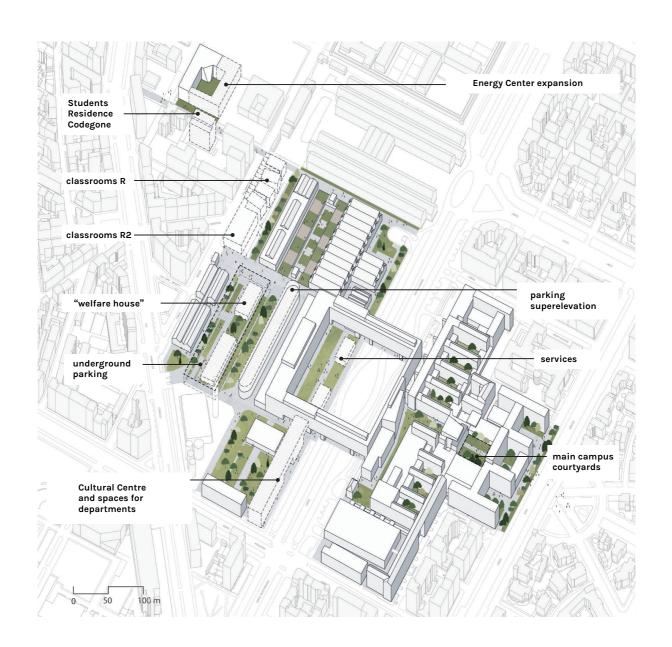
Moving to Cittadella Politecnica, after the first proposals of a chronological development and a significant number of meetings among internal structures of the university – and a few preliminary instructions with the City – the MPT moves forward, by defining a path through different intertwined projects.⁴⁴

First of all, it develops scenarios for the reorganization of the *open spaces* of the **054-055** Engineering Campus, to improve of the daily life of the university community – further details will be deepened in the second path of empirical chapters. In the meantime, explorations are underway about the other phases of construction of the residual building capacity – linked to the solution of the car parks problem through the underground parking. The study that the MPT carries out, from the very beginning of its activity, highlights the shortcomings in terms of spaces and services

⁴² Masterplan Team's Presentation, attached to Report of the Board of Directors (07/05/2018), University Bodies, Politecnico di Torino.

⁴³ Report of the Board of Directors (07/05/2018), University Bodies, Politecnico di Torino.

⁴⁴ Masterplan Team's Presentation, attached to Report of the Board of Directors (07/05/2018), University Bodies, Politecnico di Torino.



Chronological development of Cittadella Politecnica.
Report (07/05/2018).





054-055

Above: reorganization of the public spaces for the entire Cittadella. Report (07/05/2018). Below: explorations around the so-called "welfare house". Report (07/05/2018).

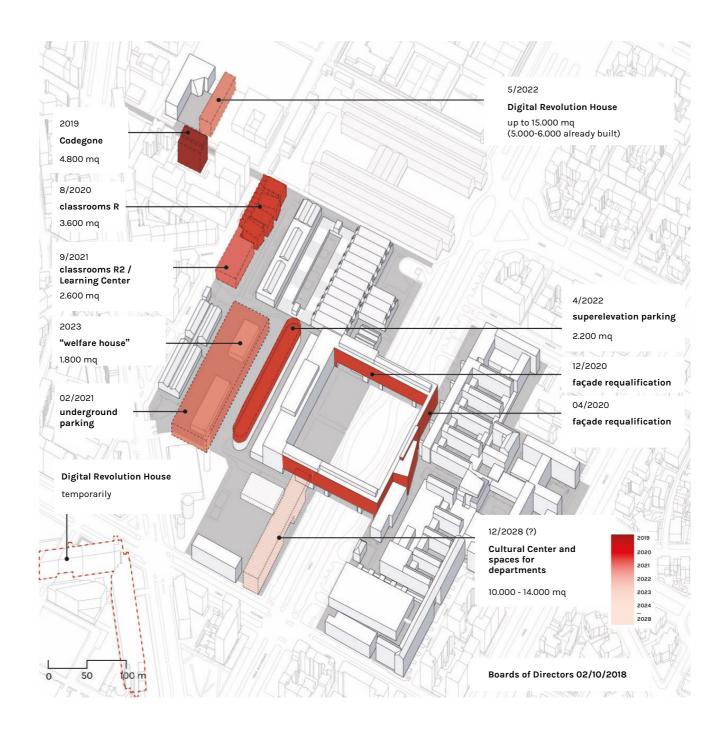


for the enhancement of the cultural heritage of Politecnico. The current fragmentation of the library heritage and of the consultation departmental libraries, together with the difficult accessibility of the central library – with closed shelves - offer the opportunity to rethink the organization of the spaces and activities of an engineering library, to guarantee a more adequate service to the needs of an international university. The library, intended in a broad sense as a new university cultural center, as an agora and a gathering space, can be an important opportunity to invest in the quality of living in "Cittadella Politecnica". The urban dimension of the intervention and the opening of the library to the city also constitute an opportunity, for Politecnico, to redefine its role as an active cultural actor in the metropolitan area and to offer an innovative space as a place e of identity and representation of the university. Again, this project – due to the long-term perspective and impossibility to really grasp some effects – is not a focus in the empirical chapters; however, it is important to highlight this opening to the city.

Another important project aimed at interacting with the city context, is that of the new classrooms R2. Being at the limit and at the entrance to the campus on via Borsellino, they represent an important opportunity to rethink one of the accesses and interfaces of the campus with the city - as deepened in the third path of empirical chapters. A peculiar opportunity comes here with the collaboration started between Politecnico and the Giovanni Foundation and Annamaria Cottino⁴⁵, a philanthropic institution involved in training and social impact. The involvement of this Foundation therefore directs the project towards the construction of a Learning Center for student-centered teaching and for educational initiatives related to impact education. This collaboration, with a shared planning of spaces, of educational programs and of cultural initiatives, aims at simplifying and at speeding up the process thanks to the involvement of a private promoter and co-financier – with reference to the timing issues just mentioned. Moreover, interfacing with an external Foundation and cohabiting campus spaces with a private entity is in line with the aim of opening up to the city and sharing research practices.

Finally, a project to be accounted – but not deepened in empirical chapters – is actually outside the boundaries of Cittadella, with the possible doubling of the Energy Center – as Digital Revolution House. The area, adjacent to the former Westinghouse and overlooking Spina 2, is an interesting opportunity to notice as possibility of expanding beyond the original physical boundaries - somehow overcoming the aforementioned "enclosures", as a nineteenth-century heritage.

⁴⁵ Cottino Foundation creates and promotes entrepreneurial action and new frontiers of knowledge. It even promotes applied scientific research and technological innovation through multiple tools and forms of intervention, with the aim of identifying and supporting ideas and projects of high cultural profile and developing entrepreneurship and start-ups, supporting in particular business ideas and projects that are able to enhance human capital, sustainability and social impact.



056Final program of the Masterplan's interventions. Report (02/10/2018).

Towards an updated institutional agreement

In the October 2018 the final program of the Masterplan's interventions is formalized⁴⁶, to be submitted to the City for an update of the ongoing Program Agreement. The main theme of rethinking open spaces, taking advantage of the opportunity of an underground parking and connecting a series of specific interventions – including the "welfare house" – in the overall system is carried out and defined in a time schedule. Furthermore, in addressing specific actions and 056 projects based on a wider open space program, a first project idea is developed for the Learning Center – nevertheless susceptible to changes over time, in dialogue 057-058 with the Foundation. In line with the design of the classrooms R, essential elements are the maintenance of the existing wall as prescribed by the Superintendency, the recovery of design elements such as the glass distribution parts that take up the thread of industrial sheds and the opaque classroom boxes. The other project, already mentioned, presented on this occasion is the Digital Revolution House – as the doubling of the Energy Center is named. It is a space for research and innovative activities on digital themes and technologies, thus it guarantees distribution flexibility for possible transitory uses related to university emergencies. Finally, the MPT reports a series of updates in respect to all the other ongoing projects: with regard to the Valentino Campus, the feasibility study by the working group in charge of the Morandi Pavilion has been completed and, together with Politecnico, a series of surveys and checks are underway. In reference to the Cultural Center, this is an intervention that is still a long way off, but fully in line with the other axes of development in terms of culture and openness to the city proposed in Cittadella.

The work with the City for the updating of the Program Agreement is in progress, so all the projects just discussed are to be considered systematic in the spatial redefinition proposed for Cittadella Politecnica. The Board of Directors therefore deliberates⁴⁷ on the continuation of the priority investment in the redevelopment of Corso Duca degli Abruzzi and Valentino Castle.

The definition of a new Program Agreement

This is the picture that is even presented in the second public presentation of the Masterplan, on the occasion of the celebrations for the 60th anniversary of Corso Duca degli Abruzzi complex. The *Masterplan*, after a first phase of intense work to understand development opportunities and potential – from September 2016 to July2017 – through a great reorganization and re-composition action, therefore proposes a series of specific project developments. In particular, it is coinciding with the mandate of the new Rector – since March 2018 – that a strong push emerges towards more project developments in the strict sense of the work group. The Masterplan then shifts from negotiation to action, however assuming a close link between the two dimensions; the work of mending and systematizing problems

⁴⁶ Report of the Board of Directors (02/10/2018), University Bodies, Politecnico di Torino.

⁴⁷ Report of the Board of Directors (02/10/2018), University Bodies, Politecnico di Torino.





057-058First project idea for the Learning Center. Report (02/10/2018).

and needs is in fact an essential element for proposing design actions. With the Board of Directors of October 2018, the Masterplan takes clearly action, with a mandate to design the Learning Center and the Digital Revolution House - in addition to the overall reorganization of the open spaces and the creation of a "spine" across the campus as a whole. If in the 1950s, at the time of its inauguration, Politecnico was above all a "factory" of engineers for large industry, today, in the knowledge society, the university produces engineers, architects and various professional figures, the training of which requires spaces capable of guaranteeing a quality of life and much more complex interaction than before.

To conclude, the main effect of the *Masterplan* – at least the one that this research considers as a (first) ending point of these two years of practice – is the modification and update of the Program Agreement with the City in January 2019.⁴⁸ In parallel with its research and practice activities, indeed, the team coordinates the process of interaction and exchange with the City to review the former "Masterplan Cittadella Politecnica". In December 2018⁴⁹, Politecnico represents to the City the need for an update of the Program Agreement in order to remodel some interventions with respect to what is foreseen in the various implementation phases; the representatives of the entities involved take note of the changes⁵⁰ illustrated in the documents, sharing the new schedule and extending the Program Agreement to 31st December 2034.⁵¹ Considering that phases A, B and C were already completed before the **044-046** Masterplan work group came into play, the time schedule planned to implement the interventions defined is referred to phases D, E and F. The update, definitively approved in January 2019, revises then the chronology in relation to the new phases defined by the MPT, after a long and complex process that has profoundly changed the original plan in terms of spaces and uses.

4.5. Different paths through the Masterplan's practice

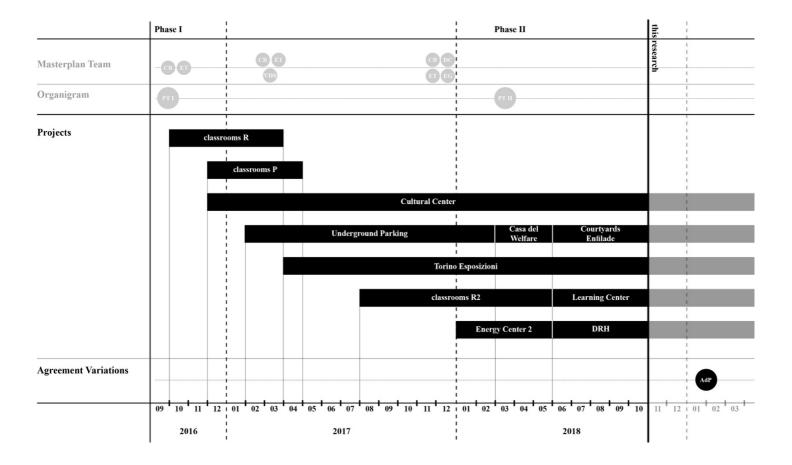
The Masterplan process is therefore configured as the institution of a practice with the primary objective of building a dialogue between the different instances involved. The case study emerges in itself as an ongoing process of a somewhat collective nature, with a condensation of different problems and projects faced with an approach straddling strategy and tactics, based mainly on spatialization. The practice of the MPT is in itself a product of a social practice, rather than an individual act of creation, whereby the architect with his competence becomes an intermediary of a negotiation, in dialogue with other actors involved in the process, based and supported by the spatialization of problems through the visual artefacts.

⁴⁸ The Program Agreement for realizing the project "Cittadella Politecnica", with Masterplan updating approval (11/01/2019), Mayor Decree, City of Torino.

⁴⁹ Protocol Note 4788 (05/12/2018).

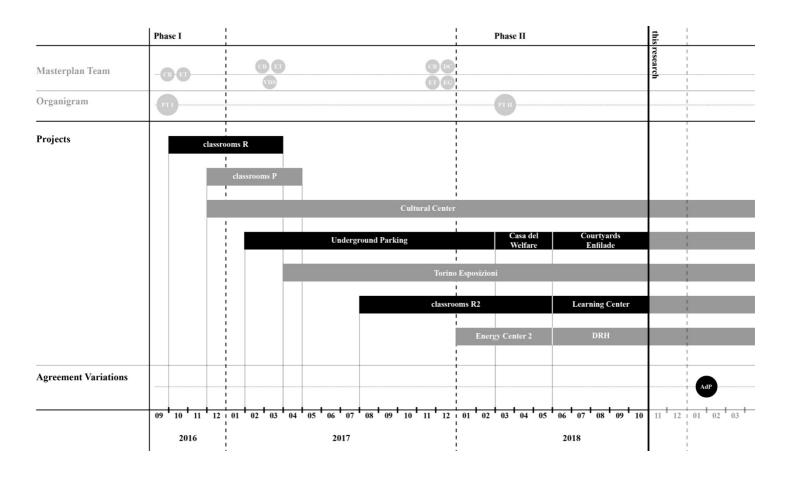
⁵⁰ Supervisory College (20/12/2018).

⁵¹ The Program Agreement consist of a series of documents: a Descriptive Report; a time schedule of interventions; a general framework of Development Phases (D, E, F); a focus on Phase D. See the documents attached at the end of this research.



059-060

On the top: Masterplan's projects during the period of observation. On the bottom: selected path to deepen in the empirical chapters.



The case is therefore an object of study in which it is not difficult to be able to take into account and to trace the specific operations carried out in the whole process – and/or with in depth excerpts and episodes of this story. By retracing the practice carried out in the folds of the Masterplan, it is therefore possible to define more clearly the roles and trajectories of the different entities involved in architectural design practice. As already illustrated, the Masterplan process relates to a number of intertwined processes around the two main urban campuses of Politecnico di Torino – we can refer to as the Engineering Campus and the Architecture Campus.

Among the several practices carried out, this research selects the Engineering Campus as the main fieldwork and, more in depth, three paths – basically three 059-060 project trajectories – to trace through the empirical chapters. The first path refers of a case of projecting under emergency, since the classrooms R emerges as an unexpected task in the early stages of MPT practice. While starting a complex and broad work of recollection about the processes of transformation of Politecnico buildings, this issue arises and let the practice deploy at two speeds for a while; in this sense, the MPT acts here no more as a research office, thus as an entity that dialogues with various – official and informal – requests, in a conflicting context. The second path relates a broader reasoning that, from the need to realize an underground parking to unlock the classrooms transformation scenarios, gives birth to a never attempted before aim at rethinking the open spaces of the whole Engineering Campus. The process comes out from a "discovery" related to a residual building capacity, that allows then not only to solve the classrooms lack problem, but also to lift the gaze to a more articulated transformation of the open spaces – in relation with the other buildings to be implemented. The third one also arises from the general lack of spaces for didactic; thus, it illustrates a specific opportunity to share and discuss with an external actor that impacts the process in terms of funding, on the one hand, but also of needs for interaction and discussion in conflicting and divergent arenas, among different institutions and interests.

By deepening the *Masterplan* case study, it appears how a multiplicity of practices and actions emerge from within the project; indeed, while going through the collected data and starting to analyze them, it is even more clear how each project, each episode provides a story able to shed light on a specific crucial point in connection to research aims and questions. Therefore, the choice is made to select the most representative stories in this regard, being conscious that their interconnections makes it possible to maintain specific focuses without disconnecting them, thus continuously taking into account their related and intertwining aspects.

The interpretative framework of empirical chapters

The empirical chapters aim at proposing written accounts together with clear reference to visual mapping and related artefacts; in this sense, the aim to trace how architectural design practices influence the decision-making process is followed by practically and empirically taking account of the entities' interactions through the

process. Such narratives are produced by breaking the process into fragments, from which themes emerge and argument can be shaped, with related attempts to reach some theoretical explanations. Since the aim of this research is an investigation – from the inside – on the role of some architectural design practices in the ongoing decision-making process, in *projecting decisions* that would not otherwise be possible to see and witness without having been *in the folds* of the process, therefore, these maps – and in general the analysis with content analysis – are the basis for interrogating the process in the empirical chapters. Each path suggests that visual artefacts become constitutive of some architectural design practices, through which practitioners in MPT envisioned strategies to deal with the already mentioned problems; these practices are followed and accounted at two scales, of course intertwined, that are the whole process as a focus or some in depth explorations.

An overview on the process

The proposed visual mapping allows, first of all, an hypertextual archive of the process, in which the events and episodes can be narrated and ordered starting from the content analysis. Each of the mapped elements is traced backwards – from the content analysis operations – and is therefore an interpretation traced and based on transcriptions and documents. In this sense, a full and deep story of the process, conflicts, negotiations and controversies observed could be punctually traced, on the basis of the documented data.

At this macroscopic view, it is thus possible a first interpretative framework on the basis of the taxonomy of entities defined through the methodology, in terms of irruptions, design practices, exchanges, founding decisions and spatializations. The irruptions – as something that happens as unpredictable and that blocks, deflects the process – can be accounted and classified in their unfolding through time, even in their relations; moreover, this gaze on the whole process allows to reveal how not only the human dimension and power act, but also the non-human's agency acts, with the negotiation that their emergence implies. Design practices' concatenation through time allows to focus on the "travel" of a document, by defining the several performativity that it produces and embodies in the process; moreover, a recognition of the unfolding of subsequent practices makes it possible to identify macro-categories of practices and a sort of phases of action in the process. In terms of exchanges, a panoramic view enables to identify, first of all, the actors that exchanges most in the process, when and why; moreover, each single arena can be traced in terms of its recurrence in exchanges, in a multi-sited process of this kind. More importantly, it can be accounted how interactions change in the different moments and contexts of the decision-making process, in strict and consequent relation with the design practices carried on. Moving to founding decisions, the different levels accounted in the process permits to trace how decisions came into play into more or less formal arenas; this means that a broad view shows the formalization level of the exchange in decision-making.

Finally, at certain moments in the maps, the portions of the process are somehow spatialized and materialized in respect to the decisions made that have consequences on the project; then, spatialization can be related – as effect – to the already-mentioned chain of entities interrelated in practice.

Following episodes

Through further inspections of the timeline, it is also possible to identify crucial episodes in which the project is really crafted, to be deepened in microscopic perspective. This detailed account starts from the same taxonomy – irruptions, design practices, exchanges, founding decisions and spatializations - as an interpretative framework, thus going in depth to see in practical and concrete terms how the project action proceeds as a chain of practices and exchanges. Design practices are here interpreted on the basis of their performativity in the story, in an attempt to associate them to the roles that boundary objects – as visual artefacts – perform in decision-making process. Decisions are here the ending point in which the interrelations among practices precipitates, as consequences of actions; in this sense, who takes the decision, in which arena and exchanging which kind of artefact and document is the main focus here. In terms of irruptions, an attempt is made to reconduct – even with the already-mentioned differences – these to the concept of uncertainty area, in order to classify them and relate specifically their nature to the actions occurred to face them. The map gives indeed account of the contingent matters, thus structuring and modifying the process and the project actions.

Finally, it is possible to go in depth with the spatialization of each of these crucial episodes, since the combination and interaction of a series of entities can be synthetically accounted with a spatial model changing through time, on the basis of the decisions made. Spatialization means then a meta-model in four dimensions – a space through time – that helps in accounting and even measuring the spatialized strategies of the process. The situated and subjective perspective on the process enables interpretative lunges on the specific case, which then allow to draw conclusions on the recurrence of some aspects.

The structure of empirical chapters

Each chapter is structured with an introductory paragraph on the specific project; two selected episodes that aim at highlighting and exploring the above-mentioned microscopic directions attempting even theoretical explanations; an overview intended as a macroscopic interpretation of the collected and analyzed data. The selection of paths is functional, on the one hand, to control a limited number of processes as thoroughly as possible and according to this scheme; moreover, it allows to provide a series of comparisons between specific cases. The selected path can be followed through the web tool (https://projectingdecisions.net/). Moreover, in each chapter a synthetic video that traces the project through the web tool is proposed. Finally, in the "Appendix A" it is possible to visualize the maps as they have been built manually on the basis of the content analysis – and as they have instructed the web tool.

PART 3

Unfolding the process through the maps

Chapter 5

First path: negotiating under emergency

The Superintendency of Archeology, Fine Arts and Landscape for the Metropolitan City of Turin sends, in October 2016, a communication to Politecnico di Torino's technical offices, concerning the request for verification of subjection to the Legislative Decree 42/2004 of the "former Locker Rooms" building – current classrooms R – of the Officine Grandi Riparazioni (OGR), regarding the cultural interest of the building. The classrooms R project concerns the creation of new teaching spaces in Via Borsellino, by the Building and Logistics Area at Politecnico (Edilog), an administrative structure that deals with the university's real estate assets, in terms of management services, logistics, plant engineering, but also space planning and project validation. Indeed, the Edilog offices provide, in the drafting of the project, the demolition of the pre-existing building and of the wall on via Borsellino. A design choice due to the fact that the Superintendency, with a previous judgement², expressed itself on the "Masterplan Cittadella Politecnica" presented by Politecnico, on the interventions related to the expansion project in the OGR area and on the buildings deemed worthy of being safeguarded. On that occasion, the Superintendency expressed a constraint on three buildings – the H building, the Turneries and the Forges – while it did not place restrictions on other buildings; consequently, the Masterplan was developed on the complete demolition and subsequent construction – in its development program in successive temporal phases. Edilog, at the time of the request of the Superintendency, has just awarded the works for the demolition of the building³ and is about to sign the contract with the company in charge. Consequently, the requested procedure is incompatible with the needs and timing of Politecnico, which is found in the impossibility of break ground. The Edilog working group, in the belief that an attempt to negotiate with the Superintendency is possible, asks for the collaboration of the Masterplan Team

¹ Nota prot. n. 2705 (05/09/2016) and prot. n. 4379 (04/10/2016).

² Superintendency judgement prot. DB/10295 (14/12/98).

³ Edilog to Masterplan Team, e-mail exchange (17/10/2016).

(MPT), to define possible scenarios for safeguarding the memory of the building facing via Borsellino.⁴

The classrooms R can be considered as the first widespread deviation in the just established Masterplan practice, since it represents a diversion from the started work of recollection and overview on Politecnico campuses. The work of the MPT is thus immediately configured as a two-speed action: on the one hand, the newly established working group shall endeavor in an indispensable work of recomposition and re-construction of a general needs' framework, long lost sight of by the administrative bodies of the University; on the other hand, emergency situations such as the story of the *classrooms R* oblige an acceleration and diversion of work, for contingent and substantially unpredictable questions. At the very first moment, the process sees the MPT take charge of a direct dialogue with the Superintendency, in its (!) request to preserve the building. The working group, together with Edilog, tries to carry out a (!) strategy to limit time and costs⁵ for the project review: first of all, by offering the Superintendency a possible long lasting narrative not only "crushed" on the classrooms episode, but as much as possible in view of the development of the future Masterplan; secondly, trying to evaluate together the possible margins of exchange on the project (e.g. maintenance of the wall and/or of the façade of classrooms on via Borsellino). If at first, therefore, a very small collective – composed primarily of Edilog and the other high degrees of Politecnico – discusses directly with the Superintendency with official exchanges, immediately following the request, then begins the active involvement of the MPT to progressively and more informally negotiate the possibilities to unlock the process. Thus began an intense exchange – through e-mail, messages, operational and plenary meetings – between the MPT and the various actors of the university involved in the story and, more generally, in the Masterplan process; an occasion of emergency that sees the MPT, at the very dawn of its own institution, already interfacing with the different protagonists that will remain substantially the same during the whole process. The theme of reducing costs as much as possible and, above all, timing of the operation is reiterated at the various administrative levels of Politecnico⁶, therefore the mandate for the MPT in the management of the negotiation is to understand the margin for maneuver in this perspective; this, in particular, from the moment in which the Superintendency actually highlights a need to redesign the classrooms⁷, insisting on the maintenance of the pre-existence as also reported by the generalist press:

This is the sense of a dispute – between Poli and the offices of Palazzo Chiablese – which began a few weeks ago [...]. Superintendent Papotti insists on this point: «When I was told that you wanted to knock down an "old wall" I was concerned: that is the courtly border of the Officine Grandi

⁴ Edilog to Masterplan Team, e-mail exchange (17/10/2016).

⁵ Ibid.

⁶ Vice-Rector of Edilog to Project Team, e-mail exchange (31/10/2016).

⁷ Masterplan Team, internal e-mail exchange (09/11/2016).

Riparazioni, you cannot think of erasing its memory». [...] And a resolutive meeting between Politecnico and Superintendency will soon be set. «That wall is certainly not the Sistine Chapel». The rector Marco Gilli considers the niet of the Superintendency «questionable and paradoxical [...]».⁸

There may be changes, minor cuts and renovations. But to demolish the entire building is not even mentioned. It is the staple at which the clash between Politecnico and Superintendency arrived at yesterday's meeting [...]. The Superintendent: «I trust that Politecnico's school of Architecture [...] will be able to design the new classrooms in respect of the extraordinary reality of the OGR, the most important industrial witness in Turin».

It is not granted to reconstruct the historical vicissitudes linked to the "former Locker Rooms", object of the controversy with the Superintendency. Indeed, extending in detail what already narrated about the OGR original project, the construction site was built at various times between 1884 and 1909. In 1895 the changed processing requirements forced to carry out some variations on the initial project, however, with respect to the project presented to the Municipality of Turin, modifications of a modest size were made and, overall, the physiognomy of the whole is respected. Between 1895 and 1909 the remaining buildings were completed, including the current building "former Locker Rooms". Along the then via Principi d'Acaja there were several buildings: the two-storey office building, flanked by two smaller classical buildings and topped by a tower with a clock; a civil construction that has hosted several functions over the years; a warehouse of used furniture; the Wood Warehouse, which was rebuilt in reinforced concrete following the bombings of the Second World War. Next to these, stands the "former Locker Rooms" building with a shed roof, originally used for processing boiler tubes, then as a canteen – until the 1970s – and finally as a general dressing room. 10

The building is located on the edge of the duty wall: from the documents preserved in the Historical Archive of Turin (ASCT), it emerges that in the years of its construction the wall – in particular the front on the avenue – is the subject of a heated debate in reference to its distance from the city limits. The archive contains a copy of the relevant correspondence exchanged involving engineers from the High Italian Railways, and representatives of the Municipal Administration that lead to negotiate the distances of respect to maintain in respect to the tax boundaries

⁸ Emanuela Minucci, *In via Borsellino la Soprintendenza boccia il Politecnico*, in «La Stampa» (10/11/2016). Translated by the author.

 $^{^9}$ Fabrizio Assandri, *Tra Soprintendenza e Poli lite sul cantiere. L'impresa si arrabbia*, in «La Stampa» (10/11/2016). Translated by the author.

¹⁰ To deep information about buildings, dimensions and uses: A. Ragazzoni, *Le Nuove Officine delle Strade Ferrate*, pp. 10-51; G. Franceschetti, *Le Nuove Officine nascono al plurale*, in Officine Grandi Riparazioni: fucina di treni e di vite, pp. 18-21.





061-062The classrooms R, before the project (photos of the author, 18th November 2016).

of the city. 11 However, the gaps in the archive documentation on the building do not make it easy to understand the built project, nor the exact chronology of its uses over time. According to the detections that Politecnico drawn up in 1997, the building appears as a volume of about 2000 square meters, with a shed roof structure supported by cast iron pillars, and an internal clear height of about 5.70 meters that reaches the altitude of 9 meters at the shed. The roofing is in tiles and the perimeter walls have a plaster finish in masonry inserts in exposed view. 12 The current shape of the building is closely linked to the situation of the OGR complex, following its definitive disposal as an industrial plant at the beginning of the 90s. As part of the recovery program for disused industrial areas, it is known that the large lot occupied by the OGR is radically rethought in the General City Masterplan of 1995, which hypothesizes the demolition of the pre-existence and starts the long doubling project of Politecnico, to expand beyond the railway line which has become the Spina Centrale. 13 Following the Masterplan project of Gregotti Associati Studio, the urban area once occupied by the OGR is the assigned to the new Cittadella Politecnica aimed at housing the university functions connected with the extension of the historic headquarters of the university. ¹⁴ In particular, the space of the "former Locker Rooms" is adapted to educational needs by placing classrooms for Architecture education, a study room and a classroom for teachers, all located north-west and south-east of a central distribution corridor. The consistency of the building does not undergo radical transformations: the facades are restored and slightly altered with respect to the original building, also maintaining the original elevation on via Borsellino, and the redistributions of the interior spaces of the building keep the original metal columns of the central row longitudinally to the building in view. This is the building as it is presented to the 061-062 MPT during the dispute among Politecnico and Superintendency.

The MPT needs to first respond to the urgent constraints, since the Superintendency requests to redesign the classrooms. This occurs firstly with a quick recon work in a report in which a series of historical maps, re-drawings, and some as-built drawings are collected. The early moments of this work feature therefore a practice of (A1) consulting relating present and past information, with a general aim of negotiating and incorporating present constraints into the project. Indeed, a

¹¹ Nuove Officine di Torino 1883, in Archivio Storico della città di Torino (ASCT), Progetti Edilizi, pratica 150, Allegato Permesso di costruire dei Muri di Cinta e chiusura terreno per le Nuove Officine, ASCT, Progetti Edilizi, n. 150.

¹² Stato di Consistenza delle aree denominate ex-OGR (Officine Grandi Riparazioni) compresa tra le vie Corso Catelfidardo, Corso Peschiera, Corso Ferrucci, Vial Piercarlo Boggio (e meglio Lotto 3 della convenzione Politecnico FS Spa del 07/02/1997), curated by Politecnico di Torino, ferrovie dello Stato, 28 aprile 1997, Archivio Politecnico di Torino.

¹³ The transformation process of the area is already explained in the previous chapter.

¹⁴ For further information: L. Gibello, *Politecnico di Torino*, in Comoli Mandracci, Vera - Olmo, Carlo (eds.), Guida di Torino. Architettura, U. Allemandi, Torino 1999; A. Martini, Politecnico di Torino, in M. A. Giusti, R. Tamborrino, Guida all'architettura del Novecento in Piemonte (1902-2006), U. Allemandi, Torino 2008, p. 283; C. Spinelli, Edifici per il Politecnico di Torino, in Bonino, Michele [et al.] (a cura di), Torino 1984-2008. Atlante dell'architettura, U. Allemandi, Torino 2008, chart n. 61.

fundamental choice is made of maintaining the old OGR wall on via Borsellino and the former façade, intended as a first step of negotiation¹⁵ around the previously envisaged complete demolition. Through the report (A1), the MPT's objective is to define and establish the elements to maintain and the strategies to follow to avoid the complete demolition; in this sense, the historical research is necessary to understand the value that the Superintendent recognizes in the existing project. Therefore, by producing and then consulting the report, the working group in Edilog and MPT get information on existing features, trying to develop a general design solution that foresees the preservation of the façade of the *classrooms R* on via Borsellino, suggested by the historical value reconstituted through historical research. In a meeting with the Superintendent¹⁶, this report enables the participants to gain a way back into the game, in order to address the question of re-drawing the previous project, with a reflection on different scales.

The subsequent process is then deepened in the following sections by choosing some excerpts and focusing on *episodes*. The whole events would have been accounted thanks to the possibility to recollect the whole categories identified the content analysis; however, the aim here is first of all to go in depth in the inspection of some crucial episodes in which the project is crafted – and proceeds, with someone taking decisions. The chosen episodes are selected in the folds of the process, as significant diversions that, on the one hand, change the project, on the other, let it proceed until the ending point and the effects on decisions.

In this respect, the final general effect reached through the MPT practice is the authorization of the project by the Superintendency. ¹⁷ This is immediately preceded, in the previous months, by the formalization of the general preliminary project presented by Edilog ¹⁸, with a letter (K1) bringing and summing up together multiple aspects of the project, from the RUP – head of the procedure – to the Superintendency. This preliminary judgement comes after a period in which the MPT is substantially no more involved in the design, except for some updates with respect to the progress of the work; beforehand, thus the large part of the discussions and negotiations around the project has already been faced in strict collaboration with the MPT itself – as explained in the following *episodes*. In conclusion, after reaching this preliminary judgement, Edilog conveys the definitive project, in which a design solution that incorporated the initial indications and requests is ultimately elaborated ¹⁹, again (L1) bringing and summing up together multiple aspects of the project. The Superintendency, therefore, authorizes the execution of the works, as described in the above-mentioned design

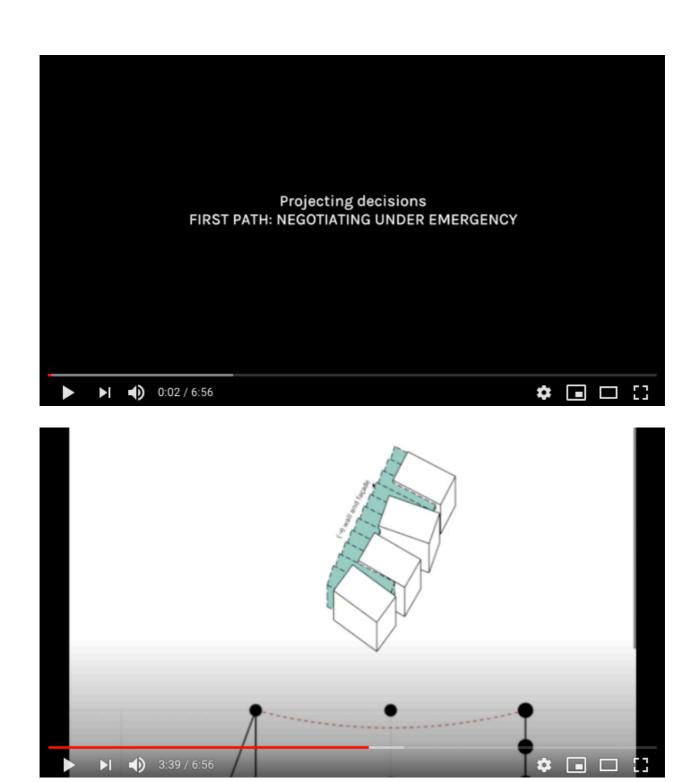
¹⁵ Masterplan Team to Edilog and Project Team, e-mail exchange (10/11/2016).

¹⁶ The Superintendent and members of the Masterplan Team participate in a meeting to discuss possible scenarios for transforming classrooms R, fieldwork and note taking (10/11/2016).

¹⁷ The Superintendency authorizes the project (14/11/2017).

¹⁸ Edilog to the Superintendency, letter sent by the RUP (Solely Responsible Project Manager) (15/03/2017).

¹⁹ Edilog to the Superintendency, nota prot. n. 16098/10.2 (09/10/2017).



063-064Screenshots from the video that illustrates the selected episodes.

documents presented²⁰; then, a conference of services is organized to ascertain urban compliance for the classrooms²¹ and to update the relations of the project with the whole *Masterplan* under transformation. Finally, the regular procedure of the tender is carried out and the works assigned²² – and the classrooms are under construction right now. An overview to follow the two episodes is traced in this video: https://youtu.be/jwjSbaLSzzI. Moreover, they can be followed as "user" through the web tool, and in the related map in the "Appendix A".

5.1. The project's review as a swift process of negotiation (episode 1)

The move towards tackling the emergency of classrooms R and answering the requests of the Superintendency has an impact on the operational level of the working methods of the MPT, whose strategic objective becomes first of all to prepare in a short time a broad solution to be submitted to Edilog and the Project Team.²³ In fact, an urgent aim becomes to share, discuss and negotiate with the Superintendent a general design solution that includes the preservation of the façade of the classrooms and the contiguous wall, on one hand; on the other, its integration into the wider Masterplan project.²⁴ MPT is then asked to quickly address the requested revisions of the previous design proposal, together with the university technical office, with which the exchanges of materials and ideas are in this phase steady and crucial to tackle the main issues related to the project and to ascertain the feasibility of the different options. The first episode relates to a relatively short period of time and can be followed through the map – the web tool or the one in the "Appendix A" - from 10th November to 23rd November 2016, when an informal decision by the Superintendent is made. The heavy lifting seems to be done, the MPT just negotiated with the Superintendency, a feasible way to unlock the process:

A short email to tell you that yesterday morning's meeting with the Superintendent, went fairly well; the shared hypothesis resulting from the dialogue is to try to develop a general solution that foresees the conservation of the façade of the classrooms on via Borsellino and its integration [...] in the project developed by Politecnico; a new meeting with the Superintendent will take place in a short time, around these proposals.²⁵

A way to unlock the process had to be found; then this first success is shared, without focusing on technical problems, or bureaucratic issues, since at least a solution exists, and the game can be started again. The previous project – that stopped – plays a central role in terms of details to be clarified and materials to be

065-066

063-064

²⁰ Superintendency to Edilog, nota prot. n. 17529 (14/11/2017).

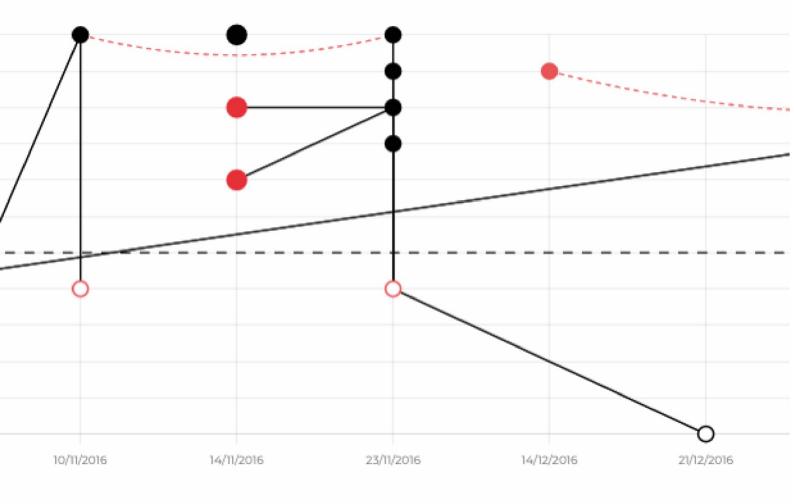
²¹ Meeting with stakeholders, Edilog and Provveditorato (06/12/2017).

²² The works for the classrooms R building are assigned (29/01/2019).

²³ Masterplan Team to Edilog and Project Team, e-mail exchange (10/11/2016).

²⁴ Masterplan Team to Edilog and Project Team, e-mail exchange (11/11/2016).

²⁵ Masterplan Team to Project Team, e-mail exchange (11/11/2016).



065-066

Above: the portion of the web map related to the episode 1. Below: the travel of practices and decisions in episode 1.

B2 (14/11/2016)

outlining different solutions to choose from

← C3 (23/11/2016)

outlining different solutions to choose from

← INFORMAL AGREEMENT (23/11/2016)

informal meeting with the Superintendent, that agrees on the new project

← AUTHORIZATION (21/12/2016)

interruption of the previous tender

C2 (23/11/2016)

showing and noticing current conditions

→ INFORMAL AGREEMENT (23/11/2016)

informal meeting with the Superintendent, that agrees on the new project

← AUTHORIZATION (21/12/2016)

interruption of the previous tender

shared, as emerged in the e-mail exchange held with Edilog.²⁶ The attempt is to keep the project unchanged; the already mentioned (!) need to redesign the classrooms has thus a range of implications, mainly technical, related to the preservation of the façade or parts of it; to the extension of the existing façade with lightweight constructions until the height required; and to the coverage of the distribution space with shed geometry. In this sense, a matter of (!) integration between new project and pre-existence (wall and façade) emerges, in an attempt to re-use the main feature of Edilog's previous project idea – a need highlighted also on behalf of the Superintendency. The MPT work autonomously from Edilog and the whole Project Team, with a view of tackling the main issues of the project, first of all, with design explorations. In this phase, the working team is composed by two collaborators – a postdoc and me, as a PhD – that interact with the two in charge professors that supervise the *Masterplan*, on behalf of the Project Team.

Because the first concern is to keep the general project intact, we work mainly on the distributing space on via Borsellino; a challenge, this, faced by initially informing the project, by (B1) considering suggestions from other projects. Through a series of case studies', a collection of references and best practices is brought together, around projects of distributing spaces for collective use – mainly in university. The report, while being used by the project team as an in-depth analysis of distributive spaces in contemporary architecture, has the ultimate aim at "modifying a minimum that staircase and transforming the double-height distribution space into something of higher quality"²⁷, once exchanged in a meeting. Moreover, in dealing with the (!) integration between new project and preexistence, an element that comes into play is the wall and façade issue, that need to be maintained and interrelated with the new project. This irrupts in the process as a concern, and becomes an element of consideration in concrete terms, when there is the need to reflect on how to integrate the previous project in respecting the Superintendent's constraints. The preservation of the façade has indeed consequences both in terms of plant and distribution, on one hand, and of roof solutions, on the other. Indeed, yet uncertainties about the possible solutions are high, so we engage in the practice of (B2) (B3) outlining different solutions to choose from, in both directions. To address the problems, we follow a process of testing and experimenting, by sharing whatsapp photos of the work in progress with the supervisors, and by progressively integrating the variations. The discussion results then in the final options, shared by e-mail.²⁸ In the first case (B2), plans and sections highlight the displacement of the interiors – stairs and pillars – due to the size of the support structure of the historical wall and of the glazed roof structure. The possibilities are left open in terms of maintaining the existing structure at the ground floor²⁹: a solution with glazed shed made in connection with the pre-existing wall; another with glazed shed as a double shell with respect to it. Moreover, the

²⁶ Masterplan Team to Edilog, e-mail exchange (11/11/2016).

²⁷ Masterplan Team, internal e-mail exchange (12/11/2016).

²⁸ Masterplan Team, internal e-mail exchange (14/11/2016).

²⁹ Masterplan Team, internal whatsapp exchange (12/11/2016).

rhythm of sheds is actually a crucial aspect of the project, since the MPT envisages the possibility to let them hold together the requests of the Superintendent and the old project that provided photovoltaic on the roofs, then by let "the sheds' ridges continue, [it] can hold together the old project and the continuity requested by the Superintendent". Indeed, the original new classrooms designed by Edilog offices — to be maintained in the review of the project — were four parallelepiped volumes encrusted in a lower distributing space. In this direction, we engage in a sort of geometry exercise, reflecting on the roof possible shape in relation to the existent, with the aim at intertwining the two. Therefore, we proceed here (B3) by keeping open several alternatives for the roof. On one hand, a solution with glazed shed interrupted in correspondence of the volume of the classrooms; on the other, a proposal with glazed shed over the entire surface, intersecting the space amidst the classrooms itself. We first of all respond with a series of options, as aware answer to a general lack of information, but also as a strategy through which "the Superintendent is involved in the game".

In the analysis of the first half of this episode, one can witness how the MPT engage with specific practices in answering to the emerged irruption of the (\rightarrow) wall and façade issue. While dealing with the integration of the pre-existence and the new project, the MPT is involved in an internal exercise to answer, in different ways, to the new open possibility to partially maintain the previous project. This is produced, firstly, through consultation and selection of a series of case study related to universities' collective use spaces, shared among members to discuss the kind of project to aimed at. Through this practice of (B1) considering suggestions from other projects, the visualization of examples allows to establish a common language and to share perspectives about the project; the need to take a specific direction with the project thereby goes through a re-examination and refinement of the distributive idea of other projects. In this sense, the common idea reached through iterations through several examples – to meet the specific needs of the project – can be intended as a result of traversing a syntactic boundary. This means that the artefact (B1) performs by transferring and communicating a common perceived nature of the problematic situation. Moreover, in this sense it is interesting to notice how, once a shared language and perspective is established, the artefact is not shared anymore. Indeed, it is not socialized in the following process outside the MPT practice, then it somehow represents the basic level to unlock action and a symptom of the fact that this practice actually responded to contingent needs. Moving to analyzing practices of (B2) (B3) outlining different solutions to choose from, these are an evident example of producing possible alternative solutions, to be shown and used to instruct the discussion with the technical office. Indeed, an important technical problem in facing the (!) integration between new project and pre-existence is the lack of information³² and a general need of

³⁰ Masterplan Team, internal whatsapp exchange (13/11/2016).

³¹ Ibid

³² Operative meeting with Masterplan Team and Edilog, fieldwork and note taking (11/11/2016).

measuring the existing building. Moreover, this illustrates how (B2) and (B3) artefacts embody, instead of avoiding, uncertainties in terms of different possibilities related to the (\rightarrow) wall and façade in the project. Indeed, as the project previously proposed was questioned by the Superintendent, the practice of outlining and shaping several alternative on tracing paper make the MPT testing and rethinking possibilities in practical terms. Yet uncertainties are high, since the alternatives produced here are not yet exchanged with others outside the MPT, neither details about the feasibility of the different options in other terms (technical, economic, etc.) are possible to be reached. Thus, the multiple representations put in comparison in the same visual artefacts aim at exploring and activating reasoning. In this case, the (\rightarrow) wall and façade issue is included in the outlined practices with interpretative alternatives that not only represent but translate their differences in concrete terms. The range of possibilities here traced through (B2) (B3) can be intended as a way of traversing a semantic boundary and sharing the undertaken and interpreted solutions in concrete terms. These practices are then, from the beginning, intended to cross the borders of the studio and the internal MPT practice - and their "travel" continue in the process; indeed, the alternatives are produced in order to involve the Superintendent in the project and to let her choose between options.³³

Relating with the (!) integration between new project and pre-existence issue, the wall and façade of the pre-existing building emerges with a role in the process, actively contributing to the design process, or rather being the engine of the subsequent practices. The MPT address the problem by testing, going in depth, making options, with the possibility to take account of so many related possibilities. In this sense, the issue could be intended as an *uncertainty about working environment* (UE), related to external circumstances and a kind of technical solution and need more information to be faced. Usually, this kind of uncertainty can be dealt with by responses of a relatively technical nature – such as surveys, forecasting exercises, costing estimations, etc. However, this internal explorations of MPT depict a different step – or at least a previous one; indeed, in this case the uncertainty is not tackled to be reduced, thus as already said is embodied and materialized in the practices (B2) (B3). This means that the uncertainty is not made "more certain", for now, instead it is introduced as a component of the assemblage of this design prefiguration.

While dealing with the (\rightarrow) wall and façade issue, the MPT start with an exchange by e-mail with the technical offices that pursued the previous version of the project – the one blocked by the Superintendency. The need to tackle the problem as a matter of emergency let the project team – the operative one – questioning himself how to produce a new arrangement, in a fully "inside" process. The main exchanges in this – first half – episode relate the office work and the progressive exchange, by e-mail or whatsapp messages, with the supervisors. This accounts a view of design

³³ Masterplan Team, whatsapp exchange (13/11/2016).

practice "from within", as a multi-sited sharing of artefacts that travel from the office, through a laptop or a phone in the hands of the supervisors, to quickly come back with comments or requests – in this case, for example, the arena in which the produced artefacts (B1) (B2) (B3) are exchanged is an e-mail.

Heading back to this story of projecting decision, our internal exchange continues, since it has to be defined a strategy to meet the Superintendency in the following days. In our attempt to address the problem an important role is played by the definition of the kind of artefacts to be presented, as "a structured and bound dossier to be presented to the Superintendent and for internal use in the university". 34 After a series of explorations and solutions, the project needs to be put to the test and socialized. Besides presenting an historical report and design hypotheses – as alternatives to involve the Superintendent in design process – an important element to be added is a photographic and as-built survey. We, first of all, recollect previous researches and produce an historical research – a document, with both written excerpts and archival research consisting of a series of maps – as a way of (A1) consulting and relating present and past information, to understand the value that the Superintendency recognizes in the project. Moreover, we keep open the already presented design alternatives, by (C3) outlining different solutions to **choose from**, in particular for the roof – in canvases with plants and sections drawings, perspective drawings and renderings. The alternatives also embody a will of avoiding any misstep, "for various reasons [...] all obvious: it ain't us, we are not able enough". 35 Indeed, the geometries at the intersection of shed and crooked classrooms volumes are a "constructive delusion". ³⁶ Due to the difficulty to reach information from the technical offices around the existing conditions of the building³⁷, we also produce an as-built survey, (C1) consulting and relating **present and past information** to clarify the take-over of what exists – in this case, a canvas with a plant, a façade and a section – in terms of both technological and structural details. Finally, a photographic survey – a document with a series of external and internal pictures of the classrooms - aims at (C2) showing and noticing current conditions, and again it is meant for highlighting the conditions of the building, and for incrementing the negotiating space about it. This set of artefacts is then presented by the supervisors to the Superintendency³⁸, in order to ask for an informal authorization to continue with the direction of the project. The meeting, dedicated at evaluating the possibility of pursuing the preservation of the façade, as in the already mentioned directions, is positive and the solution appreciated.³⁹ Our work – even with the provision of an operational meeting with Edilog to define project developments – seems finished, and the emergency over.

³⁴ Masterplan Team, internal e-mail exchange (14/11/2016)

³⁵ Masterplan Team, internal e-mail exchange (20/11/2016)

³⁶ Ibid.

³⁷ Masterplan Team, internal whatsapp exchange (21/11/2016).

³⁸ Meeting with stakeholders, Masterplan Team and Superintendent, fieldwork and note taking (23/11/2016).

³⁹ Masterplan Team to Edilog and Project Team, e-mail exchanges (23/11/2016).

The second half of this episode allows to witness further practices in which MPT engage during the process; what is more, these practices are here related with an effect in decision-making process and an agreement around a change in the project. The MPT continues its exercise around the preservation of as much as possible of the previous project; moreover, it aims at demonstrating the modest documentary consistency around the project (A1), to negotiate about what has to be maintained. The artefact acts managing – actually anticipating – the conflicts related to the consequences of particular choices in the project, through the inclusion of implications and differences among interests. By transforming perspectives in concrete visual reference, it could be intended as traversing a pragmatic boundary to share a common perception - around the value of the building and its components. By referring to the design explorations, (C3) actually recollects both the previous produced documents – (B2) and (B3) – in a sole report, with the same intended aim. Moving finally to the as-built (C1) and photographic (C2) surveys, they are presented by the MPT to acknowledge and demonstrate that the building, except some cast-iron columns and the already mentioned façade, has no values to be kept. 40 Again, the artefacts allow to visualize and to make concrete – then to transform – a perception, to be shared with the Superintendent in a concrete sense.

A consequence of the MPT effort in presenting these artefacts to the Superintendency is its agreement around the project; here the decision is made during an informal meeting, in which the above-mentioned products are shared and discussed with the Superintendent. This decision in the folds actually reverberates throughout the process and results in a change of the project on the basis of these first design suggestions of the MPT. In order to continue with the process, a decision is made, that results also at a more formal level, since the previous tender can be interrupted to take the path of this new project.⁴¹ At this point, the decision taken allows the project to continue its travel back to the technical offices, with a need to translate and to accommodate the design changes in their details of other kinds – costs, technological solutions, etc. This decision reflects then a complex ecology, since the wall, the MPT work, the Superintendency, the interrupted tender, are all o67 correlated in their implications. Moreover, these relations are all synthetically representable in a spatialization of the consequences in the project's changes: then the wall preservation and the shed roof represent and embody this complex ecology. 42 By following the explorations and engagements of the MPT in defining and socializing the options produced, one can also witness how design choices actually are not – fully – dependent on the will and idea of the architect; then, the meanings and choices that accompany the project have not an autonomous value, attached to the shape after, or as something else. Thus, in this case the roof, with doubled – masonry and glazed – sheds, is the way negotiations and discussion take

⁴⁰ Masterplan Team to Edilog and Project Team, e-mail exchanges (14/11/2016).

⁴¹ Interruption of the previous tender (21/12/2016).

⁴² The decision made can spatialized, it can be traced the irruption to which it corresponds, with which practice it is defined, which exchanges are conducted and who decides. The whole process can be here synthesized.

shape in the process. In this sense, the sheds story illustrates how architectural design practices are deployed in detecting a problem, engaging in explorations to better acknowledge it, structuring the possible paths to deal with it, all by taking into account a complex ecology of entities. In conclusion, rather than accounting architects' ideas and concepts – as a traditional "humanist" understanding of the process – this story unfolds a concrete engagement among the human and the non-human matter through documents and practices of architectural design.

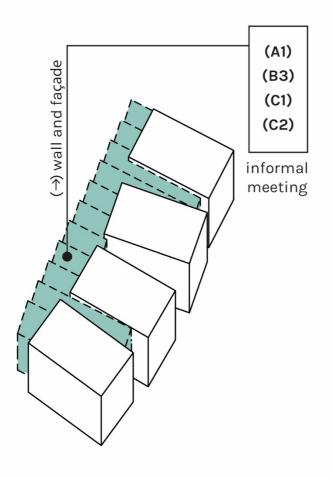
5.2. Tackling the project as a matter of contingencies (episode 2)

The previous mentioned artefacts performativity arose in gaining and generating knowledge about the possibilities related to the project, then in negotiating a way to unlock it and to solve the emergency. After this initial exploration the team indeed develop a project review process intended at going in depth with the technical and structural issues; what makes this task particularly challenging is the dependency on the effective collaboration between MPT and Edilog offices. The joint work of MPT and Edilog thus opens up a new phase in which regular meetings are organized and cross-team discussions are held. Indeed, in the accelerated work on the review of the project for the *classrooms R*, the MPT works continuously in close contact with Edilog, on the one hand, to acquire information, share and build together options for solving open problems, but also to verify the feasibility of the proposed solutions; on the other hand, the Project Team – in charge on the more general Masterplan – is constantly updated with respect to the work in progress. This second episode aim at focusing on the backwards trajectory of an artefact that can be followed through the map – the web tool or the one in the "Appendix A" – from 14th December 2016 until the Superintendency agree on the project during the informal meeting of 20th February 2017, waiting then for an official dossier.

068-069

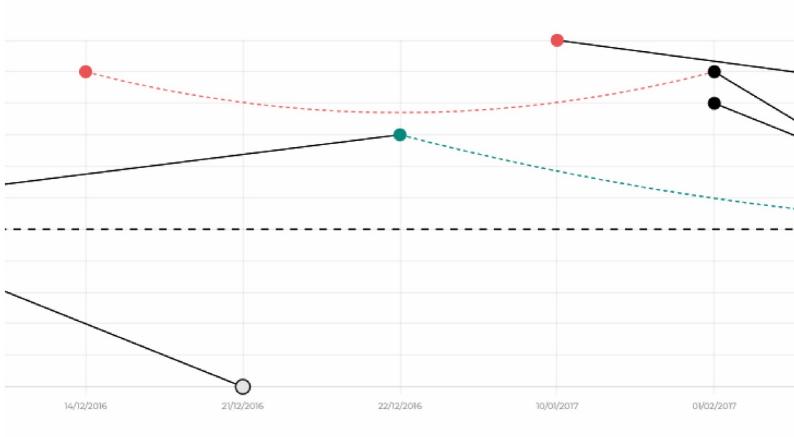
To witness how contingency is embodied in architectural design practice, the making of a report (J1) bringing and summing up together multiple aspects of the project is the opportunity to follow and account. Indeed, this report results as a composite assemblage of different documents, with their specific paths and triggering factors. The report is produced and shared during an informal meeting between the Superintendency and MPT members, discussing on the basis of what agreed in previous meetings, and of the materials developed by the operative MPT in collaboration with Edilog. The meeting is particularly positive, then the request comes for promptly and officially sending the dossier with a preliminary project to the Superintendent – accompanied by historical analyses and further reflections about the façades – to get a preliminary general judgement about it.⁴³ Then, thanks to the sharing of this report, a delivery pass takes officially place from the MPT to Edilog – after a work of mediation, that took then away a bit of workforce from the

⁴³ The preliminary judgement, positive, is reached (14/04/2017) on the basis of the same main project principles, prot. n. 5884.



067-068

Above: the spatialization of the instances taken into account (episode 1). Below: the portion of the web map related to episode 2.



D1 (14/12/2016)

showing and noticing current conditions

→ D1 (01/02/2017)

showing and noticing current conditions

← G1 (02/02/2017)

concretizing the future project with visual artefacts

← I3 (10/02/2017)

bringing and summing up together multiple aspects of the project

bringing and summing up together multiple aspects of the project

→ J1 (20/02/2017)

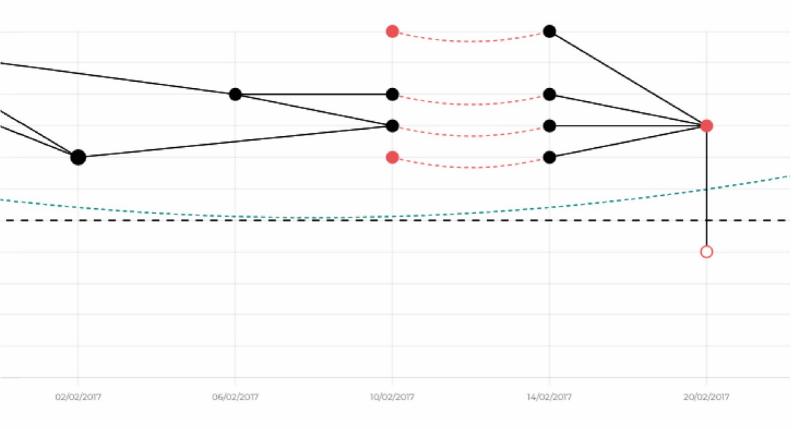
bringing and summing up together multiple aspects of the project

→ INFORMAL AGREEMENT (20/02/2017)

the Superintendent agrees on the project and waits for an official dossier

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The travel of practices and decisions in episode 2.



general *Masterplan* process, but certainly necessary to overcome the emergency.⁴⁴ From here the process needs and sees official exchanges between Edilog and Superintendent, even if the MPT remains available for discussing the refinement of the project. By retracing the ($\mathbf{J1}$) report's travel through the process, what emerges is the arise of an overall project of open spaces, to be intertwined and deepened with the *classrooms R* project – as far as urgent, they have to slow down in this sense.

This backwards chain of links among documents conducts to a previously emergent and unexpected involvement of the OGR-CRT Foundation in the process. The Foundation is indeed working on the redevelopment project of the H-shaped building⁴⁵; then, the northern corner of the new classrooms becomes an important point of view towards the OGRs, an axis towards the future western square of the building. The opportunity to reason at a broader project scale, in this crucial moment, is therefore envisaged. The axis to the OGR square, in an enlarged look at the whole *Masterplan* of the Cittadella Politecnica, emerges as an opportunity of (!) thinking about a unitary project of open spaces, in dialogue with OGR-CRT Foundation, then along with an opportunity to relate with the H-shaped building.⁴⁶ The irruptions of the Foundation brings then into play this issue of open spaces deepened in the next chapter; therefore the *classrooms R* project, notwithstanding the emergency and urgency of unlocking the project rapidly, is somehow deviated. A completely unexpected actor – the Foundation interest – intertwines then with the project, directing it with a larger insight at the campus open spaces⁴⁷; as an operative consequence, in contrast to what envisioned at the beginning of the classrooms R emergency, the MPT therefore does not stop following the project. Indeed, a working method is formalized for a non-emergency and long-term design: on its part, Edilog deals with more technical issues; on other part, the MP is asked to produce a broader project, (!) thinking about a unitary project of open spaces. 48 At this stage, the two working groups define then a parallel strategy, by subdividing the whole problem in smaller and handy issues.

By following the (J1) report to its triggering factor backwards, our work is first of all directed to an original document that includes the (\rightarrow) OGR-CRT / open spaces issue; indeed, essential for us at this first stage is (D1) showing and noticing current conditions, with a drawing that represents and analyzes the current ground floor distributing system – both inside and outside the buildings – of the campus.⁴⁹ The actual space behind the classrooms is indeed largely used as underground technical rooms – e.g. power stations, generators – so there are physical limits, like grids and stone walls, that obstacle the changing of the surface arrangements.

⁴⁴ Masterplan Team to Edilog and Project Team, e-mail exchange (20/02/2017).

⁴⁵ Operative meeting of Masterplan Team's members, fieldwork and note taking (24/11/2016). The H-shaped will host exhibitions, concerts, shows, theater and dance events, workshops, start-ups and innovative companies, on the basis of the OGR-CRT Foundation work.

⁴⁶ Ihid

⁴⁷ Operative meeting of Masterplan Team's members, fieldwork and note taking (01/12/2016).

⁴⁸ Meeting with Edilog, fieldwork and note taking (13/12/2016).

⁴⁹ Masterplan Team, internal e-mail exchange (14/12/2016).

All these elements have not been included by the Edilog office in the previous project; we then produce this visual representation with an attempt not only to understand and to show what exists, but also to reflect on problems and opportunities for that unitary project in dialogue with the OGR building – e.g. the already discussed ramps and aeration grid behind the classrooms. 50 As a consequence, the whole reasoning around campus transformation strategies is addressed by this new perspective and building are considered as "not isolated objects" 51, thus in a dialogue built through a unitary idea of open spaces. In the meantime, the above-mentioned involvement of the OGR-CRT Foundation shall lapse, since it emerges no "intention to reason on their part on the interface between OGR and Politecnico about the design of open spaces". 52 However, the issue of a unitary public space in the campus remains open; indeed, the MPT discuss with Edilog and the Vice-Rector – the highest level of Edilog office – the need to exceed these problems, with a collective and agreed aim of transforming the whole campus' open spaces.⁵³ For this purpose, in addition to the already presented (D1) as-built survey of the opens spaces, we quickly work in the office on another drawing in order to highlight the potentialities of transformation of open space. Yet, more often the directions to be followed come first of all from the object of analysis itself, then by (F1) using the project to prompt further reflections, a general direction in terms of axes and greening is envisaged. In this phase the main exchanges we have are with Edilog, far from working on parallel and separated paths, thus continually exchanging reflections on the different layers of problems about the project. In this sense, a central role is played by the imagining of a possible future, shared not just as written or told, but also in visual form. Specifically, in our attempt to address the problem of (\rightarrow) open spaces we collect the (D1) and (F1) artefacts together with rendering with an aim of (G1) concretizing the future project with visual artefacts. On one hand, a will to show a solution that foresees the preservation of the façade of classrooms R, together with the keeping and integration of the previous project; on the other, an aim of using renderings to bring forward the final effect of the project in relation with the context.⁵⁴ Since the aim is to share again with the Superintendency an update of the project, we then bring together all the key visual artefacts related to the project in a draft presentation, (13) bringing and summing up together multiple aspects of the project to confer robustness and fulfillment at the proposal. This report, completed with further technical annexes and explorations made by Edilog (J1), is discussed by the supervisors in the MPT with the Superintendent⁵⁵, during an informal meeting in which they intercede even on behalf of the whole Project Team. The Superintendent, on the basis of the assembled document (J1) agrees on the project for classrooms R and related open spaces, after "a design and mediation work that took some energy away from the

⁵⁰ Masterplan Team, internal e-mail exchange (14/12/2016).

⁵¹ Masterplan Team and Edilog, operative meeting (24/01/2017). This counts also on open spaces project.

⁵² Masterplan Team to the Vice-Rector, e-mail exchanges (27/01/2017).

⁵³ Ihid

⁵⁴ Operative meeting with Masterplan Team and Edilog, fieldwork and note taking (02/02/2017).

⁵⁵ Meeting with external actors (Superintendency), fieldwork and note taking (20/02/2017)

work of the whole *Masterplan*, but certainly necessary to overcome the emergency. [...] At this point we return the ball to Edilog, being still available for the refinement of the project".⁵⁶

Although we follow here the input given from the OGR-CRT Foundation irruption – and then quick exit – in the process, the report includes, besides the floor plan of the area: internal spaces and structural solutions; façades; and plant engineering solutions. ⁵⁷ These themes are mainly developed autonomously by Edilog, in particular – in brief, since they are not the focus of this episode – relating to the issue of (!) tackling the fire-fighting problems. The external emergency stairs have to be defined, then Edilog explores the back of the classrooms⁵⁸ (I2) outlining different solutions to choose from. Other important and complex issues are related to the structure to hold the glazed sheds, and to verify thermo-technical issues related to the glazed surface; therefore, Edilog works also at (!) assessing technological solutions about the roof⁵⁹, with a result in practice for the MPT of (I1) (I4) including additional analyses on part of other experts, inserted in the final report (J1).

Thus, leaving aside these practices held mainly by Edilog, the OGR-CRT Foundation irruption – resulted in the already mentioned final report (I3)⁶⁰ – also has more collateral and contingent effects. Indeed, the reasoning about the open spaces leads us in the MPT work office to become concerned about the finishing of the façades of the four parallelepiped volumes, destined to constitute the scenography of the *promenade* that seems to slowly configure as a possible axis of connection to the OGR. This is not a direct request from Edilog group, neither from the Superintendent; actually, as said before, a further direction to be followed comes from the object of analysis itself and the issue of (!) proposing the external finish on this "scenography" gradually emerged. As a first attempt to shift the attention also on this rising theme, we go in depth in a collection of alternative possible façade, (E1) considering suggestions from other projects in terms of finishing solutions.⁶¹ Moreover, we share with Edilog⁶² rough drawings and variants of the (\rightarrow) façade aimed at (H1) outlining different solutions to choose from⁶³; then, the façade is reckoned and determined as a further issue to be tackled. To conclude on this, the (\rightarrow) façade issue actually emerges as a consequence of the (\rightarrow) OGR-CRT / open space issue; moreover, even after the abandoning of this actor from the process, it is accounted among the materials discussed – and approved – during

⁵⁶ Masterplan Team to Project Team, e-mail exchange (20/02/2017).

⁵⁷ Masterplan Team office work, fieldwork and note taking (10/01/2017). Even if we focus here on a specific document, as it is assembled and travels in the process, the path of "open spaces" is not the only one and also these other aspects converge in the draft – and the in the final – report.

⁵⁸ Operative meeting of Masterplan Team's members, fieldwork and note taking (10/02/2017).

⁵⁹ Operative meeting with Edilog, fieldwork and note taking (17/01/2017).

⁶⁰ Meeting with external actors (Superintendency), fieldwork and note taking (20/02/2017).

⁶¹ Masterplan Team office work, fieldwork and note taking (10/01/2017).

⁶² Masterplan Team to Edilog, e-mail exchange (06/02/2017).

⁶³ *Ibid*.

the informal meeting with the Superintendency, before proceeding with the definitive and the executive project.

Drawing on the just explored episode, even the analysis can start from the effect, that is the decision of the Superintendency to approve the presented project. As in the previous story, the Superintendent agrees around the project through the presentation of a report in an informal meeting; moreover, the presented document is an assemblage of several practices collected and discussed during the process – on behalf of the two main project teams, MPT and Edilog – precisely produced to answer emergent issues. Each part of the document, in this sense, can be precisely traced backwards from this effect to its triggering input, in unfolding the assemblage to the document. In synthesis, the document collects and assumes the 070 irruptions – more or less intertwined each other – emerged during the portion of the process, by answering them through the artefacts that it puts together. Then, the informal meeting serves as a common answer to a series of specific issues emerged in relation to the whole problem. Moreover, it has consequences at a more formalized level, since on the basis of these artefacts the Superintendency gives a preliminary judgement on the project.⁶⁴

In this sense, the practice of (J1) bringing and summing up together multiple aspects of the project results as a collection of different practices held by the different artefacts that compose it. By relating to the (\rightarrow) OGR-CRT / open spaces issue, the aim of (G1) concretizing the future project with visual artefacts is incorporating present constraints and uncertainties, while only provisional representation of the future. In this, the production of such images is instrumental in translating and presenting the future closer, in order to negotiate and, eventually, overcome those constraints and uncertainties. The artefact helps then traversing a semantic boundary, since the axis towards OGR aims to keep open the future possibility of a connection – even if at the moment the OGR-CRT Foundation is no more into the process. The (G1) document is on its own assembled thanks also to the (D1) and (F1) previous produced artefacts, respectively suitable for (D1) showing and noticing current conditions and (F1) using the project to prompt further reflections. By suiting the opportunity held in the process of dialoguing with an outside important building and institution, these artefacts help managing a pragmatic boundary and anticipating the implications of a reasoning of this kind – on the one hand, by showing the current opportunities, on the other, by envisioning these opportunities in just few simple moves. In this sense, they transform perspectives into visual artefacts, to concretely deal with them. By relating, finally, to the (\rightarrow) façade issue, as already said it strictly relates to the opportunity of reflecting on open spaces and somehow springs from it. As a new issue, a first need is (E1) considering suggestions from other projects, to establish a common view and language among MPT member, in order to share perspectives around the possibilities to treat the façade in the project. The façade treatment is indeed a

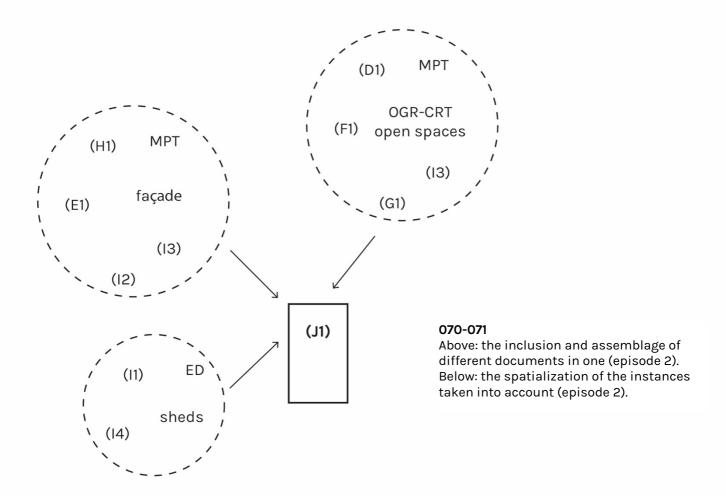
⁶⁴ The Superintendency gives a positive preliminary judgement, prot. n. 5884. (14/04/2017).

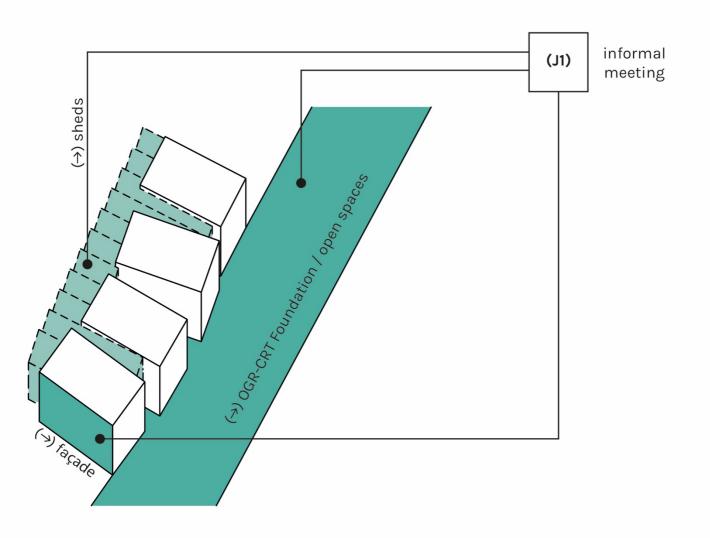
completely new issue on the table, not yet discussed with Edilog, nor with the Superintendency; however, because of that, the strategy is to "leave the choices that the Superintendency does not like". 65 In this sense, an exploration and refinement through several examples allows to reach a common view of the range of possibilities to consider, as a result of traversing a syntactic boundary. This practice enables the subsequent approach of (H1) outlining different solutions to choose from, to be shown and used by the technical office to integrate the (\rightarrow) facade issue with the structural and technological exploration they are carrying out. The discussion among MPT and Edilog illustrates how (H1) artefact aims at anticipating the uncertainties related to the façade finish; in this sense, even with rough drawings and suggestions, the alternatives aim at let the technical office "easily adapt them to the needs of internal distribution (and its possible changes)". 66 In this case, the multiple representations in comparison aim at traversing a pragmatic boundary, concretely resolving implications by anticipating them and transforming in practical ways the possible commitments to action. By combining all these aspect, the (I3) report shared with the Superintendency performs as a boundary object, in this advanced point of the process, since it is made on the basis of a number of artefacts that together perform and traverse the whole three boundaries; moreover, its effect is completely traceable on the basis of the above-mentioned decision taken by the Superintendency.

Relating with the (\rightarrow) OGR-CRT / open spaces issue, the hint derives from a contingent and unexpected "entry" of a new actor in the process, the OGR-CRT Foundation. This irruption let the MPT discuss around looking up and broadening the design perspective across the physical boundaries of the campus, by defining a further related relation to be investigated. Indeed, the issue actively contributes to enlarging the MPT action to the whole campus and outside of it – and this is further demonstrated by the fact that this issue give birth to the second path illustrated in this thesis. The opportunity of (\rightarrow) thinking about a unitary project of open spaces reveals then interconnections between the classrooms R and further choices and decisions to be made for the whole campus; in this sense, it can be listed as an uncertainty about related decisions (UR). In line with this, a further issue around the (\rightarrow) façade is interconnected and emerges as a consequence, as a further related irruption. Usually, this kind of uncertainties demands for an exploration on the relationship between decisions, in order to negotiate them together during the process. Actually, again in this case – as in the previous episode – the irruption is first of all faced and resolved somehow internally to the project team, before being shared and discussed with the decision-maker. It is actually embodied and concretized in practice, through visual artefacts that are produced from it as a hint, more than an obstacle. Finally, this view of design practice in the folds let to trace how, starting from a contingent and an unexpected entry in the process, of a not yet

⁶⁵ Masterplan Team operative meeting with Edilog, fieldwork and note taking (17/01/2017).

⁶⁶ Masterplan Team to Edilog, e-mail exchange (06/02/2017).





considered actor, actually the process is deviated from it, even when and if it abandons the game.

In line again with the previous episode, here the MPT is engaged in a first instruction of the work inside the office, by communicating mainly among the collaborators and the supervisors and partially sharing with the technical offices; the two proceed in parallel on different paths, that are somehow collected and bring together in the final report (J1) presented to the Superintendency. The assemblage is summed up and presented by the MPT, after a series of exchanges with the technical office; indeed, even the issues of (\rightarrow) sheds and (\rightarrow) external stairs are framed into a more general narrative that account the role of classrooms R in the whole *Masterplan*. The decision, as already said, is made during an informal meeting and reverberates in the formalized process when a preliminary judgement is sent by the Superintendency on these bases. To conclude, as an effect is reached in the decision-making process, the consequences are visualizable in a spatialization of the changes in the project, then the axis in the open spaces, the external stairs and the sheds' shape can be punctually reconducted to their triggering issues.

From here on, the *classrooms R* project follows then the bureaucratic path, without encountering any further blocking issue; after the approval of the executive project, then the General Director authorizes the work procurement procedure and relative contract for the classrooms⁶⁷, with a type of open tender procedure and criteria according to the most economically advantageous offer. Then, after the approval of the contract award proposal⁶⁸ and the authorization to sign the contract; the contract awarded is published⁶⁹ and the classrooms are now under construction.

5.3. An overview

072-073

This path unfolds the meticulous design work needed for dealing with an emergency arisen from an external actor, with the power to block or not the process on the basis of its own judgement – that is the Superintendency. By tracing and visualizing with maps the design operations embodied in this process, I follow the back and forth trajectories deployed to deal with this building-in-the-making. Moreover, at a macroscopic sight on the story, further considerations can be proposed on the basis of the taxonomies identified through visual mapping. It is first of all accountable how an autonomous logic of decisions and choices made in advance from the real process fails in practice, thus has no evidence at all. It is not the independent idea of the architect that is progressively shared and linearly conducted to realization; instead, it is here clear how the logic of architectural design practice and related decision-making processes are defined by a complex and a hybrid chain of relations, some of whom contingent. Architectural design and

⁶⁷ General Director on the *classrooms R* procedure, DDG n. 1219/2018 (12/06/2018).

⁶⁸ General Director on the *classrooms R* procedure, DDG n. 2446/2018 (26/11/2018).

⁶⁹ The RUP (Solely Responsible Project Manager) publishes the tender's results (29/01/2019).





072-073

The classrooms R, during the works (photos of the author, 129th September 2019).

its products – in terms of design choices and trajectories – depends actually from a variety of implications, that can be here accounted as a sample and exemplification.

Immersing into the whole travel of decisions, a noteworthy issue concerns the level of formalization of the exchange and the collective involved in the decision arenas. Indeed, the most important decisions, those that modify the results of the process and of the practice, often seem to be played on informal meetings. In most cases, after several discussions and explorations in the office or together with the technical side of the project team, the MPT usually interfaces with the actor or the actors who have the power of decision to reach a kind of informal agreements through the progress of the project. Nevertheless, after a series of informal meetings, those of official character are basically of endorsement around "already decided" matters. Consequently, a kind of preliminary, more informal and negotiative phase seems to precisely embody the decisive one for defining the feasibility of the operation; in other words, and as already explored in the earlier crucial episodes, the specific instances to be faced in the process are collected and implicated before in the design productions and documents. Since the focus in this research is not only in description, but in delineating a model of action for designers, the analysis aims at strengthening the operative role of architects. In the selected episodes and in this macroscopic exploration, then, decisions are the main effect on which directing the effort of interpretation.

In this sense, another connected and consequent element is observing how the interactions of the MPT with the various actors change in the different phases of the process, in respect to decisions themselves. A specific and predominant role of the architect as "instructor" emerges in this, that is, the project team instructs the process at an early stage, in which it is concerned with collecting a framework of needs from the different interlocutors that act or irrupt in the process – being them the Superintendent, the wall to be preserved, the shed inclination, or the Vice-rector. This happens very often with punctual exchanges, mainly operative meetings or exchanges via e-mail, in which the team acquires and accommodates partial information and requests, which then takes care of recomposing through its own productions. This is a phase that sees, as predominant, productions such as historical research, photographic reports, but also collections of case studies and alternative design proposals. It is even highlighted by the reports how MPT actually act predominantly in sending – intended as producing – documents, while the receivers are definitely distributed, even with a significant presence in design production of Edilog technical office. Moreover, the main interactions occur in informal settings - mainly e-mails and operative or stakeholder meetings – while the official ones are less in number, but also the decisions discussed are basically already elaborated in the previous ones. It is then possible to notice how, in this process, negotiating and agreeing with actors is configured very little as collective moments when everyone is sitting at the table and discuss or negotiate; on the contrary, negotiation through the project takes place much more like a subsequent series of informal meetings with the various interlocutors. It can be seen as a specificity of the decision-making

process of architectural design, in which it is the project that somehow is governing the interactions among entities and structures the process. In respect of PSMs literature, in which decisions are made in collective arenas – with or without a facilitator and intermediary - where all the instances are put on the table, the specificity of design could be identified in this anticipation and somehow deconstruction of issues and interests. All the implications are here filtered and directed through design, the uncertainties are included more than reduced, the problem structuring is embodied in practice of spatializing through the process; in this sense, the specificity of space and its capability of synthesizing in practice all the above-mentioned dimensions allows architects and architectural design being the intermediaries of decisions in the process – projecting decisions. Then, the plenary meetings, the official agreements, the procedures are often those with a larger group of people involved, but where nothing is really negotiated, therefore the larger tables often serve to share and agree on issues and projects already discussed – and resolved – on the basis of specific conflicts, issues and instances the smaller ones.

In deepening the actions carried out through the projects, the early stages of MPT action relate practices of consulting and relating present and past information, or showing and noticing current conditions, in order to collect and structure coherent knowledge around the project. Moreover, the aim of proposing ways of considering suggestions from other projects or outlining different solutions to choose from result in line with this structuring attitude. Thus, in comparison with the PSMs' – in particular SCA – structuring aim, these practices are governed and put in concrete terms through the project and spatialization. The uncertainties are included and anticipated with concretizing different solutions, as much as other projects and suggestions aim at visually explaining and again concretizing the possible answers to problems. Moreover, the structuring effort is nourished by an iterative movement of the MPT that collects and proposes in continuous exchange with the entities implicated in the collective. Again, architectural design performs here a role of intermediation and negotiation. Negotiation that is not exhausted after the first informal decisions, thus is put again in practice in this iterative dynamic while using the project to prompt further reflections and concretizing the future project with visual artefacts, in an incremental and progressively inclusive way of solving specific problems – for example, including additional analyses on part of other experts. On the one hand, it emerges here again this role of architects as "instructors", and architectural design artefacts as intermediaries of several layers and collective synthetized together. This is interesting to notice, since it is something not really explicit nor evident in architectural profession, this kind of an historical approach, or more related for communication related profession; in synthesis, this way of concentrating a big effort in the "first" instructor documents is something that emerge from this practice as a recurrent – but also effectual in reaching decision – way of acting through projects.

This big effort in including and anticipating issues related to the process is paired with an evidence in terms of irruptions and requests, that are concentrated and emerges in this first "instructory" phase. Indeed, the emergent problems and uncertainties around the process are collected and rapidly integrated in the progressive proceeding of the project – as already said – in order to be solved and somehow laid down in decision-making process. Moreover, it can be highlighted how these irruptions are heterogeneous in their emergence, since they relate both humans requesting or questioning specific issues and non-humans emerging as contingent and unexpected consequences of the trajectory of the process. It can be better explained by recalling the illustrated episodes, where the first decision and spatial effect in the project is directed by the wall and façade issue to be grasped and accounted; or when the need to define a treatment for the facades emerges as a collateral effect of broadening the view to a project around the whole campus open spaces. However, by going backwards to the origins of these non-human irruptions I would suggest a hypothesis – to be verified in other cases – related to the questioning of generalized symmetry in STS oriented accounts of architectural design. Indeed, what emerges here is the facts that non-human irruptions are somehow related and consequences of previous human decisions or irruptions. As an example, the façade finish issue, as a relevant problem to be faced and crucial to go further with the process, would not probably be as much important without the irruption of the OGR-CRT Foundation, with the possibility of thinking about a unitary project of open spaces. Moreover, the issue of maintaining the wall and the subsequent technological problems of shed, lightening and structure, are somehow dependent on the previous "bigger" irruption of the Superintendency in locking the process and requesting the preservation of the building. Nevertheless, once entered in the process and taken into account, even these non-humans act and perform in the process; thus, it can be said that they even guide architectural design process and can be clearly identified in their concrete effects in spatialization.

Going back to practices, the temporality is also interesting, since the bulk of the decisions are made in a short time, with many documents and a lot of exchange; instead, at a certain point a longer drawing process begins where very few actors are in control, and in particular we as MPT have practically no more power over the things being discussed. This can be identified as the "designing" phase, more related to the formalized steps from preliminary to executive project, the one most linked to the traditional conception of project. In this, the moments in which it is necessary to exchange opinions and negotiate positions are very few, and it is more linear than it is in other cases – for example, the same project was actually locked at the step of the executive project. It could be, of course, partly related to the fact that the arena of discussion is bounded to few actors - Politecnico and Superintendency, in extreme synthesis – thus it was the same condition of the previous project. I would suggest instead that the bulk of the decisions are on how to unlock the process, in the very first instructory phase; in this way, the designing phase results more "contractual" and linear. Therefore, in order to act in a process of this kind, an architect may know that the more some issues are better defined and grasped before, the less this contractual and procedural moments will deviate and encounter controversies.

In relation to this "contractual" attitude, another element that emerges is how some specific documents are stronger than others. For example, the strongest produced document – here and in other projects – is that of the presentation, the one that is most often discussed and approved during institutional meetings. A presentation is basically a strategy, a logical sequence of actions and documents that helps to understand the complexity, on the one hand, but also the logic of the project. Moreover, here the presentations consist basically in bringing and summing up multiple aspects of the process, already discussed and negotiated in previous arenas - that is in line with the above-mentioned issues. In collective contexts, the MPT has generally produced many more presentations than projects, essentially proposing theses and strategies rather than architectures. So even in this, in relation with the action of architects, it can be seen how there is a strong aspect linked to the production of a series of documents that, even before modeling the space, model the process by which you get to define a space. To conclude, it would be interesting to see how it happens in other cases too, through the subsequent chapters; indeed, in complex processes, perhaps there is a logic with which it is convenient to proceed, a logic that from partial and not connected perspectives and issues, moves to a composition of steps materialized and spatialized in project, as feasible courses of actions visualized in their implications.

Chapter 6

Second path: unlocking transformation scenarios

The action through the *Masterplan* has, among others, the objective of making certain passages clear and visible, looking for elements that make it possible to change the position and power of Politecnico in the city negotiation tables. The need and emergency from which the process arises is the awareness of having to respond to the growing number of students to avoid the closed number of access to the university – as anticipated in the emergency issues of previous chapter and deepened in the next one. Nevertheless, an intertwining strand of this lack of spaces is here strictly related to an opportunity, that gradually emerges among the involved parties until it completely shifts the perspective, unlocking the transformation scenarios of the *Masterplan*. The process that is synthesized as *open spaces* can be actually intended as the more related to the broader dimension of development of the whole process; indeed, it actually starts from reflections around an underground parking, moves through the related possibilities in matter of requalification of open spaces and even has implications for the new phases identified through the updated Program Agreement. 1 In particular this second path relates then to a broader reasoning that, from the need to realize an underground parking to unlock the classrooms transformation scenarios, gives birth to a never attempted before aim at rethinking the open spaces of the whole Engineering Campus. The process comes out from a "discovery" - explained in the first episode - related to a residual building capacity, that allows then not only to solve the classrooms lack problem, but also to lift indeed the gaze to a more articulated transformation of the open spaces – in relation with the other buildings to be implemented.

These reflections actually arise in a moment in which the University Bodies even is actively involved in a process of research for classrooms outside its own spaces.³ Indeed, as clearly emerged during the first plenary meeting with the whole Project

¹ An update of the Program Agreement with the City is intended as the final common decision – as effect – related to the interdependencies among the different paths presented (11/01/2019).

² Plenary meeting with the Board of Directors, fieldwork and note taking (30/03/2017).

³ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

Team, in which it is underlined how "there are no certain answers from external interlocutors"⁴, with whom Politecnico is in continuous and swift connection to find solutions to accommodate new classrooms – or to start a dialogue for realizing them, even far from the main locations of the campus. Nevertheless, it is stressed – during the discussion – the importance of maintaining high quality standards in teaching spaces. The idea of using independent spaces, of different quality, and often distant from the campus is hardly practicable – and not even desirable. From the very beginning of the discussion with the MPT, then, some further possibilities emerge, as adopting solutions for temporary constructions that can be easily assembled and dismantled, to be built in concert with external companies and which can become an opportunity for experimentation and research. Moreover, it is important – on behalf of the MPT – to recompose a mapping of projects in progress, in order to be able to redefine a common strategy, re-starting active dialogues with the City and local authorities, which should be based on first project proposals developed by the University. If the University takes an active position with respect to the interlocutors in the area, therefore the Masterplan can become a tool of knowledge and governance in the hands of the University Bodies, to have a more precise picture of the current condition and favor evaluations and strategic choices, or even to bring out the demands of other actors.⁶

The work of the MPT, from the first opportunities of involvement, is directed by a work of re-composition of previous projects and strategies, even blocked or interrupted without a clear and shared reflection about. It is few weeks before the above-mentioned plenary meeting that, in dialoguing with the Edilog technical offices, an unexpected opportunity is envisaged, in terms of (!) possibility of a residual building capacity to be realized in Cittadella. 7 Indeed, while the University Bodies are "wandering" in the city looking for spaces to be rented for classrooms, an almost forgot – or at least discarded – feasibility of solving the problem "inside the walls" of the campus is actually existent. In particular, the ongoing Program Agreement about "Cittadella Politecnica" is defined in phases – as a legacy of the 1995 plan – that link the square meters of surface area to be realized with the consequent needs in terms of parking space. At the moment in which the MPT enters the process, the realizations are temporarily slowing down, due to the ongoing emergencies – the blocked process of classrooms R and the general lack of classrooms. However, in particular through an already programmed underground parking, possibilities are left open for developments in Cittadella, that for the moment are just kept in the Program Agreement without further reflections. Among the first actions of the MPT in deepening the (!) building capacity there is then a recollection related to the project for the underground parking to be realized in the next phases of the process, still in the phases that the Edilog offices defined

⁴ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

⁵ Some more details around the realization of the temporary *classrooms P* will be added in the next chapter, focused mainly on tackling the classrooms' emergency.

⁶ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

Operative meeting with Edilog and Strategic Projects, fieldwork and note taking (06/12/2016).

with the City, but no more – apparently – present in the decision-making level of discussions of the University Bodies. Basically, it is here evident a complete gap among the technical sphere and the political one, as a missing dialogue between internal bodies of the University - among the reasons why the Masterplan as a process has been established.8

The Program Agreement⁹, ongoing at that moment, operates by linking existing and currently prefigured car parks to the building developments of Cittadella, with analyses of the relative quantities, distribution, and uses, in terms of parking requirements according to the current regulations. In particular, based on the latest update of the agreement¹⁰, the completion of the building capacity available in the area is intertwined - to meet regulatory requirements - with the realization of a series of underground parking in Cittadella, in Corso Duca degli Abruzzi and immediately closer to the two locations. Focusing on the one in Cittadella, in October 2008, the Edilog offices prepare the preliminary project 11 for an underground multi-storey car park to be placed in the area between the classrooms M-N and the General Motors building. The project, that after the preliminary phase 074-075 is entrusted externally, involves a four-storey underground structure 12 and the consequent arrangement of the green area above. From the initial stages of the project, the underground parking is indeed described as a response to the problem of the complete occupation of the external areas of the campus by flush parking lots - reserved for employees, students, technical and administrative staff of Politecnico. The specific objectives and needs of the car park are therefore to collect and convey the current car parks to the new underground structure in order to facilitate the use of the external areas, through the organization of vehicle flows, pedestrian paths, green areas and even areas free for use by users. 13 Also, in the subsequent updates, it is specified how the new parking project is not intended to increase the offer of parking spaces, but to channel all the existing ones inside, simultaneously proposing a redesign of the open spaces – even including areas for sport uses.14

At this point, the MPT role in the process is first of all to recollect the past trajectory of the underground parking, trying to define its deviations and slowing down by linking them to their triggering issues. Moreover, redefining the underground role in the scenarios of development of the whole campus has implications in terms of

⁸ Report of the Board of Directors (29/06/2016), University Bodies, Politecnico di Torino.

⁹ Program Agreement among the City of Torino, Piedmont Region, Torino District and Politecnico di Torino (20/03/2006).

¹⁰ Program Agreement variation (21/01/2016).

¹¹ Realizzazione di parcheggio interrato multipiano, Progetto preliminare. Relazione illustrativa (October 2008), Edilog Archive, Politecnico di Torino; Integrazioni volontarie alla Relazione di Verifica Assoggettabilità a VIA (26/02/2010), Edilog Archive, Politecnico di Torino.

¹² Approved by the Boards of Directors (16/07/2008), University Bodies, Politecnico di Torino.

¹³ Realizzazione di parcheggio interrato multipiano, Progetto preliminare. Relazione illustrativa (October 2008), pp. 2-4, Edilog Archive, Politecnico di Torino.

¹⁴ Integrazioni volontarie alla Relazione di Verifica Assoggettabilità a VIA (26/02/2010), Edilog Archive, Politecnico di Torino.





074-075

The area for the planned underground parking and the actual open spaces (photos of the author, 10th April 2017).

choices of the University Bodies. Nevertheless, relations with city government become a major issue, since the way to implement the transformation seems to review the Program Agreement in force at the time of the start of the process. In this sense, the implementation of the interventions depends in equal measure on the ability to keep together the decision-making dimension within the university and that of city governance, in a dialogue that has to be constantly negotiated through the project by the project team. The MPT needs then to respond to the urgent needs of Politecnico, thus without discarding the regained awareness on the (!) possibility of a residual building capacity to be realized, rather evaluating that of the underground parking as an opportunity to be considered immediately. The path outlined so far is far from straightforward and obvious, rather it is initially configured as a real "discovery".

The process is deepened in the following sections by choosing some crucial *episodes* to be interpreted. The events are evidently intertwined with the previous – and the next – chapter, even because this process is the more related to the general implications for the whole *Masterplan*. The chosen episodes are selected in the folds of the process, as significant moments that, in this case, not only change the project, but also let the whole strategy proceed until the definition of a new Program Agreement. An overview to follow the two episodes is traced through this video: https://youtu.be/fwk-zyzgWEY. Moreover, they can be followed as "user" through the web tool, and in the related map in the "Appendix A".

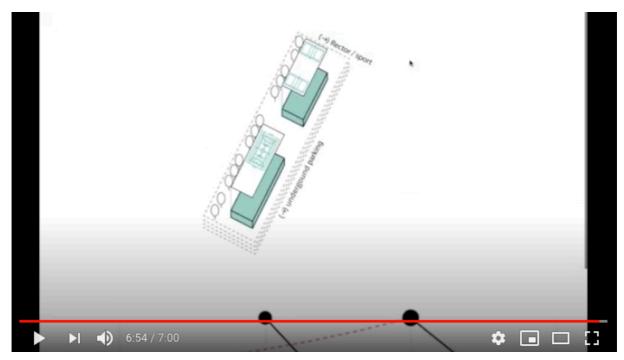
076-077

In this path, the final general effect reached through the MPT practice is the deliberation, during the last Board of Directors before the signature of the new Program Agreement, around the definition of an overall strategy in relation to the redevelopment of open spaces, with planning hypotheses for the "welfare house" – deepened in the second episode in this chapter – and the review of the internal courtyards even on the main location of the campus. 15 Indeed, rethinking a framework of open spaces within which individual projects can dialogue and connect is a fundamental overall view¹⁶, taking into account that until then the different spaces in Cittadella have not often considered their impact on the surrounding open spaces. From the definition of a main axis, emerged from the idea of the underground parking, a reflection arises on how to redevelop the area according to the principle of a pedestrian square, obtaining an increase in the quality of life – with moves actually contained. A further deepening, shared within this Board of Directors, concerns the redefinition of the internal courts of the headquarters. In particular, the rethinking of whole sequence of courtyards – from Cittadella to the entrance on Corso Duca degli Abruzzi – is thought to redesign the pedestrian crossing to make the axis recognizable as a strong and public place – a "spine" through the entire engineering university.

¹⁵ Deliberation of the Board of Directors (02/10/2018), University Bodies, Politecnico di Torino.

¹⁶ Masterplan's Presentation attached to the report of the Board of Directors (02/10/2018), University Bodies, Politecnico di Torino.





076-077Screenshots from the video that illustrates the selected episodes.

6.1. Increasing awareness through spatialization (episode 1)

The underground parking results from the very beginning of the process as the key through which governing the (!) building capacity issue emerged¹⁷, then the whole intertwining of projects and opportunities in the *Masterplan* process. Nevertheless, instead of being intended as a technical – even quantitative – resolution to punctual emergency problems, it is conducted as an opportunity for broader cultural reflections. ¹⁸ To avoid the limitation of a mere strategy of expanding the campus, it is necessary therefore to rethink current uses and spaces, to overcome consolidated strategies and optimize, as well as increase, existing spaces. These recomposing and rethinking strategies are crucial also as a matter of positioning Politecnico as a territorial actor, with an "exit" strategy – after the work of the MPT – on the public scene with a clear and shareable new image and idea for the campus in its context.

Thus, it is precisely from the surrounding environment that a first opportunity to raise the level of reflection occurs. As anticipated in the first path on *classrooms R*, the process is influenced from an emergent and unexpected involvement of the OGR-CRT Foundation – working on the redevelopment project of the H-shaped building.¹⁹ Then, the campus development strategy can be defined even taking into account that its northern area could become an important point of view towards the OGRs, an axis towards the future western square of the building. As already explained, the Foundation at a certain point actually interrupts the collaboration with Politecnico, nevertheless this input can be related to the underground parking project and the rearrangement of the open spaces, as at least a triggering input.²⁰ This irruption brings indeed on the discussion table with the University Bodies and the other involved offices this issue of open spaces. The first episode relates to the first year of work with the MPT and can be followed through the map – the web tool or the one in the "Appendix A" - from 14th December 2016 to 30th March 2017, when the Board of Directors deliberates around the revision of the underground parking project, in order to unlock the transformation scenarios in the campus and even reasoning in terms of a reorganization of open spaces.

078-079

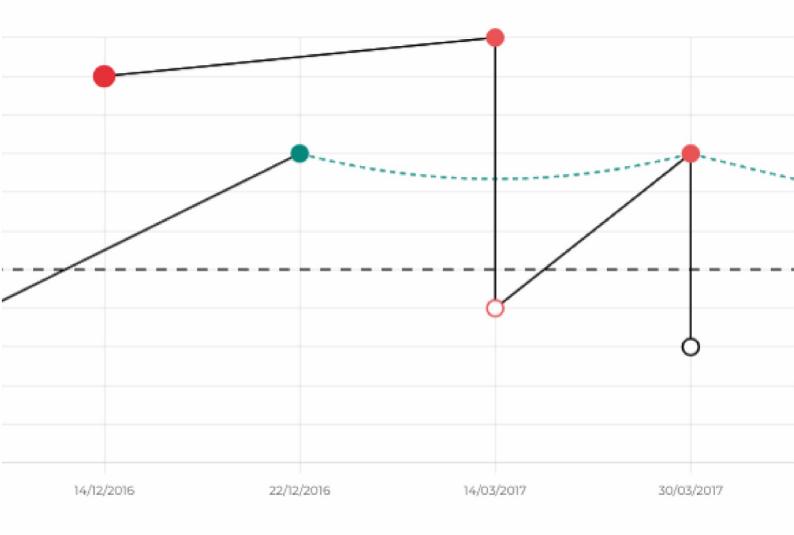
By following the opportunity, our work is first of all directed to respond to the (\rightarrow) OGR-CRT / open spaces issue, starting from a simple, while non-obvious effort of (A1) showing and noticing current conditions, with a drawing that represents and analyzes the current ground floor distributing system – both inside and outside the buildings – of the campus.²¹ The attempt we have in producing this view is in line with the actions pursued with the MPT during the first months of work; indeed, in the previous projects produced by the technical offices, the strategy has basically

¹⁷Operative meeting with Edilog and Strategic Projects, fieldwork and note taking (06/12/2016).

¹⁸ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

¹⁹ Operative meeting of Masterplan Team's members, fieldwork and note taking (24/11/2016).

²¹ Masterplan Team, internal e-mail exchange (14/12/2016).



078-079

Above: the portion of the web map related

to the episode 1.

Below: the travel of practices and

decisions in episode 1.

A1 (14/12/2016)

showing and noticing current conditions

→ B1 (14/03/2017)

focusing on essential instead of detailed forms

S INFORMAL AGREEMENT (14/03/2017)

the Vice-Rector asks for the construction of scenarios of expansion with or without the underground parking

→ MP2 (30/03/2017)

bringing and summing up together multiple aspects of the project

← DELIBERATION (30/03/2017)

the Board of Directors asks for a review of the parking project, minimizing the lost in terms of parking lots

been to reason in terms of isolated objects²², with their own area of relevance to be consequently requalified. However, a whole re-composition in terms of open spaces has never been carried out before that moment. Then, this visual representation allows, through a synthetic recollection of what exists, to reflect in terms of problems and opportunities at a broader scale, even in relation with the OGR building. In the meantime, the (!) possibility of a residual building capacity²³ to be realized in the campus is necessarily related, in practical terms, to the need of (!) complying the parking law.

Indeed, before understanding if and how to exploit the internal possibility to build, and to rethink the whole campus in terms of axes, open spaces and opening to the city, a big issue is to negotiate with the City this crucial topic – the one that, actually, blocked the process until that moment. Our work is then directed to deeply understand the dynamics behind the calculations for parking needs, to be discussed with the City and, hopefully, negotiated and simplified.²⁴ This dialogue with the City is prepared through a series of e-mails, through which we conduct first explorations in terms of room for manoeuvre to reduce the request for parking – being, furthermore, inside a university with aims for sustainability in mobility topics. The problem is actually well aware in the City offices, and "present in our plan of regulatory review and simplification". 25 Nevertheless, the sought option of not having parking inside the university 26 seems from the beginning of this discussion very unlikely. Because the first concern is to keep the (!) building capacity available - that is even the main intention of the Program Agreement for Cittadella, deciding whether or not to build the underground car park affects "the future development of the entire area". ²⁷ It indeed implies an internal theme for reconfiguration of spaces, together with an external theme of potential interest from companies. Nevertheless, as confirmed during a first operative meeting with the City, the transformation of the campus emerges more and more clearly as triggered by the underground parking.

An awareness around the need to tackle the (!) parking law to actually unlock the transformation scenarios in the whole campus has to be reached – or at least recovered – also among the University Bodies of Politecnico. We then participate to a series of operative meetings, on one hand, with the technical offices – to retrace and understand better the dynamics of calculation and the regulatory framework related to the parking; on other hand, the Vice-Rector and General Director are continuously updated and involved in the deployment of the process – both in terms of better understanding and of proposals. It is first of all in these operative discussions that the emergent theme of dealing with the underground parking

²² Operative meeting with Edilog, fieldwork and note taking (24/01/2017).

²³ Operative meeting with Edilog and Strategic Projects, fieldwork and note taking (06/12/2016).

²⁴ MPT to City administratives, e-mail exchange (05/02/2017).

²⁵ Ibid.

²⁶ Operative meeting with Strategic Projects, fieldwork and note taking (07/02/2017).

²⁷ Operative meeting with the City and Edilog, fieldwork and note taking (28/02/2017).

gradually emerges. Moreover, with a series of partial negotiations, the different related issues that it implies are tackled and discussed with the person concerned – e.g. the parking standards and other "technical" aspects with the Edilog offices, the possible future scenarios with the more "political" offices. However, the topic is never detached from the whole reasoning, thus the more technical issues are shared together with the political ones, in further operative meetings in which both the components of the university are brought together to discuss, after a previous instructory phase. On one side the technical offices insist on the problematic conditions of Cittadella site form a geological point of view – due to the expensive reclamation operations that would require excavations in certain parts of the area. On other hand, the Vice-Rector underlines alternative possible expansion scenarios that the *Masterplan* can prefigure, starting or not from the realization of the underground parking.

It becomes clear for us that the main strategy to direct the choices, as MPT, has to be a clearer definition of the implications in realizing the parking.²⁹ In this sense, "with" the parking it is possible to reflect and to carry out various explorations on the possible development of all or part of the more than 75,000 square meters still achievable. "Without" the parking, the scenarios shift towards circumscribed and more fragmented strategies that require to continue the exchanges and negotiations for space with other actors around the campus. The idea of this "with" or "without" mechanism is reached by (B1) focusing on essential instead of detailed forms, and a recollection of the possibilities in terms of (\rightarrow) building capacity is held. In this drawing, we define some first drafts of schematized volumes, as a 'limit scenario' of 75,000 square meters realizable, together with a general rethinking of the (\rightarrow) open spaces – intertwined here as unlocked through the parking realization.³⁰ This first idea is exchanged with the supervisors by e-mail, with a consequent – not really under control of us 'lower degrees' in the office – sharing even with the Vice-Rector, that again informally remarks the need to arrive at the next Board of Directors with a clear construction of scenarios of expansion in relation with the underground parking.

In our attempt to address the problem an important role is played by a sort of "assembly scheme" of scenarios, to be inserted in the report in progress for the Board of Directors, (MP2) bringing and summing up multiple aspects of the project. In this framework of actions, but above all in a context of declared emergency and search for spaces by Politecnico, even outside of its offices, through the (MP2) report the MPT underlines – at a more formalized level – the fundamental opportunity dictated by the Program Agreement still in force. In fact, attention is drawn to the residual building capacity within the area³¹, which would

²⁸ Operative meeting with Rector, Vice-Rector, General Director, Edilog and Strategic Projects, fieldwork and note taking (09/03/2017).

²⁹ Masterplan Team office work, fieldwork and note taking (13/03/2017).

³⁰ Masterplan Team office work, fieldwork and note taking (14/03/2017).

³¹ *Ibid*.

allow to contain many of the emerging space needs, however requiring the problem of creating parking lots according to local and national standards. Moreover, in a chronological sequence in which different 'bricks' are progressively added to the scenario, it is finally clear that the underground parking would allow not only the realization of the residual building capacity, but also further reflections in terms of qualifications of opens spaces – then in the presentation it is evident a visualization of an increment in terms of 'green colored' areas. A consequence of our effort in presenting this report to the Board of Directors is an agreement around the prefiguration defined in phases – together with concrete implications in terms of classrooms and open spaces' requalification. This decision, progressively shared, built and composed in the folds, actually reverberates throughout the process in this first official presentation of the Masterplan. This results in a deliberation that actually sets up the future directions of the whole project, on the basis of these first suggestions of the MPT. Suggestions that, far from being representation of a possible future, are concrete anticipation of a concatenation of actions to be pursued in order to reach that future. A solution that remained hidden, actually admits to completely change Politecnico role in dialogues with external actors – and it will be even clearer in the next chapter, about the collaboration with an external Foundation. This first deliberation, that among other directions define as crucial a revision and re-start of the underground parking project, is the result of an envisaged strenght³², that starting from a design strategy "within the wall" can then imagine opening a debate on the external front. It seems that "the parking enables the possibility to make choices of any kind"33, in a full-fledged "discovery" of something that was already there, although being unnoticed.

In the analysis of this first episode, one can witness how the definition and sharing of the previous mentioned artefacts has deemed necessary in order to gain and even generate knowledge about the possibilities related to the project. It is an important step in the whole *Masterplan* process, because it shows no widespread awareness of the various expansion operations, of which the technical offices are substantial holders starting from the original project. Without sharing and concertation, evidently necessary, the possibility of expansion of many thousands of square meters also risks being lost otherwise; instead, the working group focuses on how, despite having encountered a problem – the one just mentioned of the need to guarantee the need for parking necessary according to national law – it is possible to call into question and face these difficulties and complexities, rather than completely setting aside the option.³⁴ In reaching this effect, the MPT engage with specific practices in answering to a series of emerging – and related – irruptions. Starting from the (\rightarrow) OGR-CRT / open spaces issue, as deeply accounted in the previous chapter the hint in this direction actually derives from a contingent and unexpected "entry" of a new actor in the process. Nevertheless, in this path, it is

³² Plenary meeting with the Board of Directors, fieldwork and note taking (30/03/2017).

³³ Plenary meeting with the Board of Directors, fieldwork and note taking (30/03/2017).

³⁴ Report of the Board of Directors (30/03/2017), University Bodies, Politecnico di Torino.

clear how contingencies can somehow irrupt and remain latent in the process, even revealing themselves as crucial in a second time. Indeed, in this case the issue of open spaces, envisaged thanks to the OGR-CRT Foundation, not only determines the discussion around the requalification of the whole campus, thus it is assembled in a concatenation of issues to be tackled in relation to the main 'actor' of this story, that is the underground parking. What I would suggest is that the parking, far from being a mere object of inquiry, is here a catalyst actor of several intertwined issues that are the core of the whole process from here on. Its capacity to act is related to the fact that, "through" it, a whole series of implications can be interconnected in a network of relations, the better understood and finally shared.

In this sense, the (\rightarrow) OGR-CRT / open spaces issue is then framed in a chain that is defined from the (\rightarrow) parking law to be fulfilled, on one hand, and the (\rightarrow) building capacity to be consequently realized, on other hand. The MPT faces in this sense a series of problems that can be intended, separately, as uncertainties about working environment (UE), related to external circumstances and a kind of technical solution, that need more information to be faced. However, instead of separating the "technical" form the "political" – and reasoning in terms of parking calculations only, or in relation to an opening to the city through a rethinking of open spaces – the practice even transforms the problems themselves. Through a series of internal explorations, discussed and shared inside the office or during informal meetings with punctual interlocutors, the MPT address these problems – after defining and understanding the current conditions through (A1) – taking into account a matter of interdependency among problems. By proposing a schematization of possibilities, the (B1) artefact is indeed intended to embody and materialize in practice the previous mentioned and emerged uncertainties. Therefore, these are not merely concretized and "measurable", but also intertwined in a first sight and anticipation on the interrelated possibilities that they imply.

In terms of sequence of exchanged artefacts and practices, this is evident in the progressive composition that from the first (A1) as-built drawing, in a recollection of not-yet-retraced information, moves through a document with further "instructory" aims as the (B1), in order to first synthetically relate a series of emerging issues. Then, the (MP2) presentation – that even includes a general update on the analyses carried out – is intended to bring together in a clear sequence the development possibilities related to the parking realization, somehow implicating – and nesting – both the two above-mentioned documents. It is exactly the way this assemblage occurs, even collecting in the meantime the first informal agreement with the Vice-Rector, that insists around the need to really grasp and understand the parking's implications in terms of transformation scenarios. In this sense, the assemblage of artefacts until the final report – the one on which the decision is made – occurs through a progressively composed performativity. Indeed, the irruptions are here face and resolved somehow internally to the project team or with the partial opening to informal discussions, before being shared and discussed with at a formalized level of decision-making. The decision to be made

is actually embodied and concretized in practice, through visual artefacts that are produced from irruption as a hint, more than an obstacle. The (A1) drawing allows first of all to establish a common view and language among MPT members – and even with the technical offices – in order to share perspectives around the current state of the campus in terms of open spaces, in order to envisage further possibilities for action. In this sense, a first re-composition through a re-examination and understanding of current conditions allows to reach and communicating a common perceived nature of the situation, by transferring through a shared and synthetic language. In this sense, this starting practice let the MPT to traverse a syntactic boundary and poses the bases for any further deepening even in terms of transformation. Then, through (B1) further constraints and uncertainties are embodied into the drawing, since it completely assumes the need to fulfill the parking law, intertwining thus this 'constraint' with its implications in terms of opportunities. The uncertainty and problem are for now transformed, more than tackled, and seen as a strategy instead of an obligation. In this, this production is instrumental in translating and presenting the future closer, in order to negotiate and, eventually, overcome those constraints and uncertainties. Finally, the (MP2) report results as a collection of these – and others related to different paths – practices carried out through the above-mentioned artefact that compose it. Anticipating in phases the implications related to the parking, this artefact helps traversing a pragmatic boundary, by both showing the current opportunities and concretizing the relationships among these and other choices – as the open spaces' requalification theme. In this sense, this artefact transforms perspectives into visual artefacts, to concretely deal with them.

The discussion and exchanges occurred in this excerpt of the process reveal again a dynamic of instructing the decisions through a series of explorations in the MPT, or among MPT and Edilog offices, then shared punctually to create awareness and even refine the directions, before formally exchanging the artefacts in an arenas in which a formal decision could be made. While dealing with the (\rightarrow) parking law and (\rightarrow) building capacity issues, the MPT engages in a series of progressive exchanges – as already said – with the technical and political components involved in the process. A big effort is employed in recollecting and defining the previous path and the implicated problems related to the underground parking; nevertheless, through the projects and receiving the instances of the University Bodies, a broader level of reasoning is maintained in order to take advantage of constraints to propose a whole rethinking of open spaces.

In this, the underground parking is an echoing actor in this story, since all the implications, the constraints and the opportunity are inevitably related to it. Nevertheless, the parking in itself not yet exists, and its materialization is actually pursued through a spatialization not only of its shape, but of the whole range of implications and consequences that dealing with it imply. This network of interconnections is spatialized through the project, that acts actually both 080 embodying them and letting them communicable and shareable. This complex

ecology of interconnected instances and choices is then synthetically represented – in respect to the open spaces issue – together with the irruptions that it assumes and tackles through spatialization. In doing so, a role emerges for the MPT, that beyond the emergencies aims indeed at providing an instrument of inquiry to the University Bodies, through visual artefacts and spatializations, through which making issues visible, activating debates and reaching effects.

At this point, the decision taken allows the *open spaces* project to continue its travel. This first deliberation in terms of proceeding with the underground parking has not only implication for the *open spaces* path, but it even unlocks the whole range of possibilities in terms of transformation of the campus. It can be then intended as the 'number one' concern since it integrates a lot of different choices and has implications that directly relates with the final effect of modifying the Program Agreement. Moreover, it is the first occasion of public presentation of the *Masterplan* and let the MPT succeed and be 'invested' to continue with the process.³⁵ Even in the words shared with the whole Project Team, it is clear the reach of a crucial point that can be understood as the real starting point for a recognized role of the MPT among the University Bodies:

[...] there has been a strong appreciation by all the members of the Board of Directors not only around the work done, but also in respect to the hypotheses and design scenarios that are gradually being put in place. This appreciation was reflected in the final deliberation which, in addition to reconfirming the confidence in the intentions of the *Masterplan*, initiates a process of in-depth planning, which in practice restarts the construction process of doubling, according to what we shared in the last meetings and in line with the materials seen together.³⁶

Before moving to the second episode in this path, it is even necessary to briefly recollect the subsequent events in this first year of work of the MPT on the topic of *open spaces*. After reaching the agreement on define a strategy for building through several phases in the campus, an extended stage of reasoning together with Edilog is conducted, to carry out first prefigurations. In this trajectory, a further irruption that accompany the project – and that even harder implies a reflection on the theme of *open spaces* – is the national request to (!) complying the green laws.³⁷ As already said, the campus is a former industrial area and the reclamation costs are high; then, the directions through which define a requalification strategy has to be really grasped in technical terms. Moreover, in the following months a need emerges to discuss of the project with the City³⁸, then a second Board of Directors is previously planned in order to clarify the parking issue – the current status and

³⁵ Report of the Board of Directors (30/03/2017), University Bodies, Politecnico di Torino.

³⁶ Masterplan Team to the Project Team, e-mail exchange (31/03/2017).

³⁷ Operative meeting with Edilog, fieldwork and note taking (19/04/2017).

³⁸ Plenary meeting with Vice-Rector, Project Team and Edilog, fieldwork and note taking (24/05/2017).

the hypotheses for an underground parking – even in relation with first scenarios and morphological explorations, accompanied by a regulatory framework in terms of the area's reclamation and a reorganization idea in terms of open spaces and spaces for sports.³⁹ It is during this subsequent Board of Directors that there is a deliberation to approve a first detailed chronological scheme⁴⁰, which becomes the first official document that chronologically embodies the steps of transformation of the campus on several interrelated levels. The proposal to build an underground parking emerges from the twofold need to realize the building capacity of Politecnico in the area and to start a process of reorganization of the open spaces, currently largely occupied by parking at level. The solution proposed 41 here provides for the construction of a new multi-storey parking – built in stages, in order to contain the initial investment costs – to ensure the restart of the first projects to expand the university spaces and to organize the external areas. From here on, the guidelines and investments are approved on the basis of these prefigurations, as a document through which the various institutional and external parties can dialogue and even advance requests on a concrete basis.

6.2. Using the project to compose strategies (episode 2)

The previous mentioned plenary meetings⁴², in which two subsequent deliberations are made in terms of development of scenarios for transforming the campus, are crucial in unlocking the process. The team's work, from now on, continues indeed in a clearer direction of insights and explorations regarding the different phases to be deepened. This possibility to reason in terms of bright and understandable alternatives even clarifies the role of Politecnico on different levels, then a dialogue with the City can be started again.⁴³ As mentioned in the general recounting of the process, after a long effort of re-composition and negotiation to reach a common view on the possibilities on the ground for the university, the subsequent can be intended as a phase more related to concrete projects and proposals. Nevertheless, another "discovery" is fundamental in directing the Masterplan development, since during an operative meeting it emerges that (!) the Program Agreement with the City is expired.⁴⁴ Then, even if the "table" with the City would not be open without the MPT effort until that moment, it isn't actually enough; after the re-construction of a framework it is necessary an acceleration and a strategy with the municipal offices to upgrade the previous Program Agreement.

³⁹ Masterplan Team, internal e-mail exchange (28/04/2017).

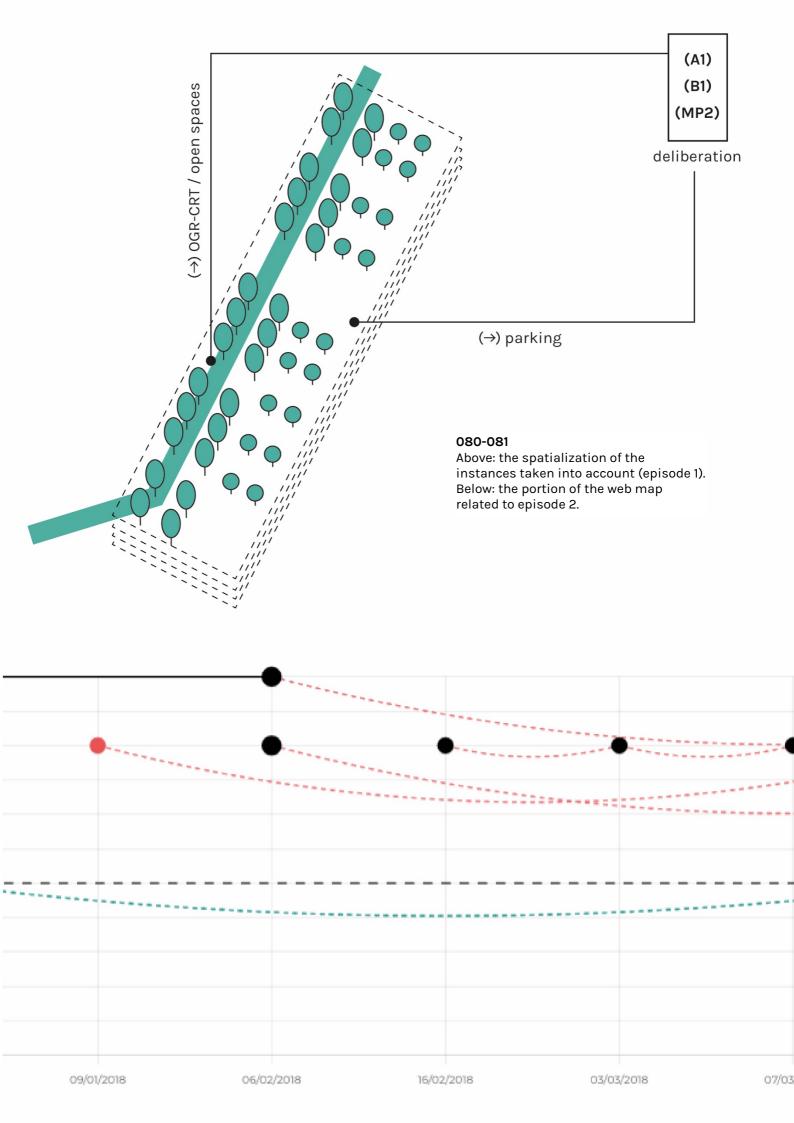
⁴⁰ Report of the Board of Directors (20/07/2017), University Bodies, Politecnico di Torino.

⁴¹ Masterplan Team's Presentation, attached to the report of the Board of Directors (20/07/2017), University Bodies, Politecnico di Torino.

⁴² Board of Directors (30/03/2017; 20/07/2017), University Bodies, Politecnico di Torino.

⁴³ Operative meeting with the City, General Director and Edilog, fieldwork and note taking (17/10/2017).

⁴⁴ *Ibid*.



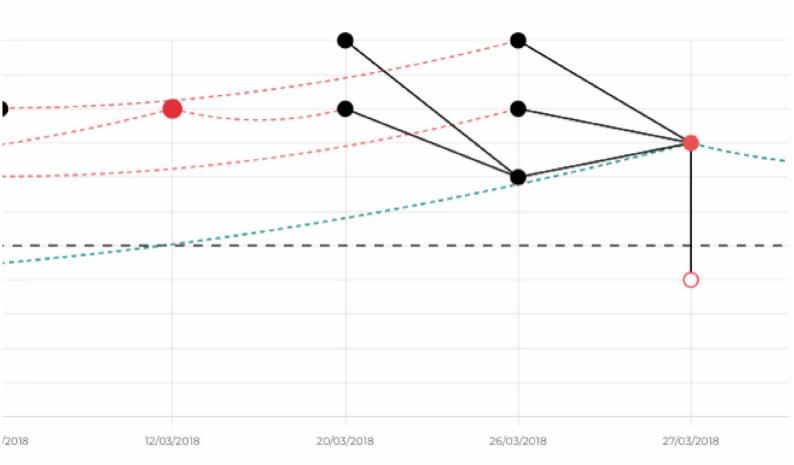
I1 (09/01/2018) spatializing verbal requirements into visual form

- ← Π (12/03/2018)

 spatializing verbal requirements into visual form
- ← IT (20/03/2018)

 spatializing verbal requirements into visual form
- ← M1 (26/03/2018)
 outlining different scenarios to choose from
- ← MP4 (27/03/2018) bringing and summing up together multiple aspects of the project

082 The travel of practices and decisions in episode 2.



It is in this frame of both re-composing and proposing strategies, the *open spaces* constitutes an element of continuity to connect the campus with a reorganization "from the inside" and a reasoning in respect to the nearby OGR and "the outside". It is in a series of operative meetings at different levels of the decision-making inside the university that a possibility of (!) using the underground parking to transform the open spaces emerges as a clear strategy to be pursued as connecting the whole number of projects emerging for the diachronic phases to be proposed. The parking could be "used" to bring along choices as pavilions above the parking – e.g. for student spaces – or pergolas, a rethinking of courtyards and rooftop, and green axes to define the morphology of the campus. Basically, this second phases of work with the MPT on the *open spaces* shouldn't be only a matter of economic feasibility, parking calculations and constraints, thus an opportunity to "put in field a new image of the university". 46

081-082

This second episode focuses on the trajectory of an artefact that can be followed through the map – the web tool or the one in the "Appendix A" – from 9th January to 27th March 2018, that let the Rector – newly elected – and the Prorector agree on *open spaces* project, during an informal meeting in which a series of opportunities is related to the (!) underground parking realization.

In the practices occurred during this period of time, the MPT is involved in explorations to allow the improvement of the daily life of the university community. The *open spaces* undergo an overall redesign (H1) aimed at connecting the transformations and stitching up the different transformation interventions through new paths, green areas for study and sport, aggregative places for collective and recreational activities (J2). In order to allow the pedestrian and cycle use of these spaces, currently largely intended for flush parking and vehicular transit, the requirements are updated (K1) and the executive underground parking project planned for the ex-OGR area revised (J1). In the meantime, the interrelations among parking spaces, green areas and building capacity is constantly kept and verified with the Edilog offices, as essential basis to handle the whole operation. All these documents are kept in the final presentation (MP4) that is the final point of this trajectory, nevertheless the focus here is on the trajectory of a specific artefact that relates a collateral project of the underground parking.

As part of the review of the *open spaces* project, as MPT we explore indeed the possibility of inserting two pavilions in the overlying area of the underground parking⁴⁷ to host collective spaces for the university community. The issue of (!) using the underground parking to transform the open spaces constitutes here a possibility not only to unlock quantities and surfaces to be realized, in abstract

⁴⁵ Operative meetings with Edilog and CDPS (06/12/2017) and with Prorector, Vice-Rector and Student Representatives (19/12/2017), fieldwork and note taking.

⁴⁶ Masterplan Team, office work (21/12/2017).

⁴⁷ Operative meetings with Prorector, Vice-Rector and Student Representatives, fieldwork and note taking (19/12/2017).

terms; in this case, it concretely and materially provides a site on which the explorations for new pavilions can be located. Starting in this case from a completely new project – not a review of a previous one, nor a requalification of a precedent building – the trajectory I follow here is a practice of (I1) spatializing verbal requirements into visual form, with a translation of this same artefact⁴⁸ in the process, progressively assuming and assembling new requests accounted through punctual meetings with the interested parties. In this case, we focus on some first explorations in terms of alternative volumes, with different alignments with the historical buildings, positions and surfaces for two pavilions above the parking. These explorations reflect the need to define and free two perpendicular axes in Cittadella as condition for a unitary design of these spaces. 49 The construction of the pavilions is closely linked to the parking project, indeed imagining the wires of the pavilions aligned to the existing historical buildings, they would insist at least in part on the slab of the parking. Moreover, it implies the need to identify a structural mesh to prepare the foundations of the pavilions on the extrados of the last floor of the parking.

These issues are discussed internally⁵⁰ and with the City⁵¹ in the following weeks. Indeed, while we continue to work on the project, a handover is imminent inside the university with the election of a new Rector and its University Bodies. As a consequence, this revision of the parking project – together with its implications – can be decisive if addressed with a search for a "public space" for the entire Cittadella. The aim in pursuing this should be not to separate the "chamber of politics from what is technical"52, even in order to communicate in this handover a clear aim at re-reading the existent through these levels' interaction. The practice of (I1) spatializing verbal requirements into visual form is essential in this phase in which the common shared strategy has to be again shared with the upcoming new governing structure of Politecnico. Actually, some first insights come – informally and in advance – from the future Rector, concerning the connotation of those two pavilions as the "welfare house" 53, for sport and services uses. Moreover, the whole group agrees on the opportunity of using the (\rightarrow) underground parking project event to identify solutions that minimize the altitude differences currently present in the area: on one hand, by setting the floors with slight slopes, or with stepped solutions that can be used for studying in the open air; on other hand, by including that altitude differences in the internal distribution of the pavilions. We then discuss further technical details in a series of meetings with Edilog – as the provision to incorporate the pedestrian exits of the parking lot within these new structures⁵⁴, or

⁴⁸ Masterplan Team, office work (09/01/2018, 12/03/2018, 20/03/2018).

⁴⁹ Masterplan Team, internal e-mail exchange (16/01/2018).

⁵⁰ Operative meeting with the Vice-Rector, General Director, Edilog and Strategic Projects, fieldwork and note taking (29/01/2018).

⁵¹ Operative meeting with the City and Edilog, fieldwork and note taking (31/01/2018).

⁵² Operative meeting with the Vice-Rector, General Director, Edilog and Strategic Projects, fieldwork and note taking (29/01/2018).

⁵³ Operative meeting with Edilog and Strategic Projects, fieldwork and note taking (16/02/2018).

⁵⁴ Operative meeting with Edilog, fieldwork and note taking (02/03/2018).

the possibility to project the pavilions and the external furniture in house.⁵⁵ Finally, more clearly in this moment emerges a further issue, understood from the future Rector, to hypothesize (!) possible sport areas on the roof of the pavilions, furthermore as projects to be possibly realized within the period of the mandate.

Again, the practice of (I1) spatializing verbal requirements into visual form results here in a schematic - thus detailed in surface and uses - version of the pavilions, in order to envision the transformation program.⁵⁶ Moreover, the issue of (→) **Rector / sport** is included in this artefact, since the "travel" to be followed is first of all the approval on behalf of the Rector – that suggested this inclusion. Nevertheless, as a MPT we produce further explorations in terms of alignments and location in a system of open spaces through an update of the (I1) artefact⁵⁷, both with an aim of better understanding the implications of the project in relation with the context, and in using it to refine the exploration on the whole plan of the Masterplan. As a final exploration internal to the office – as a further level of definition of the pavilion project – different alternatives of these pavilions are compared through a series of renderings⁵⁸, in a practice of (M1) outlining different scenarios to choose from. The trajectory of these artefacts in their translation and nesting on in the other conducts then to the report presented to the Rector⁵⁹, (MP4) bringing and summing up together multiple aspects of the project, not only with respect to the above-mentioned drawings and explorations about the pavilions, 083 but also as an assemblage of several directions taken about the open spaces.

The MPT presents the dossier with an in-depth focus on the open spaces and the "welfare house" pavilions, even as a matter of involving the new Rector and Prorector into the dynamics of the Masterplan already underway. This operative meeting is crucial, as a first occasion to share and communicate the process, even through the lenses of specific projects, as the "welfare house". Actually, the Rector and the Prorector agrees on the definition of a whole project of open spaces in terms of relations between Politecnico and the city. Then, the MPT can proceed with the development of the project directions – and in particular with the hypotheses related to the pavilions as spaces for staff and students' services, and for sport.⁶⁰ The Rector even acknowledges that such a way of placing internal skills at the service of the university "generates positive effects, strengthening passion and a sense of belonging". This view is shared and reinforced by the Prorector who highlights the benefits of the interface with other internal groups and the strengthening of the University's image towards the territory.

⁵⁵ Operative meeting with Edilog, fieldwork and note taking (08/03/2018).

⁵⁶ Masterplan Team, office work (12/03/2018).

⁵⁷ Masterplan Team, office work (20/03/2018).

⁵⁸ Masterplan Team, office work (26/03/2018).

⁵⁹ Operative meeting with the Rector, Prorector, General Director, Edilog and Strategic Projects (27/03/2018).

⁶⁰ Operative meeting with the Rector, Prorector, General Director, Edilog and Strategic Projects (27/03/2018).

The episode accounted here underlines, I would suggest, a starting configuration that is different from others already occurred in other paths. Indeed, starting from the final effect in this episode – the informal agreement with the new Rector and Prorector – it is actually an evident example of the "power" of design documents in instructing and guiding the process in the folds of operative exchanges and preliminary sharing of strategies, progressively assembled and then presented at a formalized level after an iterative movement of revisions and assemblage. However, in this case the additional contingency is the fact that, during the already started flux of the ongoing process, new actors with the "power" of decision have to be included. I would say, they have to be assembled in the same way irruptions are assembled in the project to be faced. Indeed, it is evident how the MPT practice has to balance here the need to continue with the explorations already deliberated by the Board of Directors, while including in the meantime the new Rector's positions and ideas on the topic. Nevertheless, a will or an intention is something unpredictable and difficult to manage, then the practice of the MPT is actually more related, I would say, to a different strategy of involving the Rector's power, directing it as potential materialization in the project. In retracing the travel of this presentation assemblage, the attempt is even to follow and account this power's materialization through the project progressively produced and exchanged.

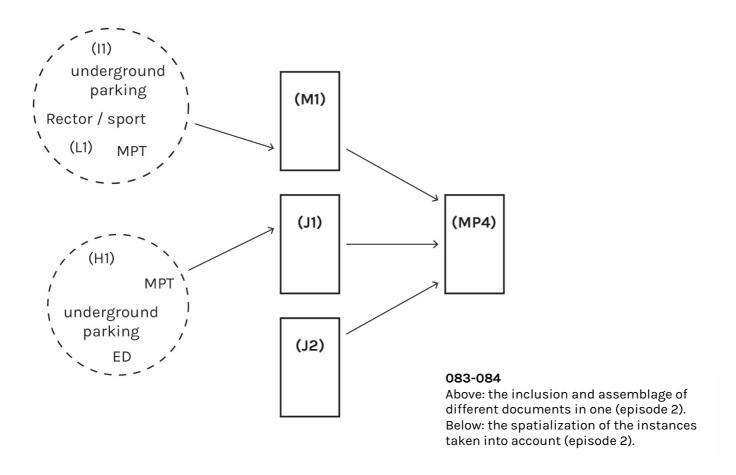
The ongoing process is firstly directed, in this episode, by an issue of (!) using the underground parking to transform the open spaces, as a "trait d'union" among a first year of work of the MPT in re-composing the framework of needs of the university, and a launch forward through this conquered re-composition in proposing feasible courses of action. In this sense, at the very beginning of its travel the practice of (I1) spatializing verbal requirements into visual forms is employed by the MPT to explore and refine a further opportunity through alternative schematizations, to be shared with the "technical" and the "political" parties progressively and share a common view of the possible strategies. It allows here to reach a common view of the range of possibilities to consider, as a result of traversing a syntactic boundary. The process could have been linear in this sense, as a progressive assemblage of knowledge and instances in this circulation movement among offices and informal meetings.

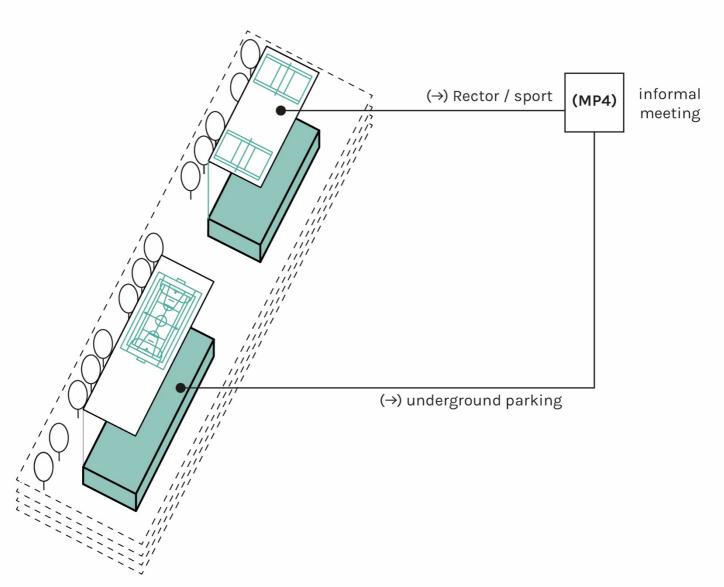
However, in its subsequent trajectory this (I1) practice includes then a further irruption, that is the suggestion related to (!) Rector / sport. This issue of thinking about services and sport areas is reached by the MPT on behalf of the new elected Rector, even before his mandate is started. The information is shared and traced during a series of meetings with the technical offices and the governing bodies at the end of the mandate, as a matter of concretely defining a handover. On one hand, the Rector aims to have a role in the project of *open spaces*, to be from the very beginning included among the objectives of its mandate; on other hand, the importance of maintaining the reached level of control on the whole project – even in dialogue with the City – is crucial at that moment. What emerges here is an *uncertainty about guiding values* (UV), since there is a need for clearer objectives

in order to go further with the project, being aware of the fact that an agreement with the Rector from the very beginning is fundamental. Then, as a way of anticipating the uncertainty, even before the start of his mandate, the Rector indirectly has to be "assembled" in the project. While thinking about sport areas on the roof of the pavilions, the MPT spatialize in an already discussed and assembled project a further irruption, that is treated on the same plane of others – through spatialization. It is in this sense that I would intend the "power" of the Rector as spatialized and problematized through the project – and traced in the document. It is for the moment a provisional representation of the future, not even discussed and negotiated with the Rector, however this anticipation is instrumental in translating interrelated possibilities to be pursued. I would say that the artefact helps in traversing a semantic boundary in order to negotiate and, eventually, overcome conflicting interests. I would say that this anticipation let the uncertainty being included before it could represent a stop in the process. Moreover, it is assembled in a way that is actually feasible and in line – concretely – with the further constraints already under investigation about the project.

Nevertheless, once this document is nested in the (M1), it is even maintained an openness on different possibilities that even not include the sport areas on the roofs of the pavilions. Indeed, the aim through the MPT practice is not to merely follow the will or the idea of a single actor in the process; however, the way projects seem to continue their travelling is dependent on specific practices – among which the spatialization even of alternatives that intercept the larger collective and network of interrelated issues. In this sense, a series of alternatives to be included in the final report help again reaching a common view of the possible strategies, even attributable to different interests on the table, through renderings. These artefacts, in this case, finally concretize already shared perspectives *transforming* them in visualizations of their assemblage in a shareable and communicative way. The (M1) report helps then managing a *pragmatic boundary*, concretely resolving implications by anticipating them and transforming in practical configurations the possible alternative.

It is then during the operative meeting with the new Rector, finally, that this series of exchanges and practices is assembled in a presentation that sum up the project – even including it in the whole process of the *Masterplan*. The (MP4) report is officially intended to update the Rector around the whole process, while giving him in the meantime further insights in respect to the "welfare house" project. What emerges in this presentation is then a re-composition of the whole through the particular, in some sense. This means that the practice carried out by the MPT through this artefact is, on one hand, to reach an agreement on the whole strategy; on the other, the way to do it is to materialize the implications of this strategy through the spatialization in a clear and understandable object – as the pavilions. Nevertheless, the pavilions themselves embody the already explored issue of realizing the underground parking, that implies the realization of the residual building capacity and the feasibility of the whole operation. In the pavilions and in





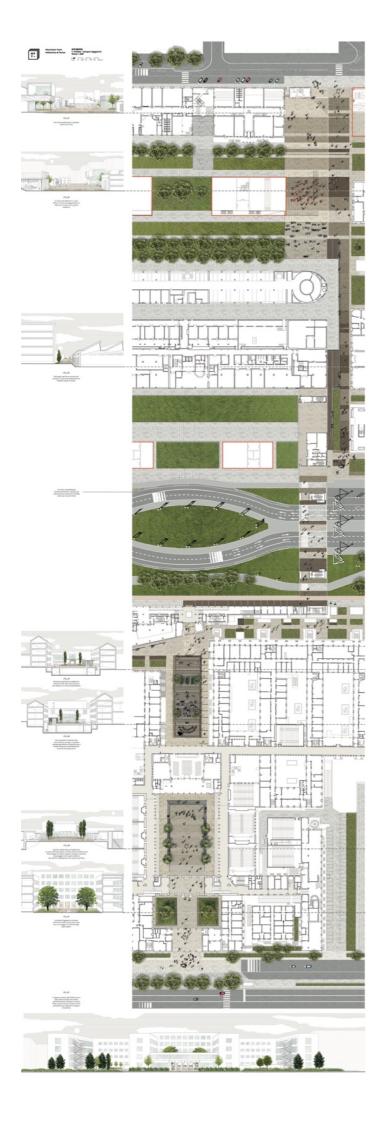
the decision of the Rector to continue with the project with more detailed efforts is then present a complex ecology that relates not only to the first episode accounted in this chapter, but that relates this one with the whole process.

The decision, as already said, is made during an informal meeting and constitutes an important basis for the further implications it has in reaching the update of the Program Agreement. As an effect is reached in the decision-making process, the consequences – that are actually the way through which the decision has been made **084** – are visualizable in a spatialization of the changes in the project, then the pavilions respond to the issue of "using" the opportunity of an underground parking to build above it, and to the will of the Rector of provide through this project services and sport areas for the university community. in the open spaces, the external stairs and the sheds' shape can be punctually reconducted to their triggering issues. To conclude, after this first agreement with the Rector it is even formalized the direct dependency of the MPT as a structure of the university from the Rector, that is the managerial figure that directly guides the practice related to the Masterplan. This choice ha implications in terms of accelerations of the process of review of the Program Agreement, indeed in a few months the general system of interrelated strategies is finalized and discussed in a Board of Directors⁶¹ – the last one I witnessed through this participation/observation to the process. Among the decisions made – and the material effects reached – in the open spaces path, further directions arise from the above-mentioned first agreement with the Rector, that even imply an opportunity to rethink the courtyards of the main location – nearby Cittadella. This can be intended as a collateral effect, undoubtedly resulted as a consequence of a general requalification of the campus' open spaces. Nevertheless, this is actually an effect of this reasoning and practice of interrelating several aspects - both in terms of problems and opportunities. Actually, a first 086-087 requalification of the main courtyard – in front of the Aula Magna – has already been realized, as a partial step of this strategy, that however counts as an assemblage of the whole conditions that allows it as a concrete effect.

6.3. An overview

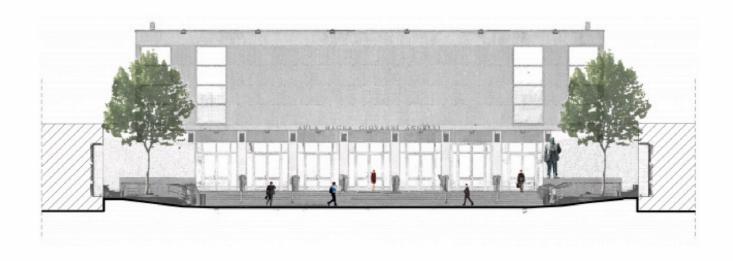
The story illustrated through this path retraces, with a focus on the project for reorganizing the *open spaces*, the overall strategy carried out in the process. Starting from the unlocking of scenarios of transformation – through the "discovery" of the residual building capacity – it directs the trajectory until the final reached decision that is intended as the end of this observation of the process – the approval of a new Program Agreement to define the transformations in the area. Such a recollection allows first of all to show how spatialization of data through the project allows to "unlock" scenarios and continue with the process. In a way, the "discovery" of a residual building capacity is not "enough" to pursue the intended effects, if it is not

⁶¹ Report of the Board of Directors (02/10/2018), University Bodies, Politecnico di Torino.



085

The project of the courtyards as an enfilade of related open spaces. Report (02/10/2018).





086-087

The project for the requalification of the Aula Magna courtyard of the main campus. Actually, the project has been realized (June 2019).

connected or problematized through the project. Architectural design and its practices appear in this sense as both embodying the whole range of issues and implications materialized in the process and instrumentally conduct the process itself in reaching the effects that it implies. The underground parking has a role, a fundamental role, and acts in the process by shifting perspectives and decisions; as well the pavilions, that embody in themselves a series of opportunities as "covering" altitude slopes problem related to the underground parking altitude slopes and guiding the alignments and axes of the rethinking of open spaces. However, all these actions, once collected, perform through the documents. It is the project and the spatialization of these data that allow the different instances to be shareable and accountable – then faceable. I would suggest that the projects have a leading role in keeping somehow the "power" of data through spatialization. Of course, the more the project is an assemblage of the collectives it implies, the more it is able to accommodate the deviations it encounters and to proceed with its travel.

Again in this case – and related to this first suggestion – the first episode in particular is related to a sort of instructory phase that, before modelling the space, model a series of networks of entities that in their interactions, brought and summed up together, allows to get a more structured and shareable account of the actions to be pursued – and make decisions "ready" to be taken. It is through spatialization of problems, irruptions and possibilities that a first awareness on the possibility related to the underground parking emerges again from a "somewhere forgot drawer" of the technical offices of the university. Sometimes the project allows then to show something that is already there, by materializing and giving form - usually visualizable form – to the complex ecology of implications it has, or it can provoke. This instructory phase is here much related to a series of operative meetings in which instances are reached, assembled, re-negotiated and continuously discussed, always merging what I mentioned as the "technical" with the "political" components of the university in combining and problematizing their relation, through the projects themselves. In this sense, the *Masterplan* project proves to be an important moment for the university, not only from a methodological point of view, but as an opportunity to make a point on issues and problems by acquiring a broad vision of data that, in such an organic way, were never been analyzed.

Moreover, the operative and more informal situations in which discussions are carried out, as a matter of punctual and specific partial instances to be recollected, have a crucial role in the process, as the context in which the artefacts circulate the most, until a moment in which they are somehow "ready" to proceed in the decision-making process to be discussed and formalized. This circular movement is clear in the second episode, where the MPT even implies before some issues and uncertainties by collecting and assemble partial perspectives into a spatialized proposal of their implications. The pavilions proposed are not – or at least not only – interesting in themselves as a matter of technical, or distribution choices made by the architect. They act and perform in reaching effects in the process since they embody and respond through their shape to a series of recognizable and crucial

issued that are, in this way, faced and even solved – when the decision is reached, and the process continues. This unpacking and then considering all the implications one by one in the project and through the project let the collective involved expand; it seems somehow against the trend of participation and collective discussion, where we all sit at a table and maybe nothing comes out. In reality, it emerges how this punctual and strategic exchanges have a leading role in settling and treating the divergences. In discussing the deployed practices in the whole process, this sort of action in stages actually emerges concretely in the produced artefacts.

Furthermore, in this path it is clear how a shift from architects to account the design process allow to trace dynamics of no linear progression, interdependencies and implications among choices, to avoid ideological interpretations and to reason on the process in terms of what architectural practices "actually do". This is important in terms of a socio-technical perspective here assumed, since this work aims even to respond and to be useful for disciplines involved in deepening and studying the way decisions are taken and reached in the process. Indeed, a plurality of entities is acting in this story – in these two excerpts of the same story actually. The interactions among these entities, assuming what has been said just before, seem not to proceed in a dynamic of free decisions of subjects that instrumentally use models and artefacts to agree and accommodate their wills in a project. Thus, the practice that is unfolded here reveals how even the free decision or will of an actor - as the Rector - has actually to be spatialized and problematized in the project to be really grasped and faced. The Rector, in this sense, is actually "treated" on the same plane than other actors – the underground parking, the building capacity – by the MPT in its practice. This means that even at a certain point of a decision-making process – in this instructory phase that can be somehow recognized in a large-scale and multi-sited process of this kind - the project itself guides and directs the assemblage of collectives necessary to reach a decision, on the basis of its peculiar ability of spatializing and give shape of all these elements. If the more formalized level of decision-making ignores this specificity, using models that do not include this "space" issue, even risk to fail in really impacting and having effects in process of urban transformations.

Nevertheless, in responding to interpretations that implies a generalized symmetry in analyzing architectural design practice, on the same basis I would suggest that this specificity of space and spatialization — as an ability of progressively composing and shaping all the instances and collectives involved — should be deepened. The projects have the role to somehow intermediate the interactions among parties, as synchronic materializations that both implies the diachronic deployment of the process until that moment, and the possible courses of action from then on. In this sense, even with the further interpretations in the following chapters, a hypothesis to follow and even strengthen is this leading role of projects — as documents — in assembling in practices these dimensions.

To conclude, in this research I follow the "threads of power" through the documents, since the effects are reconstructed through the dissemination of these threads in the different pieces that make up the process – which in my case are the project documents and the documents and transcripts related to exchanges. It can be seen in this process how decisions are dictated from time to time by some specific irruptions, which are the entities or actors that govern the choices that are made at that particular stage of the process. In this, artefacts punctually deal with irruptions and gradually negotiate with the continuously changing collective of entities implicated in practice. The reclamation issue and the costs of the underground parking, first, has blocked the project for years; in a first preliminary phase the MPT, discussing with the different actors individually, directs the choices after the "discovery" of a residual building capacity to be realized in the campus, trying to implicate all instances and carry on the project, dealing with and tackling the subsequently emergent irruptions of non-humans in the process. Then a second phase opens, I would say that of design in the more traditional sense, when the transformation scenarios have been already unlocked thanks to the project. This is where all the most technical aspects meet – the altitude slopes for the parking, the different possibilities in terms of alignments with the existing buildings in relations with the structural mesh to prepare the foundations for the pavilions. However, all these aspects are – or at least result in the interactions – somehow smoothed out by this big previous effort in the instructory phase. In this sense, I would suggest that if the process is articulated in a circulation of partial and progressive assemblages of instances – in a movement that can be envisaged as "inside-outside" back and forth in the MPT office – then it is easier even to compose the subsequent steps and to present a stronger strategy through the reports and presentations.

Chapter 7

Third path: projecting with and for others

The first plenary meeting¹ of the whole Project Team – defined to tackle the *Masterplan* and delineate strategy of development for the university – in December 2016 represents the initial opportunity to present the work in progress, as a sharing and discussion with respect "to the message [...] to send outwards from the university". The MPT presents the material shot over the previous few weeks, evoking a double nature for the working group: to outline, on one hand, a long term incremental process for the construction of scenarios and a method that the University Bodies takes to make choices; on the other, as an organism whose temporal planning depends on a series of elements in the making and contingencies - as in the case of classrooms R emergency. This double temporal and operative levels are crucial to deal with the main emergency of the lack of classrooms; indeed, it is unimaginable to meet the needs of spaces to expand the university's teaching and research possibilities within months, but at the same time it is not desirable that the resolution comes from a reduction in the number of students enrolled. The MPT have to focus, on the one hand, on the search for temporary measures and guarantee strategies in terms of classrooms spaces, on the other, on a long-term vision. Moreover, this has implications with respect to relations with external actors and in terms of the role and action power of the university in the city. Therefore, in addition to asking for more spaces, Politecnico must demonstrate feasible strategies and micro-reforms in a short time, which, despite not having spaces available immediately, show that the University Bodies are working for this. As an example, in this sense, an outdated and uneconomical reorganization of spaces within the departments – at least on the ground floor to obtain spaces for classrooms – is conceivable. Actually, at the very beginning of the process, the field of action of the working group is still unknown, which allows to build alliances and to aim for some broader objectives.³ These are the tones of the discussion, in which the project team hypothesizes – despite prefiguring these parallel work paths – at least an

¹ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

² Ibid.

³ Ibid.

orderly and linear progress to proceed. However, in a matter of minutes the Vice-Rector for Didactic joins the meeting and somehow brings back to the reality of the emergency the – until then on different levels – disquisition. Indeed, in a month the teaching plan for the next academic year has to be defined, then exists an overriding and urgent need for "at least two classrooms with 150-200 seats, in the surroundings".⁴ The problem is actually bounded and clear, even if it is not really a possibility for strategizing, if posed in this sense of responding to a contingent need. Thus, this contingent problem actually opens up a discussion in terms of possible transitional structures, as even a way to solve problems through research and experimentation on the quality of temporary spaces.

In this direction, on one hand, the MPT is rapidly directed to face another emergency and firstly tackle the issue of realizing in a short period of time this temporary solution - with the classrooms P, actually realized from another dedicated temporary project group together with Edilog. However, this is not the focus of this chapter; indeed, on other hand, the opportunity to delegate the emergency of classrooms P to another working group allows the MPT to figure it out and define a classrooms development strategy on a long-term perspective, by linking it with the "discovery" – explained and deepened in the previous chapter – of the possibility to realize further buildings in the campus area.⁵ This brings the MPT to intertwine the logic of defining a chronological development in phases for the campus to the incremental provision in terms of classrooms, in particular with the classrooms R2 project – then Learning Center. 6 Moreover, this enlargement of view to a general strategy for the campus allows Politecnico to even attract the attention from external investors interested in collaborating with the institution.⁷ As a consequence, the MPT engages here in a practice of projecting with and for other stakeholders outside the University Bodies.

The reasoning around new classrooms is completely in line with the work of recomposition and re-construction of a general needs' framework requested to the MPT from the University Bodies of Politecnico. In this sense, apart from the emergency of *classrooms R* and *classrooms P* – both solved in a somehow "outside" dynamics in respect to the whole process – actually that of the classrooms is a need that is gradually outlined through the more general work of analysis that the MPT defines around the current state and organization logic of the urban campuses of Politecnico. The issue of (!) tackling the classrooms emergency emerges clearly in MPT's practice, as a problem already grasped and operatively challenging not only in spatial terms, but also in respect to the managing profile with the Vice-Rector for Didactic.⁸ The main problem relates the number of the demand from students, that in the previous years has been double in respect to the number of

⁴ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

⁵ Plenary meeting with the Board of Directors, fieldwork and note taking (30/03/2017).

⁶ Further details will be provided in the first episode of this chapter.

⁷ Further details will be provided in the second episode of this chapter.

⁸ Operative meeting with Strategic Projects, Edilog, Didactic Vice-Rector (06/03/2017)

places available, both at the first year for Engineering and for the master's degree courses. Moreover, the timetable is already from 8.30-19.00, with some crosscutting activities – e.g. languages – up to 20.30. As a consequence, the desired objective would be to enlarge the number of enrolments, on one hand, while reducing the timetable for lessons, on other hand. The work of the MPT is then directed to the definition of comparative synoptic tables with scenarios in terms of student growth and timetables, as an essential analysis to investigate the horizon in terms of didactic in Engineering, but also as a clarification of Politecnico position when speaking with external actors – e.g. looking for spaces to rent for lessons. Moreover, in continuity with the *classrooms R* project, a possibility emerges of reasoning about a further construction of classrooms on via Borsellino – the so-called *classrooms R2.9*

The area nearby the *classrooms R* is at this moment occupied by a prefabricated building of low value, used as small classrooms – often used by students as study rooms. In this sense, it is not useful to reconstruct from an historical point of view the vicissitudes of the building, as in the *classrooms R* case; nevertheless, it is important to remind that the prefabricated building is located near the wall object of the controversy with the Superintendency, then that decision somehow relates also to the possibilities of transformation of this building. Until that moment, the planned function for the building in the "Masterplan Cittadella Politecnica" has been a micro-nursery, as a baby parking for the employees' children. Indeed, in implementation of internal welfare policies and support to the issues of work-life balance, the University intends to equip itself with a new structure in order to meet the growing need, by employees, for new accommodation spaces for their children. This requirement emerges from the awareness that the spaces currently intended for baby parking in the main campus on Corso Duca degli Abruzzi are insufficient to meet the growing demand for reception and support services for children. 11 The intervention is intended as part of an overall re-functionalization of the buildings facing via Borsellino, alongside the installation of large classrooms in the R classrooms, with the intention of transforming the area also at the urban level. This new possible interface with the spaces and the city roads actually falls away when the Superintendency requires the classrooms R to keep the existing wall; in addition, the emerging need for new classrooms within the campus calls into question the function of a micro-nursery hitherto identified after the dismantling of the adjacent prefabricated classrooms.

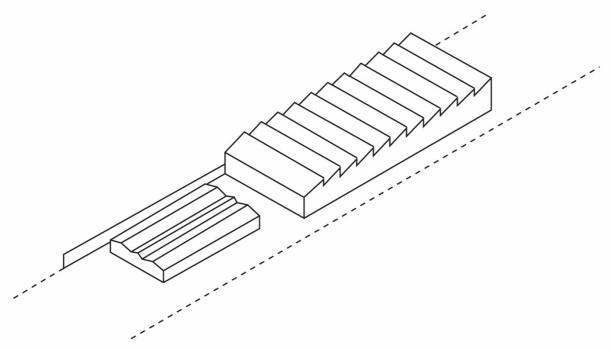
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Nevertheless, the MPT role in this process is actually to closely link the urgent question of teaching spaces to broader urban and cultural reflections, in order not to fall into the risk of a purely physical expansion strategy for Politecnico. While thinking about how to deal with emergencies, the working group has to carry out a

⁹ Operative meeting with Planning and Strategy and Edilog, fieldwork and note taking (15/03/2017).

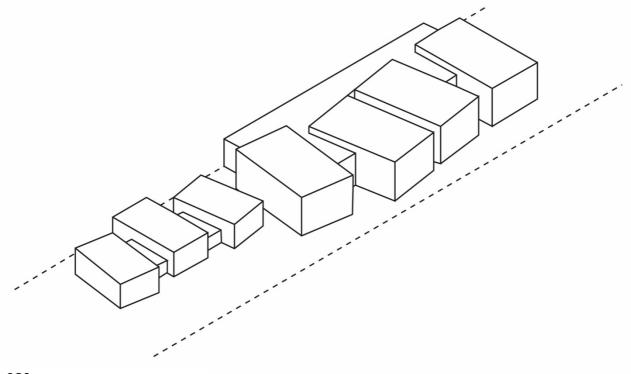
¹⁰ Program Agreement with the City (11/01/2019).

¹¹ Illustrative Relation on the former project around classrooms R, Edilog Archive (2016).



088

The former prefabricated classrooms (elaboration of the author, on the basis of the building as it was in 2016).



089

The project of a micro-nursery (elaboration of the author, on the basis of the blocked classrooms R project).

reflection on models of reuse of spaces, in order "to dismantle a layered machine". 12 The MPT effort is from here directed to the construction and de-construction of spaces according to a strategy, as the key to shift from a building expansion perspective to a spatialization and re-organization perspective, according to a precise idea of how the people live and relate. In strict relation with this view, it becomes gradually clearer as a strength to first of all develop a design strategy "within the walls" 13, and then open a debate on the external front – as local authorities and the City. Then, by starting from a reconstruction of numbers and quantities – as a very long and tiring framework of needs definition – the MPT aims at highlighting Politecnico spaces not only as a place for teaching and knowledge, but also with a role in the urban context. While reasoning as a territorial actor, with a clear and high internal capacity, the MPT opens up the possibility for Politecnico of being recognized as a public actor of political value, with consequent opportunities of negotiations and agreements in terms of investments in the City. Nevertheless, a shift in the perspective of action of this kind can even bring out actors who have not entered the game for the moment; indeed, if the university is a clear and recognized promoter on the territory, actually the power is balanced in respect to the territory itself.

The *classrooms R2* process is then deepened in the following sections by selecting some excerpts and focusing on *episodes*. Again, the whole events would have been accounted thanks to the possibility to recollect the whole categories identified the content analysis; however, the aim here is to go in depth in the inspection of some crucial episodes in which the project reaches effects. This, in respect on the abovementioned aspects related, on one hand, to the definition of a long-term strategy for classrooms' realizations; on the other, to the effective emergence of an actor that enters the game at a certain point of the process. Indeed, on the basis of this mutated perception of the role of Politecnico as an actor capable of transforming the city, the Cottino Foundation¹⁴ starts a collaboration with the university, with an (!) opportunity for external funding for a new project.

In this process, the final general effect reached through the MPT practice is the signature of a Memorandum of Understanding ¹⁵ between Politecnico and the Cottino Foundation to realize the first – at the national level – campus dedicated to impact education, with an aim of generating an "impact" culture through a new training model, that conveys the importance of social sustainability, not only environmental and economic, to reach a model for a more sustainable future. This is immediately preceded, in the previous months, by a swift work of collaboration and discussion between the Foundation and MPT, on the basis of the mutual interests in terms of new classrooms realization. Moreover, the project emerges with an emphasis on innovative spaces for learning, on one hand, and an interaction

¹² Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

¹³ Operative meeting with the Rector, fieldwork and note taking (28/03/2017).

¹⁴ More detail around the Cottino Foundation will be added in the second episode.

¹⁵ Meeting with Cottino Foundation, fieldwork and note taking (18/07/2018).





090-091Screenshots from the video that illustrates the selected episodes.

with a renovated idea of public space 16, on the other. Indeed, the Learning Center - as the classrooms R2 are defined in the discussion with the Foundation - aims at embodying a space dedicated to innovative teaching and to topics "that today are not included in the ordinary teaching of the university, like those of social impact". 17 Therefore, the Learning Center project presented for the signature of the Memorandum – even from the point of view of the conceptualization of spaces – seeks to interpret the issue of innovative teaching (J1) bringing and summing up together multiple aspects of the project such as spaces of connection and socialization, absolutely central. Moreover, in terms of urban relevance, the ambition of the project and the interest of the Foundation are linked to the idea of a new system of public spaces imagined in the future of the campus, in dialogue with the surroundings, as an opening to the City that even reflects the opening of Politecnico in collaborating with an external Foundation. This preliminary agreement comes after a period in which the MPT is strictly involved in a collaboration with the Foundation, in terms of design issues and strategies. In conclusion, after reaching this preliminary agreement among the two institutions, the collaboration proceeds with more details and even a series of substantial modifications; in this sense, this specific process actually demonstrates how sometimes a project effort does not reach the effect of being carried out, but of opening the discussion and obtaining an agreement on whether that project, or another in that direction, can be realized. The discussion around further design solution are carried out with the Foundation in the following months, also in relation with the whole Masterplan under transformation and a further official moment that establishes this collaboration is the inauguration of the Cottino Impact Campus¹⁸, temporarily host in other spaces of Politecnico. An overview to follow the two episodes is traced in this video: https://youtu.be/WxCp8kmVpb0. Moreover, they can be followed as "user" through the web tool, and in the related map in the "Appendix A".

090-091

7.1. Highlighting interdependencies among choices (<u>episode 1</u>)

The theme of spaces becomes straight away central to the future of Politecnico; in this sense, the significant and constant increase in the number of pre-enrolled students in each academic year requires profound reflections, both on the practical and feasible response to a real emergency, and on the strategical vision on what type of university Politecnico aims at being in the following years. The long-term horizon – that designing a building, or a number of buildings, requires – implies necessarily a project intended as an intertwining of strategies on different levels, both in spatial and in organizational terms.¹⁹ Until the establishment of the MPT –

¹⁶ For further information around the project of open spaces see the previous chapter.

¹⁷ During the celebrations for "60 years of Politecnico" in Corso Duca campus location, the professor responsible for the MPT presents the aims reached during the first two years of work.

¹⁸ The collaboration with Cottino Foundation is inaugurated and the Impact Campus has started (15/01/2020).

¹⁹ Plenary meeting with the Project Team, fieldwork and note taking (22/12/2016).

and even during the first months of work of the project team – Politecnico attempts to make assessments about the emergency spaces without the foresight of a project capable of overcoming this situation, while providing emergency solutions to avoid a narrowing to the limited number of enrollments. Therefore, it basically considers the possibility of temporarily renting spaces outside the current campuses. However, the "discovery" of a huge residual building capacity in the Cittadella area – as already mentioned in the previous chapter – actually overturns Politecnico position and opportunities from within. The long-term task of MPT is then to recompose a clear framework – an effort never carried on before:

[...] It would be important to have scenarios with respect to teaching, timetables and student growth, dividing between architecture and engineering. It is essential to investigate Politecnico over an at least 5-10 years horizon, for a clear position in respect to the classrooms issue, even when speaking with external bodies.²⁰

A way to answer, through the project, to the broader issue of (!) tackling the classrooms emergency (classrooms) cannot thus be separated from some further "non-architectural" analyses, as already emerged with the Didactic Vice-Rector and the technical offices of Politecnico.²¹ The MPT works here strictly in contact with the Planning and Project technical office, with an aim of intertwining a project and spatial competence, with a managing and organizational one, through design explorations. In this phase, the working team is still composed by two collaborators – a postdoc and me, as a PhD – that interact with the two in charge professors that supervise the *Masterplan*, on behalf of the Project Team, and with the abovementioned Planning and Project technical office. The first episode relates to the first year of work with the MPT and can be followed through the map – the web tool or the one in "Appendix A" – from 30th February to 20th July 2017, when the Board of Directors deliberates around the start of *classrooms R2* project explorations.

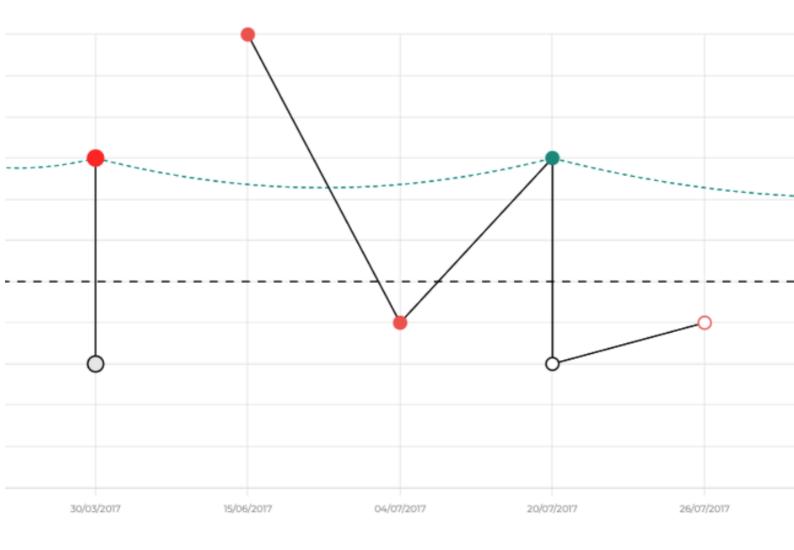
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A closer look at these intertwined strategies among offices results as an engagement in a practice of (MP2) bringing and summing up together multiple aspects of the project. Indeed, among other analyses included in the (MP2) dossier, we face the specific issue of classrooms' lack by literally recounting them, defining their size, their positions, and simulating on these bases their saturation through an evolution path. This study is faced by initially informing a simulation path considering the current base classroom set – the number of classroom spaces available – in relation to the didactic programs of the courses; by crossing these data, the saturation level of the teaching spaces is obtained.²² At that moment, several adjustments are in place to solve the classroom problem – for example by taking courses in computer rooms, laboratories, classrooms of departments.

²⁰ Operative meeting with Edilog and Strategic Projects, fieldwork and note taking (15/03/2017).

²¹ Operative meeting with Didactic Vice-Rector, Strategic Projects and Edilog, fieldwork and note taking (06/03/2017).

²² Masterplan Team, internal e-mail exchange (26/03/2017).



092-093

Above: the portion of the web map that related the episode 1. Below: the travel of practices and decisions in episode 1.

DELIBERATION (29/06/2016)

Board of Directors deliberation for an updated Masterplan

→ MP1 (22/12/2016)

bringing and summing up together multiple aspects of the project

→ MP2 (30/03/2017)

bringing and summing up together multiple aspects of the project

→ DELIBERATION (30/03/2017)

the Board of Directors asks for a review of the parking project, minimizing the lost in terms of parking lots

A1 (15/06/2017)

recollecting as-yet-unknown information

→ INFORMAL AGREEMENT (04/07/2017)

postponment of the Board of Directors due to the wrong costs

→ MP3 (20/07/2017)

consulting and relating present and past information

← DELIBERATION (20/07/2017)

MPT activities: formalization the with the City; updating the parking project; projecting the new classrooms R2; scenarios about the Cultural Centre.

Adopting this strategy almost completely solves the problem at present for small classrooms, while Politecnico is still in a critical situation with medium-large classrooms – the reason why, for example, the *classrooms R* result an urgency. Through a series of simulation scenarios, alternative strategies are brought together, starting in concrete terms from the existent spaces and proposing, on one hand, a growing percentage in students' enrollments, and reduction in the daily lesson time. However, what is the main effort in the (MP2) simulations is the further level of spatialization – and then visualization of data – intertwined with the analyses. The report, while being produced with managing and organizational aims, adds a further level as "some basic 'bricks' with dimensions [...] to be composed in scenarios".²³ This visualization in concrete terms of the diachronic changings in the classrooms' saturation aims in our practice at adequately and synthetically capturing and intertwining among choices, before envisaging and pursuing directions in tackling the (\rightarrow) classrooms issue. The arena in which the (MP2) report is exchanged and discussed is the first Board of Directors to which the MPT participates – together with the other technical offices involved in the Masterplan. This is the context in which the main "discovery" of the process takes place – as already explained in the previous paragraph; however, with a focus on the (\rightarrow) classrooms issue, it is also the first opportunity to grasp differently this task, with a re-composition and spatialization of data. During the plenary meeting, indeed, the alternative prefigurations in terms of saturation of the classrooms are further developed in terms of addition of new classrooms – by actually adding hypotheses of basic 'bricks' and looking for the changing and resolution of the classrooms emergency; in this way, the Board of Directors actually recognizes not only the problem, but even a possible resolution path, and deliberates the approval of the guidelines presented and instruct the MPT to pursue the development of the analyses in that sense.24

In the analysis of the first half of this episode, one can witness how the MPT engage with specific practices in answering to the emerged irruption of the (→) classrooms issue. Indeed, while wondering about new forms of teaching and research – that means focusing on didactic as a political reasoning about what kind of university be in the future – the MPT collects and intertwines all these instances not only into a unitary and unifying visualization and strategy; moreover, it concretizes the strategy with a practical and shareable proposal²⁵, that in fact reaches effects in the decision-making process through a recognition of the problem and then a formal deliberation. In this case, the spatialization of data – instead of tables and calculations around the same simulations – allows to establish a common language among the participants involved in the plenary meeting. This sharing of perspectives let then arise the concrete – and now estimated – need to solve the classrooms emergency. Then, the common idea reached through the spatialized

²³ Masterplan Team, internal e-mail exchange (26/03/2017).

²⁴ Deliberation of the Board of Directors (30/03/2017).

²⁵ Operative meeting with students representative, fieldwork and note taking (29/03/2017).

simulation can be intended as a result of traversing a *syntactic boundary* and the **(MP2)** report performs by *transferring* a common perceived nature of the problematic situation among participants.

Moving to the issue of (!) tackling the classrooms emergency, this lack emerges as a concrete problem, even abstract in material terms; this means that, even the problem is well recognized, it is not really defined and estimated in very practical terms – the ones necessary to tackle and solve it. In this sense, the issue could be intended as an uncertainty about working environment (UE), related to technical circumstances, and need more information to be faced, as surveys, forecasting exercises, costing estimations, further analyses in general. I would suggest that, while the issue is actually materialized and concretized through the practice of MPT, the kind of uncertainty to deal with is actually transformed in its nature. As in other cases, it is not tackled to be reduced, thus is embodied and materialized in the (MP2) practices to be accounted through interaction; moreover, by intertwining it with a further related relation to be investigated – that is the building capacity already existent in the campus – it is even transformed and tackled as an *uncertainty* about related decisions (UR), looking up and broadening the design perspective to a diachronic development of classrooms in the area. Indeed, the (\rightarrow) classrooms issue actively contributes to enlarging the MPT action and even implies a further related irruption around the need of (!) evaluating time and costs (costs)²⁶, that leads to the second half of this episode.

Coming back to the story, once achieved the objective of a common perception of the problem around the classrooms in terms of spatial opportunities, as a consequence it becomes "really decisive to discuss [...] the costs of the volumes under definition" ²⁷ with the Edilog technical offices. In this sense, after a series of explorations and solutions, the project is directed to the first realization of new classrooms inside the MPT strategy, in particular by moving from the project of a micro-nursery to classrooms exploration, for the building near the *classrooms R* on via Borsellino.²⁸ By concretizing in an hypothesis for a building, the project can be then put to the test of (!) evaluating time and costs. In collaboration with Edilog, we first of all recollect previously defined parametric cost estimation and produce several hypotheses around the realization of the new classrooms R2, by (A1) recollecting as-yet-unknown information into a report²⁹, that not only includes and materializes the (\rightarrow) classrooms issue, but also the (\rightarrow) costs related one. While keeping open alternatives, this (A1) report aims at tracing even a matter of responsibilities between MPT and Edilog. Indeed, our clear aim as project team is to apply the parametric costs identified by Edilog on our first distribution solutions and volume schemes; however, this distribution of task is not so evident, than the report embodies a need to establish how "their work is not finished with the

²⁶ Masterplan Team to Edilog, e-mail exchange (06/06/2017).

²⁷ *Ibid*.

²⁸ Masterplan Team, internal e-mail exchange (08/06/2017).

²⁹ Masterplan Team to Edilog, e-mail exchange (15/06/2017).

parametric estimates [...], but we need them to even follow the next phase of defining the costs for each alternative". 30 In this sense, we somehow trace and materialize the difficulty to reach information and collaborate with the technical offices, in order to solve it. Actually, as a result of this lack in communication and interaction, a bigger – and potentially decisive – irruption deviates the process. Indeed, an informal operative meeting is organized³¹ in the following weeks, to discuss with the General Director and the Vice-Rector for Buildings and Logistics an update of the Masterplan - in view of a further Board of Directors, in which to define the first investments. While discussing around the pursued strategies and elaborations, we actually intend the (\rightarrow) costs issue as somehow "taken for granted", due to the several – even if difficult – exchanges with the technical offices on that topic. Ours MPT supervisors actually present the linear and apparently solved path to realize the first transformations in the area, focusing the attention on the already-mentioned intertwining of opportunities and implications among choices. However, at a certain point and very close to the end of the meeting, the Vice-Rector actually focuses on a discrepancy about the defined costs; then, after a rapid check with Edilog, actually (!) the hypothesized costs result wrong (wrong costs). It is a matter of seconds, then a meeting that seemed to be finished actually deviates the whole process; indeed, as a first consequence, the Board of Directors is postponed and the whole strategy has to be evaluated again.

After dealing with an initial dramatic moment, the deviation actually results in a better coordination among the involved parties, then the MPT and Edilog re-start dialoguing – through different arenas – in defining and even adjusting the (\rightarrow) wrong costs for the next organized Board of Directors. The first big update of the Masterplan³² is finally organized, with an aim of formalizing the work done until that moment and of starting some projects, after a long and meticulous effort in recomposing the framework of needs. By referring to the classrooms R2 project, our practice in this phase is to insert it in a recollection of the whole strategy and development for the campus, in a mutual link with other projects and in particular with the projections about new classrooms' need in the next years. As MPT, we then assemble and present a report³³ aiming at (MP3) consulting and relating present and past information. In particular, the already presented simulation in terms of classrooms saturation and growth is punctually related to the building capacity development scenarios. Then, the emergency of classrooms is proposed with a resolution non only in terms of the previous basic 'bricks'; thus, it is even defined in more concrete terms, into actual buildings' proposals. Again, the lack of classrooms has always been a known problem for the Board of Directors; but so far, the matter has never materialized and spatialized in such practical terms, by punctually highlighting interdependencies among a long-term real estate strategy

³⁰ Masterplan Team, internal e-mail exchange (08/06/2017).

³¹ Operative meeting with General Director, Vice-rector, Edilog and Strategic Projects, fieldwork and note taking (04/07/2017).

³² Plenary meeting with Board of Directors, Rector and Strategic Projects (20/07/2017).

³³ Presentation of the Masterplan Team (20/07/2017).

and the emergency resolution. Moreover, the even more evident and encouraging detail is that the saturation of classrooms shifts and decreases a lot even thanks to the addition of very few didactic spaces. To conclude on this episode and as a consequence, a deliberation is made on this and the Board of Directors commissioned to design new building on via Borsellino for educational purposes to the MPT³⁴ – together with a series of further deliberations that are not strictly linked to this project and part of the overall development.

The second half of this episode allows to witness further practices in which MPT engage during the process, related with a clearly recognizable and traceable effect in the ongoing decision-making process, that is the above-mentioned deliberation. The need of defining the (\rightarrow) costs of the classrooms R2 has the main objective of showing and sharing the first moves to be pursued – even in a short time and without a huge economic commitment – to really tackle the (\rightarrow) classrooms issue with a long-term perspective and strategy. Even in pursuing a strategy, however, it is essential to start from basics but not yet known information, that is the aim of (A1) practice in defining the costs for several hypotheses of classrooms volumes. This artefact acts here anticipating the consequences of several choices in the project, both tackling the (\rightarrow) classrooms and the (\rightarrow) costs issues; indeed, the implications of different sizes and distribution of classrooms and the related costs are here explicated in their differences, in concrete terms. A specific volume actually embodies and implicates a defined cost, this artefact not only represent but translate their implications, as a way of traversing a semantic boundary and sharing the undertaken solutions in concrete terms – in this around the value of the building in different alternatives. Actually, this report travels in the multi-sited process and circulates between both MPT and Edilog offices, basically through e-mail exchanges; as in other cases, the MPT dedicates mainly to the instructory and negotiation phase, then the analyses and the technical issues are discussed and deepened with the Edilog technical offices.

A further reflection on the level of formalization of the exchanges can be added here. Indeed, MPT and Edilog have the 'limit' of working on the same project on daily basis, while not being in the same location – that means in the two different urban campuses of Politecnico. This lack of proximity actually results in difficult conditions for dialogue, with a consequence of meeting in an almost formal way every time a discussion is needed – as always having to argue with a client. Instead, as already emerged in this *Masterplan* process, the kind of informal meetings are the ones in which implications are anticipated, conflicts are solved in-the-making and deviations are shared and swiftly followed. Moreover, in a case of discussing about technical issues, this way of separating the project from its implications – in this case money and costs – even risks at completely failing. This is even more clear in the subsequent event, when the (!) the hypothesized costs result wrong and the process really is liable of being stopped. However, again the importance of informal

³⁴ Deliberation of the Board of Directors (20/07/2017).

and punctual meetings emerges again here. The irruption of the (\rightarrow) wrong costs occurs in the context of an informal exchange prior to the Board of Directors; this crucial issue comes to the surface in the informal sphere, then even in a negative sense decisive decisions – as this interruption and reprogramming of the process – often takes place precisely in such informal situations. Furthermore, this shows how these informal meetings are somehow useful even for the more general success of the process, in which the problem came out in a previous informal context, rather than emerging during the Board of Directors. In a situation like that, it could have completely stopped the process and even destabilized the role that the Project Team has assumed in the process – perhaps even dismantling the MPT.

To conclude in interpreting this episode, further consideration can be added to the (MP3) presentation, that finally the MPT is able to share with the Board of Directors by going further with the project. As in other cases, the plenary meetings are an occasion to share already negotiated issues, that the MPT and Edilog office previously discuss at least with the Vice-Rector and/or the Rector; nevertheless, the presentation artefact results as a fundamental, because it is basically the one on which decisions actually 'result' to be taken – and practically are. This presentation, in respect to the *classrooms R2* project, refers again to the emergency of classrooms saturation; however, in this case the diachronic evolution is not made of 'basic' bricks, but is spatialized in specific project. So, the previous (MP2) actually let the discussion start on this side – by sharing a common language, as said; then, the subsequent (MP3) report perform by intertwining instances on interrelated levels. Thus, this diachronic representation of concrete possibilities results in a further interpretative practice; in respect to the previous representation with 'basic' bricks, then performs transforming perspectives in concrete visual reference; in this sense, it aims at sharing a common perception and could be intended as traversing a pragmatic boundary. Then, as in other cases, at this level the presentation acts as a boundary object in the formalized level of exchange. The definition of the previous mentioned artefact is deemed necessary in order to spatialize and then share knowledge and going further with the events; effectively, the decision taken allows the classrooms R2 project to actually start its travel – in relation, as a diachronic step, with the whole Masterplan definition. By following the explorations and practices of the MPT, one can witness how actually everyday practices matter in fully understanding architectural design; indeed, it depends on a variety of implications – even failures and errors – that are embedded in the folds of this everyday effort. In this, documents are both a support and a trace of even these failures – as in the case of the wrong costs exchanged and shared just before the Board of Directors, and that deviate the process. Nevertheless, the focus on decisions – the deliberation of starting with the project – as effects of these practices allows here not only to describe how artefacts perform in the process, but also to envisage a model of action for the architect. As an example, in this case a lesson can be learnt in terms of not dividing the project from its technical, economic, procedural implications; moreover, an informal level of exchanging partial progress of the project can actually avoid bigger failures while encountering a technical

problem. Finally, this decision can be spatialized in its effects, that are actually the 094 starting point for the next steps with the classrooms R2 process; then, the emergency of the classrooms deviates the micro-nursery trajectory and completely replaces it with the first recognized and shared move that embody the long-term strategy in dealing with the lack of spaces.

7.2. The project as a practice of anticipating interests (episode 2)

After reaching the official start for the project from the University Bodies, the team engages and dedicates a big effort in defining the diachronic strategy to accompany the Masterplan to the realization. In practice, the MPT together with the technical offices involved in the process defines and proposes a step by step program to follow and to negotiate with the City.³⁵ This leads to a first operative meeting with the City in the following months, during which another "discovery" is made, since the Program Agreement through which the transformation in the campus proceed is actually expired and has to be redefined.³⁶ In this sense, the *classrooms R2* project has to be inserted in a more concrete strategy of development – starting from the hypothesized chronology already presented in the previous Board of Directors. This represents actually a huge clarification in terms of the MPT work, since the effort in re-composing and re-constructing the different needs and problems of Politecnico can be now clearly directed and organized through a strategy that recollect the space with the instances emerged through the process. Actually, even the working team is updated and composed by four collaborators – two postdoc and two PhDs – that interact with the two in charge professors that supervise the Masterplan. The Project Team is not so much involved in practice, then the main interactions of the MPT are with Edilog the Planning and Project technical office.

Focusing on the *classrooms R2* trajectory to introduce the second episode in this paragraph, the MPT reflection regards here the creation of new spaces suitable for innovative forms of teaching and research - with 'spatializing interdisciplinarity' as a slogan.³⁷ Interdisciplinarity relates here to the coexistence and parallelism with departments too, and a consequent integration and enrichment in the intertwining with research. Moreover, teaching innovation has to be linked to technology transfer and dialogue with businesses, then the project explorations should also redefine and spatialize these possible relationships. All these reflections are of course strictly linked with the general aim of qualification of open spaces explored in the previous chapter. The work is actually slow and directed on several interdependent – fronts and projects; nevertheless, at a certain moment a contingent irruption accelerates the classrooms R2 path. Indeed, an (!) opportunity for

³⁵ Operative meeting with Strategic Projects, fieldwork and note taking (26/07/2017).

³⁶ Meeting with the City, fieldwork and note taking (17/10/2017).

³⁷ Operative meeting with Strategic Projects, fieldwork and note taking (26/07/2017). Reflections on new form for teaching and researching.

external funding (Cottino / funding) emerges³⁸ and directs the reflection on a possible collaboration on topics of innovative teaching. The Cottino Foundation, among its aims, promotes indeed applied scientific research and technological innovation through multiple tools and forms of intervention, with the aim of identifying and supporting ideas and projects of high cultural profile and developing entrepreneurship and start-ups. This opportunity of funding actually doesn't subvert completely the project, since actually the vocation is still for classrooms; in the contrary, this collaboration gives a specific push and direction to the project, with a search for modern teaching in architecture and engineering field. However, an agreement has to be reached before any agreement on funding and use of the spaces start, both on the side of Cottino Foundation and in the intention of the Rector. Indeed, in the meantime the government team has changed 39 and the MPT completely depends on the Rector figure, as a reference, it is actually one of its tools for acting during the mandate. The two institutions then start a dialogue in respect to the realization of new classrooms. 40 Following the need for Politecnico of realizing new classrooms, intertwined with the search for Cottino Foundation for a place in which deploy its didactic program, this second episode focuses on the trajectory of an artefact that can be followed through the map – the web tool or the one in the "Appendix A" - from 6th June to 18th July 2017 - where a further artefact, a model, comes also into play and performs a decisive role in the process. In particular, this trajectory is indeed the one that embodies the aim of the Rector of making the Learning Center – former classrooms R2 – being the 'project of the mandate', through the signature of a Memorandum of Understanding.

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There are many arenas where architectural practice is performed, among which presentations with a client are probably one of the main examples. In the case of the *Masterplan* this is actually somehow an exception, due to the fact that the discussions and negotiations are mainly within Politecnico, projecting with others on 'the same side'; however, in some cases as in the *Learning Center* process, the MPT has to face the situation of projecting for others, in order to convince them to be actually involved in the process, or even funding it. As already illustrated in the previous episode, the lack of (\rightarrow) classrooms is from the beginning the engine that moves the MPT effort and practices. Thus, after solving – or at least calming – the emergency by authorizing the *classrooms R* and realizing the temporary prefabricated *classrooms P*, Politecnico can more slowly explore the possibilities related to further developments.

The new Rector, after envisaging the (!) opportunity for external funding, starts acting his role of directly governing the MPT work; indeed, in this phase we proceed with the development of a first project proposal for the realization of a new

³⁸ Masterplan Team, internal whatsapp exchange (04/04/2018).

³⁹ The new hierarchy defined by the Rector has been illustrated in chapter 4.

⁴⁰ Meeting with Cottino Foundation, fieldwork and note taking (27/04/2018).

Learning Center – on the site of the planned classrooms R2.⁴¹ The Masterplan actually embodies a 'tool in the hands' of the Rector and the University Bodies for the governance of the university in its relationship with the city, as an element of knowledge to start making choices. Moreover, in this specific case, the Learning Center emerges the project sponsored by the Rector within the mandate⁴², as a concrete 'object' to even land the further destinations in prevision with the Masterplan. Once received "a strong endorsement" ⁴³ from the Rector on the project, a chain of documents and production starts to be produced and travel in the process.

By following the process, a specific attention is here focused on the practice of (E1) spatializing verbal requirements into visual form. Indeed, starting from the above-mentioned interests and needs of Cottino Foundation, and merging to their requests the possibilities in terms of building capacity and classrooms saturation, we gradually materialize in plants, elevations and sections the possible *Learning* Center. This (E1) project drawings circulates and are assembled in a couple of weeks of MPT work, in a continuous discussion among collaborators and supervisors – through office work, e-mail and whatsapp exchanges. This phase depicts a 'suspended' moment in which the only constraints actually taken into account – but also the only ones already known – are surfaces and location of the project. The exchanges are mainly among the members of the project team, having in mind the main objective of convincing and involving the external actor in the process. The challenge we face here is to anticipate and promise a project able to encounter the possible – even unexpected – needs. In some sense, the process occurred until that moment actually helps defining some basic moves, and some already recognized irruptions and uncertainties can be included from the beginning; in this sense, being near the classrooms R, a known constraint is for example the request to maintain the (\rightarrow) wall on via Borsellino and a possible direction to follow the one of mixing again 'boxes' and (\rightarrow) sheds.⁴⁴ Moreover, the already defined surfaces that Politecnico needs – in a diachronic scenario – to deal with the (\rightarrow) classrooms issue are included as a datum in the project, even in respect with the whole building capacity for the Masterplan. 45 Following the travel of the (E1) project drawings, these are then exchanged in preliminary and operative meetings with the Rector other University Bodies. 46 These exchanges allow to assemble to the project further issues, as a sort of 'anticipated negotiation'; indeed, further reflections emerge – and have to be included in the project – around the need for the classrooms of being used in a promiscuous way from Politecnico and Cottino;

⁴¹ Masterplan Team to Rector, Pro-rector, Rector Delegate and Pro-rector Secretary), e-mail exchange (06/06/2018).

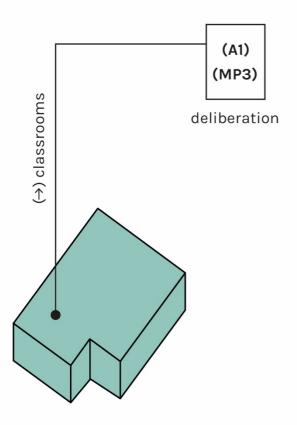
⁴² Masterplan Team office work, fieldwork and note taking (06/06/2018).

⁴³ Masterplan Team, internal whatsapp exchange (09/06/2018).

⁴⁴ Masterplan Team, internal whatsapp exchange (18/06/2018).

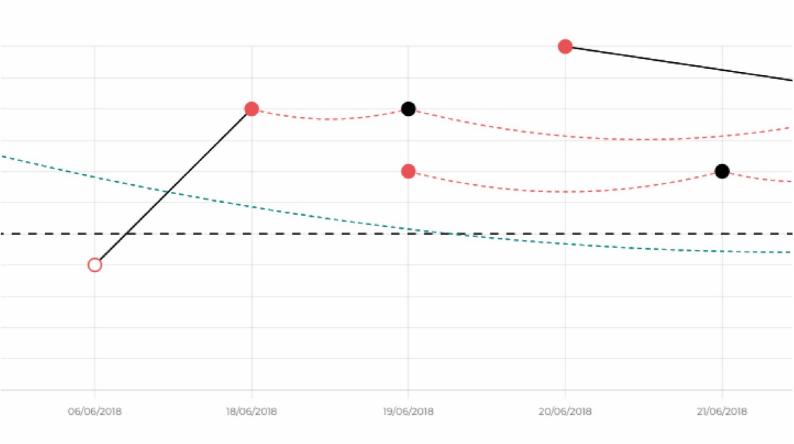
⁴⁵ Masterplan Team, internal whatsapp exchange (20/06/2018).

⁴⁶ Operative meeting with Rector Delegate, Pro-rector and Strategic projects, fieldwork and note taking (02/07/2018) and operative meeting with the Rector, fieldwork and note taking (05/07/2018).



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Above: the spatialization of a decision, related to episode 1. Below: the portion of the web map related to episode 2.



INFORMAL AGREEMENT (06/06/2018)

decision of the Rector to consider the classrooms R2 project as the project "of the mandate"

S €1 (18/06/2018)

spatializing verbal requirements into visual form

← E1 (19/06/2018)

spatializing verbal requirements into visual form

S E1 (28/06/2018)

spatializing verbal requirements into visual form

← E1 (05/07/2018)

spatializing verbal requirements into visual form

→ H1 (06/07/2018)

bringing and summing up together multiple aspects of the project

← I2 (12/07/2018)

bringing and summing up together multiple aspects of the project

← J1 (18/07/2018)

bringing and summing up together multiple aspects of the project

S INSTITUTIONAL AGREEMENT (18/07/2018)

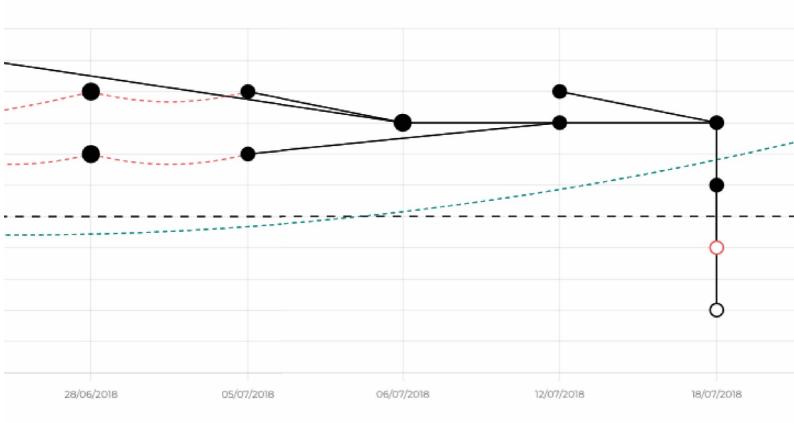
signature of a Memorandum of Understandings between the Cottino Foundation and Politecnico

SHINFORMAL AGREEMENT (18/07/2018)

Cottino Foundation agrees on the project of the MPT

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The travel of practices and decisions in episode 2.



moreover, distribution spaces should be not just distributions, however being variously used – for teaching, studying, free time – as a further innovative and hybrid character of the project. Finally, a further reflection on the (\rightarrow) Cottino / funding issue can be made in terms of opportunity, since the fact that a managing from private investors could also provide a restricted tender program and shorter times for the project to be realized. All the mentioned issues are assembled together with other documents that are here nested – with a practice of (H1) bringing and summing up together multiple aspects of the project, in order to be discussed with the client.⁴⁷ The principle from which we start in this first informal discussion with the Foundation is then the possibility of proposing a mixed use of spaces and promoting interaction and collaboration between students, teachers and external actors, through the provision of common spaces, both for work and for relaxation, with the possibility of spontaneous aggregations. Furthermore, from a spatial point of view, the objective – also visible in the plan is the development of a design idea that may vary over time. Another important element is the maintenance of the wall – as prescribed by the Superintendency – and the fact of starting from the basic phonemes of the classrooms R – the glazed shed and the theme of the classroom-boxes. Further developments of the (H1) report are included in the (12) one – that assembles other materials as renderings and three-dimensional models and can be intended as a draft of the next report – until the (J1) presentation.⁴⁸ The final part of this episode leads to the reaching of an effect in the decision-making process, through the signature of a Memorandum of Understanding among Cottino Foundation and Politecnico.⁴⁹

One last question from the journalists, one more handshake, some photo's flashes and the curtain closes. During a summer afternoon the Rector and Cottino Foundation sign the Memorandum of Understanding for the design and implementation of a Learning Center. The project is publicly presented as among the first European campuses dedicated to the promotion of a culture based on social impact in teaching strategies. Engineer Cottino, aged 91, entrepreneur and philanthropist, in 2002 gave life to his Foundation, committed to supporting and promoting a culture of social impact; then his "dream [...] becomes reality, creating the first campus dedicated to impact education". 50 In this way the internal press recounts the event, with a strong symbolic value: actually, Cottino graduated at the Politecnico in 1950, as a starting point of his long entrepreneurial career. However, nothing was really decided until a few hours before. That same morning, engineer Cottino and his collaborators are welcomed in the Room of Magnificence at Valentino Castle, on the main floor of the building that houses the Politecnico di Torino's departments of Architecture. The chosen room is frescoed with a celebration of the Savoia sovereign engaged in the construction of buildings and

⁴⁷ Operative meeting with Rector, Pro-rector, Cottino Foundation and Edilog, fieldwork and note taking (10/07/2018).

⁴⁸ Presentation of the Masterplan Team, fieldwork and note taking (18/07/2018).

⁴⁹ Signature of the Memorandum of Understanding (18/07/2018).

⁵⁰ PolitoComunica (18/07/2018).

parts of the city; and in this room the Politecnico is now deciding on the possibility of making a building with a strong symbolic and innovative value on its campus. As MPT, we have worked rapidly in less than a month to propose a project that can accommodate a future *Learning Center*. Thus, today's meeting is crucial, because our group's preliminary meetings were held with some members of the foundation, including the founder's granddaughter, the managing director and the "impact campus" project manager; but the last decision must be given by the engineer, who today sees the proposal for the first time. To welcome the elderly and impeccably elegant engineer, here are the Rector, the Pro-rector, and the professors engaged as project managers; we collaborators to the project remain standing, near a large glass table, on which we have "staged" the project presentation (J1) – the plans with drawings and renderings – and the model (J2) to which one of us worked day and night in recent days.

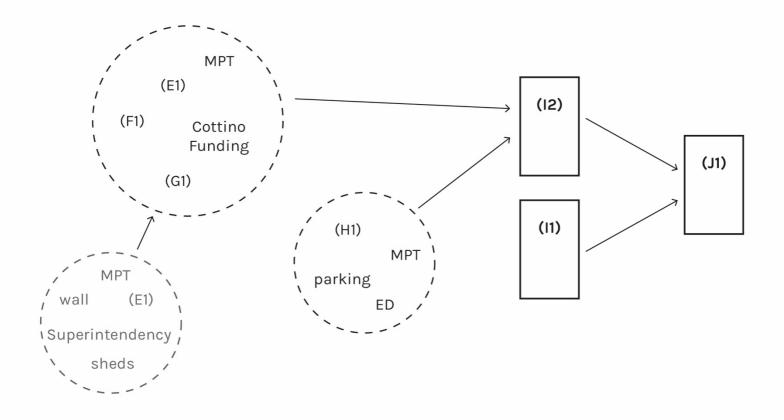
The presentation of the project is all focused to get the attention of the engineer, towards whom worried looks and smiles are alternately focused; the "bosses" underline how the project is complex and ambitious, strongly central as a position on campus and facing the city, (J1) bringing and summing up together multiple aspects of the project built with the members of the Foundation. The project is part of the interventions planned up to that time for the entire Masterplan, according to works with different degrees of development, some already procedurally ahead, others more recent. Plans are underway for a series of spaces that had also been promised in the Rector's election campaign – mentioned in the previous chapter – like the welfare spaces, to be built above the future underground parking, with services for staff and students of the University, but also possible sports spaces such as an elevated plate above these structures. This allows a rethinking of all public spaces and a large square on which the Learning Center could look out. In this sense, the project is located in a strategic and central position, on via Borsellino, at the entrance of a new public square, with an important view of a new system of open spaces. Furthermore, the theme of an internal collective space is underlined, a covered square, with quality distribution spaces - such as meeting places of planning and moments of knowledge – and around the modular didactic structures, in which each of the boxes is divisible inside creating flexible spaces for different teaching, laboratory and workshop moments.

Then it is up to the engineer to pronounce. We all remain in suspense when we hear from him: "[...] this building would not be all ours?". The engineer apparently does not see the need for promiscuity between his Foundation and Politecnico. Then the Rector intervenes, trying to re-establish the roles of the two institutions, underlining the importance of the Politecnico at the national and international level, therefore the possibility of being part of a project that is not only between the university and the city but will help the Foundation to have a central role also internationally. However, the somehow abstract idea that a project like that can

⁵¹ Meeting with Cottino Foundation, fieldwork and note taking (18/07/2018).

produce concrete effects does not seem to be enough. However, something changes when, from the angle from which we observe standing and defiling the scene, we bring to the meeting table the grand model (J2) giving material form to the project, that represents what the project will be. Then, that engineer's steely gaze changes slowly, as he begins to move and uncover the different pieces of the building. Moreover, the Rector tries to tickle something more, underlining how, creating that building, his name would be impressed on a part of the city in the years to come. And then, with that concreteness in his mind and in his hands, the old engineer smiles and we all breathe a sigh of relief. The doors open and the press conference with photographers and journalists can take place and the Memorandum of Understandings can be publicly signed.

Drawing on this episode, the analysis can start from the final event and effect, that is the institutional agreement among the two institutions involved. As in other cases, Cottino Foundation actually agrees on the project through the presentation of a report in an informal meeting; moreover, this meeting risks even to stop the process, until the model (J2) is shared as a way of more concretely experiencing and understanding the project. Moreover, the other presented artefact (J1) is a presentation assembled from several specific practices collected and discussed during the process – even with Cottino members, that is something that put together also already negotiated materials. Each part of this document, as in other cases, can be precisely traced back in its trajectory to its triggering input; moreover, this document collects and synthesizes the whole number of intertwined irruptions emerged in the process. In this sense, the practice of (J1) bringing and summing 097 up together multiple aspects of the project results as a collection of several practices held by the different artefacts that compose it. By proceeding from the starting point from which the assemblage can be defined – with the decision of the Rector of making this project as 'the project of the mandate' – the (\rightarrow) classrooms and the (\rightarrow) Cottino / funding issues are included in the practice of (E1) spatializing verbal requirements into visual form. Moreover, in its travelling in the office and with a series of operative meetings, this artefact actually can be seen as the (\rightarrow) wall and (\rightarrow) sheds issues from the *classrooms R* project. While only provisional representation of the future, not even discussed and negotiated with the Foundation, nor with the Superintendency, this anticipation is instrumental in translating and presenting the future closer, in order to negotiate and, eventually, overcome those constraints and uncertainties. I would say that this anticipation let the uncertainty being included before being reduced or tackled, then the artefact helps then traversing a semantic boundary. In being nested into the (H1) and then (12) artefact, this (E1) document is then assembled together with further documents - not the focus of this episode - aiming at (G1) proposing detailed solutions to be **tested**, in terms of surface for classrooms in relation to the problem of (\rightarrow) complying the parking law, and at (F1) concretizing the future project with visual artefacts, with the three-dimensional model and renderings of the project. In conclusion, finally falling deeply into the (J1) presentation, the document on which the decision is made and from which the effect is reached actually embodies



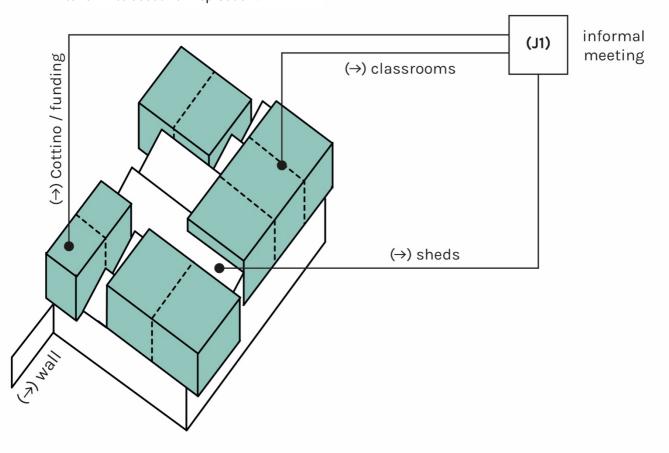
097-098

Above: the inclusion and assemblage of

different documents in one.

Below: the spatialization of the instances

taken into account in episode 2.



an assemblage of uncertainties and irruptions – the (\rightarrow) classrooms, (\rightarrow) Cottino / client, help managing a *pragmatic boundary*, concretely resolving implications by anticipating them and transforming in practical ways the possible commitments to action, during the interactions. In this sense, they *transform* perspectives into visual artefacts, to concretely deal with them. By combining all these aspects, the (J1) report, together with the (J2) model shared during the meeting act as boundary objects.

Moving to analyzing the irruptions occurred, the whole process is of course derived from the recognition of a (\rightarrow) classrooms issue, that – as already highlighted in the previous episode – is actually tackled as an uncertainty about related decisions (UR), looking up and broadening the design perspective to a diachronic development of classrooms in the area. In this way, the (\rightarrow) classrooms issue is included as an engine of the process and actively contributes to enlarging the MPT action in reasoning on different levels. By acquiring awareness on the internal possibilities and opportunities in terms of realization, Politecnico indeed attracts investors as the Foundation, then a matter of (\rightarrow) Cottino / funding actually emerges and deviates the process. In this case, the irruption of the Foundation actually implies un uncertainty about guiding values (UV), since there is a need for clearer objectives in order to verify or not the possibility of collaboration among the two institutions. It is even the reason why such a process is directly followed from the Rector, as a need for a more political response to guide the different steps and prepare the negotiation with the external actor. Nevertheless, a way of anticipating the uncertainty is still present, since a series of possible concerns – as the promiscuity or the procedure for funding the project – are actually discussed before and spatialized through the project in order to be negotiated with a further actor involved in the process. Finally, even the collateral and previously emerged issues of (\rightarrow) wall and (\rightarrow) sheds are included and contributes to the project in its spatialization.

Indeed, this movement among documents and the assemblage of the abovementioned issues in the project can be spatialized on the basis of all these traces and
as a consequence of the decision occurred in signing the Memorandum among
parties — as a reverberation of the just before occurred informal meeting. To
conclude, the consequences can be spatialized and shown in their mutual
dependency on the above-mentioned issues; then, the wall, the sheds and the
classrooms-boxes can be punctually reconducted to their triggering input,
nevertheless the flexibility of classrooms and of the common spaces can be related
to the Cottino funding issue. Indeed, in this participation I could see some crucial
points, specific design strategies and operations influencing the decision-making,
that would not otherwise be possible to see on a different scale of observation, and
that I could not have witnessed without having been in the folds of the process—
such as that smile in the eyes of the engineer, occurred through the interaction with
the very concrete and understandable model. Moreover, the press involvement
actually demonstrates how the whole complexity here accounted disappears from

an external point of view, often presented as a linear process of subsequent steps and decisions, from the cause to the consequent effect, as "the dream of the engineer Giovanni Cottino becomes reality". Then to take account precisely of the whole detours and deviations of a process, architectural design practices in the folds of this episode, and an internal situated point of view aloe to shift from this apparently linear progression, to a more accurate description of architects' actions. Nevertheless, this allows to assume a perspective on the basis of which evaluating and making considerations on the above-mentioned ways of tackling the process.

From here on, the *Learning Center* project, far from being concluded, follows then the really negotiative path, only partially experienced during the participation to the project team's work; indeed, after reaching an institutional agreement the MPT and Cottino members can go in depth in the process and defining in detail the way of building up such an innovative project. This openness is actually witnessed through (K1) considering suggestions from other projects; a practice, this, that somehow clashes in respect to the higher definition of the project reached in the just accounted episode. Nevertheless, this reveals how the MPT actually has gone 'forward' with the project to reach an agreement; the role of the architectural definition in this phase has the aim of triggering and promoting an alliance between the Foundation and the Polytechnic, through the project. Once the first negotiation step has been passed, in reality a real preliminary phase begins with respect to the actual needs and possibilities, put to the test of a punctual and planned co-design.⁵² Then, at the moment of this writing, Politecnico and Cottino Foundation have just inaugurated their collaboration – at the moment in temporary spaces – and the Cottino Impact Campus project is started⁵³; in the meantime, the project is publicly presented at the level of definition on which it is now, as it will be realized in the prevision of the 099-100 Program Agreement.

7.3. An overview

The study of this building in-the-making traces the networks of practices surrounding the *Learning Center*, that reveal the repertoire of actions and the shift in these and in the process while a big external actor enters into the game, with the potential of completely changing the course of the process. A story of this kind somehow illustrates the political valence of architecture, since it relates 'the project of the mandate' of the Rector and a sort of first major challenge for the MPT of measuring up itself with external actors to be involved in the process. However, the approach to tackle these aspects differs here from a simple narration and reinterpretation of this political identity; thus, the travel of this building is accounted through the multiplicity of entities on the scene of the process. As a consequence,

⁵² Before concluding my involvement in the project team, I participated to a series of meetings in October 2018, the basis on which the collaboration in more 'practical' terms is actually discussed. ⁵³ Celebration on Cottino Impact Campus establishment, fieldwork and note taking (15/01/2020).





099-100

Above: the celebration of Cottino Impact
Campus starting.
Below: the actual level of definition on the
Learning Center project (Program Agreement).

no linear progression is actually emerging while unfolding the everyday practices and tracing backwards the travel of a decision through the process. Nevertheless, this political relevance actually influences the architectural design practices occurred in the process, then it is recognizable a specificity in the agency and performance of documents in this context. By tracing and visualizing with maps the above-mentioned design operations embodied in this process, it is indeed possible to follow the back and forth trajectories deployed in practice.

Starting indeed from the end, a decision is reached in the process of official involvement in the *Learning Center* project, through an institutional agreement with the Cottino Foundation. This agreement actually occurs on an advanced level of definition of the project that, even in a short time, is actually assembled in order to tackle and even anticipate a number of issues emerged and here problematized. Nevertheless, in the following months the process is somehow 're-opened' to be defined in detail, as if the previously defined details have been left out once reached the agreement. Of course, I propose here an exaggeration in these terms, since in reality all the above-mentioned choices – in respect to the sheds, the classroomsboxes, the flexibility of classrooms, the common spaces – are actually maintained as a starting point. However, a further reflection can be made on the way the specific practices in this case perform in the process. Indeed, the fact that after the agreement the two institutions get to work punctually to define the specificities of the project demonstrates how previous practices have defined not so much the specific outcome, but the rules by which the specific outcome is established. Sometimes drawings – or in this case models too – even if they are materialized in and propose architectures, are not used as such to carry out that project, but to make possible and negotiate the conditions under which that or another project in that direction can be made. In this process, drawings therefore have effects in unlocking the process, rather than on the type of architecture that will be produced; I would suggest that this specificity even relates the need to convince and involve the external actor by going 'forward' with the project to reach the agreement. Nevertheless, I would add that the process, by actually including the whole number of issues emerged in the project and the entities as they emerge in practice, even doesn't fail in doing so. Indeed, you need to know how to communicate things to make sure you can do them; maybe it is less related to the material effect, but the fact that the building will even exist or not is fundamentally dependent on this phase - as a gamble, however punctually 'hooked' in practice through the traces produced and exchanged.

This process, immersing into the travel of decisions, allows to reflect again on the level of formalization of the exchange and the collective involved in the decision arenas. Again, in this case, the most important decisions and negotiations occur in a hidden – from a public point of view – and intense work that the MPT carries out with punctual meetings with several actors. In the first episode, after the emergence and irruption of the big deal of lack of space for classrooms, the articulation of the problem in its implications and possible resolutions is deployed through a series of

operative and even informal meetings, before being exchanged and formalized during the Board of directors; even the failures and conflicts emerges in this unformalized situations, that deviates and delays the process. As already mentioned, this preliminary context in which the process is instructed actually allows to create an intermediation among parties through the project, since the documents exchanged are progressively assembled and exchanged by including the new instances emerged. Moreover, while being discussed in informal and separate meetings, the emergence of conflictual viewpoints is always filtered by the architectural design practice, with the consequence that in the formal and public forums – in which things need to be formalized – they are already solved, and the process can proceed. This occurs even in the second episode here accounted, where just few hours after a potential conflict – the risk that the engineer doesn't agree on the promiscuity in the project – the public level of the exchanged is shown as linear and clean from any doubt and detour. This means that a research of this kind, while collecting and putting in relation through the maps the documents through which the process is unfolded, can actually show and narrate another story, with this internal perspective on the process.

In this sense, a further reflection can be made around the interactions occurred in the process, in its different phases. As in other cases, a role of the architect as an 'instructor' emerges here, even because the Learning Center project is strictly related to the dynamic of diachronic scenarios produced for the whole Masterplan process. In the early stages of this process, the project team collects and recomposed a never clarified before framework of needs and opportunities from the different actors involved in the process; nevertheless, in this recollection even unexpected irruptions occurred in the process, as the wrong costs shared and exchanged, or the need to comply the parking law in relation to the whole building capacity realizable in the area. In particular in the first phase – the first year – the team acquires and includes in the process partial information, problems and issues in the process, with an aim of highlighting interdependencies among choices. Indeed, an evident lack in the previously deployed strategies is in the lack of coordination and in a too much narrow view on the singular and particular 'object' - as in the case and failure of the classrooms R project blocked by the Superintendency. In this shaping of the process, I would recognize a similarity with the SCA strategy, when an effort is dedicated in highlighting and recognizing interdependencies among 'decision areas'; this recognition of a mutual link among problems to be faced actually allows to anticipate and even to better structure the process from here on. As already said, this instructory phase is long and somehow slow, indeed the second episode accounted – where something in the direction of a building realization actually starts – occurs almost a year later. Nevertheless, the instructory phase deployed before, that broadens the design perspective from the beginning, easily intertwines with the contingent opportunity of an external funding. The problem has been structured in its implications, then a swift project definition is easily proposed and negotiated to reach the goal of collaborating – again, with the characteristics of this design phase intended, as already mentioned,

as a negotiation effort to define the feasibility of the operation, more than the shape of the project in itself.

Moving to the kind of exchanges and related practices through which this process evolves, in the previously proposed interpretation it is even clear a role of projects and artefacts as intermediaries of several positions, in addition to the supporting and communication the project in itself. Thus, the project actually embodies and spatialized the progressively encountered positions in recognizable and retraceable - through the maps - terms. The punctual exchanges mentioned before again demonstrates how strategically documents can have a role in settling and grasping the conflicts. In this sense, the subsequent practices performed let emerge concretely the above-mentioned 'phase' through which the process is faced. The early stages of MPT action relate practices of recollecting as-yet-unknown information and consulting and relating present and past information, with an aim then of outlining different solutions to choose from, in this case showing interdependencies among projects. This leads to the possibility of collecting and structuring knowledge on the ongoing project while including the emergent framework of related issues that emerge. Thanks to this, the 'future' can even be concretized rapidly – in discussing with the Foundation – through visual artefacts more strongly, and spatial requirements can be translated into visual forms since they have been already grasped in the whole instructory process.

I would suggest that project related documents perform and have a leading role in the process, thanks to the specificity of space; I mean that architectural design practices have the specificity of put in concrete terms things through spatialization, by including and anticipating uncertainties in their 'effect' through designing them, or proposing suggestions that materialize the future, or visually translating otherwise intangible issues. Moreover, with an STS oriented view, this specificity allows even the non-human entities speak, since the instances they mobilized are put in practice through spatialization. In terms of architects' actions, this suggests that, far from being an effort of conceptually and abstractly deal with the project, the architect's practice should deploy and assemble documents that shape the process by which a space is defined, to reach effects in the process itself. Again, more than a generalized symmetry, documents in architectural design practices emerge as 'peculiar' kind of non-humans that somehow embodies even the instances of all the others. This is even true by referring to the situation in which these instances, in interaction, emerges in words, dialogues or even through e-mail or whatsapp. Indeed, the project is also made of these several contents, sometimes oral and informal; nevertheless, only once they are fixed in an inscribed form these further dimension can be share and taken into consideration. The power of documents actually emerges here, because it is the only way through which effects can be traced and even measured.

In concluding and in line with this need for spatialization to move forward with the process – including the deviations and irruptions occurred – a further comment can

be proposed in relation to specific visual artefacts. As emerged in other cases, the stronger document in this process is often the ones that brings and put together multiple aspects of the project, as in the case of report and presentations. This is related to the dynamics of progressively include and spatialize different emergent irruptions, since the presentation results in itself as an assemblage of several questions put together and tackled to reach a solution. The reports and presentations that MPT assemble embodied the future through a diachronic strategy, as a logical sequence of actions – derived from other documents nested in the presentation – that grasps the complexity of the process. In this sense, the most 'effectual' documents are often not typical of architectural design practice, such as this kind of strategical ones. Nevertheless, sometimes a further level of materiality can even help managing specific conflicts, as in the case of the model through which the engineer is finally convinced to be involved in the project. In this sense, a further reflection can be made – and a lesson learnt – in terms of identifying, in architectural profession, which kind of documents or artefact should be used in different situation, to act properly in the decision-making process. In any case, even the model, actually materializes - and actually spatializes - the whole range of implications emerged through the process, it is not a mere and abstract representation of a possibility; in this sense, again the importance of preparing and instructing the process during its unfolding results fundamental.

Conclusions

Architectural design practice aims at reaching effects in the process, by producing, sharing and formalizing a realizable course of action in transforming the material world. However, the strategies to deal with such an uncertain future and to give form to something not yet existent are mainly accounted in respect to the material effect in itself – as buildings – more than in the process of project production. Consequently, the main aim of the research has been an investigation - from the inside - on the role of some architectural design practices in relation to the ongoing decision-making processes, by exploring the connections between these practices and their results and effects. In this respect, STS and ANT inspired researches, as ethnographies of architecture, already define architectural design as scientific field of research, through an investigation on practices, on one hand. Moreover, PSMs informed approaches grasp the complexity of decision-making processes by exploring the relationship among the practices through which decisions are addressed and their outcomes, on the other. Nevertheless, these two literatures come together in this research as combined methods to reflect, investigate and trace the path to tackle the above-mentioned research question. In particular, framing architectural design practice in a multi-sited and large-scale process, the research adds in the field of ANT-inspired ethnography of design, with a movement that goes beyond the practice itself, in an inside-outside movement that is accounted – from an internal perspective – in the effects in decisions in the decision-making process. Moreover, this reasoning opens up to a socio-technical perspective - in understanding the decision-making level of architectural design – and to an exchange system seen in its unfolding through the whole process, to suggest PSMs to overcome the borders of intervention. Finally, in reflecting on the role of visual artefacts in the specific practice of architectural design, this research points it out a role of practices that both embody the entities unfolded in the process – as in STS view – and conduct instrumentally to realizable courses of action - as in PSMs perspective - on the basis of spatialization.

Architectural design practice and urban transformations have indeed the peculiar characteristic of relating to a space, as the final effect on which the negotiations and discussions through the project finally are configured into a form. This effort is then tackled through a spectrum of practices that aim at configuring a not-yet-known future into present configurations that tend at articulating it. Then, the practice of defining the characters of the exchange activities through the project — in unfolding the practice on the *Masterplan* and analyzing it through a mapping methodology — allows to make three contributions.

Firstly, the study adds to our understanding of architectural design practice from a *theoretical* perspective, with contributions that can be reconducted to the intertwining among disciplines, on one hand, on the basis of the specificity of spatialization in architectural design, on the other. Secondly, the definition of a mapping strategy to grasp the complexity of the research question has implications in *methodological* terms, then reflections on the effectiveness of the research methodology are accounted. Finally, as product of a practice-based research, some considerations on the *operative tool* as a way to replicate and reuse the mapping methodology allows to define directions for further research.

Projecting decisions as instructing the process

In examining the role of architectural design practices in the folds of decision-making processes, I position this research at an intersection among ethnographic accounts in architecture and strategic methods to deal with decision-making, to address an issue in defining the effects of architectural design, through research on a process of large-scale and multi-sited urban transformation. In defining a 'movement' through which the theoretical findings can be directed in their unfolding, I would suggest that this research adds first of all to a further understanding of architectural design practice in the framework of the ethnographic, STS-inspired researches. Nevertheless, in enlarging the focus of the research on an inside-outside iteration of these practices in the decision-making process, the implications of knowledge through this research even impact on PSMs methodologies. These points and this 'movement' – from STS and ethnography, to inform PSMs through this research on architectural design – are here deepened in discussing the theoretical findings.

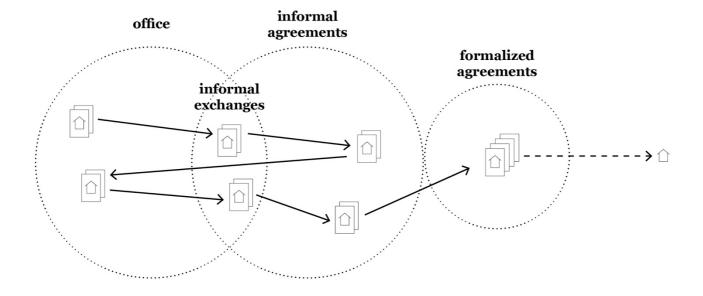
This research is in line with an understanding of architectural design as an assemblage of practices that put in relations several entities as they emerge in the process. It is already clear from STS and ANT-inspired accounts on architecture the failure of any vision of an architect intention, linearly directed to a building, with a shift on a relational view of design in its unfolding. However, this focus on design process at a large-scale of a multi-sited process, from within, adds a layer of complexity and another dimension on this relational perspective. Indeed, the inside-outside circulation of projects results in a kind of practice in which the architect – and researcher – is admitted to the whole levels of formalization of the

decision-making process. Indeed, the involvement in the re-shaping of a university masterplan actually opens up perspectives on what enters and what leaves the office, its travel from the technical to the governing offices of the university, even until the formalization and authorization process in the municipal offices. Architectural design practice emerges here as distributed across many sites and a long-term process, moreover some recurrences and evidences in this circulation movement can be identified.

Focusing not only on the decision-making inside the office, but even on the whole trajectory 'outside' it is then possible to identify an iterative – back and forth – movement of practices, as they progressively include and assemble several actors occurred in the multi-sited encountered arenas. In doing so, tracing backwards from a formalized decision – through the mapping methodology – to the practices through which the decision has been reached it is possible to actually unpack how it is assembled, and the configurations of actors that it implies. Nevertheless, this possibility of following the whole travel of decisions in a process of this kind is not yet accounted in ethnography of design in its whole unfolding – even in temporal terms, with a two years' involvement in the process.

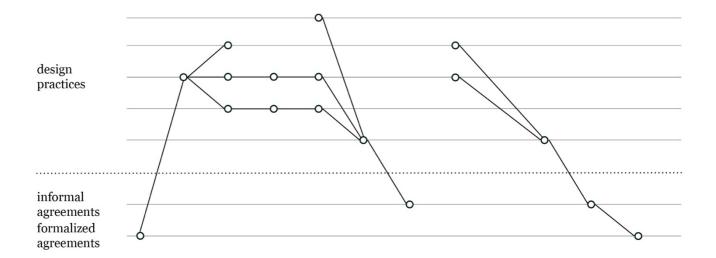
It is then possible to identify, through the selected analyzed paths, a recurrent configuration of actions in producing and exchanging through the projects. Even in accounting and narrating the processes, each project proceeds from an input concern and requirement, to be progressively addressed in what I name an 'instructory' phase in the process. This is the moment in which a major and intense effort is put in practices as showing and noticing current conditions, consulting and relating present and past information, considering suggestions from other projects, outlining different solutions to choose from, or recollecting as-yet-unknown information. In summary, these actions and practices make first of all things possible to be discussed and shared, through a series of what I define as "informal" - thus registered and accountable - meetings and exchanges on different arenas. These punctual and distributed informal exchanges actually allow to reach and assemble in the artefacts all the issues and instances progressively emerging in the process. This so-called instructory phase can even involve agreements with – some of – the actors charged of the formalized decision, as a preliminary and informal arena in which starting the negotiation and even proceeding with the project. This implies a circulation 'movement' in this instructory phase between the office and the informal arenas of exchange – not only through meetings, but also e-mail or whatsapp exchanges. Then, in some cases, the assemblage continues through an again instructory approach, however more related to a 'designing' phase, with practices of using the project to prompt further reflections, showing interdependencies among projects, proposing detailed solutions to be tested, including additional analyses on part of other experts, or even giving material form to the project.

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101 The circulation movement of artefacts inside-outside

the office.



102

The project's back and forth movement to progressively reach a formalization.

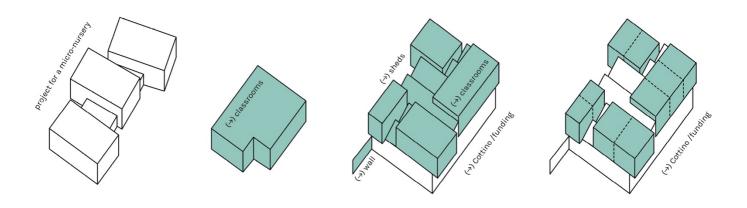
After this back and forth iterative movement of exchanges among the offices and the punctual informal arenas with several actors, the projects usually reach more 102 formalized level of exchanges, in which decisions are effectively taken. These formal and institutional arenas of sharing and discussion result actually less characterized in negotiation terms; instead, they are more evident as the moments in which an 'already decided' matter is exchanged to be validated. In general terms, it seems that the previous instruction and structuring of the process implies less negotiation in the 'real' formalized decisional forum. However, this first result can be articulated in more detailed terms.

Projecting decisions as anticipating through spatialization

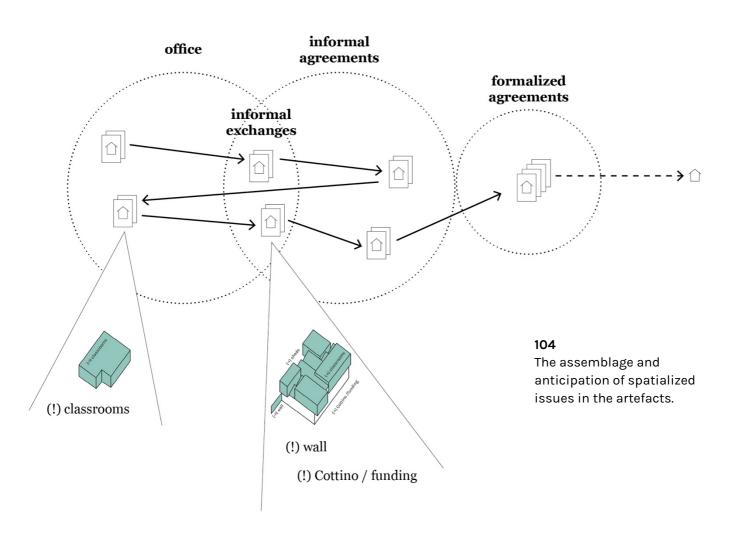
In this circulation 'movement', the punctual and distributed informal exchanges actually allow to reach and assemble in the artefacts the issues and instances progressively emerging in the process. This means that the irruptions and their implications – as materialized through arenas and exchanging practices – are included and anticipated in the practices themselves, through spatialization. On this basis, the role of architectural design practices emerges in both embodying the entities unfolded in the process, on one hand, and conducting instrumentally to realizable courses of action, on the other.

Indeed, architectural design practices have the peculiar above-mentioned characteristic of relating to a space, as the final effect on which decisions precipitate and are configured into a form. As emerged in the empirical cases, this specificity of space is crucial in making things possible to be discussed, shared and let the decisions have place. Spatialization is the main action in guiding the 'instructory' phase mentioned before. Through the progressive involvement, in punctual and distributed informal exchanges, of partial – even related – points of view on the process, their implications and connected uncertainties are then grasped as a spatialized assemblage. This means that even never before spatialized issues are put in the same terms, and in comparison, with the others, therefore problems and opportunities are related to their implications in terms of space. As a consequence, meanings and choices that accompany the project have not an autonomous value but take shape as an assemblage in the process.

Moreover, these punctual and distributed informal exchanges actually allow, through spatialization, to progressively open and expand the collective involved. Then, informal agreements have place on artefacts that, through iterative movements of partial inclusion and implication of the emerged issues, put into a form and anticipate the negotiation of the previously emerged uncertainties. This 'anticipation' occurs in proposing something to be shared and understood, before actually reaching the moment in which things have to be asserted - and formalized decisions have place. Uncertainties and problems, even contingencies that emerges and deviates the process, are introduced as a component of the 103 assemblage through the project, that is the way in which the project then answers



103
The assemblage of issues spatialized through the exchanged artefacts.



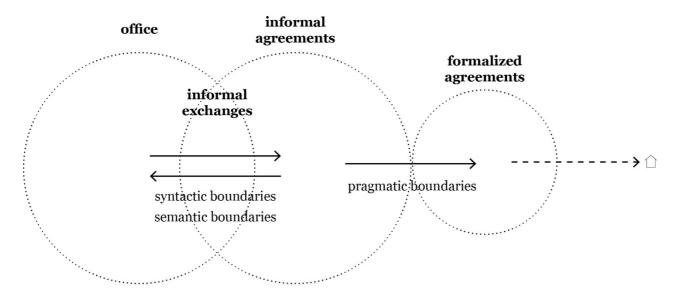
punctually to the emerged issues. The project allows these uncertainties and their implications to 'be seen' and then shared in discussion through the visual artefacts that spatialized them. In this way, irruptions actually govern, direct and deviate the process, with the project having a leading role in structuring and including the emergent issues. Indeed, the heterogeneous irruptions – humans and non-humans - are somehow filtered and concretized through the project, that has both the specific 'power' of data and that of transforming the space. This means that the whole range of entities in the collective involved is actually problematized through spatialization. In this sense, as anticipated through the empirical cases, the leading role of project documents can be seen as a shift in a view of generalized symmetry in STS-informed accounts on architectural design practices. Moreover, this practice of spatializing data linked to the specificity of space in architectural design opens up further reflection on its contribution in structuring the process. In PSMs interventions, this specificity of space is not yet accounted nor explored as a matter of better structuring the process through models. Furthermore, this 'structuring' as recognized in the whole process through punctual 'instructory' exchange, more than in the singular collective intervention, should be added as a further level of exploration in the specific case of urban transformations.

In concluding on this point, anticipating through spatialization is the governing practice of this inside-outside 'movement' back and forth, generating knowledge both in production and interaction. Moreover, it implies the negotiation and sharing on something that does not yet exist, therefore the exchange allows to spatialize states of possibility. This movement can be then intended as an unfolding of a sort of 'black box' about not yet known issued, that are gradually implicated through the artefacts and exchanged, until they are composed into a representation of a course of action on which formalized agreements can be conducted. In this, the more the artefacts manage to anticipate the uncertainties and problems in this circular exchange movement, assuming the crucial issues, the more they proceed to the formalization in the process, as they conduct instrumentally to realizable courses of action, through a composition – that is the last focus in this theoretical contribution.

Projecting decisions as composing through artefacts

To proceed to the formalization in the process, artefacts emerge in the analyzed paths as conducting instrumentally to realizable courses of action when they consist in themselves as an assemblage of distinct documents. Indeed, the empirically resulted as 'stronger' documents – the ones on which usually formalized decisions are taken – are the presentation and reports. The documents presented in collective arenas are basically strategies that bring and sum up the previous circular movement of instruction of the process, even collecting the specific assemblages of the previous exchanged documents and practices – and the related, already anticipated and negotiated, collectives.

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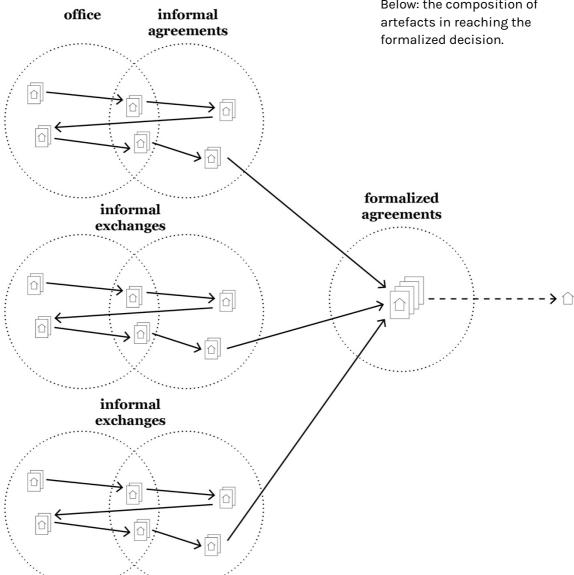


105-106

boundaries through artefacts during the process.

Below: the composition of artefacts in reaching the formalized decision

Above: the traversing of



This composition is even more clear by looking at the artefacts in the process as boundary objects – as proposed in the empirical cases. Indeed, in this circulating movement during the whole process, artefacts have been accounted as progressively performing – in relation to the represented reality – in transferring, in order to develop shared language between participants; in translating, to develop shared meanings; in transforming, with the aim to develop common interests among parties. Moreover, considering the final goal to understand and then to transform reality, this traversing of different boundaries can be referred to the different phases identified in the process. Therefore, the practice in the office 105 and the informal exchanges - through which a spatialization of the problems is progressively built – manage first of all to produce and even share awareness on the encountered issues and anticipated uncertainties. In this sense, the kind of artefacts that circulate in this instructory phase is directed mainly to transfer knowledge and to translate meanings, in order to respectively traverse syntactic or semantic boundaries. These are the artefacts through which the circular instructory movement takes place, and even the one in which failures in this process actually occur – as in the case of wrong costs, or discrepancies in the work among the project team and the other technical offices. In this sense, the punctual informal exchanges are the ones that even implies a movement backwards to the office. Then, once accounted the whole range of entities emerged, the artefacts - the ones translated in the process - are usually and progressively nested and composed into a report. These reports and presentations are the kind of document that is exchanged in the formalized arenas in which decisions are taken and proceed even outside the university, to be then validated and authorized. In this sense, these artefacts are the more related to actually transform reality, developing common interests among parties in the formalized level of decision, as a strategy, a logical sequence and a way to traverse a pragmatic boundary, taking into account the whole assemblage. In this sense, this composed artefact results as a boundary object, traversing the three kind of boundaries encountered in the process. This is possible through this nesting and composition of different artefacts, put together as they perform different roles.

This last focus on performativity of reports and presentations – as a composition of previously negotiated artefacts – highlights the role of architectural design practices in both embodying the entities unfolded in the process, on one hand, and conducting instrumentally to realizable courses of action, on the other. Indeed, through this composition of artefacts the progressive assemblage of 'already decided' matter is maintained, nevertheless it is further deployed and directed to a realizable course of action through this articulation in a set of documents, brought together in a spatialized strategy. In this sense, a movement is recognizable from a negotiation of partial instances, that progressively enlarge the collective including uncertainties and other issues, then assemble through spatialization, and finally compose in a presentation the whole amount of anticipated implications. Then, the 106 more a project anticipates its implications and composes them into a strategy, the more it seems to perform in *projecting decisions* and travels to the execution, with

consequences at a formalized level. Decisions are somehow 'already' spatialized in the artefacts; therefore, the presentation document usually coincides with an agreement and deliberation – even opening further directions. In this sense, the artefacts exchanged in this process, even before modeling the space, actually model and spatialize – even imply – the decisions in the process through which a realizable course of action is made possible.

To conclude, a further reflection can be suggested on this 'anticipated' modeling and composition of instances, and the recognition of a role for architectural design practices that progressively let them act and perform as boundary objects. This reflection actually contributes to synthetize the 'movement' – anticipated in the first lines of this *theoretical* discussion – that this research is exploring, from STS and ethnography, to inform PSMs. In summary, by enlarging the perspective of the researcher on architectural design practice in socio-technical terms, together with an aim of grasping the whole process' effects in terms of decision, this research suggests some specificities through which the decision-making process of large-scale and multi-sited transformations should be tackled. In respect to STS-informed ethnographies of architecture, this research adds the decision-making level 'outside' the office – witnessed from the inside – as the place in which investigating the effects of practices.

In doing so, the iterative movement inside-outside, the spatialization as central point in artefacts' performativity, and the composition issue as a way to conduct to realizable courses of action, even have implication in PSMs-related researches. Indeed, I would suggest that thinking about interventions as contexts of free decisions of actors that interact on modelled problematizations of reality risk – in light of this research – to miss the point and even to reach the effect, if they abstract from a reality, that is actually a space. Even in SCA, as the method used to deal with uncertain and complex urban transformations, the "space" specificity is absent from the formalized models through which the problem is represented and tackled. Through this research, I would like to propose a reflection on the specificity – even to be strengthen and deepened through further explorations – that urban transformations should imply as materialization of this "space" in the models used. Moreover, the composition issue and the temporality through which decisions are assembled to conduct to realizable courses of action could imply a suggestion, first of all, to overcome the borders of the intervention. While dealing with spatial transformations a further look at what happens and takes place in the whole process - in this circulation of artefacts and continuous opening and closing, and re-opening again through more informal and punctual exchanges – could provide a better understanding and progressive building of the terrain for decisions to be formalized. Secondly, a socio-technical perspective could be assumed not only as an instrumental way of defining the interactions among actors through models; thus, even PSMs interventions could be seen and conducted more as these assemblages spatialized of implications among entities.

About the methodology

The second contribution is *methodological* and has to do with the tools employed to grasp the complexity of the process. To investigate the role of architectural design practices in the decision-making process, this research carries out empirical research inspired by ethnography. Actually, it adopts an ethnographic perspective, without exactly conducting an ethnography. The main challenge has been to methodologically establish researcher's position, being part of the process under investigation, without missing this embodiment in practice - instead emphasizing its specificities. The provided methodology is then configured as a tool for analyzing a case of action in which the researcher is immersed. The method allows then to follow and narrate the process to capitalize an experience in operative terms; to investigate the actions carried out in architectural design practice, reaching effects in the decision-making process; to make these actions describable by identifying a tool for representing the process. In this sense, the research action on architectural design practice differs, first of all, from the practice itself in order to produce and acquire new generalizable knowledge – in the first case – with respect to the sole objective of responding to a specific and contingent request or need - in the second. In this sense, the methodological structuring of registration and formalization strategies of the work constitutes precisely the position of the researcher with respect to the object of study, as a generalizable and incremental result of research.

Architectural design practice is here followed and researched by following chains of documents to reconstruct their trajectories until the effects, to keep the course in the bundles of detours that make the action proceed. Starting from the collected data, a content analysis is the basis to recollect and to order the different paths in the process, to investigate the way projects produce effects in the wider decisionmaking process. The assumed perspective consists in a duality among design tools and founding decisions, with movements of translation or nesting of design documents, to finally reach a decision. This perspective is diagrammatically represented, and the above-mentioned chains of documents allow to graphically trace the role the projects play in the decision-making process. Furthermore, two further levels are added, the first related to the exchanges arenas in which the process is unfolded, the second as the spatialization of the strategies occurred in the process and assumed through decisions. In this way, the map acts as a model in four dimensions through which the spatialized strategies occurred in the process can be traced in their unfolding through time. Moreover, as already accounted, this allows the interpretation of the collected data by even visually underlining some dynamics as the circulating 'movement' already accounted, or the composition of artefact as they fall into a final document – the one on which decisions are formalized.

In this configuration, the map acts in different ways. It results, first of all, as an archive, to take into account the complexity of the process as a whole. Nevertheless, there is the assumption of a perspective, that is related to the

relations and exchanges between the inscriptions produced by the architects and the consequent institutive acts. The archive is then oriented to the search for actions and performativities of architectural design practices in the decision-making process. In doing so, it allows a categorization of the entities accounted as relevant in answering the research question. Moreover, it synthetically relates the practices to their effects through the spatialization of the process that diachronically follows the course of the events. Secondly, this map becomes the basis for further interpretations, since it serves to show how the design action proceeds, traced through the chains of documents. This, with the ultimate intention to identify in what points this process – even in its singularity – manifests some recursive conditions of use of the project. Finally, the map works – even to describe – like a prototype. Then, the form of description through this perspective is in itself a contribution of this research, whose reliability cannot lie in the perspective – which is subjective – but in the method with which data are interpreted.

About the operative tool

A matter of replicability of the methodology actually leads to the last contribution of this work, that consists in the realization of an operative tool. A creative artefact – a methodology to investigate the role of architectural design practices in decision-making processes – is, as above-mentioned, the methodological output of this work. Moreover, a further level that positions this research among practicebased studies is the production of a creative artefact, as a product configured as a necessary condition to fully understand the significance of the research itself. The realization of the web tool – powered, as mentioned in the thesis, by DEM Future - consists in the transpositions of the methodology in a navigational tool, as a databank with an interface for data handling. The input in building the tool comes from the already-mentioned theoretical and methodological dimensions; nevertheless, the transposition of the maps – previously built 'manually' – in an informatic language actually has implied impacts and repercussions on the definition on the methodology, as it was conceived. In this sense, the realization of the web tool contributes at refining the methodology, in the final form it is definitely purposed; even in the practice of defining the methodology, a circular 'movement' of influence and falsification has been part of the work.

In particular, it has implied reflection on the way these maps act – as mentioned in the previous paragraph. Moreover, it constitutes in itself the aim for replicability that is the ultimate goal of this research. Indeed, even if designer's action and operativity are 'in tension' in this work, the methodology actually constitutes an interpretative tool for grasping a past process – or, eventually, a present practice. Nevertheless, the replicability and usability of the web tool is aimed at generating space for future works. In relation to this, a reflection around the target imagined for this research is part of this contribution in operative terms. Indeed, as first audience of this research I see scholars interested in understanding architectural

design practice, even in its operative functioning within the decision-making process. The use of the maps, as in this research, could be directed to the same aim of defining these dynamics by following chains of documents of other processes of this kind. Nevertheless, a further aim that these maps envisage is their use in an ongoing architectural design process. Indeed, this tracing of the chains of documents while dealing with a process could be useful for an architect to capitalize the experience in the present, then even direct, from a step to another, the performativity of its practice.

Further research

To conclude, a suggestion is proposed in terms of the possibility – through the web tool – to apply a similar study and even abstract more findings in respect to other complex and similar transformations. Indeed, a further step in refining the methodology would be in challenging its flexibility in dealing with different kind of processes. This research has been conducted on a context and case-study that, besides being a real ongoing and complex process of transformation, has actually a peculiar structure that could have influenced – at a certain level – the reached findings. An aim to expand the range of case studies and the type of situations in which the methodology is applied could provide further insights in verifying the keeping of the perspective in defining the methodology. Moreover, the possibility of building the same maps on different projects, to see if they support the identified categories and dynamics, allows to focus better on the peculiarity of the decision-making in architectural design practices, that these maps highlight. Then, a further theoretical reasoning, with a process of theorization and abstraction, could also lead to design reflections and even direct designers' action. At this level, as ultimate goal, the web tool could even become the basis not only for some interpretations, but also to suggest action strategies through some generalizations. Hence, further directions of this research can be envisaged in the aim of establishing more precisely what the peculiar and connotative characteristics of architectural design practices, in the decision-making process, are, and therefore trying to develop, modify, even innovate them.

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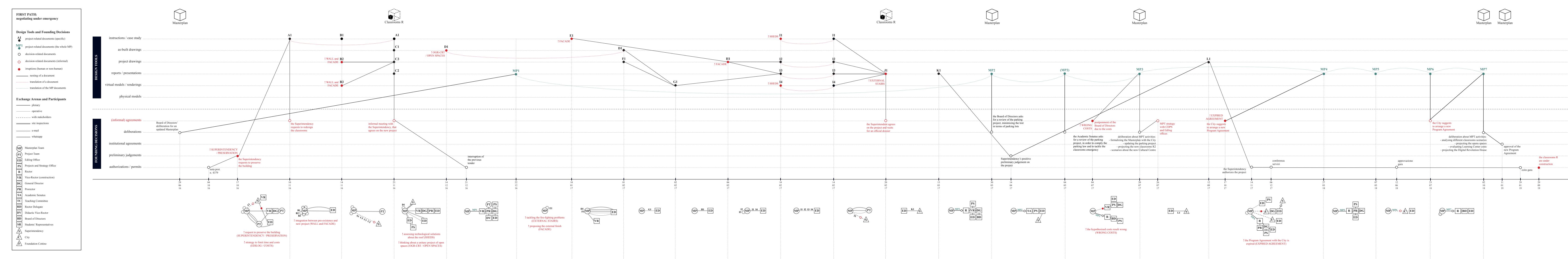
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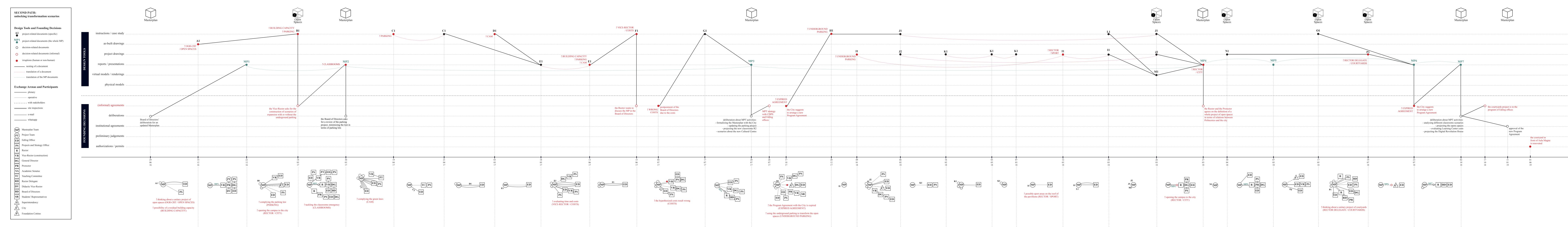
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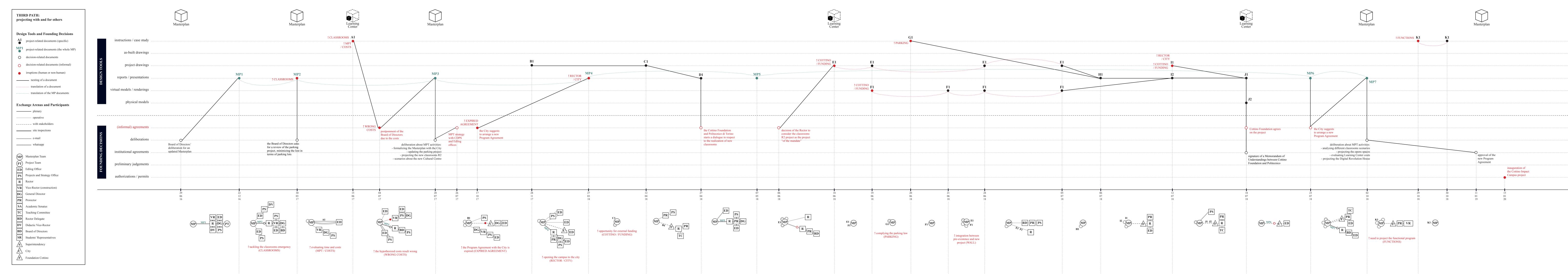
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Appendix AMAPS







Appendix B
WEB TOOL

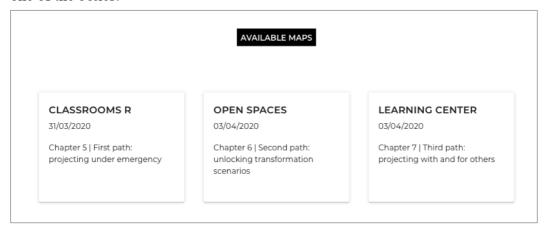
Web tool / Projecting decisions

The web tool can be used by following these instructions. The link to reach the webpage is: https://projectingdecisions.net/. This is the screen as it appears to allow the login:

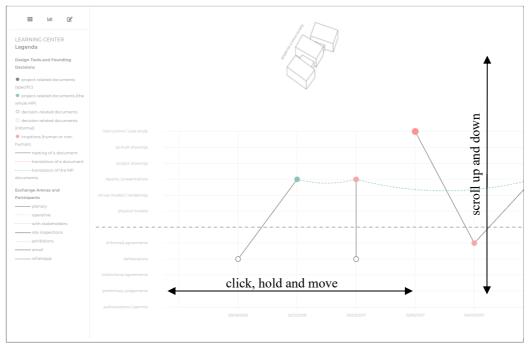


For accessing the page and the maps you have to login, by using your institutional **e-mail** – the one whereby Politecnico has contacted you as commissioner – and by inserting **committee** as password.

Once accessed, this is the screen that allows to visualize the maps, by clicking on one of the boxes:



Then, the map can be navigated with two main functions. It can be **clicked**, **hold** and **moved left and right** on the timeline, or **scrolled up and down** to alternatively visualize the spatializations – above – and the exchanges – below:



In order to facilitate the use of the maps, a series of video have been added to the thesis – and can be found in the chapters:

Chapter 3

Projecting decisions_WEB TOOL
https://youtu.be/OM2tXrMdODU
Projecting decisions_DASHBOARD
https://youtu.be/InzBOUu9aVw

Chapter 5

First path: negotiating under emergency https://youtu.be/jWjSbaLSzzI

Chapter 6

Second path: unlocking transformation scenarios https://youtu.be/fwk-zyzgWEY

Chapter 7

Second path: unlocking transformation scenarios https://youtu.be/WxCp8kmVpb0

In particular, in following the empirical chapters (5-6-7) it is crucial to visualize the video, that shows the mentioned artefacts – these are not inserted in the text – as they are linked to the web tool. Videos can even be a guide to use the web tool.

Projecting decisions is powered by the young team DEM Future involved in design, software development and consulting projects (https://demfuture.com/it/). The team is composed by Matteo Bassan and Davide B. Di Nicoli.

The web tool is based on a cloud architecture composed by a server and a client application. In the first one events, attachments, links between events and all information related to them are stored on a SQL database. This component is written in Javascript on the Node.js platform. The client, on the other hand, is a reactive application developed with the Vue.js framework and takes care of showing to the users the data retrieved through specifically defined APIs. The main interface, which consists of the actual map, is based on the chart.js library, expanded and modified to show the type of data required and the connections between the various events.

Being a Web Application, this solution allows every user to access data comfortably and immediately from any connected device; in addition, thanks to cloud storage, it is possible to avoid the loss of data, the slowdowns due to access implications and configuration typical of software run locally.

Appendix C TABLES

Content analysis

This appendix is available and loadable at the following link: https://app.luminpdf.com/viewer/5f102f14a0d2ab001bd0621b

