S+S
Spatial Design + Service Design

Annalinda De Rosa

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Descrizione opera
The book explores the implications for the design discipline, particularly in participatory design research and practices, in identifying dialogues on the relationship between Spatial Design and Service Design through a theoretical analysis of specific areas of the design research. This is the first step towards an approach defined as S+S - Service Design + Spatial Design: the book is a foundational act in this direction. The topic has been studied from a design research perspective to expand and contribute to a new gateway into Service Design, that of Spatial Design.

Beyond its political and social dimension, how does design act in its phenomenological dimension through tangible and intangible artefacts capable of intercepting, orienting, modifying, and determining the behaviour and relationships of individuals and communities? How does design – that (co)designs artefacts and visions that operate as services influencing these behaviours – interact with spaces? This research explores the relationship between spaces and services in their action in the social and political dimensions.

Profilo autore
Annalinda De Rosa, PhD in Design, is a researcher at the Department of Design of Politecnico di Milano and adjunct professor at the MSc Innovation and Technology Management of Università Cattolica del Sacro Cuore, Milan. Her research concerns the relationship between spatial and service design, specifically focusing on design-driven models for incubating innovative processes for the cultural and creative sectors to improve social cohesion through participatory design in urban and rural areas. She is a member of the Polimi DESIS Lab within the international DESIS Network (Design for Social Innovation and Sustainability). She collaborated on the research projects "Human Cities, Challenging the city scale" (2014-18) and "Human Cities / Smoties, Creative works with small and remote places" (2020-24), funded by the EU Creative Europe program; "DoCS4Design, Doctoral Courses System 4 Design" (2020-23, Erasmus+ project); and "campUS, Incubation and settings for social practices" (2014-16, Polisocial Award).

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S+S. Spatial Design + Service Design
by Annalinda De Rosa

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e-mail: clienti.editore@maggioli.it

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FOREWORD

Davide Fassi

Why look for a connection between two apparently distant disciplinary fields? We – as Polimi DESIS Lab – have asked ourselves this question several times over the past ten years. Our lab, which includes Annalinda De Rosa, focuses on social innovation and sustainability in research and teaching, operating in a variety of ways: with and for local communities – in urban contexts as well as remote ones –; within small and medium-sized companies when dealing with issues related to social responsibility; in collaboration with public administrations and the third sector; in academia, involving students and lecturers.

Our design research and design practices activities run on parallel tracks that, more often, intersect, generating unexpected results. As Annalinda called them in her book, these *collisions* have led us to investigate new areas of interest and methods to disruptively undertake academic projects to the point of questioning how to label our approach.

At the Polimi DESIS Lab, we have different backgrounds in product design, interior and spatial design, communication design, product-service system design, interaction design, and architecture. As a result of this creative variability, we have tried to go beyond the boundaries of these labels to discover new realms over the years.

Several opportunities have marked this path: *Coltivando - The convivial garden at the Politecnico di Milano* (2012), where, for the first time, we created a working group composed of designers of spaces and services and the local community; *campUS - incubation and staging of social practices* (2014), where we tried to articulate the *Coltivando* modus operandi in a broader urban context; *Human Cities - Challenging the city scale* (2018), designing some solutions in the city of Milan; *Off Campus Nolo* (2020), rooting systems at neighbourhood scale within a medium-term strategy; *Smoties - Creative works with small and remote places* (2022), where we are codifying methods and tools for the incubation of innovative solutions at the scale of the small village.

Throughout this progress by research projects, many considerations about

Davide Fassi is Associate professor in design at the Politecnico di Milano and coordinator of the Polimi DESIS Lab. He published “Temporary Urban Solutions” (2012) and “In the neighbourhood” (2017). His research concerns the relationship between space and service with a community-centred approach. He was awarded XXV Compasso d’Oro in 2018 for the “campUS – incubation and settings for social practices” project”.

the design discipline itself have come to light, prompting extensive, dedicated research. The design of spaces considering what services they can accommodate or enable and, at the same time, managing the spatial dimension when designing a service including that dimension is, in fact, a need for contemporary designers in that field.

This is a generation of designers that no longer has the vigorous dimension of the individualistic approach but that looks at the inclusion of end-users in the design process, acts as part of a team and not as a star, and breaks down disciplinary silos within a more fluid modus operandi.

S+S is the result of years of reflection through intense research, teaching, and practice in the field; it tries to provide a theoretical framework to that experimental dimension of the design of space and services that has strongly emerged in our research practices.

With this book, Annalinda has tried to overcome those light, still, resistant boundaries that often inhibit disciplinary contaminations through a design approach that involves gathering people and ideas around a table, prompting discussions and contaminations, and creating a shared and sharable language.

This is a vocabulary – made up of words, tools, methods, approaches, and applications – aspiring to become a reference in the current design landscape possibly. A trans-disciplinary foundation for an unnamed design area, situated between the design of spaces and the design of services, that finally finds its references here.

Annalinda's book comprises three main steps: a state-of-the-art of Spatial Design and Service Design, their *collisions* as mentioned above, and then that enabling leap to what she has called *S+S*. The three emerged dimensions – phenomenological, temporal, and relational – have also been explored through tests in university courses at the international level, ready to assimilate the principles of a new design approach.

I hope this work will be interesting to educators, students, researchers, and practitioners dealing with that nebulous disciplinary in-between and catalyse further *collisions*.

FOREWORD

Annalinda De Rosa

Design-driven praxis aimed at transforming spaces in relation to social and relational practices confronts design researchers with the need to develop transdisciplinary approaches. If, on one side, it is impossible to envision a space without its subject matter – encounters, relations, and interactions between human and non-human entities – on the other, any type of service designed to be part of that place relies on a spatial dimension and its material reality is inevitably influences. This assumption raises questions for the design discipline: what happens when the design of spaces and services is intertwined? How can we design the service interaction through the spatial definition? Albeit apparently simple, the relationship between Spatial Design and Service Design still hasn't been fully explored. This book aims to contribute to filling this gap by exploring the implications for the design discipline, particularly in participatory design research and practices, to identify *dialogues* on the relationship between spaces and services through a theoretical analysis of specific areas of the landscape of design research.

The aim is to start the first step towards an approach defined as *S+S – Service Design + Spatial Design*: the book is a foundational act in this direction. The topic has been studied from a design perspective and a design culture background to contribute to the first attempt towards transdisciplinarity to expand and contribute to a new gateway into Service Design, that of Spatial Design.

As a constantly evolving field, design requires a transition from an approach based on disciplines to an approach based on transdisciplinary coordination. While design practice requires designers to deal with multidisciplinarity, design education has gone through a long process of creating silos – an understandable transformation of the discipline itself. Design research needs to take a concrete step towards transdisciplinary research, which means being interdisciplinary while being able to cross borders. I don't claim that the design discipline has all the means to govern, deal with and solve such complexity; indeed, I believe that

designers are becoming more and more involved in multi-faceted milieus and, regardless of the domain, a specific transdisciplinary approach must be designed to break the boundaries and expand the approaches.
The book represents the theoretical basis of the research and questions how spaces and services correlate from a design point of view. The study originates, in fact, from the perception that services actively contribute to the definition and identification of spaces: Spatial Design encounters Service Design in urban planning and the design of workplaces, retail environments, private interior spaces, public services, and infrastructures. In this range of settings, spaces host relational entities, and vice-versa, services take place in physical environments and determine tangible outcomes. Yet, despite the strategic importance of the theme, demonstrated by S+S experimentations in design university courses and the professional design practice, the absence of coordinated design culture and the lack of theoretical developments in design research is not negligible.
The aim is thus to identify common ground between the two design branches to explore areas of differentiation and balance: these are the identified *dialogues*, disclosing the fundamentals of an S+S design and reconsidering the tangibility and intangibility of Service Design through a spatial perspective.
This is proposed through the *Qualitative Comparison* for an S+S transdisciplinary approach, aimed at breaking the silos between Service Design and Spatial Design and focusing on a framework beyond the boundaries of the two design branches. This *comparison* represents the

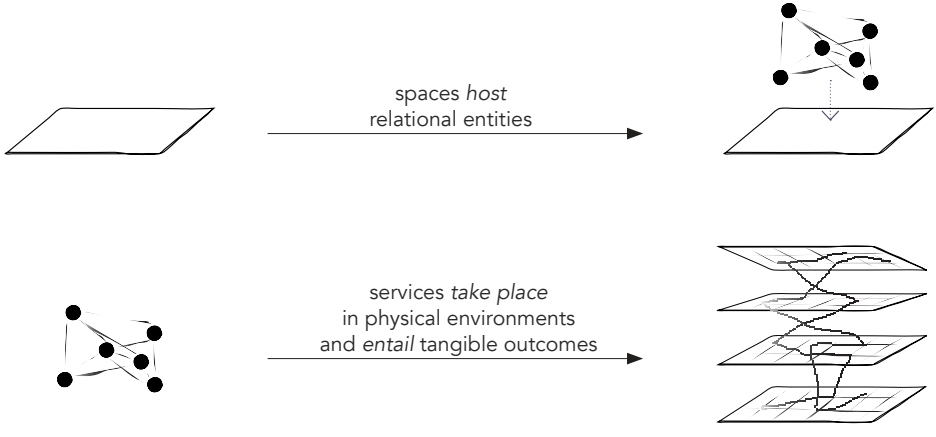


Fig. 1 – Diagram by the author

first attempt to synthesize the gaps identified between Service Design and Spatial Design, and it serves to shape and experiment with methods and tools in research projects and educational activities.
Through an S+S approach, the material reality of services is implemented, and Spatial Design methodologies can embed the consolidated methodological discourse around human-centred design in its theoretical development, avoiding the Spatial Design development being merely a frame for Service Design. The resulting Qualitative Comparison aims to outline principles for the foundation of an S+S approach. This comparison is meant to propose an abstract and more comprehensive interpretative model to start considering the contribution of Spatial Design to Service Design.
This book argues that:
• Service Design and Spatial Design share the development of the design culture towards direct and integrated cooperation between disciplines and towards a balance between socio-cultural and techno-physical environments
• Adding the service components to the design of spaces means expanding the systemic view, while Spatial Design contributes to contextualized design services
• With an S+S approach, the service designer contributes to the materiality of the relational value of services, and the spatial designer contributes to the co-production of the immateriality of spaces within a coordinated narration of actions and interactions in places
• The research identifies that an integrated design of all components avoids the Spatial Design development being merely a frame for Service Design but being an integrated part of it only if a transdisciplinary dialogue overcomes the conceptual distances.
It must be declared from the very beginning of this book that the topic launched here is strongly embedded in the international arena of design research shifts within the contemporary socio-human-economic systems and embedded in the Italian and Milanese design context. The latter has always possessed a certain distinctiveness: the fact of being constantly projected into the international panorama while maintaining a strong design culture (theories and theorists, methods, and approaches), recognized worldwide as an Italian School. While the background knowledge is outlined in an internationally based literature review, the context of the research and problem area is mainly grounded on the Polimi design research approach, and the sense itself of *spatial and interior design* is based on the evolution of the design culture in Italy, especially in the Milanese context.

INTRODUCTION

The topic originated in the research activities run by and within the author's research team, the Polimi Desis Lab.[1] This book is based on the PhD thesis in Design *S+S. Dialogues on the relationship between Spatial Design and Service Design. Disclosing the fundamentals for a transdisciplinary approach*[2], developed by the author within the PhD program in Design of Politecnico di Milano from November 2015 and discussed in February 2019.

Several direct experiences in research projects and educational activities, together with interviews with experts with both academic-based and practice-based profiles, constitute the core activities of this work. The test environments analysed during and after the doctoral activity identified a lack of a specific literature review in this topic, highlighting the absence of supportive structures that this work attempts to start framing. I have been involved in field experimentations in the urban context of Milan, applying participatory processes and co-design tools based on community-centred design. These activities involved students, researchers, and citizens organized in informal groups or local organizations. The team realized that the process of designing spaces to host activities with and for people could be greatly improved using Service Design's tools and approaches. When the uses change, so does the discipline: while changes happen in practice, a theoretical discussion lag. This awareness emerged mainly through the development of the research projects listed below:

• "Coltivando, the convivial garden at Politecnico di Milano"[3] (2011-ongoing), a collaborative project where the competencies of both spatial and product-service system designers converged. It has been developed by a team of postgraduate students, supervised by researchers and teachers, and co-designed with the local neighbourhood.

• "CampUS, Incubation and settings for social practices"[4] (2014-16), a funded interdisciplinary research project developed by the Department of Design together with the Department of Architecture and Urban Studies (DAStU) and the Department of Management, Economics, and Industrial Engineering (DIG) of Politecnico di Milano. The project's main goal has been to use the university campus as an incubator for social practices to be developed through design skills and transferred into the neighbourhood as independent actions.

• "Human Cities – Challenging the city scale"[5] research project (2014-18), co-funded by the Creative Europe Program of the European Commission. It explores how citizens constantly re-appropriate public space.

• "Human Cities / SMOTIES, Creative works with small and remote places" (2020/2024), co-funded by the Creative Europe Program of the European Commission. It examines the liveability of public spaces by using participatory design to supply processes and innovation systems in ten small European and remote places.
• Educational activities applied in real context within courses run at the School of Design, Politecnico di Milano, especially focused on temporary solutions or long-term strategies for underserved urban and rural areas to establish renewed connections and relationships among stakeholders.
In the last few years, I have focused on investigating and strengthening the theoretical implications in design research and design education in the field of S+S; therefore, the main context of my research and investigation is academic, and the main methodologies applied, grounded theory and participatory action research, have also been part of the process at a meta-level.

The book consists of three main parts: a positioning section, Chapters 1-2, framing the background knowledge in general exploration and meta-exploration. They provide the reference framework of this work within the cultura del Progetto, tracing the Italian contribution and perspective to the foundations of Spatial Design and Service Design with a proper and

well-defined cultural context and unique identity. Chapters 3-4 are the core of this work: they illustrate and propose a Qualitative Comparison for an S+S transdisciplinary approach, providing a qualitative analysis through literature (the Dialogues) and a framework for future reflections as a theoretical model. Chapter 5 presents the testing environments in the educational fields for S+S approaches and tools. The book ends with the lessons learnt and the reflections for future research.

[1] desis.polimi.it
The Polimi DESIS Lab is a research team of the Department of Design of Politecnico di Milano, part of the worldwide DESIS Network (Design for Social Innovation and Sustainability. desisnetwork.org) connecting almost 60 Labs based in more than 40 international design schools and design-oriented universities. The Lab involves a group of researchers adopting a strategic and systemic approach to design, particularly focused on design for service and spatial design, alongside contributions from strategic design, user-centred-design, design for territory, communication, economics, planning and sociology.

[2] Available on POLITesi, the Digital archive of PhD and post graduate theses of Politecnico di Milano
politesi.polimi.it

[3] coltivando.polimi.it
Cf. Fassi, D., Meroni, A., & Simeone, G. (2013). Design for Social Innovation as a form of Design Activism:
An action format. In *Social Frontiers: The Next Edge of Social Innovation Research Conference Proceedings* (pp. 14-15).

[4] progettocampus.polimi.it
Cf.: Fassi, D., Galluzzo, L., & De Rosa, A. (2016). CampUS: co-designing spaces for urban agriculture with local communities. *PAD Journal – Pages on Arts and Design, 13 (Design for Territories)*, 254-278.

[5] humancities.eu
The project is currently led by Politecnico di Milano, with nine partners acting as a multidisciplinary network: Cité du Design (Saint-Etienne, France), Clear Village (London, UK), FH Joanneum, University of Applied Sciences (Graz, Austria), Urban Planning Institute of the Republic of Slovenia (Ljubljana, Slovenia), Estonian Association of Designers (Tallinn, Estonia), University of the Aegean (Ermoupoli, Syros, Greece), Zamek Cieszyn (Cieszyn, Poland), University of Madeira (Funchal, Madeira, Portugal), Alternance SLF (Reykjavik, Iceland).

CHAPTER 01

FRAMING THE BACKGROUND KNOWLEDGE

This chapter frame the background knowledge both in terms of general exploration and meta-exploration. Since the latter has been investigated through social innovation and sustainability topics, it appears necessary to outline the ongoing process of alignment and interdependency between local and global processes to gain a basic understanding of the current scenario from a social point of view.

Thus, the following sections are meant to outline the shifts of the contemporary paradigms in the societal dimension that are reshaping the design object. These shifts are influencing the design research, practice, and education towards multi-disciplinarity, cross-disciplinarity and transdisciplinarity, analysed especially within the design education area and affected by the fundamental impact of experiential learning in higher education and its contextual and phenomenological nature.

Certainly, the research areas considered do not all encompass the redefinition of the design discipline as a (non-linear) system of knowledge and integrative (not optimized) thinking, which has a broad spread of reasons and results. However, the focus on the relationships between grassroots and top-down actions, their significant impacts on the regulatory system and the development of new collaborative models, is seen as fundamental. These external driving forces are shaping a renewed design paradigm that has taken place over the last twenty to thirty years, connoted co-design and human-centred perspectives, a participatory mind-set and public-sector innovation.

Finally, I think it is important to clarify that complexity is not a prerogative of contemporaneity: a profound change in society, industry, and business as well as the awareness of the systemic nature of reality is taking place – and has become visible – since the 1950s, causing a questioning of disciplinary boundaries and domains. Even if the overview on the evolution of SD and SpD is over the previous decades, to highlight the common viewpoint that has been sought, the issues exposed in the following sections are intentionally narrowed down to a contemporary perspective, focusing on where we are in the process of understanding the change that has occurred and is still occurring.

1.1 THE PROBLEM AREA

The literature review revealed that this topic has not previously been explored, even if many publications have explored the interdisciplinary nature of SD. For example, in their textbook on service design thinking, Stickdorn & Schneider (2011) explore the basics, tools, and cases within the discipline and, specifically, its relationships with product, graphic, interaction, strategic, social, management, and ethnographic designs. Spatial and environmental components are often underlying and cited[6] but never explicitly researched. Furthermore, and most importantly, there is an implicit and frequent misunderstanding when speaking about the spatial component since the word space prompts deeper questioning: *What is the meaning of and the differences between "space", "place" and "environment"? Does "space" only consider the physical dimension or also the digital one?*

This broad questioning around the more philosophical and etymological sense opens the door to disciplinary discourse when considering the names of design faculties, which will need further analysis: *spatial design – interior design – interior architecture – environmental design – furniture design*

In the last twenty years, SD has become more and more defined: building its specific approaches and methods (Holmlid, 2012; Kimbell, 2009; Manzini, 1993; Morelli, 2002; Morelli et al., 2021; Penin, 2018; Sangiorgi & Pacenti, 2010; Stickdorn et al., 2018); understanding its boundaries and

[6] "[...] Although services are intangible, they take place in a physical environment, using physical artefacts and do, in most instances, generate some form of physical outcome. Subconsciously, customers perceive this environment with all their senses. We see, hear, smell, touch, and taste the physical manifestation of services" (Stickdorn, Schneider, Andrews & Lawrence, 2011, p. 44).

mutual connections with other disciplines (Boland et al., 2008; Holmlid, 2009; Holmlid & Evenson, 2008; Stickdorn et al., 2011) (i.e., management, marketing innovation, service science, social/behavioural science, computing and engineering, industrial design, etc.); and being itself an already structured methodology, rich in sets of tools, within the design thinking process. Furthermore, SD received contributions in its definition from those disciplines and the design tradition, where it has been explored in the branches of strategic design, design for sustainability, and interaction design. It is important to clarify that this research is based on a design background: where it concerns the discipline of SD, the research refers to the design stream of the broader field of service science, where design thinking has been integrated into service practices, processes, and systems: *"service design is concerned with systematically applying design methods and principles to the design of services"* (Holmlid & Evenson, 2008, p. 341). In fact, service science, in turn, built its origins on different streams (Mager, 2008), being an interdisciplinary area of research in its own right. The *spatial* component has been implied within theories and practices when exploring services with physical evidence. Still, without an in-depth analysis of a direct dialogue with SpD: between the scientific communities involved, there is a lack of research on the languages, theories, and methods linking the disciplines.

These observations imply possible new scenarios to design the unfolding of services in physical spaces and open the exploration into this gap of knowledge that encounters the transformational positioning of the research in design toward contextual design (Aranda Jan et al., 2016; Lave et al., 1991), situativity theory (Greeno & Moore, 1993) and participatory actions research approaches (Björgvinsson et al., 2010; Carr & Kemmis, 2003; Star & Ruhleder, 1996), in a panorama characterized by the alignment and interdependency of local and global processes (Sassen, 2004), the impact of collaborative models on the regulatory system (Baldwin & Von Hippel, 2011, 2011; Jégou & Manzini, 2008) and the sequential shifts towards multidisciplinarity, cross-disciplinarity, and transdisciplinarity in design research, practice and education (Bernstein, 2015; Dorst, 2018; Jahn et al., 2012; Muratovski, 2010; van der Bijl-Brouwer, 2022).

1.1.1 S+S: STATE OF THE ART

As stated in the preface, the strategic importance of the research theme is demonstrated by S+S experimentations in design university courses and professional design practice.
Examples of design university courses are:
• the master programs in "Interior & Spatial Design" and in "PSSD – Product Service System Design" at the School of Design of Politecnico di Milano, where the S+S relationship between theory and practice is explored and tested in some design studios[7]
• the International Postgraduate program in "Space and Service Design" at the Thomas More University College in Mechelen (Belgium), where *"graduates are equipped with the knowledge and skills needed to design objects, furniture, and spaces to support socially oriented design projects, developing their knowledge of user-centred experiences, service contexts, and research for design."* [8]
• the Master program in Product and Spatial Design at the Aalto University School of Arts, Design, and Architecture; in 2015, a call for lecturers in Spatial and Service Design was launched by the Design Department, but unfortunately, the position, as well as the master program, no longer exists. At the Aalto School of Architecture, the research project *School as a Service*[9] is ongoing, rethinking the systemic role of the university campus and the impact of offered facilities according to flexible and cost-efficient operating models that can later be expanded and scaled to apply to other educational institutes and services. The project is exploring the service nature in the offer delivered more than in the process development, and the architectural approach is far from the spatial one previously visible
• the program of Environmental Design at Tongji University in Shanghai where, due to the double master's degree program PoliTong[10], specifically with the PSSD classes of the Politecnico di Milano School of Design, approaches, and tools of SD have been applied.

It is difficult to find cases where the SpD and SD components are treated on the same level in design projects and projects in general. Thus, finding supporting cases to prove a seamless interdependency of the two disciplinary contexts is not evident. However, in professional design practice, the need to test innovative processes for developing design ideas and projects emerges when the service and the spatial components meet.

[7] pssd.polimi.it/aimsandmanifesto/

[8] thomasmore.be

[9] aalto.fi/en/sustainability/school-as-a-service

[10] Double Degree with Tongji University in Shanghai for MSc Design students in Product-Service System Design, Interior and Spatial Design, Integrated Product Design, Communication Design and Digital and Interaction Design. design.polimi.it/en/international-area

This is the case, for example, of:

• *Studio Tilt (studiotilt.com)* in London specialised in *"breaking down the complexities of designing working environments for future-focused organisations [...] through the process of defining new workspaces with coherent narratives and identities to support creative behaviour"*[11]. Their approach started from the primary research question, *What role does space play?* trying to isolate critical elements throughout their research and practice

• *Frog Design international consultancy (frogdesign.com)*, with offices in Europe, the USA, and Asia, applying SD methods and tools for the development of private and public services and their spaces

• *DINN! (dinndesign.com)*, a consultancy working on design innovation based in Milan and Singapore. They conceive international high-end value projects envisioning brand touchpoints and experiences through branding, service design, interior & architectural design, and digital touchpoints. In an interview with the Senior Strategist Giuditta Sartori[12], she stated:

> *"Our projects are always «phygital». That's why the service component cannot be distinguished from the space. The service needs to come to life within the space, using supports and channels. At the same time, the space is enhanced and amplified through the service."*

• *Experientia (experientia.com)*, an international experience design consultancy. They design product and service strategies with expertise in UX and behavioural insights for design solutions. In an interview with the founding partner and Creative Director Jan Christoph Zoels, he stated that they

> *"Do not focus on the materials of spaces but on the behaviours occurring within a space in order to understand how a service works. Service Designers need to be better practitioners and performers, and Interior Designers need to be better thinkers and position themselves more strategically".*

Many other professionals are touching this research area in different ways, such as *Studio Wé* in Toronto, *DGI* in Milan and New York, *INNOArchitects* in Bern, *NONE Collective* in Rome, *PACO Collaborative* in Milan, *Sketchin* in Lugano, Milano, Rome, San Francisco.

To conclude this initial overview, it is interesting to highlight how until 2019, among the *Business, Technology & Design Trends* yearly released by Fjord, the Accenture design and innovation consultancy, there was a focus on a renewed attention between the physical and the digital:

[11] Groves, K., & Marlow, O. (2016). Spaces for innovation: The design and science of inspiring environments. Frame Publishers.

[12] Interview run in October 2018 by Gea Sasso, former master student of the MSc in Product-Service System Design of Politecnico di Milano. I have been Co-supervisor for her master thesis "S+S – Framing the relationship between Spatial and Service design disciplines. An explored intersection through the analysis of their process and tools" (2018).

Physical fights back (Fjord 2018)

"Digital is no longer the centrepiece of brand experience. Emphasis is shifting onto how best to use it as an invisible enabler of physical and sensory experiences. As interactions with users evolve from periodic engagements via a screen to consistent, connected experiences, organizations must create new services that are deeply integrated in the physical world. From Airbnb to Amazon, Deliveroo & Alibaba, a growing number of primarily digital brands are now placing greater emphasis on physical presence while making the most of digital & data to improve the experience. We will no longer be able to delineate between digital and physical design — they will be one and the same. This will have huge implications for brands and organizations — both in terms of how their teams are structured and how they develop products, services, and experiences. The future of service design is about blending physical and digital, and already, design specialists are responding. Organizations must put in place new systems, structures, and strategies to optimize physical experiences."

(trends18.fjordnet.com)

Space odyssey (Fjord 2019)

Work and retail spaces need a digital makeover. It's time to rethink our approaches and tools for design spaces.

The Covid-19 pandemic has strongly impacted these concepts; we are speaking about the metaverse as a new convergence of physical and digital worlds, about the repercussions for businesses of having a workforce that has been physically apart for so long, and about the renewed importance of care: self-care, care for others, the service of care and the channels to deliver care, that is both digital and physical. This overall topic is a relevant issue where design, environmental architecture, experience design, and behavioural studies are necessarily involved.

1.1.2 OBJECTIVES

The research aim is to define the fundamentals of S+S design by proposing a *framework* of this relationship. The framework is shaped as a Qualitative Comparison for an S+S transdisciplinary approach that synthetizes the gaps identified between the two disciplines through the *dialogues*, exploring the evolution of the design process as an adaptive dynamic system, the narrative dimension of the design process and the human system of interactions.
They explore a wide range of theories and aspects of the design discipline: the overall research, in fact, has not been focused on a deep understanding of a specific research area but remains on an upper level of study. This approach was necessary since the research is foundational for transdisciplinarity between SpD and SD. The *dialogues* act as converging factors in that direction, focused on mutual and reciprocal theorizing across the disciplines. The research doesn't look for an overlapping of the two fields, but it attempts to frame a transdisciplinary approach and explore alternative future developments toward cooperation among disciplines. Researching the fundamentals of S+S Design means defining supportive structures to design with an S+S viewpoint. The legacy of this work is organised through Instructor Principles within the final reflection on contributions and critiques.

The main objective looks very broad since it addresses the whole range of two design branches. Still, from one side, the research narrows down to a specific and new gateway into SD, that of SpD. From the other side, it tries to test interdisciplinarity within the broader panorama of the research, set towards transdisciplinarity.
The research, therefore, is a brand-new cross-reading of Service Design and Spatial Design.

The objectives are:
• understanding how the two disciplines connect, according to the current paradigms, and then proposing the fundamentals of an S+S approach

• setting a comparative and qualitative analysis based on the definition of critical dimensions of the two fields to assess and consolidate the transdisciplinary approach introduced and the complementarity of the two disciplines

• defining supportive structures for the S+S approach toward a comprehensive theoretical framework

The Qualitative Comparison explores the cultural dimension of design, trying to identify and highlight common ground and differentiation to frame, support, and expand the comparison between the two design branches.

1.2 THE ALIGNMENT AND INTERDEPENDENCY OF LOCAL AND GLOBAL PROCESSES

The actual social context is characterized by the active involvement of people in the transformation of their existence, acting in their environment to achieve social change. This change is *social* because people[13] are not just asking local authorities or national governments – which are responsible for that change in a top-down model – for economic, political, or social transformations in a passive and abstract way but are assuming a proactive role through the development of bottom-up activities and actions, being involved in local organizations and informal groups or through individual initiatives. These processes reveal a growing awareness of specific problems, how to tackle them and how to bring to light common values and beliefs, increasing social networks in local contexts. Activities and initiatives include various subjects, since they are related to specific concerns, but all contribute consequently to an immediate problematic situation.

What is remarkable is how the innate creativity and design capacity of human beings to invent and realize something new (Manzini, 2015) is stimulating a shift in contemporary society. The strength of this exciting, motivating force lies in the level of diffusion and in the overall impact of these transformational processes.
As Manzini states:

> *"Their diffusion and character result from the combination of two main factors. The first is, of course, the nature of the problems to be dealt*

[13] The term "people" here refers to groups of lay individuals not trained in social research, such as clients, customers, users, or citizens, according to research branches.

with on different scales, including everyday experience. The second is the pervasive diffusion of information and communication technologies and their potential in terms of organizational change. In such a situation, it is likely that a growing number of people facing a problem also see an opportunity and find a new way to solve it" (Manzini, 2015, p. 9).

The problems in question are the so-called 'wicked problems' the contemporary world is facing and which social innovation embraces, addressing specific, complex, and ever-changing issues in a diffused way, and involving multiple actors in multiple configurations of partnerships (individuals, groups, organizations, local governments, and trans-national agencies). Design, and so design research, is turning to them, addressing a system of contradictory and continuously changing elements, made of complex interdependencies. Considering the whole system of the experience means focusing on the growth of scale and complexity of design problems and, considering both tangible and intangible components of design outcomes; it also means rethinking them in the way they influence the behaviours, relations, and spaces in which they happen. The shift to a holistic approach has caused the designer to consider his/her responsibility in the social context, given the implications of design for society. Moreover, this change occurred while the social context was also transforming, being characterized by the active involvement of people in the transformation of their existence, acting in their own environment to achieve social change. Accessibility and inclusivity have become central topics nowadays, for which the human-centred approach supports design processes in achieving this goal. The design discipline embodies contemporary wicked problems, where the weakness doesn't own a negative value (as inefficiency or inability) but represents a continuous change following organic logics, diffused and diverse processes and reversible strategies (Branzi, 2006, p. 14).

The diffusion of new information and communications technologies (ICTs) gives an added meaning to the multifaceted context and the city is still the place where contemporary issues are revealed. As Castells (1996) and Sassen (2004, 2011) state new ICTs have enabled local actors to become part of global networks (Leadbeater, 2009), overcoming physical proximity in a move towards transnational spaces and networks of global cities made up of process and flow instead of physical places. In fact, they *"have enabled a variety of local political actors to enter international arenas once exclusive to national states"* (Sassen, 2004,

p. 1). This shift has enhanced a fertile context for innovation at the grassroots level, having an impact on the infrastructural level and turning into definitive structured actions, entrepreneurial projects, and institutional processes (De Rosa & Mazzarello, 2018). Thanks to the ripple effect of the *infrastructuring process* (Björgvinsson et al., 2010; Hillgren et al., 2011; Star & Ruhleder, 1996; Van Reusel, 2016), this ongoing alignment between levels – global into local and vice versa – has generated favourable conditions for innovative models to fit and operate within this context. Furthermore, there is an urgent need for designers to play an active role in addressing the wicked problems scattered among these distributed but resilient systems (Manzini, 2015, pp. 17–18). The introduction of collaborative values has been the main disruptive scenario: the bottom-up initiatives have been possible because the cultural push towards proactive engagement of people is spreading and development of the ICTs has created favourable conditions for it, becoming a critical component in most areas. This grassroots process has opened the way to innovative scenarios that have challenged the socio-technical and economic systems, demanding a more resilient infrastructure and organizational change in the system itself. Today, the context is already favourable for a systemic approach since infrastructural changes have already grown into place.

1.2.1 THE IMPACT OF COLLABORATIVE MODELS ON THE REGULATORY SYSTEM

The formation of transnational identities and communities advocates for the development of collaborative models and consumption networks (Belk, 2014; Botsman & Rogers, 2011) with the resulting impact on the regulatory system and on economic growth. This aspect is clearly connected to technological innovation and to transnational networks and flows and contributes to the growth of innovative (large-scale as well as small-scale) models and, thus, of innovative structures.

The complexity of this branching of shifts into economic, societal, and structural systems demonstrates that current changes have already grown into place and have become accessible and understandable to more people. That doesn't mean that the contemporary human-constructed systems are simpler; instead, their complexity gains in resiliency since it is continuously dependant on components and their relationships changing

constantly; resiliency has become constitutive. As Boyer et al. state:

> *"Modern society is now beginning to see – sometimes painfully – that the most critical challenges we face are also the ones which are most interconnected or systemic in nature. [...] By expanding our understanding of systemic problems, we can better appreciate the principles that govern them and the risks they pose to society" (2011, p. 19).*

Therefore, forms of collective and collaborative intelligence develop[14]: traditional methods are no longer able to deal with non-deterministic contexts and the capacity for cognitive and planning control of the individual is weakened. Complex problems are faced by experts in different aspects and with a participatory approach within an environment of diffuse knowledge; this is possible thanks to an open system and to an open network structure. The method, as we understand it, fits into closed and local systems and solutions are increasingly emerging as the result of a collective effort.

These favourable ingredients should lead to:
• investigating the cross-disciplinary nature of the discipline (Muratovski, 2016) in a co-design and human-centred perspective within diffuse design (Manzini, 2016)
• the transformational role of the designer on collective levels when engaging with multiple stakeholders and when involved in public-sector innovation, going beyond user-centred design and towards a renewed attention to design and democracy (Bonsiepe, 2006; Margolin, 2012), to agonism in co-design (DiSalvo, 2010; Hillgren et al., 2016; Munthe-Kaas, 2015) and to design for policymaking (Avelino et al., 2015; Boyer et al., 2011; Manzini & Staszowski, 2013; Mulgan, 2014; Selloni & Manzini, 2016).
• the rise of a new form of market: the sharing economy model, also referred to as peer-to-peer (P2P) markets.

As the research focuses on spatial and service aspects, these concepts have an impact on how urban contexts are affected by such changes in terms of transformation of the urban environment (physical and service infrastructuring), and in terms of uses and identities. The space of the metropolis, in its different forms and cultural identifications, is still the common ground for all contemporary artistic, sociological, psychological or aesthetic analyses and practices, and it determines the complicated relationships of today's system (Vidler, 2009). Urban contexts, in fact, are a

[14] Timothy Gowers, MIT, Center for Collective Intelligence.

theatre for important changes and challenges, and they are going through a continuous overlapping of configurations, depending on how people reclaim their use – in terms of time (temporary/medium-/long-term) and in terms of function – how people physically cross these places (new forms of mobility) and new societal dynamics. Urban spaces are not isolated entities but a complex system of places, activities, events, initiatives, and actions that happen at the border between ephemeral – all that has a short life – and provisional:

> *"An event originally intended for a medium-short term but which, for various factors whether external or internal to its provisional nature in itself, moves into the medium-long term" (Fassi, 2012, p. 38).*

Spontaneous or more designed actions modify the urban experience and influence the citizens' everyday life, eliciting social and behavioural change. More widely, the urban territory can be seen as a permeable denationalized platform, activated by multiple interventions and inter-related actions,
and thus, able to accommodate a collaborative platform. Sassen (2004) speaks about the ascendance of sub- and trans-national spaces and actors, facilitated by the weakening of the restrictive formal power of states over national regions. This geography of local networks activating multiple *"micro-spaces of daily life"* depicts a holistic system in which even marginal locations can become part of global networks and spread their influence. These changes are influencing the design research, practice, and education towards crossdisciplinarity, and are affecting higher education with an experiential learning approach.

Summing up, the introduction of collaborative values has generated a disruptive scenario: the bottom-up initiatives have been possible because the cultural push towards proactive engagement of people is spreading and development of the ICTs has created favourable conditions for it. This scenario has already been assimilated in the western context: these values are no longer disruptive but have now been assumed, and the sharing models are no longer unprecedented but have become embedded in the contemporary context. This has been possible because bottom-up initiatives have evolved into more mature forms of organization, supported by P2P information exchanges and *"by different kinds of intervention from institutions, civic organisations, or companies (top-down interaction)"* (Manzini, 2015, p. 82). The western system incorporates the attributes of the contemporary citizen/user, scaled up by putting at the centre of the change – or, more accurately, by being willing to put at the centre of the change – all the actors of the urban structure in a

systemic and integrated way: local authorities, administrations, innovative companies, territorial actors, the third sector and representatives of active citizenship.
Therefore, designers must play an active role in addressing complex issues. I don't claim that the design discipline possesses all the means to govern, deal and solve such complexity; indeed, I believe that designers are getting more and more involved in multi-faceted milieus and, regardless of the domain, a specific transdisciplinary approach must be designed to breaking the boundaries and expanding the approaches. Design, as a field that is constantly evolving, requires a transition from an approach based on disciplines to an approach based on transdisciplinary coordination.
Design methods are able *"to advance public and social innovation and achieve creative solutions beyond the reach of conventional structures"* (Mulgan, 2014, p. 1), providing a strategic approach to complex systems of things. Design research is progressively focused on the role of design as an activator of change: assuming that *"all we do, almost all the time, is design"* (Papanek & Fuller, 1972, p. 17) and that everybody designs (Manzini, 2015), "design is an act of deliberately moving from an existing situation to a preferred one by professional designers or others applying design knowingly or unknowingly" (Fuad-Luke, 2013, p. 5). These well-known statements shape the scenario that design studies and design thinking methodologies are approaching, pinpointing the considerable debate around the boundaries of design and the role of designers in the 21st century. Design, as a process for achieving change, embodies activism as a form of shifting to new paradigms and values.

1.2.2 THE PHENOMENOLOGICAL NATURE OF DESIGN

The focus of this book is not on the *object* of the design in terms of a solution-oriented discussion, but it refers to the *cultura del progetto* in which the *culture of the objects* is situated[15]. The phenomenological nature of design finds its disciplinary origin in the influence of phenomenological approaches on environmental psychology, trying to explore the ecological context of behaviour that was being neglected by traditional psychology.

> *"The study of human behaviour and well-being in relation to the socio-physical environment, emerged during the 1960s as the result of both*

[15] "By «products» I mean the human-made material and immaterial objects, activities and services, and complex systems or environments that constitute the domain of the artificial" (Margolin in Buchanan & Margolin, 1995, p.122). This definition recognizes the «project» as a «plan», that could be linked to the Italian concept of ***Cultura del Progetto*** (i.e., Italian design culture or Culture

scientific and societal concerns" (Stokols & Altman, 1987, p. 1)

It has an interdisciplinary orientation, since the professional support for environmental psychology are found in the broad fields of architecture, urban planning, geography, urban sociology, public health, natural resources management, and organizational behaviour (Stokols & Altman, 1987, p. 2). The built environment was then involved in this area of exploration and a phenomenological approach has had a strong impact on architecture and design disciplines evolution, being focused on

> *"a comprehensive study of the lifeworld, that is the world as it is lived and experienced, in which humans perceive and act and of which they are constitutive parts" (Graumann in Bechtel & Churchman, 2003, p. 97)*

Research in design therefore assumes a phenomenological perspective, that is, of observing the reality of the project to derive general rules and principles, which, however, continuously evolve together with the adopted point of view and the context of reference. Predictably, this perspective called for prejudices from the positivist sciences, in the greater debate between quantitative and qualitative methodologies of research that invested the major disciplinary shifts of the last century towards phenomenological, constructivist and participatory paradigms. A phenomenological perspective refers to a relativistic conception of culture that places each culture in relation to its space-time context, with neither claiming a hierarchy of validity between different cultures. This conception has been established in the contemporary scientific mind-set since the Lévi-Strauss ethnography studies in the 1930s. This change in perspective was fundamental and has influenced many disciplinary domains since then, in the overall turn from a positivistic and deterministic view to an epistemology of praxis, that considers the design act as a reflexive conversation with the materials of a situation. It is a reflexive conversation since, in response to the situation, the designer reflects along the action on the construction of the problem, on the strategies of action, or on the implicit phenomenological models (Schön, 1987, p. 103). The turn to the dimension of the reflexive experience as the main tool of knowledge – both in terms of theoretical design practice as in terms of applied design practice – moved in parallel with the influences of social sciences approaches, and in particular to Participatory Action Research, which is not only a methodology but a design shift in itself. In fact, participatory design is nowadays a core value of design thinking, by affecting its practice and identity, methods, and approaches within an established – but still to be fostered – participatory mind-set and a behavioural change in society (institutions, local and global organizations) and complex socio-technical systems.

of the project) which refers to the idea that the act of designing is a mode of thinking and building a dialogue with the present challenges, owning a cultural value in the broadest sense (symbolic, aesthetic, social, political), far beyond design as solely «solutionism». Maurizio Vitta in *The Meaning of design* (1985) states that "this phrase is meant to suggest the totality of disciplines, phenomena, knowledge, analytical instruments, and philosophies that the design of useful objects must take into account, inasmuch as those objects are produced, distributed, and used in the context of economic and social models that are ever more complicated and elusive" (p.3).

Participatory Action Research is a methodology employed in various fields and settings and its terminology underlines a variety of approaches and interpretations: action research, collaborative inquiry, emancipatory research, action learning, contextual action research, co-operative design, joint application design, are only some of the terms used. From these emerges the basis of this methodology, highlighting its constitutive assumptions.

First, Participatory Action Research originates in the social sciences, contributing in a transformed manner

> *"both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously" (Gilmore et al., 1986, p. 161).*

It involves researchers, practitioners, and people in general (who), through collaboration, inclusion and social action (how), for a planned organizational change to solve real problems (why). Therefore, Participatory Action Research is applied to real, specific contexts, and sees the active engagement of both the researcher and the traditional object of social research: people. The process of the action itself – cyclical, iterative and adaptable to changing circumstances – is much more relevant than its output, since it deals with continuous co-learning and adjustment. Action research is in fact about learning by doing, through considering/reconsidering data, conditions, standpoints, and procedures in the dynamism of human action, in dialectic exchange between theory and practice, subject and object.

The object I am talking about is a complex system composed of:

- space (a specific and defined place, area, or territory)
- time (a specific period, time range of/for action)
- people (specific groups, communities, citizens).

These three main aspects are strongly connected one to the other, so defining the context of the action that requires combining many elements in a new way and a change in mind-sets.

In design research, the level of participation and involvement are widely discussed. Participatory Action Research, as mentioned above, has its origin in social sciences and the research around this topic has been and is still extensively examined and analysed. The user-centred approach was acquired by the design discipline and later developed into co-designing with the user: a human-centred design approach. Co-design has been defined by (Sanders & Stappers, 2008, p. 6) as a way *"to refer to the creativity of designers and people not trained in design working together in the design development process"*. Creativity is defined as the capacity to contribute and participate - in different ways – in a design

process. Human-centred design (HCD) scales up to community-centred design (CCD) (Meroni, 2007) when facing complex systems of challenges dealing with groups and communities at society scale, in order *"to create innovative new solutions rooted in people's actual needs"* (IDEO.org, 2015, p. 9). Design research addresses a system of contradictory and continuously changing elements made of complex interdependencies. How are the knowledge and expertise of a participatory research approach transmitted to designers in their education? The changing landscape has influenced, as stated, the evolution of design research and, obviously, has had an impact on design practice, since new professional profiles are always required and, therefore, renovated business, industry and consultancy are influencing the education in design models. Since the contribution of design methods and design thinking is increasingly recognized as fundamental to facing social and public policy challenges, there is a need for the students' capacity to see possibilities, to carry out problem solving, to adapt methods of ethnography and to prototype approaches that allow fast, collaborative creation of systems and services and, therefore, to be strategic (Mulgan in Boyer et al., 2011). Experiential learning and informal learning are nowadays fundamental in higher education and a silo-breaking process is necessary.

To conclude, the current landscape of design research related to the issue explored has been framed within the changes concerning the contemporary world. Why is this connection essential or even considered as existing? Does the design discipline concern such a wide range of scope? I believe that design has no defined object but, rather, has a multi-faceted subject matter since it deals with continuously evolving and expanding contexts, and with possible worlds. The design object is shifting away from fixed and defined entities (technology-centred) to processes and complex living entities (human-centred), i.e., to a systemic view and impact on the cultural, social, economic and physical dimensions (Brown, 2009; Buchanan, 1992; Krippendorff, 2005; Manzini, 2015). The design discipline deals with the project as a solution for the physical world as well as the added cultural value it carries in the socio-cultural world (Manzini, 2016, p. 55). All their changes have an impact on design research and practice on different levels. In fact,

> *"Design today is no longer about designing objects, visuals, or spaces; it is about designing systems, strategies, and experiences." (Muratovski, 2016, p. 138).*

That is why speaking about the main issues of the contemporary shifts is considered here as a major point in framing the emerging S+S design approach.

1.3 THE DESIGN OBJECT AS A COMPLEX SYSTEM

As stated, the objective is to question the complexity of the design object (and not of the design objects), and within a design discipline background to search for a transdisciplinary foundation, explored through the influence of ethnography studies, situativity theory and participatory action research.

The notion of design object in this book refers mainly to the reflection by Buchanan in *Design Research and the New Learning* (2001). Here the author – tracing the origins of modern design research in western culture, referring to Galileo, Bacon and others, through the development of modern thought about nature, modern physics, sciences of mechanics and humanism – states that *"we are returning to the humanism that is required for a firm understanding of design"* (2001, p. 4)[16]. As illustrated later in section 2.4, the design discipline has been lagging behind in its disciplinary formation and was not included in the theoretical development of architecture and remained outside universities, being included in the fine arts approach since, generally, *"theory was highly prized in the universities, practice was tolerated, and production or making [...] was generally ignored as a subject of learning"* (2001, p. 5). The Italian situation in the last century outlined above showed the impact of the division between the artistic and humanistic side of any design practice – merged into the academies of beaux arts – and the more scientific and technologic one, melded into engineering sciences. In the debate that flourished after WW2 (cf. 2.4), the current

[16] In this paper, based on a presentation at the conference "Researching Design: Designing Research" held at the London Design Council in March1999, Buchanan is exploring the value of design research in universities specifically with the main North American and British points of view. However, since based on the history of the modern western culture, it is a valuable reference for my purposes, as it is also linked to the specific Italian context previously illustrated.

dialectic was still evident that brought the influence of system theory and operational approaches applied to architecture and design, before the reconsideration of a cultural and humanistic re-balance. Buchanan explores the changing conception of the *product* of design, not in the sense of the physical object of course, but as orders that are

> *"a place for rethinking and reconceiving the nature of design [where] places [are meant] in the sense of topics for discovery, rather than categories of fixed meaning" (2001, p. 10).*

The four orders defined are:

• Symbols: central in the establishment of the profession of graphic (communication) design that, independently from the medium, deals with the communication of information in words and images

• Things: central in the establishment of the professions of industrial design. It concerns the creation and production of tangible and physical things

The evolutionary process of the design discipline then turned its attention to the living experience of human beings, focusing on the impact of visual symbols and physical artefacts as forms of actions:

• Action: central to the establishment of the professions of interaction design that is *"how human beings relate to other human beings through the mediating influence of products. And the products are more than physical objects. They are experiences or activities or services, all of which are integrated into a new understanding of what a product is or could be"* (2001, p. 11)

• Thought: deals with environments and systems, not as systems of things but as human systems: the integration of information, physical artefacts, and interactions in environments of living.

Within his framework, what is interesting for my purpose is enclosed in these sentences:

> *"We can only experience our personal pathway through a system. And in our effort to navigate the systems and environments that affect our lives, we create symbols or representations that attempt to express the idea or thought that is the organizing principle. The idea or thought that organizes a system or environment is the focus of fourth-order design. Like interaction, a new focus on environments and systems — which are where interactions take place — has strongly affected design thinking and design research in the United States and in many other parts of the world" (2001, p. 12).*

This point supports the understanding that the design object has shifted from defined categories to a complex system the experience of the

human beings depends. Before narrowing down this through the lenses of SpD and SD, the theoretical background outlined so far towards a transdisciplinary approach is based on the analysis of the converging factors defining the current landscape of design. The attention on the shift of the object of design towards complexity plays an important role because, in order to face the complexity of the environment, it is necessary to build a complex decision-making system, a strategic and systemic vision that takes into account the changed scientific paradigms (which change the models of rationality) and the evolution of technologies (which support the project activity) (Crespi & Schiaffonati, 1990, p. 10). That opens the way to a renewed design culture in the range of ways of thinking of design, which span from a deterministic view (Pandza & Thorpe, 2010), to a reflective one (Schön, 1987), within a post-industrial era that is the scene of societal challenges, changes and actions, dominated by new emergences (individuals to sharing communities), new dominant structures (hierarchies to networks), and new design approaches (technology-centred to human-centred) (Krippendorff, 2005). In fact,

> *"We shifted to a global, information-based economy and society that asks design to be a multidisciplinary, committed to conceptualisation, configuration, and implementation of meaningful social environments, products, services, systems and brands" (Muratovski, 2010, p. 381).*

The current shifts in the social and economic sphere inevitably affect design practice and hence design research and design education towards social commitment, a real evidence basis and a participative approach, focal area of this work.

CHAPTER 02

THE EVOLUTION OF THE DESIGN PROCESS: SPATIAL DESIGN AND SERVICE DESIGN

by Gea Sasso

2.1 SPATIAL DESIGN

> *"It is necessary to upgrade the designers' way of thinking too. Designers often deny or reject this extraordinary opportunity to experiment with new logic and operative dimensions, seeking refuge in the Myth of Architecture as the producer of certainties. However, uncertainty has become the most granitic truth of today; the non-reinforced concrete can be a suitable testing playground to experiment with a wider meaning of architecture, as a new world made of senses, services, and products."* (Branzi, 2006, p. 9)

As stated by Andrea Branzi in the preface of Luciano Crespi's book *Da spazio nasce spazio* (2013), there is not (and maybe never will) a *story of interior design* separate from that of Architecture and Product Design. This fact lays down its foundations, especially in Italy, where the path of design fields is intertwined so much that borders have blurred.

In this chapter, the author attempts to trace and illustrate the Italian contribution and perspective, with a proper, well-defined, cultural context and unique identity. Even if the author will mention some global historical events and some cases and examples belonging to different pathways, their influence on the Italian design culture is peculiar. The following pages tell the story of the Italian *Cultura del Progetto* from the second half of the XX century up until today. This chapter does not aim to be all-inclusive or thorough about the discipline's history; however, this roadmap

About the author of this chapter:
Gea Sasso is service designer at Sketchin design studio (Switzerland), and teaching assistant at the School of Design of Politecnico di Milano. Her interests in merging service and spatial design marks out both her work as practitioner and researcher, testing methodologies and tools for advancing knowledge in this area of the design field.

is a useful tool to figure out the Spatial Design and Service Design perspectives within the Italian design research landscape.

2.1.1 ARCHITECTURE & MODERNITY: A CRISIS OF THE XX CENTURY

Liquid Modernity

"After a long analysis of the transformation processes concerning the idea of modernity, Bauman theorizes the arrival of liquid modernity as a social and economic condition that is flexible and reversible. A lack of predefined formal codes may characterize the various declinations and expressions in art and architecture." (Bauman, 2002)
"For Bauman, the word Liquid positively indicates a state of the matter that has no proper shape and tends to go with a temporal flow of transformations". (Branzi, 2006, p. 20)

Liquid Spatiality

It embodies the contemporary designing culture that rejects clear, stable, and reassuring shapes in favour of open, malleable, and temporary shapes. (Crippa & Di Prete, 2011)
"The project now faces the condition of uncertainty as the only possible constant, becoming a dynamic accelerator. The project takes the shape of a temporary, open, porous organism, a sort of mobile reducer that accelerates flows without blocking them". (Branzi, 2006, p. 20)

After the second World War in Italy, a considerable interest in the reconstruction plan was aroused all over the country. The winds of change were permeating everything and Architecture was about to face a crisis that would threaten its founding principles. To understand the specific characteristic of the transformation's phases within European architecture, it is convenient to start from the conditions in which it operates today instead of starting from the issue of the representation – which has excellent relevance too. These material conditions refer both to the territorial and settling situations, the coordination between them, and the quest for modernization as a mark of infinite diversification. This was strictly interconnected with the physical limits of urban development concerning the limited availability of the territory, particularly the European one. As Vittorio Gregotti reflects in his book *L'identità dell'architettura Europea e la sua crisi* [n.d. *The identity of European architecture and its crisis*] (1999), this is a considerable break and novelty

that calls into question the tension toward territorial expansion and the types of transformation that have characterized for ages the European Architecture. From today's perspective, the issue concerning the physical limits of urban growth should have brought a new view of the recovery of the existing buildings, a critical regeneration of the city instead of the territorial expansion. The situation should have stimulated a more sensitive design approach, emphasizing the dialogue with the existing structures.

This framework generated internal contrasts within the field, where innovative approaches emerged from the discussions around the transformation of the idea of Architecture and its pillars.

Even the Architect's profession was changing, as proved by the massive design specializations and involvement in activities of art direction in related fields such as advertisement and fashion. This crisis of the discipline's unity became a great cultural opportunity. It opened several new possibilities for the design culture, where great minds and movements took the crisis as a chance to explore, experiment, criticize, report, reflect and frame not only the changes within Architecture but the ones affecting society and modernity too.

From the '60, the premises of a progressive abdication of the methodological unity of the project started to show up in the works of the so-called pioneers (Crippa & Di Prete, 2011), who have tracked a direction – through their works – for contemporary architecture. The same changes suffered by the society were tangible also on an urban level.

If, in the 20th century, the city was solid, dense, and persistent, it now resembles a hybrid landscape made of multiple places. In other words, it involves a mix of different cultures and origins that coexist simultaneously. The city becomes the place of choice for *"social, political, creatives and behavioural interferences"*, an enormous bowl of disturbances where everything interacts and interferes with the rest (Leoni, 2001, p. 128). In his book Modernità debole e diffusa [Weak and Diffuse Modernity] (2006), Andrea Branzi describes this historical shift as follows: a long period of solid logic and definitive solutions leaves room for a different time, a more unstable, experimental, and imperfect period that involves ductile processes able to face the unexpected, welcoming the new.

A new model – the one of this society – does not necessarily correspond to a chaotic asset but more to a flexible system evolving together with time and the need for relationships (Branzi, 2005). This new shape of the metropolis reflects the characteristics of contemporary society: it expresses the complex thought *("pensiero complesso")* theorized by Edgar Morin (Morin, 1993), and the *weak thought ("pensiero debole")* of Vattimo and Rovatti (2010).

In addition to demonstrating a new interpretation of reality, these approaches proliferate a new model of relativeness of knowledge and an innovative push toward research. This exploration is nurtured by several

disciplines that have developed ways to interpret contemporary society's complexity, disturbance, and weakness, providing interesting material to design studies (Crippa & Di Prete, 2011). This contamination has taken place among the most different disciplinary fields, and the convergence of different mindsets toward a common direction is one of the clear traits of every age of change.
Among the keywords that better describe this Liquid Modernity (Bauman, 2002), the most accurate is indeterminacy, intended as uncertainty, variability, flexibility, and reversibility: it may explain the complex facets of contemporary society (Crippa & Di Prete, 2011). The word describes not only the contemporary context, but also the design one which is at a crossroads; *should it keep on searching for definitive architectural models, or should it question the tools of its own discipline and the capacity project has to solve anything?*

This question is the core of the critical research conducted by Avant-guard movements and pioneers, and it will be the guiding principle that goes through all the following case studies.
Thus, contemporary architecture decides to enter new research directions – that could be no longer ignored – to finally put itself into question, opening a shared discussion about the idea of project as it was previously intended. *"Architecture accepts the crisis of the project as its own intrinsic condition"* (Crippa & Di Prete, 2011, p. 29).

2.1.1 ARCHITECTURE & MODERNITY: A CRISIS OF THE XX CENTURY

In contemporary society, the project must look for reversible, incomplete, and temporary solutions that may ensure the option not to make definitive decisions (Branzi, 2006). Contemporary architecture takes a distance from the traditional discipline, defining itself as a weak system connected to a mess made of human entities, relations, interests, and exchanges (Piardi & Farè, 2003). The constructions in the city seem increasingly like a thin permeable membrane, a sort of filter imagined for a fluid and reversible reality (Crippa & Di Prete, 2011) that drifts apart from the strong marks of the past.
The project reflects this weakness and transforms itself accordingly, and it does not want to be defined permanently, as it does not want to bring final solutions and create metaphors. In this way, Architecture tries to rebuild its methodological pillars starting from the project, as the first milestone to question (Branzi, 2006).
Thus, contemporary architecture becomes a receiver of new meanings

and a matter of sense-making, it supports fleeting values because *"projects get temporary, open to change, adjustable, and unpredictable"* (Crippa & Di Prete, 2011).
In the following pages, the author will retrace some of the seeds of these experiments through the work of certain major protagonists together with broader and diffused cultural and artistic trends. In the author's opinion, these case studies paved the way to a more contemporary idea of the project, to a new kind of design culture: a human-centred one.

PIONEERS – In some architectural research, it is possible to detect the premises of theoretical and practical experiments that led to today. From post-WW2 to recent days, some artists, architects, experimenters, and visionaries can be called pioneers (Crippa & Di Prete, 2011). Their works have discussed the discipline itself, its process, tools, and project theory. Even if they are just a tiny number of great minds who have influenced our contemporary perception, the author found it useful to mention the following as support case studies for my idea of Spatial Design.

THE INTERNATIONAL CONGRESS OF MODERN ARCHITECTURE (CIAM) & TEAM X

Project: Initiatives about modern architecture and urban planning
Where: around Europe
Year: 1928 – 1959
The fourth CIAM conference took place on board the S.S. Patris II, a boat sailing from Marseilles to Athens in July 1933 (Curtis, 1986). The architects reported to the conference with the findings from their city studies. On arrival in Athens, an exhibition about Functional City was held at the National Technical University of Athens. The boards were separated into seven categories: metropolises, cities of administration, ports, industrial cities, pleasure cities, and cities of diverse functions (Mumford, 2000). The result of the congress debating became the Athens Charter, the Manifesto of modern city planning. The core theme was, in fact, the Functional City where city planning had to answer human needs properly: dwelling, working, leisure, and moving. Even if the Manifesto is widely regarded as a milestone of Modernist urban planning, there was not a unanimous sharing of its principles. *"It was practically regarded as a bible for up-to-date urban planning"* (Van Es et al., 2014, p. 224), but since the '60 it has increasingly become synonymous with an inhumane form of urban development that led to a comprehensive discrediting of modernism in urban planning and its methodological approaches and aims. However, the conclusion of the fourth congress focused on the interplay between the individual functional parts of the city. The discussion focused on the quest for an integrated approach, because the four categories were imagined as analytical aids, instead of a set of specific instructions for the design process – as they have been diffused for a long time. In 1956, after

the failure of the Athens Charter because of its excessive diagrammatic approach, the IX CIAM proposed a different design and analysis method. The new one focused for the first time *"in terms of human association instead of a functional organization"* (Smithson & Smithson, 1967, p. 39). This shift opened a massive and radical breakup in the architectonic mindset; this fracture later brought the separation of the so-called TEAM X from the CIAM. The aim of TEAM X was to use their architectonic capabilities on themes such as participation, attention to users, and open shapes.
Its members pursued inclusive and participatory practices aimed to include the user in the organizational and formal definition of the spaces. In all the design projects of the members of TEAM X, the focus was always the relevance of the user. Their mindset – inclined to participation and auto-construction – was going toward a dissolution of the myth of the Architect as an all-inclusive designer. They had the merit to impose a new vision of the design project, modifying the moment of architectural design from a top-down act to a shared process (De Carlo, 1979).

SITUATIONISTS
Where: Europe
Year: 1957 – 1972
The movement – that had great influence in bringing the theme of the event to the centre of architectonical discussion – is *L'Internazionale Situazionista (Situationist International)*, founded in 1957 from the merger between some artistic Avant-guard tendencies and some political and philosophical groups. Its members claimed architecture to be more recreational, playful, and multi-sensorial, in which *"time prevails over space, action over-representation, and existence over art"* (Prestinenza Puglisi, 1999, p. 63). With their projects, they were exploring new ways in which human life could take place, free from work and society's slavery. Some of the themes of the Situationists have been retrieved later by more recent architectural research, from Archizoom to Tschumi and Koolhaas. From the '60 similar conceptual approaches also spread within Radical Design, in particular in Italy and England from Archigram to Superstudio (Crippa & Di Prete, 2011). The movement's broadside attack on 'establishment' institutions and values left its mark upon the libertarian left, the counterculture, the revolutionary events of 1968, and more recent phenomena from punk to postmodernism. However, over time, it tended to obscure Situationism's own founding principles. According to the Situationists, the benign professionalism of architecture and design had led to a sterilization of the world that threatened to wipe out any sense of spontaneity or playfulness. The Situationists hankered after the pioneer spirit of the modernist period, when new ideas, such as those of Marx, Freud, and Nietzsche, still felt fresh and vital.
By the late '50, movements such as British and American Pop Art and

French Nouveau Realism had become intensely interested in everyday life, space, and mass culture. The SI aimed to convert this interest into a revolution—at the level of the city itself. Their principle for the reorganization of cities was simple and seductive: let the citizens themselves decide what spaces and architecture they want to live in and how they wish to live in them (Sadler, 1999). This would instantly undermine the powers of the state, bureaucracy, capital, and imperialism, thereby revolutionizing people's everyday lives.

CEDRIC PRICE – FUN PALACE

Project: never realized cultural complex
Where: London
Year: 1960 – 1966

Cedric Price was one of the most visionary architects of his age – although he built very little – his lateral approach to architecture and to time-based urban interventions has ensured that his work has an enduring influence on contemporary architects and artists, from Richard Rogers and Rem Koolhaas. The Fun Palace Project was an interactive, adaptable, educational and cultural complex to be in London, England. The project was commissioned by Joan Littlewood – the theatre director and founder of the innovative Theatre Workshop in east London – to be erected on disused public land slated for redevelopment and intended to be dismantled after ten years. Conceptual and design development drawings were created for a typical Fun Palace that could be erected on any suitable site, and several sites were considered (Price, 1965). The Fun Palace was one of his most influential projects and inspired Richard Rogers and Renzo Piano's early 1970s project (Crippa & Di Prete, 2011), Centre Georges Pompidou in Paris. Initiated with Joan Littlewood, the idea was to build a laboratory of fun with facilities for dancing, music, drama, and fireworks. Central to Price's practice was the belief that through the correct use of new technology, the public could have unprecedented control over their environment, resulting in a building that could be responsive to visitors' needs and the many activities intended to take place there. As the leaflet suggested, there was a wide choice of activities:

> *"Choose what you want to do – or watch someone else doing it. Learn how to handle tools, paint, babies, and machinery, or just listen to your favourite tune. Dance, talk, or be lifted up to where you can see how other people make things work. Sit out over space with a drink and tune in to what is happening elsewhere in the city. Try starting a riot or beginning a painting – or just lie back and stare at the sky".*

Using an unenclosed steel structure, fully serviced by travelling gantry cranes, the building comprised a 'kit of parts': prefabricated walls, platforms, floors, stairs, and ceiling modules that could be moved and assembled by the cranes.

Virtually every part of the structure was variable. *"Its form and structure, resembling a large shipyard in which enclosures such as theatres, cinemas, restaurants, workshops, rally areas, can be assembled, moved, re-arranged and scrapped continuously"*, promised Price.
Price's vision was contemporary because of anti-constituent and an early demonstration of strong attention to use the process within the spaces. His projects are among the first without constructive aim and aesthetic shapes.
He focuses instead on the creation of potential processes of organization that can be variable and modifiable through interaction with users.
Price thought that the most important function of architecture was the achievement of users' fun and happiness: people should have experienced his creation *"mixing emotions and unknown reactions"* (Bullivant, 2005). His whole career has been dedicated to contrasting the static forms, obvious fruitions, and rigid layouts; he pursued a sufficiently defined architecture that would embrace doubt and change. His Fun Palace, for the first time, has been defined as an architecture of relationships.
The never-realized project would have given a chance for users to interact with the structure actively, participating as active creators of the spaces (Prestinenza Puglisi, 1999). It aimed to celebrate the sense of the temporary.

ARCHIZOOM – NO-STOP CITY
Project: Reimagined urban planning
Where: Italy
Year: 1962 – 1972
In 1969 Archizoom opened a discussion about the contemporary city, trying to cut from their research all the linguistic, formal, and competitive implications that characterized the discipline. Archizoom Associati was made by Andrea Branzi, Gilberto Corretti, Paolo Deganello, Massimo Morozzi, Dario, and Lucia Bartolini. Together they wanted to show the existence of architectural knowledge only in quantitative terms, cancelling from the debate about the contemporary city the qualitative issue. In fact, qualitative aspects always include the limits of buildings and of the urban layout as a visible shape of a metropolitan reality. Branzi defines this new model as *"city without architecture"*, a statement that carries the complete refusal for all the project parameters linked to figurative codes, typical of the fragmentation of pre-industrial architecture (2006, p. 69).
The architect defines No-Stop City as a *"non-figurative architecture for a non-figurative society"* that had no external shapes but infinite internal shapes. This project has determined the central role of industrial products, goods, furniture, and services in the construction of fluid scenarios of the contemporary metropolis. In this landscape, there was a global system without external space where the city corresponds to the dimension of

a global market and to a diffused system of connections on the territory. No-Stop City cannot be defined as a project itself but more as a radical way of representation of the contemporary city, as an apparently hyper-expressive reality that is chaotic indeed.
However, in these new places, a new energy evolves: *"an uncontrollable and social energy that affects every function, creating a hybrid landscape made of great complexity and very little specialization"* (Branzi, 2005, p. 78).
The city becomes a continuous residential structure without empty spaces and consequentially without architectural images: within these spaces, it is possible to organize new types of open residential units for new forms of communities.

> *"In 1969, within the radical group Archizoom Associati we opened a reflection on the contemporary city, trying to cut from our own research all the questions that concerned all the linguistic, formal, and competitive problems characterizing the discipline" (Branzi, 2006, p. 70).*

The model of No-Stop City narrates a city without qualitative or aesthetic parameters as evidence of their mindset: the future shape of the house is not the problem; its use is.
Archizoom argues that new architecture cannot spring from a simple design act; it should be transformed by its use of the inhabitants within the space. The more this environment is affected by cultural and linguistic connotations, the more its use is precluded; the more an individual is forced to move inside an already codified cultural medium, the more he will give up his own creative skills.
The critical suggestion proposed by Archizoom – but also by almost all the Radicals – does not offer a better model of society, but it represents a tool to accelerate reality to understand it better (Branzi, 1974). According to several reviewers, this project embodies the end of architecture and the beginning of a new discipline in a metaphoric way:

> *"In its place contro-architecture, dis-architecture and an-architecture will flourish. Superstudio with their project 'utopian cities', and SITE with their neo-conceptual setting-ups will try to do this same thing Archizoom did" (Puglisi, 2001, p. 137).*

GLOBAL TOOLS
Project: Workshops
Where: Florence, Milan, Naples
Year: 1973 – 1975
In January 1973, a gathering took place in Milan at the editorial office of the magazine Casabella, involving, among others, architects, and designers such as Ettore Sottsass Jr., Alessandro Mendini, Andrea Branzi, Riccardo Dalisi, Remo Buti, Ugo La Pietra, and members of the groups Archizoom, 9999, Superstudio, UFO and Zziggurat. Together

they founded 'Global Tools': a system of workshops to experiment with dispersed educational programs that would serve as an alternative to the university as an institutional model of reference. The group was experimenting with a form of resistance, even a return to archaic technologies and practices. The radical act was to step out of the mechanized city in an anti-urban appeal to agrarian roots.
The main themes of research and work of the collective were five: body, communication, construction, survival, and theory. All these experiments constituted an extraordinary transformation of architectural pedagogy and a massive redefinition of architecture itself. Indeed, these pedagogical experiments can be understood as architectural projects.
Global Tools was imagined as a school of arts and crafts and an anti-disciplinary attempt to establish a platform for the free exchange of different ideas and experiences: a place suited for the stimulation of individual creativity and the development of human potentialities. all within the more general perspective of continuing education, seen as *"the only possible goal beyond the end of institutionalized education"* (Franceschini & Borgonuovo, 2015). This initiative, intended to open a period of experimentation among classes and students, was to have implemented a wide range of innovative processes in its functioning from the viewpoint of both educational tools and that of content. The educational tools would have to coincide with the direct experience of techniques and construction, the recording of original work processes, and with direct frequentation of the places where such experiences might take place: a school of formation, not of information.
The fundamental idea of global Tools would thus be that of giving rise to experimentation capable of constituting an advanced laboratory for the industry, and an example of a new kind of education without students and without teachers.

UGO LA PIETRA – L'OCCULTAMENTO (CONCEALING)
Project: Inclined planes – Concealing, from the disequilibrating system
Where: Gescal neighbourhood, Milan
Year: 1974
In the furnishings designed for the Gescal houses (managing workers' houses), La Pietra disrupted the codified spaces and revealed possible new perceptual conventions and functional uses for them, thanks to the use of inclined planes.
The project opportunity came with an exhibition – which took place in Lissone in 1973 – organized by the architects Alberto Salvati and Alberto Tresoldi, who were proposing six innovative home types.
The exhibition focused on the residential space of council housing, advertising innovative research for the house model of the 70s. Among the proposals, the one made by Ugo La Pietra aroused attention: he inflected the concept of the disequilibrating system – theorized in

the previous years – creating *Occultamento* (concealing), a system of adjustable and transformable planes. La Pietra was putting into question the codified spaces, unveiling their incoherent aspects. The project belonged to a trend of experimentation for council housing, for Gescal neighbourhood. The municipality was asking for better design choices for council housing, questing for a total design and coordinated design as a chance for innovation. In such context, *Occultamento* takes place, where La Pietra brings to the surface the most approximate contradictions of the proposed residential space:

> *"There is a lack of the vital space once all the 'functional' structures are included; the 'function sleeping' appears to be the most important, while with the proposed Occultamento it is reduced almost to zero" (La Pietra, 1977, p. 26).*

The so-called innovative solutions were avoiding the real problem – the role and the relationship between the project and fruition –, without a reasonable answer.
La Pietra wanted to find, within the design of residential interiors, a less stringent solution, allowing the final users the freedom to make decisions. The artist has dedicated his efforts to activities of definition and clarification of the relationship between people and the environment.

> *"There is a lack of the vital space once all the 'functional' structures are included; the 'function sleeping' appears to be the most important, while with the proposed occultamento it is reduced almost to zero" (La Pietra, 1977, p. 26).*

CAVART

Project: Inclined planes – Concealing, from the disequilibrating system
Where: Florence
Year: 1973 – 1978
Founded in 1973 near Florence by a group of young architecture students – including Michele De Lucchi –, Cavart was a reactionary initiative profoundly influenced by the radical architecture movement, whose philosophy had shaken the Italian educational system since the mid 1960s. Promoting participation in design and deeply inspired by the natural environment and its metamorphoses, Cavart was an Italian design collective – active between 1973 and 1978 – that tirelessly pushed back architecture's boundaries through a series of temporary and provocative events – seminars and workshops, but also films and exhibitions. The collective's first performance took place in the quarry of the Monte Lonzina, near Padua (Italy) – the location that inspired the name of the group: cavart meaning quarry art.
Following its success at the Venice Biennale in 1974, the collective gained media attention and started to meet more regularly. Hidden by the spontaneous vegetation that had taken over the abandoned quarry of Monte Ricco near Padua, in July 1975 Cavart settled for a weeklong

architectural workshop called Culturally Impossible Architecture. More than 100 students, architects, artists and curious people participated in the event. During only five days, a curious temporary town of plain architecture was built. The town was playful, archaic and futuristic. It included the hay pyramid designed by Alessandro Mendini and Paola Navone, the Red Tent installation by Franco Raggi, and to the Vertical Structure temporary architecture imagined by Michele de Lucchi and his brother Ottorino. The visionary structures – a kind of hypothesis of natural life for the technological man of 2000 AD – questioned the bourgeois architectural codes and shapes and oscillated between fragility and stability, ephemerality, and durability. Despite its short existence, Cavart not only brought together many young individuals – among whom many were to become key actors of the upcoming international design and architecture scene – but it also played an active role in re-defining the design process itself, bringing to the centre of all experience and spontaneity.

BERNARD TSCHUMI

Project: Winning competition for Parc de la Villette
Where: Parc de la Villette, Paris
Year: 1982 – 1998

Bernard Tschumi has always been a reference point the radical Avant-guard of the '60. He has a strong bound and a cultural debt to them, especially concerning the research carried out by Team X (Crippa & Di Prete, 2011). To synthesize its poetics: *"There is no architecture without action, no architecture without event, no architecture without a program"* (Tschumi, 2005, p. 9), for him this represents the relationship between architecture and the user. For this reason, his priority has always been not to affect the project, but to design the right conditions for this relationship to happen. This mindset has brought him to pursue strategic and meta-designing aspects, instead of looking for ultimate architectonic assets, often just competitive or formal. His design attention focuses on the flows of energy produced by human movement, making the space the place of events, from which architecture could gain strength to renovate (Costanzo, 2002).

Parc de la Villette is one of the first projects of Tschumi, where he proposed a new strategy for an urban organization. Initially, both Tschumi and Rem Koolhaas took part in the competition for the area's requalification, but the winning project turned out to be Tschumi's. It has become known for its new strategy of the urban organization as an unprecedented type of park based on culture rather than nature. The park is located on what was one of the last remaining large sites in Paris, a 125-acre expanse previously occupied by the central slaughterhouses and situated at the northeast corner of the city. In addition to the master plan, the project involved the design and construction of over 25 buildings,

promenades, covered walkways, bridges, and landscaped gardens over a period of fifteen years. A system of dispersed points – the red enamelled steel units that support different cultural and leisure activities – is superimposed on a system of lines that emphasizes movement through the area.
Parc de la Villette is also the manifesto of Tschumi's poetics, a perfect example of how architecture could be intended and interpreted as a scenography, ready to see actions, movements, and events happening on its stage. The movement of people through the promenade animates the park and keeps the units together, it resembles the experience of moving within the metropolis, where the experience itself recreates the relationship between space, things, and humans. The project is the result of architecture generated from social relationships, movements, and spatial involvement of those who experience it. The competition for the park's realization remains a relevant turning point for the discipline's developments, where the diagram is the specific tool to control design processes that are complex and innovative, far away from formal and technical goals.
Tschumi's Parc de la Villette recalls the tool of the storyboard used for storytelling: each frame is associated with one of the units, while people animate the story with their movement, creating a spatial tale (retrieved from a conversation with Davide Crippa, 2018).

REM KOOLHAAS (OMA)
Project: S, M, L, XL (book)
Where: Rotterdam
Year: 1995
With S, M, L, XL – after almost 20 years after his first book Delirious New York in 1978 – Koolhaas faces the theme of modernity in its challenged nature against the rules of traditional architecture. The book is divided into sections – as it is suggested by the title – about the dimension of the projects: exhibitions are small, buildings are medium, neighbourhoods are large, and urban planning is extra-large.
Even if finding a one-way interpretation, it is possible to find several causes for reflection that may help in retracing the new realism approach, as called by Koolhaas. He interprets – with the expression new realism – a disillusioned vision, a direct reality without any filter, as presented by the metropolitan society in which we live.
However, this is just one of the several works where Koolhaas expresses his architectural poetics. He is in fact, one of the biggest visionaries who have actively participated in the debate around the crisis of architecture. He proposes – as an answer to manage the dynamic complexity of this era – the capacity to think in terms of flows, events, changes and strategies (Vidler, 1994) as a new solution, instead of the application of proper architectonic tools. According to him, the city is more a system

of informal relation instead of a tissue, and the architect is not the one who takes decisions and imposes a solution, because the users and their activities govern the growth of the architectonic organism. For Koolhaas, Architecture is a *social* discipline, because it acts together and on human beings, although it operates on an urban level at the same time. Any type of planning is extremely dangerous because it could revolt against the city itself. The architect would like to substitute individual creativity for the so-called *manipulation* process – of relationships, social assets, and special configurations. His approach denies the interference of the architect-planner, and from this perspective, he has a lot in common with Tschumi's poetics: the conception of architecture as a program (Crippa & Di Prete, 2011). Koolhaas claims that *"only when architecture will grasp the intuition of continuity and relation in pragmatic and tangible terms, it will become extreme"* (Koolhaas, 2002, p.43). He has tried to transform architecture into a science of spatial organization, in which the language loses its importance to make space for actions that happen within the space. *"In this way the attention goes from the neutrality of the container to its content"* (Crippa & Di Prete, 2011, 103). In his projects, the organization of spaces prevails over shapes: the solution is elastic and temporary, offering a mixed situation and possible configurations.

2.1.3 THE BEGINNING OF THE XXI: THE CONTEMPORARY CITY

Architectural link

> *Architecture is a fragile and permeable membrane, an interface between two processes, a filter to be imagined as a fluid, a reversible and crossable reality. Its role is to support the continuous change as a sort of screen between two worlds, one of the urban and virtual networks and services, and one of the interior spaces, of operative systems, of the environmental component, which is flexible and ductile. The architectural links correspond to the idea of a reversible and crossable system, always incomplete and imperfect; a system that involves a space made of networks, services, and relationships – so always willing to transform over time. (Branzi, 2006)*

Edge cities

> *"A type of urban agglomeration outside the suburban ring, characterized by significant concentrations of offices and business activities alongside residential areas in peripheral areas that are completely connected to central locations via state-of-the-art telematics." (Sassen, 2011, p. 279)*

Global cities

> *"Cities that are strategic sites in the global economy because of their concentration of command functions and high-level producer-service firms oriented to world markets; more generally, cities with high levels of internationalization in their economy and in their broader social structure." (Sassen, 2011, p. 279)*

In the new century architecture becomes a *semiosfera urbana* (semiotic and urban sphere), overcoming its solid pillars to catch a new energy made of ephemeral qualities that change over time (Branzi, 2006). The design culture is abandoning the traditional architecture that limits its functions only to representative and symbolic codes. The contemporary urban condition is made of services, informatics networks, complex product-systems, environment, atmospheric conditions, and perceptive structures.

As Branzi observes, all these components are necessarily part and content of architecture, but they cannot be communicated through figurative codes of architecture; they cannot be depicted. Contemporary architecture is still connected to the building activity, as a generator of visible spaces. It restricts itself to singular buildings and their typologies, missing the chance to represent a sprinkled, introverted, and immaterial urban condition. Branzi solicits a new mindset, where architecture does not create a definitive project, but imperfect and incomplete sub-systems, typical of the new modernity of the XXI century. The contemporary city's functioning is profoundly influenced by the new processes happening inside: the processes of urban transformation take place only within the buildings. The overall picture of the urban landscape does not correspond anymore to what happens inside its structures.

In a period like the one we live in – continuously crossed by the new, by conflicts, by the absence of general models –, the design culture has taken the path of constant research. This is because the whole design culture is passing through a permanent crisis, a difficult condition that is not temporary. Thus, the crisis becomes a positive concept of improvement, a prerequisite to elaborate a dynamic process to welcome

the new. This acknowledgment is strictly connected to the dissolution of the academic disciplinary blocks, as always happened during the structural knots of history.

2.1.4 FROM INTERIOR ARCHITECTURE TO INTERIOR DESIGN

> *XXI century is born from the failure of the idea of modernity as a uni-logical and self-serving reality. This era focuses on a philosophy that increases the value of interior spaces of the city as an independent presence. Recycling industrial areas through temporary scenarios and reversible structures, the difference between private and public space gradually vanishes to answer to the continuous needs of an ever-changing society (Branzi in Crespi, 2013, p. 7).*

According to Crespi, today we can define an 'Interior Design' culture as a corpus that grounds its roots in the history of Interior Architecture even if the discipline claims its autonomy.

Crespi retraces the introduction of this division in the book *What is interior design?* written by Brooker and Stone (2010), where the distinction between Interior Architecture and Interior Design is traced. Each of them is entitled to a precise sphere: the first one should re-adapt existing buildings, offering opportunities for re-use, and re-defining the organizing principles on which the space raises, as a bridge between architecture and interior design – the second should dedicate itself to the interdisciplinary practice to give identity and atmosphere to environments through the modification of specific elements such as decor, furniture, and surfaces. Its modalities of intervention request limited structural modification with a pronounced ephemeral connotation. However, in Crespi's view this is not enough; in fact, there are other elements that have modified the relationship between environments and their contents: the first one is market globalisation, and the second aspect is related to a great change in the ways spaces are used, both interiors and exteriors within the contemporary city.

In this framework, it is relevant that the capacity of Italian Design must penetrate the contemporary complexity. This ability is due to the critical and reflective mindset Italian Design always had in its everlasting search for sense. Moreover, there is also a great willingness to widen the competencies beyond Industrial Design and toward services, spaces and cultural heritage (Crespi, 2013). New perspectives of experimentation

open for Interior Design, no more limited to internal environments, but oriented toward the introduction of new aspects, such as aesthetic qualities. That is why a real and genuine shift of perspective is needed. In this overview, the boundaries between the inside and the outside are blurring, confirming the phenomenon that Walter Benjamin retraced in the '20 in a city like Naples: a city that is porous as much as the walls in which its domestic environment expands, from the streets it penetrates inside the houses (Crespi, 2013). The connection between internal spaces and the streets increases: museums, libraries and art overlook and exit on the outside, seizing the urban environment.
Therefore, the commitment to Interior Design becomes something different, the discipline must re-imagine the places where we live in, disrupting the borders between public and private areas, among interior and external spaces, and among objects and architecture too.
For this reason, the discipline must also receive other inputs coming from near worlds, overcoming the design field. In this way, Interior Design will transform its inner nature and will be able to face the challenges of the contemporary era.

2.1.5 THE SHIFT FROM INTERIOR TO SPATIAL DESIGN: THE ADDED FACTOR OF EXPERIENCE

In the society of information, and the information revolution, the theme of the relation is gaining a central role, together with the amplification of the meanings of communication and interaction. A new unprecedented cultural scenario is emerging, transforming our ways of designing and – at the same time – permeating our lives with new incentives and themes to discuss on the project.
As Crippa and Di Prete state, Interior Design's commitment is to give sense to the non-sense, and to design inviting, articulated, and characterized spaces (2011). Starting from an approach similar to the 'exhibition' one, it is necessary to introduce reversible solutions inside living spaces, in order to answer to continuous change from time to time. To do so, particular attention must be addressed to the question of the experience within spaces. As the authors observe, every intervention in the space produces a variation in the relations among its inhabitants. Vice versa, relationships – by themselves – can create spaces.
Thus, the discipline operates between spaces and relationships: between

spaces able to generate relations and relationships capable of producing spaces. The distance between these two points of view sometimes is big as the whole world – as the distance between the tools they use – but on that line, straddling between the two, we have to reflect.

> *"Designing relationships mean to create interferences – as status variations –, capable to stimulate different spatial settings" (Battaglia, 2003, p. 19).*

Relationships do not operate in a mechanic and systemic way, they work on a creative, mental, spiritual, and emotional level. They assume a broader meaning, becoming opportunities for mutual and dynamic evolution.

> *"A process that opens unseen ways of thinking between people and the world", a connection among people and places occurs, creating mutual modifications: "each person tends to modify the personal context and it is modified itself" (Pizziolo & Micarelli, 2003, p. 63).*

This aspect becomes a matter of the project and drives to a new framework. The subject of the relation modifies the context, the objects, and the procedure of the project itself, *"because it moves the focus from the shape to the effect"* (Crippa & Di Prete, 2011, p. 41). From this moment on, the connection between the observer and context will be emphasized as a core focus. The authors talk about an experiential architecture, as an architecture able to deal with a collective creation.

INTERIOR DESIGN + RELATIONAL FACTOR = SPATIAL DESIGN

To better define the context and area of expertise of Spatial Design, the author has retrieved the definition given by the Royal Danish Academy of Fine Arts about the disciplinary study program:

> *"Spatial Design focuses on the relationship between architecture, design, and man with the interior as a point of departure. An architect or a designer from Spatial Design works with spatial organization and all its human implications. The more rapidly organizations, patterns of living and local traditions are disrupted, the more awareness is needed. It is crucial to know how people actually live and to understand the societal agendas and the historical background behind the change of spaces, and it is fundamental to see the interior organization and design in relation to the architecture, the city, the landscape, and society at large".*

The definition traces a clear picture of the area of expertise of the discipline, specifying it deals with Architecture and Interior Design but exceeding their limits. The discipline is gradually spreading, also in the School of Design of Politecnico di Milano there has been a movement

in this direction. Since 2017 the master's degree course has changed its name from Interior Design to Interior & Spatial Design. A consideration has to be made regarding the design culture in the Milanese context. Here Interior Design already had a broader view. In fact, Interior Design projects have always focused on spaces in general, not only *interiors*. The reason for the change in the name of the master's Degree's is to align itself with the European academic panorama.

Spatial Design represents, in the author's opinion, the last steps of a path that started a long time ago with Architecture. Even if it has been coined recently, it seems more like a sum of a different discipline, than a completely new one. It crosses the boundaries of traditional design specialism such as architecture, interior design, and – from a certain point of view – Service Design too. Its emphasis is on working with people and spaces, covering a variety of scales from detailed design of interior spaces to large urban strategies. It can be seen as a glue that connects the traditional design of spaces together with the people that live within them.

2.2 SERVICE DESIGN: THE STATE OF THE ART

As widely explored above, the factors that had an influence on the last century are deeply connected with global transformations. In the previous paragraphs, the author has explored how the global transformations had an impact on the design culture, in the world of Architecture and SD specifically, and how the mix of several factors had played a key role in the re-definition of the project development, the disciplinary pillars, the design matter, and culture. A common trait that covers all the designing disciplines is a gradual abandonment of control along the project development. The principles of weak thought expressed by Vattimo and Rovatti (2010) are also applied to the design field, where the inability of design to completely plan and regulate everything has to be accepted. As Meroni and Sangiorgi observe in their book Design for services (2011), the context leads to a shift in the object of design: it is becoming more a process than an object, something similar to an activity that occurs over time. According to the authors, Design no longer focuses on designing things – or spaces or goods – but rather on designing for something, or to make something happen: "it deserves entities in the making, whose final characteristics will emerge only in the complex dynamic of the real world (2011, p. 3). In this sense, Design is in a transformation process itself, it is moving from a product-oriented mindset to a service-centred culture. In such a framework, Service Design's matter appears very broad and extended. The discipline deals with the interaction between people, things, and places in a wide range of possible situations. Because of

this evident extensiveness of the fields in which Service Design may operate, the author will intentionally narrow it down to contexts in which it connects to Spatial Design, meaning where a spatial dimension is present.

> *"[…] For this reason, precisely because they appear to be un-designable, it is useful and necessary today to develop a new, service-oriented design culture and practice. To justify this paradoxical statement, we must trace a pathway that leads from XX century design to that of the XXI and which can be summed up as the loss of the illusion of control, or the discovery of complexity. A loss and a discovery that has influenced the future and practice of design in general". (Manzini in Meroni & Sangiorgi, 2011, p. 1)*

2.2.1 IDENTITY AND DEFINITION OF SERVICE DESIGN

Asking for a unique, one-way, and widely shared definition of what is Service Design may result in several and varied definitions of the discipline. This happens mainly for two reasons: the discipline is quite new, and it is a hybrid one, as it has gathered some portions from other disciplines.

As Stickdorn & Schneider state in the very first pages of *This is service design thinking* (2011, p. 5), *"Service Design is an interdisciplinary approach that combines different methods and tools from various disciplines"*. According to the authors, the discipline is a new 'way' of imagining, as opposed to traditional stand-alone academic disciplines. Its newness and evolving nature make SD difficult to frame in a common definition. The disciplinary approach is in constant evolution too, causing trouble in the clear articulation of its language. If a single and shared definition may not be so crucial, the issue of a shared language is absolutely an urgent topic. In this way, Stickdorn & Schneider's book tries to sow the seeds for a common language of Service Design.

Let us go back a bit, when was Service Design born? Looking at the history of Service Design as a discipline, it emerged as a contribution to a changing context and to what certain groups of design experts started to perceive and outline as a new design direction.

> *"In the 1990s the growing economic role of the service sector in most of the developed economies was in clear contrast to the then dominant practices and cultures of design, which still focused on the physical and tangible output of the traditional industrial sectors" (Meroni & Sangiorgi, 2011, p. 9).*

In fact – according to research conducted by Brandon Schauer of Adaptive Path in 2011 –, $2 billions was spent each year in the United States on the planning and design of services, but only $70 millions of this – so around 3,5% of it – was spent on 'service design' as intended here. The rest of the work is done by professional figures that are not designers, such as systems engineering, marketing, and branding, operations management, customer service, and so on. The author does not even mention the Italian context, where the awareness about the discipline is lower, as is its application.
However, things are changing and in more recent days, the themes addressed by Service Design have become important for many organizations, and design has become a key innovation and management methodology (Stickdorn et al., 2018). The growing relevance of the Service Design sector has affected not only the design field but several other disciplines too. Nowadays, several companies are opening their own in-house team of Service Design, regardless of the field in which they operate. Service Design is becoming more and more popular, probably thanks to its adaptive nature and problem-solving equipment.

2.2.2 THE OBJECT OF SERVICE DESIGN

> *"Frankly, one of the great strengths of design is that we have not settled on a single definition. Fields in which definition is now a settled matter tend to be lethargic, dying, or dead fields, where inquiry no longer provides challenges to what is accepted as truth. However, I believe that definitions are critical for advancing inquiry, and we must face that responsibility regularly in design, even if we discard a definition from time to time and introduce new ones." (Buchanan, 2001, p. 8)*

The current conceptualization of service as a design material can be seen from three different perspectives: the definition of 'material' itself, the connection with service logic and the techniques used by designers, these are the means to understand service from a design perspective (Blomkvist, Clatworthy, et al., 2016).
Going back to the first of the perspective listed by the above-mentioned authors, the author will try to investigate the material of Service Design to highlight the point of contact with the other discipline. In fact, defining

each design disciplines according to their peculiarities in the material is useful to highlight how each of them takes care of specific aspects. Defining what the material of Service Design is opens possible directions and interpretations of which is the field of action of the discipline. Moreover, this is still an open discussion, as this definition will reflect on the discipline itself and its development.

DESIGN ORDERS – Taking a step backwards, Buchanan (2001) has classified what designers produce – or which are the **products** in design – to distinguish different design orders. Each order expresses a way of rethinking and reconceiving the nature of design. The orders should be imagined more as topics for discovery rather than fixed categories of meaning. The first and second order played a central role in the establishment of the graphic and industrial design profession. Graphic design came from visual symbols: the communication of contents through words and images as means. While industrial design was the result of a concern for tangible, physical artifacts – for material **things**.

This first two design orders – symbols and things – played a central role in the twentieth century. But according to Buchanan, *"designers have turned to two quite different places to create new products and to reflect on the value of design in our lives, they have turned to action and environment"* (2001, p.11). The reason has to be found in the fact that communications and constructions are – in some sense – forms of action. This shift has caused the emergence of a new design direction and professional practice: interaction design. This new domain sees designers focusing on *"how human beings relate to other human beings through the mediating influence of products"* (Buchanan, 2001, p.11). But now products mean more than just physical objects, they could be services, experiences, and activities that are included in the new definition of what a product could be. Interaction design has accordingly generated the third design order, which corresponds to **actions** – and services, experiences, and activities. The author also suggests the existence of a fourth design order, which includes all the previous ones, focused on **environments and systems**. The concept of system is not new, it has played an important role from the nineteenth century on. What has changed instead is the new meaning given to the word system: it now could mean human system, integration of information, environments of living, working playing and learning, and not just system of things.

Because of its extended nature, *"human beings can never see or experience a system"*, even if they *"are strongly influenced by systems and environments"* (Buchanan, 2001, p.12). By definition, a system is the totality of all that is contained within it, while human beings can only

experience a possible path through it or a portion of the total. That's why – in the attempt to govern these systems and environments – human beings create symbols or representations that try to portray the idea that is the organizing principle. *"The idea or thought that organizes a system or environment is the focus of fourth-order design"* (Buchanan, 2001, p.12).
Here it is possible to see how the materials of design have started to include both tangible and intangible components.

	Symbols	*Things*	*Actions*	*Thought*
Symbols	**Graphic Design**			
Things		**Industrial Design**		
Actions			**Interaction Design**	
Thought				**Environmental Design**

Fig. 2 – Four orders of design, in Buchanan (2001).

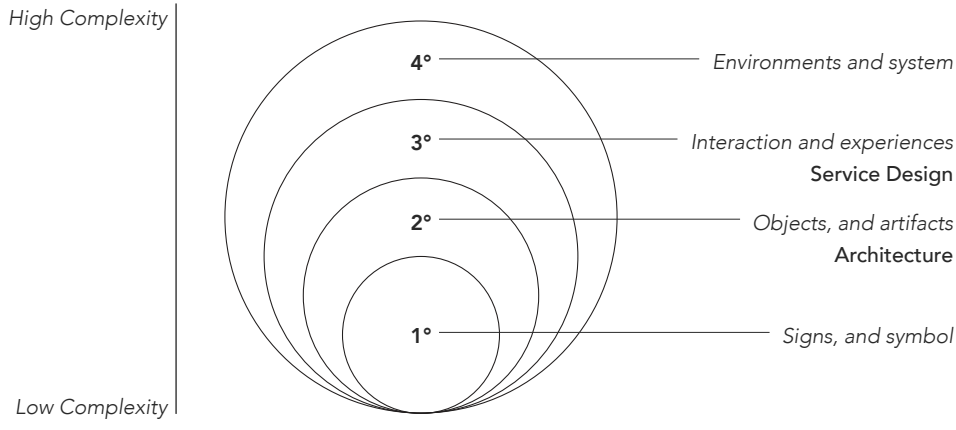


Fig. 3 – Graphic interpretation of the four orders of design, in Buchanan (2001).

DESIGN MATERIAL – Within Service Design, there has been a discussion regarding the nature of its materials. Different opinions emerged, some more explicit than others. For example, the touchpoint is widely conceived as a central concept in Service Design, especially as a material manifestation of service. In fact, Clatworthy (2011) focuses on it, as well as Secomandi and Snelders who retain that *"the identification of touchpoints as an object of service design is a clear step away from the imposition of the goods-centred paradigms of the past"* (2011, p. 20). While Sangiorgi (2009) observes that when the object of design becomes the way organizations conceive and redesign their own services, Service Design needs to become more familiar with the dynamics and issues of organizational change, highlighting the need for a new definition of the service matter.

In any case, the materials of Service Design include both tangible and intangible elements of services (Secomandi & Snelders, 2011), due also to the fact that higher orders include the materials of lower ones, such as symbols, things, actions, and so on, as seen in Buchanan's orders of design (2001). Meroni and Sangiorgi (2011) suggest that the way designers work is evolving, describing new possible scenarios where designers work with services as facilitators of social and co-creation processes. In this framework, they do not identify the materials of design precisely, but they underline the need for designers to work with processes, relationships, and networks within a co-creation paradigm typical of designing for services.

But the definition of what are the definitive materials of Service Design is still ongoing. In fact, Blomkvist, Clatworthy and Holmild try to refine what the materials of Service Design could be, to nurture a wider conversation on *"what service design is, could, and could not, be"* (2016, p. 3). Such a discussion focuses on what has to be combined and produced to provide a service, but this 'what' has not yet been defined.

A central concept remains the one of the touchpoint, as a material manifestation of service.

However, generally in design – but more specifically within Service Design –, designers deal with both the whole and the parts during a project. Kimbell helps in this definition, specifying that

> *"Service designers paid considerable attention to the experience of stakeholders engaging with the service, both the service considered as a whole and the detail of the design of the various artefacts involved in constituting it" (2009, p. 250).*

So, according to Blomkvist, Clatworthy and Holmlid, when talking about the material of service, we should consider both the whole and the

individual parts as Service Design materials. Because of the uniqueness of each service, the material constantly changes depending on what is the service about, who takes part in it, and so on.

> *"This is one of the fundamental challenges associated with identifying a general description of service as a material. Any attempt to study or observe a service influences the material" (2016, p. 5).*

According to the authors there is a need to develop a wider and more meaningful vocabulary around the materials in Service Design, a discussion that should overcome the tangible outcomes as the touchpoints are. Even if well-designed touchpoints and essential for a service, they are not the key to solving and understanding the essence of the Service Design material.

> *"However, service designers usually do not physically rearrange the physical layout, the people, and web interfaces of actual services directly, only representations of these, and thus do not directly influence the touchpoints of services any more than they can directly shape service experiences. In a sense, they are not designing the touchpoints." (2016, pp. 3–4).*

2.2.3 A FOCUS ON THE CONNECTION WITH OTHER DISCIPLINES

In the previous pages, there has already been space to observe how Service Design is not a stand-alone discipline. Since the beginning, it has been characterized by a strong relationship and influence with other disciplines. Because of the complexity that affects services, the discipline has for sure the need to relate with other contexts, a fact that was observed by Kimbell. She states that Service Design – as an emerging discipline based on informal and tacit knowledge – could structure itself as a more defined discipline if it develops a better dialogue with existing disciplines (Kimbell, 2009).

Meroni and Sangiorgi in the last section of their book Design for Services have focused on the exploration of future directions for research and practice for the Service Design discipline. They ideally and graphically put design for service in the centre, together with the human-centred approach as an ongoing principle. They then identify four macro-areas, created according to the type of service delivered: experiences, systems development, transformation, and policies. In this panorama the mentioned disciplines are several, also organized by area of expertise. It

is interesting to notice where, according to the authors, Spatial Planning is located. In fact, from a Service Design point of view, Spatial Planning (or Spatial Design) is positioned in the middle between the service development and the service transformation (cf. *Figure 2.7.1 Map of design for services with related disciplines and job profiles* in Meroni & Sangiorgi, p.215). This probably refers to the possibility of designing a service in an existing space – where the transformation of what already exists is the core focus –, or of developing a completely new space according to new service guidelines – where instead the space is built from scratch.
In these relations, the role of service designers is to generate *"scenarios for the future development of regions, places and service systems"* (Meroni & Sangiorgi, 2011, p. 206). Services are seen as demonstrations of scenarios, showing tangible ways of implementing more desirable visions or building them. According to the authors, the designers here qualify themselves as visionary and facilitators who enable effective conversations among all the stakeholders involved; they do it by applying *"methodologies from strategic design and scenario building using idea generation and visualization tools to facilitate creative collaborations and discussion around possible futures"* (2011, p. 206).

SERVICESCAPES – *"The environment in which the service is assembled and in which the seller and customer interact, combined with tangible commodities that facilitate performance or communication of the service"* (Bitner, 1992). In terms of relationships among discipline, the author has found the concept of servicescape interesting in the first place. The author has later abandoned it, because of its strong marketing orientation and focus on retail spaces. The concept of *servicescape* has been outlined by Bitner, where service and landscape are two ingredients of the so-called *servicescape*. Her approach is strongly related to a customer-oriented marketing view which is interesting and useful but marginally related to the aims of this chapter. Even though the punctual focus on marketing and retail fields, it was one of the first points of contact between Service and Spatial Design, at least in the author's research path.
In 1973 there was the first mention of an existing relationship between service and its atmosphere, where importance is given to the impact design of space could have on the senses of the clients (Kotler, 1973). Emphasizing this examination, Bitner claims how *"objective environmental factors are perceived by both customers and employees and that both groups may respond cognitively, emotionally, and psychologically to the environment"* (1992, p.59), adding one more discriminating factor about

human perception, influenced now also by roles inside the experienced space.
Taking into consideration other sense's perception, great attention has been given to the results caused by music and aroma in retail spaces, where it has been demonstrated that the loudness and tempo of music affect the time spent in stores as well as its perception (Turley et al., 1990). So, in order to talk about customer's perception of a service inside a surrounding, a framework for spatial characteristic is given by Bitner (1992) who identifies three macro groups of features for spaces: condition of the environment, space's layout with functionality, as last signs, symbols and objects. The quality of the interiors is strictly related to the five senses' perception of the customers who are attending the space, while layout, functionality and signs are a guide for the customer and have a more tangible aim.
She explains how clients react to their surrounding through cognition, feelings or physiology, and their reaction is the cause of their behaviours. This is extremely interesting, as a service may be influenced by how the space is perceived. As a matter of fact, certain types of *servicescape's* experiences could have both negative or positive output in terms of reaction or behaviours, which transforms into a desire to leave the space or to keep staying (Wilson et al., 2009).
It has to be taken into consideration that the perception of customers is not a direct result of the contact with only one ambient characteristic at the time, but it is a synthesis of all the aspects perceived as only one. A compound of different elements – rather than individual factors – is what affects a customer's final perception. Later in the day, an idea of customer experience has been associated with the holistic perception of the environment, especially in the retail sector, where the space becomes the field for enabling an extraordinary customer experience. It has to be considered, as already said by Bitner in the 1992, that the interest on the surrounding in service was not sufficient. After her warning about this problem, in the latest years, a lot of research has been conducted about her first introduction to the meaning and field of the *servicescape*, even though the actual state of the art is still patch-worked and restricted. Servicescape – intended as an area of research – must be considered broad and mutant because of its several interconnections with many other topics that go from the emotional and psychological sphere to architectural and interior studies. In any case it gives an interesting point of view on the themes of the experiences within spaces where services are offered, from a marketing and retail perspective.
An in-depth reflection of a method firmly established in Service Design

practices, the *desktop walkthrough*, and its implications in the design of spatial experiences has been illustrated in the book chapter: Auricchio, V., De Rosa, A., & Göransdotter, M. (2022). Experiential ways of mapping: Revisiting the Desktop Walkthough. In B. Camocini & A. Dominoni (ed.), Engaging Spaces. How to increase social awareness and human wellbeing through experience design (Vol. 6, pp. 131–158). Franco Angeli.

2.2.4 PROCESSES AND METHODS OF THE DISCIPLINE

Since the beginning, Service Design has adopted several methods and tools from other disciplines to enrich its own set. Designers – especially service ones – need to facilitate the discussion and listen to users. To do so they need a multiplicity of dedicated tools made to support them in doing such a job. Tools and methods are useful to communicate within the design team and with clients and to involve users in active participation. Even if tools can be used in all design practices, they have found their most advanced field of action in design for services (Meroni & Sangiorgi, 2011). Moreover, it is impossible today to propose a service without ethnographic research, user-centred approach and above all, without discussing and testing the proposal with users.
These tools have been adopted and adapted to fit disciplinary purposes, and they come from several different contexts. Some have been borrowed from interaction design disciplines such as drama, scenarios, service interface analysis, storyboards, flow charts, storytelling, use cases, scripts, personas, role play and experience prototypes (Mager, 2004; Meroni & Sangiorgi, 2011). Tools and methods not only support the design practice, but also contribute to visualising and testing the service experience in all the phases, from description to implementation. The difference between the two is subtle but important. Tools are concrete models, such as journey maps and storyboard templates: they follow specific structures and may be built on given templates (Stickdorn et al., 2018). They may also be adapted according to the specificity of the service case. At the same time, methods are procedures to accomplish something, for example, how to conduct a contextual interview as a research method or doing *desktop walkthrough* as a prototyping method. Methods are the way in which something is done. Tools represent what to use, while methods usually describe how to create and work with certain tools in Service Design projects, such as interviewing, synthetizing, and prototyping.

In the end, both tools and methods are applied and used during a process that may be divided into phases. All design processes are iterative and share some qualities and important steps. Service Design has adopted well codified processes which are several. One of the most known is the Double Diamond, divided into four distinct phases: discover, define, develop, and deliver. It is very strong on a visual level; it gives a perfect idea of how the process goes through each phase: it opens in exploratory phases, and it narrows down in moments of definition. Another one is IDEO's. In the book 'The field guide to Human-Centred Design' (2015), IDEO shows its human-centred design approach divided into three phases. Even if it seems different from the Double Diamond, it follows the same divergent-convergent process, concentrating in the second phase the two central ones of the double diamond. The three phases are Inspiration, Ideation, Implementation. IDEO's process is the most diffused one, and it has been largely adopted by the design community. Even if IDEO has not invented the design process itself, the credit of having structured and applied it in such a clear and codified way belongs to them.

This chapter has been dedicated to a narrative evidence of the state of the art of both design branches and to an analysis of their genesis. The relation that occurs between Spatial and Service Design needs to be supported with *"tools, work practices and methods"* to transgress *"simple labor division or hierarchical expert support"* (Edeholt & Löwgren, 2003, p. 9). The existing complementarity between the two has to be proved through the analysis of their tools and processes to build a shared vocabulary for complementarity.

CHAPTER 03

A FRAMEWORK FOR TRANS-DISCIPLINARY "COLLISIONS"

3.1 INTRODUCING S+S POSITIONING WITHIN THE EVOLUTION OF THE MULTIDISCIPLINARY NATURE OF DESIGN

Both SpD and SD are already fields generated by the evolutionary contributions of many other disciplines in and outside the design domain. The roots of SpD are situated between the history of architecture and industrial design, and it has not yet been investigated as an autonomous disciplinary corpus (Branzi, 2006) because of its origin and because of its elusive nature. SD is a younger but consolidated discipline with a multidisciplinary nature: while service science's origin is based on different streams (management, design, social sciences, marketing, operations), SD is also connected with traditional design domains, and especially to the core concepts of design thinking and human-centred and user-participatory methods models, and it is, in turn, an active part of public policy, business, and management areas. This is valid if considering its establishment as well as the domains of applications today and the areas being explored with renewed attention: design and democracy (Bonsiepe, 2006; Margolin, 2012); agonism in co-design (DiSalvo, 2010; Hillgren et al., 2016; Munthe-Kaas, 2015); design for policymaking (Avelino et al., 2015; Boyer et al., 2011; Manzini & Staszowski, 2013; Mulgan, 2014; Selloni & Manzini, 2016); service evaluation (Drew, 2017; Foglieni et al., 2018); and data use for policy making. In fact, complements from other disciplines are strengthening its analytical components: in its evolutionary path within the so-called Fourth Industrial Revolution (Costa et al., 2018; Morrar et al., 2017); in its relationship with the physical realm, going across the SpD discipline as studied here (Blomkvist, Clatworthy, et al.,

2016; Felix, 2011; Fuad-Luke, 2012; Pine & Gilmore, 1998); and the human-to-human and human-to-digital interactions.[17] The overall value of this nature is central in relying on Jantsch's (1972) and Gustafsson's (2016) frameworks and discussion on the shift towards multi-, cross- and transdisciplinarity in theoretical research (section 3.1).
It is then seen as important to explore the evolution itself of SD and SpD, especially in relation to the evolution of the design process. In fact, since SD has developed in the last 20 years a structured operational capacity through recognised methods and tools and SpD, instead, lacks the development of a shareable method, it is useful to identify a linkage between the meta-design approach of SpD through its evolution from Architecture and the structured acquisition of provisional and probabilistic components into the SD methodology.

The design act is, in general terms, a multifaceted act since it is at the same time a creative process, where experience and intuition have a fundamental role, and a scientific process, with criteria for decision-making and rational systems. When theoreticians began to deal with design, they brought with them the philosophy and practice of analysis as the premise for a scientific approach (Rosselli, 1973, p. 5). After WW2, in fact, dealing with the concept of complexity as a determining condition for an open methodological approach in architecture, where intuition and creativity, on one side, and an analytic and deterministic method, on the other, were not already explored as dialectical counterparts. It emerged, in fact, that both intuition and hermeneutical as well as analytic and deterministic methods were not enough to encompass everything. As Rosselli stated, one does not exclude the other: in fact, intuition does not exclude the method, but it requires it as a dialectical counterpart. In that period, the need for a rationalisation of the design process led to the effective introduction of methodologies coming from other important scientific fields, such as information sciences, mathematics and statistics (Collina, 2005). Within the emerging debate, it began clear the indissoluble relationship between, from one side, the reality is seen as a complex system to be approached and understood, and, from the other, the way – method – to deal with reality's issues – design opportunities – as a complex system as well as the factors to be analysed, to be synthesised into ideas among the unlimited possible solutions and, finally, to be validated for production and dissemination. That means that the elaboration of a comprehensive, unique, and right method to deal with any design problem was neither a solution nor the object of design methods studies. The qualitative and intuitive creative act needed a

[17] From: De Rosa, A., Ayala García, C., & Parisi, S. (2018). The PhD Special Seminar on service design: unfolding a proof of concept. In Proceedings of the ServDes.2018 Conference. Linköping: Linköping University Electronic Press, p.1189.

supportive methodological approach: not mechanistic but a sense-making of the design act immersed in the contemporary socio-technical system. As Rosselli[18] states in the booklet *I metodi del design* [Design methods] (1973, pp. 9–10), design methodologies must not be operational – that means depending on the final good and according to its determination – but must be reconnected to philosophical research in order to reframe them within problems that are dimensionally different. A methodology, in fact, is not directed to solve problems but to understand the relationships among the components of any complex system. Relationships among the things are the object of a method and any procedural method maintains an analytical process aimed at sizing the system of the problem into simpler components, putting them in a hierarchy and evaluating smaller groups of variables (1973, pp. 8 and 17). The so-called wicked problems (Buchanan, 1992) are the subject matter of design thinking in fact; this assumption can be seen as an unresolved way to express something, but it brings us precisely to the understanding that a linear approach to any subject matter is not suitable. A transition from a deterministic view of the system to a complex one occurred, so while a systemic approach is needed, the system escapes from the possibility of being controlled, weakening the ability to design it. Methodologies in design were then seen as fundamental for guiding a sense-making of the design act and, to do so, design methodologies need to be hybridised too since systems with higher levels of complexity and with a higher number of variables need a reformed attitude.

This debate generated internal contrasts within the field, and the innovative approaches had an impact on the transformation of the idea itself of Architecture. The impact of the technological changes within the economic and social transformation and their multiple implications, had a relevant influence on the debate around the design methodology and in the development of Interior and Spatial Design approaches, operating between spaces and relationships. A crisis of the discipline's unity becomes a great cultural opportunity, opening new possible paths to the design culture. We must take a step back to what happened specifically after the Second World War, when a debate in the educational process about the role of architects in rebuilding cities resulted in an original point of view about the role of the technology of architecture, in that it needed transforming, and its relationship to a design approach. The need for methodological research developed from the inadequacy of an intuitive procedure in architectural education, which was unable to cope with new dimensional, quantitative, operational, and productive problems.

[18] With the research team of the Faculty of Architecture of Politecnico di Milano, course of Progettazione artistica per l'industria [Artistic design for the industry] , composed by Alberto Rosselli, Adriana Baglioni, Costantino Corsini, Luigi Moretti, Marco Simonazzi, Giuseppe Turchini.
Alberto Rosselli (1921–1976) was an Italian architect, designer, and professor of the Faculty of Architecture at Politecnico di Milano, co-founder of ADI – Associazione per il disegno industriale (Industrial Design Association).

This reflection evolved through a forceful debate via articles in the major journals and had an impact on the evolution of courses and programmes in Italian universities of architecture: in fact, the main theorists were prominent figures of the Italian education system as well as, in many cases, of the professional one. Thus, according to the Italian scientific community, this was influenced by considering the technical elements as objects with which to compose the building system. In order to begin, it required a credible policy of industrial and technological (re) organisation (cf. Giulio Minoletti, Alberto Rosselli, Marco Zanuso). Theorists and designers questioned how the university and university teaching could assimilate the new data of the techno-scientific industry, looking for a crucial connection of the academy with the field of practice. 3

> *"Italian design has been known to elaborate a specific critical culture [that] has laid the foundation for the subsequent development at an academic level of a peculiar research approach [...]. The research on Made in Italy design has dissociated itself increasingly whether in terms of the desire to emulate the sciences (such as mathematics, physics etc.) or in methods and tools – a typically Anglo-Saxon approach – or in terms of the temptation to remain a magical and ineffable territory, as that of art – an approach typical of Écoles des Beaux-Arts." (Seassaro, A. in Bertola & Maffei, 2008, p. 8).*[19]

Parts of these reflections have already been anticipated above (cf. *Design Methods* by Alberto Rosselli). It is interesting how that booklet was intentionally addressed to architects, to provide them with a collection of documents about the international debate around the development of a rational design process as systemic and operative procedures. The theories and methods reported in that publication evidenced the need for an overall understanding of the industrial design concept as a reconciliation between function, market, and production issues in a final solution, so as to understand the ongoing reflection between the creative process and operational method and to transfer it into the education of architects. The design approach was discussed as a method that integrates logical analysis with creative thinking into a unified system [Jones, J. (1959). *A systematic design method. In Design*, n.124, 49-52], as a response to needs to be analysed within the dialectic between situations, activities, and objects, where life is read as a sequence of actions [Moles, A. A. (1958). *Théorie de l'information et perception esthétique*], or as the creation of creative and original models, prior to the final work, that meet the needs identified [Archer, L. B. (1969). *Systematic Method for Designers.* Council of Industrial Design]. This is a

[19] Alberto Seassaro was the first dean of the Faculty of Design of Politecnico di Milano and one of the authors – with Raffaella Crespi and Leonardo Fiori – of the founding document of technological teachings in the Faculty of Architecture in 1970.

line of publications that, starting from different areas of interest, considers design knowledge and practice as a programmable process divided into phases, far from the vision of a creative genius, and regardless of whether it is mechanical engineering, architecture, design, or something other. Furthermore, in the essay *"Lo spazio aperto. Ricerca e progettazione tra design e architettura"* [The open space. Research and design between design and architecture] (1974), Alberto Rosselli clearly states that the overcoming of the contrast between architecture and design was desirable through the development of a methodology broad enough to accommodate a more evolved and relevant social need, towards a complementarity between culture and method. Within this complexity, the design outputs were already seen as relational phenomena, not obtainable through linear processes but through a complex system of prevision (models) with an impact overcoming the borders of the output itself. This logic has been transferred to the space, which cannot be qualitatively solved within the architectural object but must be understood as part of a socio-economic sphere, where an integrated relationship between spaces and objects needs to be explored. Neither places nor objects should be seen as independent parts: the object is part of a system in time and space and space is a relational issue, resulting from certain situations, certain activities and certain objects (1974, p. 8). Clearly rooted in this debate, a need emerged throughout the '70s to include the systemic approach in the design process itself and not only in the nature of design, thus introducing the meta-design approach and clearly driving the architectural studies reflections into the design ones, opening the Italian *cultura del progetto* to the international meaning of design as a disciplinary field (and not only as the pure translation of *progetto*). Ciribini[20] spoke about the management of the design process as *"an adaptive dynamic system"*: a sequence of actions of the programmatic action of the designer, that works through qualitative models and preventive solutions (Collina, 2005). The iteration along the whole process is constitutive: using a meta-design approach means structuring norms able to produce infinite and different but homogeneous morphological solutions indirectly.[21] Pushing forward that discussion today, meta-design and the design method are not only a sequence of operations in a scientific methodological process for exhaustively listing functions, purposes, requirements, constraints and any other factor that can drive the project, but they must also deal with an abductive process of inquiry. The design activity must surrender to an integral control of both the process and the output since the project embodies the unexpected as a constitutive element (Crespi, 2013).

[20] Giuseppe Ciribini (1913– 1990) was an Italian engineer and professor of Technology of Architecture at Politecnico di Torino. He is considered the father of the discipline of Architectural Technology in Italy. It is important to report that the process that resulted in the foundation of the School of Design – the former Faculty of Design after the Italian reform (L. n. 240 of 30/12/2010) – developed from the Department of Technology, then to the Department of Planning, Design and Construction [Dipartimento di Programmazione, Progettazione e Produzione Edilizia].

[21] Alessandro Mendini, "Metaprogetto sì e no" [Metadesign yes or no], in Casabella, n.333, 1969, p.13.

In these definitions, the basic notions pertinent to the design process are evident: the notion of the system – the structural order of the relationships between the parts in a given set; the notion of the process – when the time variable introduces the dynamic sequencing of states; and the notion of iteration and the notion of creativity. This last is not opposed to a systemic approach but is its dialectical counterpart: the system is the undeniable structure of reality; the system is the undeniable structure of the method as an operational and cultural reformulation of problems; creativity is the undeniable and founding variable of any human act. Hence, the design method progresses through being systemic and strategic into the techno-physical system and by acquiring provisional and probabilistic components of the human and socio-cultural environment (Norman & Stappers, 2015; Rosenman & Gero, 1998), renouncing an integral control of the reality to which it is applied, through a strategic and abductive approach (Crespi, 2013, pp. 28–29).

There is a clear connection with the Product-Service System (PSS) dimension. A PSS is defined as a system of products, services, supporting networks and infrastructure designed to be competitive, user-centred and sustainable (Mont, 2002) and *"a marketable set of products and services capable of jointly fulfilling a user's need"* where product is a *"tangible commodity manufactured to be sold"* and service is *"an activity (work) done for others with an economic value and often done on a commercial basis"* (Goedkoop et al., 1999, pp. 17–18). The PSS concept represents the shift from a purely tangible dominant practice to an integrated design strategy oriented to design solutions, where the connection between products and services is not casual but conceived from the very beginning (Meroni, 2008). Goedkoop et al. (1999) define PSS as *"product(s) and service(s) combined in a system to deliver required user functionality in a way that reduces the impact on the environment"*, where the hardware (product component) + the software (service component) are combined in a systemic logic taking into account ecological and economic (value-creating) issues in its development; all these parts are inseparable in order to deliver a required user functionality in a way that reduces the impact on the environment. So, the PSS concept should be considered an advanced – or another – vision of the integration of the tangible and the intangible of the service-dominant logic. In a continuously changing society, new forms of consumption and new social demands require a participated complex and contextualised product- service-systems (Meroni, 2008, p. 32), designed, made and delivered on a case-by-case basis and viewed from the client's perspective (Baines et al., 2007, p. 1549). SD aims to

provide a holistic approach in order to get an understanding of the system and of the actors and factors within the system (Mager & Sung, 2011). Holism is embedded in a cultural and humanistic re-balance of the scientific process.
Transcending the hardware/software relationship and for the clearer tangible/ intangible one.
• Tangible (product): extension of the traditional functionality of goods by incorporating additional services
• Intangible (service): an activity (work) done for others with an economic value often done on a commercial basis
• System: a collection of elements including their relations (Baines et al., 2007, p. 1545, paraphrasing Goedkoop).[22]

Since PSS includes acquiring knowledge about the end users as well as all the various players (administration, associations, companies, supply chain actors etc.) and may include their engagement in some phases of the design process, this perspective is explored through processes of co-creation and co-design[23] that are frequently discussed in SD and which have their origins in strategies of inquiry in the social sciences, e.g. Participatory Action Research.[24] Also here, an overall system view invests both the object of research and of practice as well as the necessary operational and cultural dimensions. As Morelli states (2002, p. 6), the extension of a design activity to incorporate services requires the use of new methodological tools to address PSS, in terms of: understanding the users' needs and the friction between complex technologies and the users; the complexity of variables entering into the design process and the tools and methods to deal with this; and validation of the process (representation, communication and dissemination).

The overall paradigm shift brought about disciplinary reflection on how the approach to the design project changes and how that has an impact on design education, turning from product creation to process creation (Muratovski, 2010), and setting a balance between artistic, technical, aesthetic, and analytical skills. Nowadays, universities – as complex hubs for research and education merged within the physical space of the city and in the transnational system of the global panorama – are fostering their pivotal role within communities of practice and communities of learners. Their renewed cultural and civic role between localisation and globalisation (Chatterton, 2000) involves more and more design research and design thinking as a strategy to *"advance public and social innovation and achieve creative solutions beyond the reach of*

[22] «Tangible» and «Intangible» terms have been introduced instead of «hardware» and «software» as for the original source.

[23] Co-creation and co-design are creative and interactive processes. It is a method, a strategy, embedding today from co-creation to -production to -evaluating etc. as an expansion of the overall participatory era in which we are. Participatory approaches developed as methodologies from the social sciences in the 1970s, entering the exploration phases of the design process and, later, within the user- and human- centred design discourse. Today, its expansion of concepts and, consequently, of methods, tools, and areas of application, make participatory design central in issues such as democratization, decision making, policies.

[24] Participatory processes had little impact on service development, while they have been strongly assimilated by service design because of its co-created nature. Cf.: Holmlid, S. (2012). Participative; co-operative; emancipatory: From participatory design to service design. In Conference Proceedings ServDes. 2009; DeThinking Service; ReThinking Design. (pp. 105- 118). Linköping University Electronic Press. Cf.: Gilmore, T., Krantz, J., & Ramirez, R. (1986). Action- based modes of inquiry and the host-researcher relationship. Consultation: An International Journal.

conventional structures and methods" (Mulgan, 2014).
Throughout this section, the disciplinary evolution within system theory has evolved on two levels: in its implication for the codification of disciplines (theory) in the international and Italian debate, and for the design act from a phenomenological point of view (object), contributing to the foundation of an investigation towards transdisciplinary approaches of a systemic and strategic nature. The incubation of such interest within higher design education is necessary to increase the impact of addressing contemporary needs with strategic thinking.
To conclude, it has been illustrated that there is a linkage between the contextual impact on the methodological development in the SpD discipline and the development of a meta-design approach with the later structured acquisition of provisional and probabilistic components into the SD methodology, dealing with the complexity of variables entering the design process through the contextual processes of co-creation and co-design. SD has developed in the last 20 years methods and tools linking the creative and the operational sides of the design process, with the relational component at the centre of its methodological evolution. SpD, instead, lacks in the development of a shareable method.

Finding 1. **A transition towards transdisciplinary coordination and cooperation is needed, rather than an approach based on separate disciplines. This cooperation should consider a dialectic between the creativity of the design act and the operational nature of the design method.**

Finding 2. **The systematic nature of the design object is intertwined with the systematic nature of the design process. SD and SpD share a semantic turn towards an open and humanistic methodological approach, where ethnography, community, and environmental psychology, play a fundamental role.**

FIRST COMPLEMENTARITY INDICATOR FOR AN S+S TRANSDISCIPLINARY APPROACH:

The structured methodology of the design process of Service Design can expand the operational capacity of the one of Spatial Design considering the understanding of the common ground they share

3.2 TRANSDISCIPLINARITY AS AN ANSWER TO THE COMPLEXITY OF THE POST-INDUSTRIAL ERA

A merged-knowledge approach is needed, to enable design practitioners to deal with the whole system of relationships within a *product milieu* (Margolin in Buchanan & Margolin, 1995). As a field that is constantly evolving, design requires a transition from an approach based on disciplines to an approach based on strategic planning: from know-how to know-what (Jantsch, 1972). While design practice requires designers to deal with that, design education has gone through a long process of creating silos – an understandable transformation of the discipline itself. Design research needs to take a concrete step towards transdisciplinary research (Muratovski, 2011), which means being interdisciplinary while being able to cross borders.[25] In the past decade, in fact, there has been an inverse process: design education has moved towards a transdisciplinary approach.

The author does not claim that the design discipline has all the means to govern, deal with and solve such complexity; indeed, the author believes that designers are becoming more and more involved in multifaceted milieus (that can include the development of innovation in the public sector, the reframing of business models, the creation of collaborative solutions or of innovative managerial solutions). Regardless of the domain, a specific transdisciplinary approach must be envisaged to break the boundaries and expand the approaches.

[25] The authors refer to the notions of hierarchy of increased complexity from multi-, to cross- and to inter-disciplinarity, theorized by Jantsch, E. (1972). Technological planning and social futures. New York: Halsted Press, a Division of John Wiley & Sons, Inc.

The seminal work of Erich Jantsch in 1972, Technological planning and social futures, is considered as the main reference for this exploration of the notion of a hierarchy of increased complexity from multi-, to transdisciplinarity in the cooperation and coordination among disciplines.[26] According to Jantsch, a renewed disciplinary relationship was needed to deal with such changes at a macro level: university needs to become an active institution in society, with a close connection with institutions and industry for a knowledge-based and methodological-based actions towards a proper framework, and consequentially it was needed to break the silos of disciplines toward increasing cooperation and coordination in the education system, since disciplinarity as a specialisation in isolation is meaningless for a purposeful system.
Even if Jantsch's focus was not specifically on the discipline of design, the forecasted issues are extremely relevant in the general scenario depicted. He illustrates the hierarchy as follows:

- disciplinarity as a specialisation in isolation and as *"a static principle which becomes meaningless if considered in the framework of a purposeful system"* (1972, p. 220)
- multi-disciplinarity, when there is no direct cooperation among the disciplines
- pluri-disciplinarity, when there is direct cooperation among the disciplines without coordination
- cross-disciplinarity, when there is direct cooperation among the disciplines, with a strong polarisation towards one (one within the other)
- inter-disciplinarity as a coordination by higher-level concept, meaning that it involves cooperation between disciplines to the point of modifying their concepts, structures and aims through a common viewpoint or purpose, especially in a two-level coordination
- trans-disciplinarity includes multi-level coordination, *"embracing a multitude of interdisciplinary two-level systems"* (1972, p. 222) that changes the overall purpose of the system.

The positioning of this research within the framework is to build an interdisciplinary approach between Service Design and Spatial Design considering transdisciplinarity in design education.

[26] Cf. chapters 15 and 16 of the book.

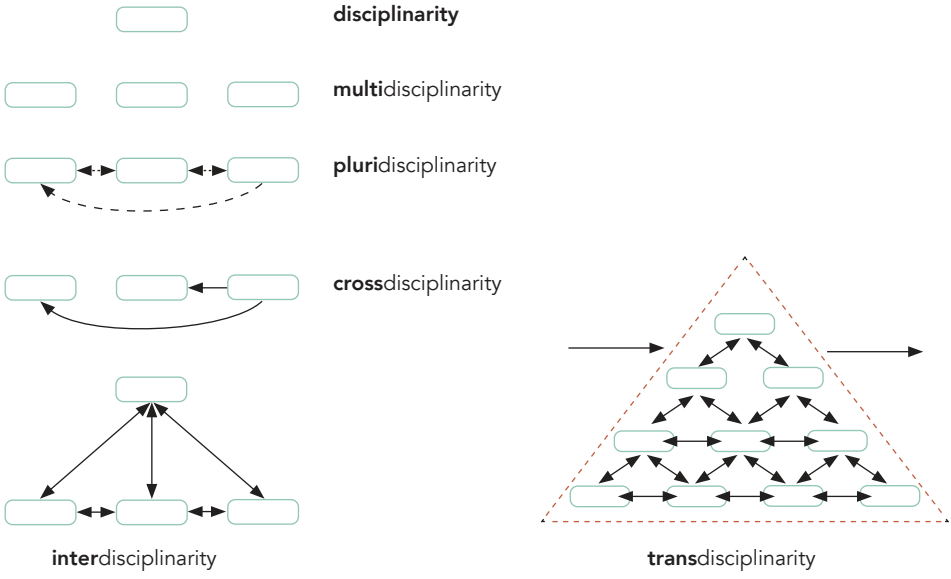


Fig. 4 – From: Jantsch, E. (1972). Technological planning and social futures. New York: Halsted Press, a Division of John Wiley & Sons, Inc., p.221.

No direct cooperation among disciplines is expected.	One discipline should support the other within itself.	Direct cooperation exists but it doesn't expect the borders of the different disciplines to be crossed.	Direct cooperation exists. The borders of the different disciplines are crossed and overcome.
It refers to adding different isolated disciplines without any direct cooperation in-between.	Where one discipline supports the other within the other.	There is a cooperation in both directions and the results can't be achieved entirely only within one of the two.	It requires an extensive amount of knowledge, a systematic proficiency and a comprehensive theoretical framework.

Fig. 5 – From: Jantsch (1972). Gustafsson et al. (2016). Edeholt & Löwgren (2003). Muratovski (2015).

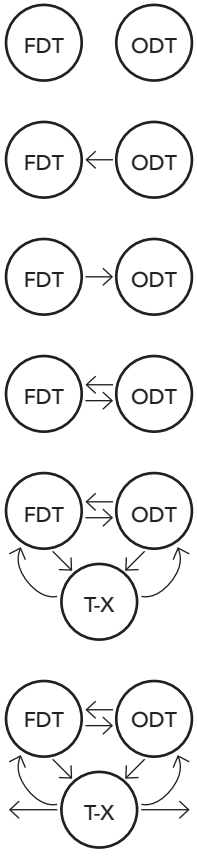
The precursory and accurate nature of his work is evident, and his notion of a hierarchy of increased complexity from multi-, to trans-disciplinarity in the cooperation and coordination among disciplines is extremely relevant to this book. In fact, his work provides a clear framework for the transdisciplinary approach in an attempt to be formulated.
Within this discussion, the contribution of Gustafsson et al. in Developing service research–paving the way to transdisciplinary research is particularly important. The paper aims to understand how service science,

> *"As an interdisciplinary area of research, can increase its potential for transdisciplinary contributions from the perspective of what signifies intra-, multi-, inter-, and transdisciplinary research" and they argue that "service research should strive for transdisciplinary but first the research needs to become truly interdisciplinary" (2016, pp. 1–2).*

In developing different forms of theorising research, their notions are illustrated as follows:
• intra-disciplinarity, when research is conducted internally within a discipline without any explicit intent of making contributions to theories of other disciplines
• multi-disciplinarity, when there is a disciplinary collaboration, classified as theory borrowing (*"one-way contribution of theories developed in other disciplines to describe and explain observed phenomena [...] with no explicit intent to make contributions to the borrowed theory"*); theory lending (*"one-way contribution of theories developed in a focal discipline to describe and explain observed phenomena [...] with no explicit intent to make contributions to the lent theory"*); mutual theory (*"a two-way theoretical exchange that involves the coordination and/or juxtaposition of theories from various disciplines"*)
• inter-disciplinarity, *"occurs at the fringes of established disciplines and leads to the forging of a new discipline when the restrictions and limitations of the parenting disciplines do not allow further theoretical progress"*
• trans-disciplinarity, when *"mutual theory development leads to the development of revelatory, and evolving theoretical explanations that transcend the pre-existing understanding of any of the contributing fields"* (2016, pp. 3–4).

By comparing the two frameworks, it is useful to gather an in-depth understanding of the shift towards multi-, cross- and transdisciplinarity in theoretical research. From one side, Jantsch frames it in a wider discourse around the added value of disciplinary cooperation to understand the

impact of a complex system of knowledge on social, institutional and labour changes and challenges. He forecasted the shifts due to the technological changes' implications on social, institutional and labour issues and the need for increased cooperation and coordination of disciplines to deal with these on large and multiple scales. To mention a few, he analysed the shift from mechanistic and linear thinking to a non-deterministic one to tackle a complex systemic context; the need for future-oriented systems of human decision-making over a basic problem-solving approach; and the need for large social systems of participative planning and decentralised initiative matched with centralised synthesis.



Intradisciplinary
Development of a theory within a focal discipline (Focal Discipline Theory - FDT) without any explicit intent of coordinating insight with or making contributions to theories developed in other disciplines (Other Discipline Theory - ODT).

Multidisciplinary forms
Theory borrowing: One-way contribution of theory developed in ODs to describe and explain observed phenomena, and increase the quality of intradisciplinary theory-based research in a FD. There is no explicit intent to make contributions to the borrowed theory.

Theory lending: One-way contribution of theory developed in a FD to describe and explain observed phenomena, and increase the quality of intradisciplinary theory-based research in ODs. There is no explicit intent to make contributions to the lent theory.

Mutual theoretical advancement: Two-way interdisciplinary contribution of and to theory that involves a joint use of and/or juxtaposition of theories from various disciplines in ways that help advance, falsify, and/or define the boundaries of the contrasted theories within each of the involved disciplines.

Interdisciplinary
Interactive mutual theoretical development and integration among and on the fringes of different disciplines (with different concepts, methods, data and terms), organised into a common effort on a common problem.
Interdisciplinary research leads to revelatory and evolving theoretical advancement (T-X) and the forging of a new discipline with sustained intercommunication among participants from the different disciplines.

Transdisciplinary
Mutual theory development that leads to the development of a novel, revelatory, and evolving theory (T-X) that transcends the preexisting theoretical understanding in the involved disciplines. Transdisciplinary theorising representing a holistic approach that seeks to relate the involved disciplines into a coherent whole by creating a novel theoretical understanding that is applicable across and beyond preexisting theories in any single contributing discipline.

Fig. 6 – In Gustafsson, A., Högström, C., Radnor, Z., Friman, M., Heinonen, K., Jaakkola, E., & Mele, C. (2016). Developing service research–paving the way to transdisciplinary research. Journal of Service Management, 27(1), 9–20. Diagram by the authors, p.4.

According to Jantsch, a renewed disciplinary relationship was needed to deal with such changes at a macro level: the university needs to become an active institution in society, with a close connection with institutions and industry for a knowledge-based and methodological-based actions towards a proper framework, and consequentially it was needed to break the silos of disciplines toward an increasing cooperation and coordination in the education system, since disciplinarity as a specialisation in isolation is meaningless for a purposeful system. Jantsch's work provides a clear framework for the transdisciplinary approach in an attempt to be formulated.

On the other side, the work of Gustafsson et al. supports this exploration within the design research domain, with attention on service science, being the touchstone of many shifts occurring in the last decades within design research (on the intangibility of the design object; the value of co-creation; the economic and strategic value of design; methods to observe and interpret needs and behaviours; and to transform it into something useful, usable, desirable, efficient and effective (Buchanan, 2001; Holmlid & Evenson, 2008). Furthermore, they underline that any levels of theorising research contain the lower ones, so that the more complex ones embed the simpler ones, which is necessary to have diverse insights towards more comprehensive theoretical understandings.

Considering the possible ambiguity, the language differences (terminology, contexts, methods and levels of analysis), and the tendency to disciplinary protectionism as some of the challenges for transdisciplinary dialogues, Gustafsson et al. argue that

> *"Due to its inherent interdisciplinary roots service research has the opportunity to develop service research theory with transdisciplinary qualities if the domain manages to address internal ('stacking' concepts) and external (conceptual distance) challenges [and] has an opportunity to become a more open and creative domain that engages in mutual and reciprocal theorising across academic disciplines and institutions outside the academia. [...] Essentially, [they] argue that service research should strive for transdisciplinarity but first the research needs to become truly interdisciplinary." (2016, pp. 8 and 4).*

This research illustrated a process in which the exploration of possible contributions from one discipline to the other has been tested with experimentations in design education with a multidisciplinary approach, to then inform more advanced exploration to go beyond their restrictions (interdisciplinary approach), and finally to frame a possible transdisciplinary direction through theoretical explanations. The proposed framework is still not meant to be forced into a testing environment but, rather, to expand the borders. In fact, multi- / cross- / interdisciplinarity are applicable to testing environments while transdisciplinarity is the perspective for theoretical implications.

NOTES ON THE WORK OF ERICH JANTSCH

Jantsch carried out a very substantial investigation on the impact of the technological changes within social change and on the multiple implications. He forecasted the shifts due to the technological change's implications on social, institutional, and labour issues and the need for increased cooperation and coordination of disciplines to deal with on large and multiple scales. To mention a few, he analysed and anticipated a series of questions that are evident today:

• the shift from mechanistic and linear thinking to a non-deterministic one to tackle a complex systemic context

• society and technology are seen as joint systems, including policy, strategic and tactical issues

• the need for future-oriented systems of human decision-making over a basic problem-solving approach

• the need for large social systems of participative planning and decentralised initiative matched with centralised synthesis

• the need for universities to become active institutions in society, building and maintaining a close connection with other institutions and industry for knowledge-based and methodological-based actions towards a proper framework

• the consequential need to break the silos of disciplines towards increasing cooperation and coordination in the education system.

3.3 FRAMEWORKS FOR THE COMPARISON

It is necessary here to illustrate the frameworks on which the book's comparison relies.
In 2003, Håkan Edeholt – Professor in Design at the Oslo School of Architecture and Design, Norway – and Jonas Löwgren – Professor of Interaction and Information Design at the Division of Media and Information Technology of the Linköping University, Sweden – published the article *"Industrial Design in a Post-industrial Society: A framework for understanding the relationship between industrial design and interaction design"*.[27] In it, they built a framework by which to understand the relationship between the disciplines of industrial and interaction design, in order to suggest the need for interdisciplinary approaches to go beyond strict divisions in design practice and within the current panorama of the development of ICT, integrated into completely new ranges of products and in heterogeneous systems, and specifically when based on conditions given by the material rather than the virtual world (2003, p. 2). This comparison is contextualised in the disciplines' encounter in the development of ubiquitous computing, where information and communication technology moves from the desktop to permeate many aspects of everyday life, analysing the impact of the changing user/computer ratio through the decades and the impact of the evolution of industrial design both in the industrial domain and in the development of two different educational traditions, Arts and Crafts on the one hand and the Architecture on the other. Without describing their setting

[27] Edeholt, H., & Löwgren, J. (2003). Industrial design in a post-industrial society: A framework for understanding the relationship between industrial design and interaction design. In Proceedings of the 5th Conference of the European Academy of Design, Barcelona. At that time, they both belonged to the Arts and Communication Department at Malmö University College, Sweden.

of discussion in more depth, it is interesting to find parallelism in this comparison between design disciplines with a different historical breadth, with disciplinary needs emerging from a changing design practice and a changing practice of use; this research context shares similarities to this one. Also, for that reason, it has been taken as a reference framework for disciplinary comparison in the design field.

The paper's authors initially identified three general areas: *Process, Materials and Deliverables*. Each area has three key dimensions with two aspects, that are more or less opposed, but this does not mean that a discipline cannot contain the two aspects in equal measure.

> *"For each aspect, the disciplines of industrial design and interaction design are scored on a three-point scale: the discipline is highly oriented, somewhat oriented, or not to any significant degree oriented towards the aspect. [...] The scores represent [the authors'] understanding of the current best practice in the respective discipline" on a mainstream level and with highly simplified characterisations (2003, p. 6).*

The Edeholt and Löwgren framework was then revisited by Holmlid in 2009 in the article that explicitly starts from the 2003 publication and carries on the disciplinary conversation with the added component of the Service Design discipline as a further level of encounter with industrial design and interaction design. As Holmlid states,

> *"For design to work in an integrated manner in such situations [business innovation strategies combining process innovation and interactive technology, e-government, etc.] designers need to have an understanding of each other's disciplines [and] by comparing the design disciplines according to dimensions of a small set of areas, [the author] provides a basis to share understanding, create common ground and identify differentiation" (2009, p. 1).*

In accordance with the initial framework, Holmlid added the Service Design level, using the same terms and adding others then necessary according to the new variable of the framework.

The Edeholt and Löwgren framework is reported here:

First key dimension: the design process

• *(P1) Design process: explorative* – when the design process is open and searching, in terms of problem framing as well as proposed solutions; *analytical* – when it starts from the assumption that the problem can be

analysed and specified first, then solved through design:
> Industrial design processes are highly explorative, somewhat analytical.
> Interaction design processes are not significantly explorative, highly analytical.
• *(P2) Design representation: depictive* – when the design representation looks like the intended result (i.e., volume models); *symbolic* – when it expresses aspects of the result other than its appearance (i.e., flowcharts):
> Industrial design representations are highly depictive, not significantly symbolic.
> Interaction design representations are not significantly depictive, highly symbolic.
• *(P3) Production process: physical* – refers to the production of material artefacts that are manufactured from physical parts, consuming raw materials, and requiring machinery and tools; *virtual* – refers to the production of software and similar artefacts which in principle have no production cost:
> Industrial design production is highly physical, not significantly virtual.
> Interaction design production is not significantly physical, highly virtual.

Second key dimension: the design material

• *(M1) Material: tangible* – when the design material can be touched and sensed; virtual:
> Industrial design materials are highly tangible, not significantly virtual.
> Interaction design materials are not significantly tangible, highly virtual.
• *(M2) Dimensionality: spatial* – when the design material extends mainly in the three dimensions of physical space; *temporal* – when it unfolds over time, and it entails concepts such as story and interaction:
> Industrial design dimensionality is highly spatial, not significantly temporal.
> Interaction design dimensionality is not significantly spatial, highly temporal.
• *(M3) Aesthetic focus: visual* – when the aesthetic focus is concerned with the form of an existing or proposed artefact in itself; *experiential* – when it is concentrated on how the existing or proposed artefact is perceived, mainly in terms of its use:
> Industrial design aesthetics are highly visual, somewhat experiential.
> Interaction design aesthetics are not significantly visual, highly experiential.

Third key dimension: the design deliverables

• *(D1) Scope of deliverable: product* – when the artefact itself is at the focus of attention; *use* – when the artefact is embedded in multiple layers of activities and other artefacts, making it more of a service offer:

> Industrial design deliverable scope is highly product, somewhat use.
> Interaction design deliverable scope is not significantly product, highly use.

• *(D2) Flexibility of deliverable: final* – when the deliverable is relatively static after delivery; *customisable* – when it is intended to be modified and further developed after delivery by the customers, by the designers or by third-party actors:
> Industrial design deliverables are highly final, not significantly customisable.
> Interaction design deliverables are somewhat final, somewhat customisable.

• *(D3) Customer for deliverable: mass market* – a mass market view of customers entails consumer-oriented marketing, large numbers of potential customers that are essentially unknown to the designers; *organisational support* – a view of the customers related to bespoke development, consulting, and contracting work where a single customer organisation receives a tailor-made deliverable:
> Industrial design customers are highly mass market, not significantly organisational support.

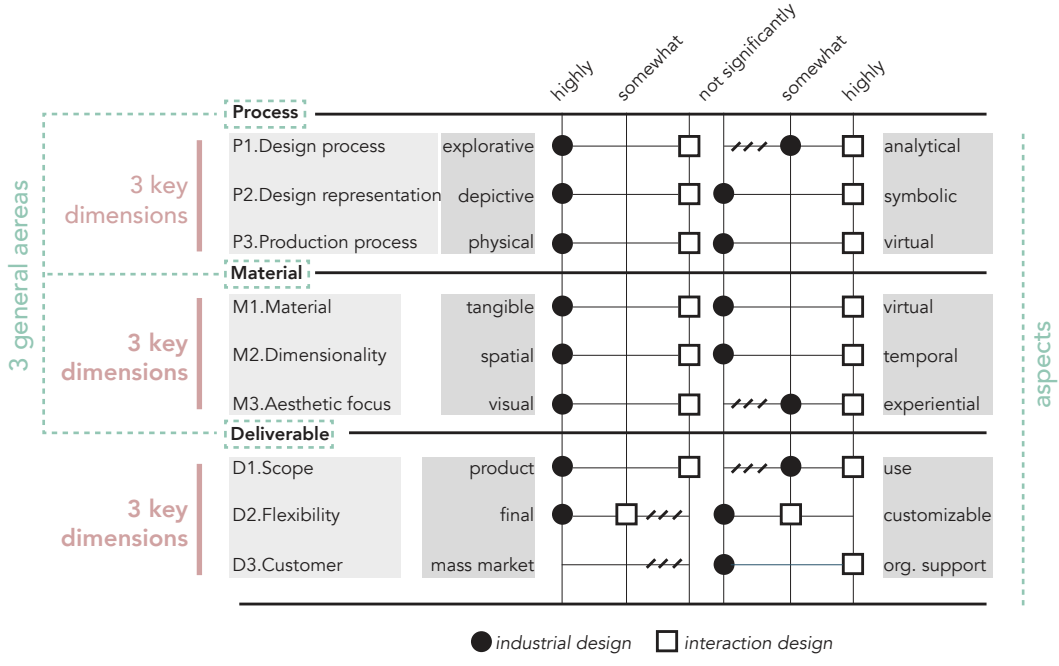


Fig. 7 – Diagram by Edeholt and Löwgren, p.8.

> Interaction design customers are somewhat mass market, highly organisational support.

The Holmlid framework is reported here:

First general area: the design process

• *(P1) Design process: explorative – analytical:*

> Industrial design processes are highly explorative, somewhat analytical.

> Interaction design processes are not significantly explorative, highly analytical.

> Service Design processes are highly explorative, and somewhat analytical.

In fact, *"service design is a discipline that is influential in innovation processes, in business and technology development [...] With a process that covers so many aspects it would be easy to say that it is explorative as well as analytical. [...] The service design processes drive and support divergence, convergence as well as selection"* (2009, p. 3).

• *(P2) Design representation: depictive – symbolic – enactive* – when using dramaturgy or choreography to represent the service process:

> Industrial design representations are highly depictive, not significantly symbolic, and not significantly enactive.

> Interaction design representations are not significantly depictive, highly symbolic, and somewhat enactive.

> Service Design representations are somewhat depictive and highly symbolic, and highly enactive.

In fact, *"depending on who uses the representation for a specific purpose their nature will shift between depictive and symbolic"* (2009, p. 4). Service Design deals often with goods, products, and physical spaces as touchpoints of the process where model, sketches, and prototypes are largely used to represent the structural significance of what is represented. The use of theatrical prototyping perfectly embodies an enacted representation, because it uses dramaturgy or choreography to tell the service process.

• *(P3) Production process: physical – virtual – ongoing* – since a service is not an artefact *ex ante*, but it is in itself a production process:

> Industrial design production is highly physical, not significantly virtual, and not significantly ongoing.

> Interaction design production is not significantly physical, highly virtual, and somewhat ongoing.

> Service Design production is highly physical, highly virtual, and highly ongoing

While Edeholt and Löwgren focused here their attention on artefacts, a service is not an artefact existing a-priori but throughout the whole process itself: production, co- production, value-addition.

Second general area: the design material

• *(M1) Material: tangible – virtual:*

> Industrial design materials are highly tangible, not significantly virtual.

> Interaction design materials are not significantly tangible, highly virtual.

> Service Design materials are highly tangible and highly virtual.

In fact, *"in service design it is essential to establish service evidence, and to have a clear service interface, but also to have software, manuscripts and other virtual material"* (2009, p. 4).

• *(M2) Dimensionality: spatial – temporal – social* – since the temporal dimension also involves the social aspects, the relational dimension is then underlined:

> Industrial design dimensionality is highly spatial, not significantly temporal, and not significantly social.

> Interaction design dimensionality is not significantly spatial, highly temporal, and somewhat social.

> Service Design dimensionality is somewhat spatial, highly temporal, and highly social.

In fact, *"a service is always produced in a social and physical setting. [...] How the physical environment is layed out can be of major importance for the service. Moreover, a service is temporal in its nature. It is hard to imagine a service that does not unfold over time. [...] Services always have a social (or relational) dimension."* (2009, p. 4).

• *(M3) Aesthetic focus: visual – experiential – active* – when the aesthetic focus is on the social relationships between the human agents of the service process:

> Industrial design aesthetics are highly visual, somewhat experiential, and not significantly active.

> Interaction design aesthetics are not significantly visual, highly experiential, and not significantly active.

> Service Design aesthetics are somewhat experiential, highly visual, and highly active.

A service can be considered experiential as it can be tested only when it is used. Nevertheless, at the same time, the service's tangible touchpoints – such as goods, spaces, and products – reflect its aesthetics, connecting its appearance with the visual aesthetics of the service. The service's

active aesthetic refers to the attention toward the human relation, where this dialogue is re-established between the human agents in the service process (2009, p. 5).

Third general area: the design deliverables

• *(D1) Scope of deliverable: product – use* – performance – since the deliverable relies on the experience of participation, of value co-creation:

> Industrial design deliverable scope is highly product, somewhat use, and not significantly performance.

> Interaction design deliverable scope is not significantly product, highly use, and not significantly performance.

> Service Design deliverable scope is somewhat product, highly use, highly performance.

In fact, *"the main deliverable of service design is based in a temporal structure where the experience of participation, action and contribution is at centre stage, but there will be artefacts and products embedded in this activity that are central for the experience of the service."* (2009, p. 5).

• *(D2) Flexibility of deliverable: final – customisable – dynamic* – given that the service design is not finished until the service is performed, there is a high degree of dynamicity in the deliverable:

> Industrial design deliverables are highly final, not significantly customisable, and not significantly dynamic.

> Interaction design deliverables are somewhat final, somewhat customisable, and somewhat dynamic.

> Service Design deliverables are somewhat final, highly customisable, and highly dynamic.

In fact, *"a service design deliverable is final, or static, in the sense that when the service is over, it cannot be revoked or changed. For a service customer getting a service once, the service is static, but over time the service can be highly customisable. Given that the service design is not finished until the service is performed, there is a high degree of dynamicity in the deliverable."* (2009, p. 6).

• *(D3) Customer for deliverable: mass market – organisational support – customer's customer* – since the influence of the customer's customer experience is important:

> Industrial design customers are highly mass market, not significantly organisational support, and somewhat customer's customer.

> Interaction design customers are somewhat mass market, highly organisational support, and somewhat customer's customer.

> Service Design customers are highly mass-market, highly

organisational support, and highly customer's customer.
In fact, *"the deliverable from a service design point of view often is as influential for the customer's customer, and her experience of the service, as it is important for the customers possibilities to give high-quality service."* (2009, p. 6).

These two frameworks are interesting because they offer a parallelism between design disciplines in a clear way, and because of its highly simplified characterisation to represent the current best practices of the disciplines.
This comparison between design disciplines is highly interesting and it has the value of expanding the theoretical reflections of the impact of the design object and the design process – in their wider sense – on multiple layers of their ontological meanings.
However, it is evident that the dependence on specific examples determines the greater variable of this framework, depending on the level of advancement of technologies that are able, as is evident nowadays, to unbalance acknowledged paradigms, such as temporal and spatial paradigms.

For the concerns of this book, this framework has provided a useful inspiration and reference to frame the later proposed Qualitative Comparison between Spatial and Service Design. However, the comparison is not built around a specific disciplinary encounter, such as in the reference, but it is built upon theoretical dialogues on the nature of services and spaces in their encounter in the physical realm, to foster a qualitative discussion on design disciplines' influence and impact in their specific domain.

For this reason, the author's intention is not to add the Spatial Design level in the presented framework as the main scope of this book but as a test to support the later framework proposed. This test has been developed as part of the master thesis in Product-Service System Design by the former graduate student Gea Sasso, that the author

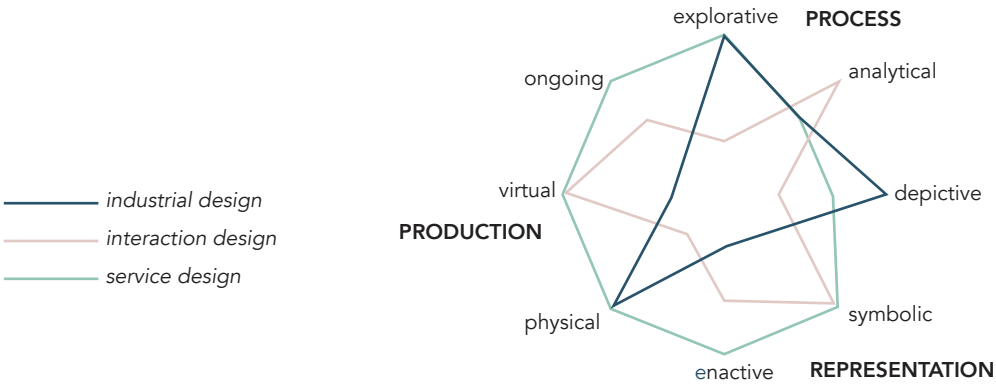


Fig. 8 – Diagram about the dimensions of the Process area by Holmlid (2009) p.4.

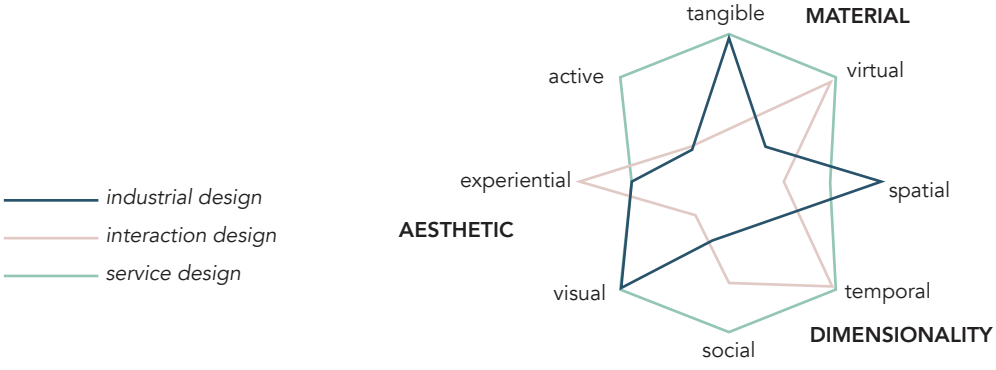


Fig. 9 – Diagram of the dimensions of the Material area by Holmlid (2009) p.5.

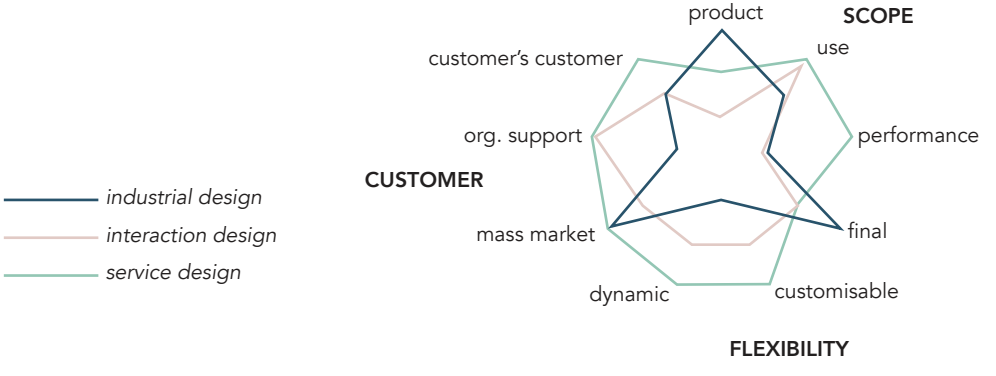


Fig. 10 – Diagram of the dimensions of the Deliverable area by Holmlid (2009) p.5.

co-supervised[28], and later presented at the DRS Bilbao Conference in the paper *Spatial Design + Service Design: Framing a trans-disciplinary perspective* (De Rosa, Sasso, 2022)[29]. Moreover, Holmlid, in the paper's discussion section, also underlined that the areas in which a new term is needed are exactly the areas of expertise of Service Design, where the contribution and the competencies of the discipline are evidenced.

In accordance with that and in line with the purpose of this book, the scope of framing the fundamentals of a transdisciplinary approach means that – here – the areas in which each discipline expresses its contribution to the wider reflection on the design research is exactly where the disciplinary coordination and cooperation should be explored.

The framework presented here has been a fundamental reference to rely on, both in its structure and in the contribution of the authors around the disciplines for a definition of the comparisons. Furthermore, Holmlid also relies on Buchanan's framework on the design orders, defining it as a

> *"Partial model, [...] valuable to interpret the design disciplines as integrative disciplines or as boundary openers of the model" itself (2009, p. 7).*

This observation is important: from one side, because it underlines the impossibility to strictly categorise established design disciplines but is useful to orient their initial conception; from the other, it supports the outreach of the design disciplines towards transdisciplinary cooperation. From Jantsch's hierarchy of increased complexity from multi-, to transdisciplinarity in cooperation and coordination among disciplines, interdisciplinarity and transdisciplinarity were defined as follows:

- Inter-disciplinarity as a coordination by higher-level concepts, meaning that it involves cooperation between disciplines to the point of modifying their concepts, structures and aims through a common viewpoint or purpose, especially in a two-level coordination
- Trans-disciplinarity includes multi-level coordination, *"embracing a multitude of interdisciplinary two-level systems"* (1972, p. 222) that changes the overall purpose of the systems.

Assuming that both SpD and SD are already disciplines generated by the

[28] Sasso, G. (2018). "S+S - Framing the relationship between Spatial and Service Design disciplines. An explored intersection through the analysis of their process and tools". Master thesis in Product-Service System Design, School of Design – Politecnico di Milano. Supervisor: Davide Fassi. Co-supervisor: Annalinda De Rosa.

[29] De Rosa, A., & Sasso, G. (2022). Spatial Design + Service Design: Framing a trans-disciplinary perspective. In D. Lockton, S. Lenzi, P. Hekkert, A. Oak, J. Sádaba, & P. Lloyd (ed.), DRS2022: Bilbao. https://doi.org/10.21606/drs.2022.656

evolutionary contributions of many other disciplines in and outside the design domain,

> *"only with inter- and trans-disciplinarity the science/innovation system becomes 'alive' in the sense that disciplinary contents, structures and interfaces change continuously through coordination geared to the pursuit of a common system purpose. Inter- and trans-disciplinarity thus become the key notion for a systems approach to science, education and innovation." (1972, p. 224).*

Through the reflections illustrated in De Rosa and Sasso (2022), and Sasso (2018), adding Spatial Design to the framework brings to:

First general area: the design process

• *(P1) Design process: explorative – analytical:*

> Spatial Design processes are highly explorative, and highly analytical.

Spatial Design has a highly explorative process because it usually investigates several different ways to problem framing. It usually collects case studies and faces the research mainly through the exploration of existing good practice within and outside the disciplinary context. It rarely formulates requirement specifications that lead to a traceable way for testing. However, it is somewhat analytical because space has always to answer technical requirements, that offer constraints and opportunities in the evolution of the process.

• *(P2) Design representation: depictive – symbolic – enactive:*

> Spatial Design representations are highly depictive, highly symbolic, and not significantly enactive.

The representation in Spatial Design is highly depictive and it is intrinsically connected to the core nature of the discipline. The majority of Spatial Design's means of representation are visual and depictive. Symbolism is also a strong component in the design representation of spaces, and it is connected to the values of eternity inherited by architecture. SpD is not significantly enactive during the design process, even if space could be a potential stage for mise-en-scène.

• *(P3) Production process: physical – virtual – ongoing:*

> Spatial Design production is highly physical, not significantly virtual, and somewhat ongoing.

SpD's production process is highly physical, due to the strong tangible nature of spaces. On the contrary, the production process is not significantly virtual – while it is highly virtual in the design process –, as most part of SpD takes place in the environment with tangible elements. In the end, the production process for SpD is somewhat ongoing. In fact, even if spaces are in a certain way meant to last and designed to

be absolute and everlasting, they are also subject to requalification, restoration and, above all, subject to modification through use.

Second general area: the design material

• *(M1) Material: tangible – virtual:*

> Spatial Design materials are highly tangible, not significantly virtual.

• *(M2) Dimensionality: spatial – temporal – social:*

> Spatial Design dimensionality is highly spatial, somewhat temporal, and somewhat social.

The dimensionality of SpD is of course highly spatial. The SpD's dimensionality is somewhat temporal, as space is partially influenced by time. It has to be considered that the idea of space refers to the absolute paradigm of eternity. Howe, to the human presence. This is connected to the social dimension of the space as an encounter. So, the social dimension of SpD results as somewhat social: the human presence has an influence on the dimensionality of the space that usually is perceived as a container. These observations are especially valid for the way in which the social and temporal dimensions enter the design process discourse. Of course, spaces are highly social and temporal; but only *somewhat* when referring to their predominance in the design process so far.

• *(M3) Aesthetic focus: visual – experiential – active:*

> Spatial Design aesthetics are highly visual, highly experiential, and highly active.

The aesthetics of SpD have to be highly visual, as the perception of SpD is channelled through visual means. The experiential aspect of its aesthetic is as important as its visual aesthetics. There is great attention to the possibilities of usage of the artefact, as SpD focuses on human activities and their functions. SpD's aesthetic focus is somewhat active, as the discipline takes somehow into consideration the moment of the encounter.

Third general area: the design deliverables

• *(D1) Scope of deliverable: product – use – performance:*

> Spatial Design deliverable scope is highly product, somewhat use, and somewhat performance.

The scope of the deliverable is highly product, because there is a great attention to the production aspects of the space, in a material sense. The deliverable scope is somewhat use, because space is part of the ecosystem of actions, so it is somewhat performance too.

• *(D2) Flexibility of deliverable: final – customisable – dynamic:*

> Spatial Design deliverables are highly final, somewhat customisable, and not significantly dynamic.

It is quite difficult to modify the space after, it could happen but usually

with spaces imagined to be subject of transformation. This clearly refers to structural material transformations. In this sense, SpD deliverables are somewhat customisable, because they may be designed to evolve or transform, or in some cases, they can be adaptive. Space is rarely dynamic because, in order to change it, it is necessary to do hard operations that are usually complex.

• *(D3) Customer for deliverable: mass market – organisational support – customer's customer:*

> Spatial Design customers are highly mass market, somewhat organisational support, and not significantly customer's customer. SpD customers are always mass market as spaces are designed to be used by anyone, their value is also related to this capacity.


explorative
PROCESS
analytical
depictive
symbolic
REPRESENTATION
enactive
physical
PRODUCTION
virtual
ongoing
tangible
MATERIAL
virtual
spatial
temporal
DIMENSIONALITY
social
visual
AESTHETIC
experiential
active
service design
spatial design

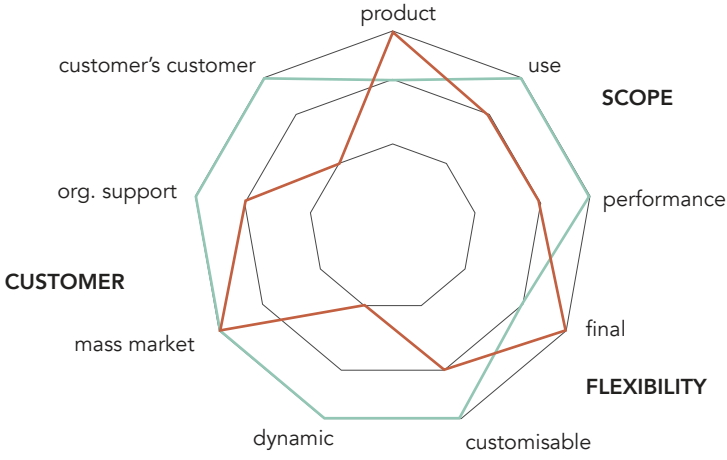


Fig. 11 – Diagrams by Holmlid (2009) with the added Spatial Design analysis by Gea Sasso (pp.24–29).

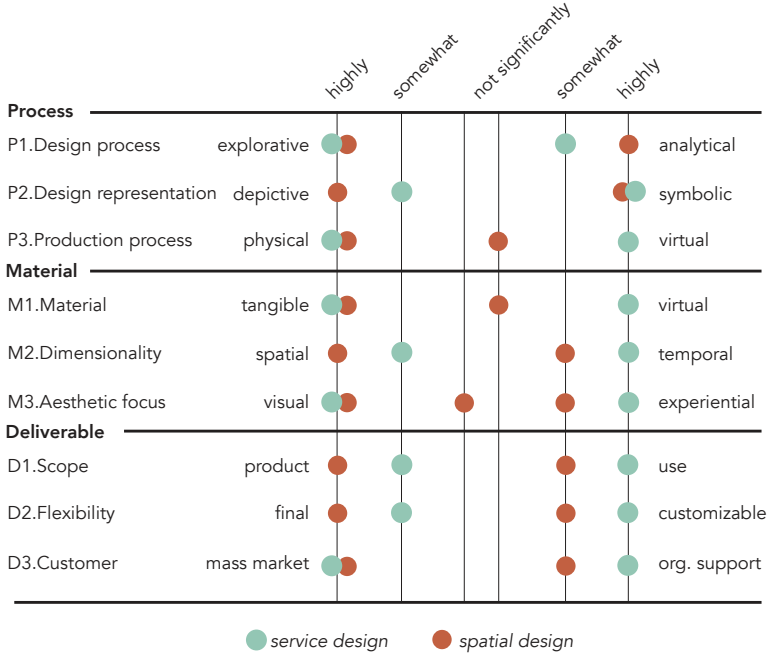


Fig. 12 – Diagrams by Edeholt and Löwgren (2003) with the analysis of Spatial Design and Service Design by Gea Sasso (p.29).

3.4 IDENTIFYING THE FUNDAMENTAL KEY DIMENSIONS: THE AREAS OF S+S TOWARDS COMPLEMENTARITY

As stated by Holmlid (2009, p.6):

> *"From the comparisons we may also observe that service design cannot operate on its own. It depends on specialist competence from interaction as well as industrial design. The areas identified through this comparison, where service design needs specialist competence, are analytic processes, depictive representations, experiential aesthetics, and product deliverables."*

Considering the positioning of this research within participatory design practices and design for social innovation (cf. Introduction and Chapter 1), I am concentrating the attention on the areas in which Spatial Design has or may have a significant role and Service Design can add its competences. The focus is, therefore, on those areas grounded in the relational and dialogical perspective of the design of places and in the unfolding of actions and relationships in it over time. Since Service Design *"integrates actions and the thought governing the environment in which these actions are performed"* (Holmlid 2009, p.7), the integration with Spatial Design can serve: i) to situate alternative narratives in spaces, meaning to make interactions with and by means of the tangible environment happen; ii) to create a common ground for a more participated, dialogical, and inclusive social transformation, therefore impacting the quality of the experience; iii) to unfold the phenomenology of spaces as aesthetics places (De Rosa & Galluzzo, 2023; Di Stefano, 2017; Haapala, 2005).

For the sake of understanding, the selected areas of convergence are listed below:

• (P2) Design representation:

> Service Design representations are somewhat depictive and highly symbolic, and **highly enactive**

> Spatial Design representations are highly depictive, highly symbolic, and **not significantly enactive**

• (M2) Dimensionality:

> Service Design dimensionality is somewhat spatial, **highly temporal**, and **highly social**

> Spatial Design dimensionality is highly spatial, **somewhat temporal**, and **somewhat social**

• (M3) Aesthetic focus:

> Service Design aesthetics are **somewhat experiential**, highly visual, and highly active

> Spatial Design aesthetics are **highly experiential**, highly visual, and highly active

• (D1) Scope of deliverable:

> Service Design deliverable scope is somewhat product, **highly use**, **highly performance**

> Spatial Design deliverable scope is highly product, **somewhat use**, and **somewhat performance**

• (D2) Flexibility of deliverable:

> Service Design deliverables are somewhat final, highly customisable, and **highly dynamic**

> Spatial Design deliverables are highly final, somewhat customisable, and **not significantly dynamic**

The author's purpose is to deduce the key dimensions of S+S towards complementarity, building on the complementarity that emerged here above using the Edeholt and Löwgren framework. The key dimensions are meant to transcend the design process, material, and deliverables to start the process of identifying supportive structures for the S+S relationship, meaning disclosing the fundamentals. The SD level added by Holmlid to the Edeholt and Löwgren framework, and the tested SpD addition outlined above, show that there is an upper level of analysis that could be taken into consideration to ground the relational and dialogical perspectives researched. In fact, the lack in a theoretical development in the research in design between SD and SpD makes necessary a complex but also first attempt in – at least – discussing about a common ground of the two disciplines to explore areas of differentiation and of balance.

The deduced dimensions, explored through three *dialogues* (cf. Chapter 4), are:

- the phenomenological dimension
- the temporal dimension
- the social dimension

These wide dimensions serve to synthetize the gaps identified between the two disciplines, that are seen as occasion to discover where SD and SpD could be complementary to each other and that contains the selected areas from Edeholt and Löwgren, and Holmlid:

- Dialogue 1 – Spaces as permeable platforms: it explores the dimensions of physical space (spatial, temporal, and social), focusing on M2
- Dialogue 2 – Narrative and *mise en scène*: it explores the narrative dimension of the design process, in terms of generation (the management of complexity to trigger the creative thinking) and of representation (P2) (the management of data transfer), and their impact on the aesthetics of the relationship (M3) within the design outcome
- Dialogue 3 – Space and ownership: it explores the intrinsic experience of participation in the design deliverable (D1), linking the co-design of the design process (D2) with the place ownership embedded in the design outcome.

In the complex but humble attempt of this work, an interdisciplinary approach between SpD and SD has been tested in four experimentations through a hybridisation that progresses with a disciplinary process of integration, as illustrated in Chapter 5**,** considering transdisciplinarity in design education. In these research experimentations, design approaches' hybridisation has progressively conversed with the design research process itself, becoming process codes. Knowledge acquisition through educational processes has been fundamental in informing reflections and in testing tools.

The Qualitative Comparison following the *dialogues* (Chapter 4) is built on them, explores a wide range of theories and aspects of the design discipline, and remains on an upper level of research. This approach is necessary since this research is a foundational act towards transdisciplinarity between SpD and SD, and the *dialogues* act as converging factors in that direction, focused on mutual and reciprocal theorising across the disciplines.

CHAPTER 04

THE DIALOGUES

The *dialogues* has been framed through literature review and historical research spanning the wider research topics of design culture and the design object, of Spatial Design within the design culture and Service Design.
After the analysis of the reasons why multi- / cross- / and interdisciplinarity are applicable to testing environments while transdisciplinarity is the perspective for theoretical implications, the discussion provides here the reference and the critical understanding in which to frame the proposed comparison through three *dialogues*.
Each dialogue extracts findings and complementarity indicators for S+S to guide the definition of the proposed framework then. The complementarity indicators have the scope of describing the core evidence of the disciplinary dialogue towards transdisciplinarity, developed to build on the *connected the dots* of the literature review.
While the resonance of the research topics faced is transversal to the international design community, the disciplinary exploration has a predominant focus on Italian design culture, as stated in the Preface by the author.
It is also important to underline that the areas of research revealed and the *Indicators* later identified are based on the guiding aspects of the interdisciplinary nature of services. According to the service-dominant logic model (Vargo & Lusch, 2004) – which focuses on the transaction to a new perspective of the dominance of intangible resources, co-creation of value and relationships – the fact that *"no divide exists between goods and a service, since a service encompasses goods"* (Penin, 2018) and that *"goods and services cannot be seen as two different things, since they are actually the same thing"* (Penin, 2018, p. 31) will bring my focus on transferring these concepts to SpD, highlighting *dialogues*, as yet not adequately explored, and through the lens of a cooperation model between disciplines.

4.1 SPACE AS PERMEABLE PLATFORMS: EXPLORING THE DIMENSIONS OF PHYSICAL SPACE

Dialogue 1 explores the dimensions of physical space (spatial, temporal, and social) and it relates to M2 (*Material* area, *Dimensionality* key dimension) of the reference framework.

The theory by Castells (1996) of spaces of flows and spaces of places is useful support in the research for a dialectic connection on how spaces are defined in this book as *permeable platforms.* In *The rise of the network society. The information age: Economy, society, and culture*, Manuel Castells reflects on the shift to an informational society, structured around networks that are built on nodes of flows of information through technology. The reflection turns around a global network point of view, where new forms of economy and new technologies have huge impacts on social polarization and social exclusion. The *space of flows* he has theorized is a structure – a system – that is not hierarchically organized, since it depends on the variable of the flows, a vulnerable process and continuously and simultaneously in place. In this versatile network, the city is not a place but a process: a process by which centres of production and consumption of advanced services, and the subordinate local societies, are connected in a global network through information flows which, at the same time, reduce the importance of the connections of global cities with their hinterland (1996, p. 445). The spaces of flows introduced new spatial forms and new spatial processes: social processes influence the space by acting on the built environment, inherited from socio-spatial structures that are prior to those taking place now (1996, p. 471).

That is why he introduces the notion of spaces of flows in relation to the *space of places*: while spaces of places are the *material support* of social practices of sharing time, spaces of flows are the material organization of the social practices of sharing time that *operate through flows.*

Flows are repetitive and programmable sequences of exchange and of interaction between physically disjointed positions occupied by the social actors: this means the fracture of the relationship between society and its building environment, where places had a social meaning and function, and a loss of meaning of a sense of belonging due to physical proximity. On the other hand, an absence of physical proximity and the enhancement of flows' mediums have increased a sense of belonging linked to transnational communities and identities (Sassen, 2004) due to social and typological similarities. The *crisis* of the relationship between society and its building environment corresponds to a detachment between city and architecture, since *eternal structures* are no longer possible in an urban system composed of sub-systems that are continually renewed, invalidating codes and foundations towards temporariness and reversibility (Branzi, 2006, pp. 65–67). It is no longer possible to speak of the unity of the urban and non-urban territories and therefore it is no longer possible to speak of the unity of the project, where processes, objects, people, and communications prevail.

The *permeable platforms* introduced above are meant to express spaces that are complex systems and networks where relationships and interactions take place and where services affect the *space of places* while operating within the *space of flows*. This is a conception that sees a network of spaces existing only since an overlapping network of services is able to link them: in fact, spaces are not a system in themselves, but they are *enablers* of the service network. Through an environmental psychology perspective, a place is a socio-physical unit of analysis, with a place specificity, localized and dynamic because of human interventions that are *"able to influence and also to be influenced by individual behaviour and experience outside of personal awareness"* (Bonnes and Bonaiuto in Bechtel & Churchman, 2003, p. 31). The intertwined link between the notions of place-centred and trans-territorial expresses a re-democratization of cities through a co-created sense of belonging that is possible thanks to a democratization of flows and spaces. Furthermore, the underlying concept of liquidity (Bauman, 2013) implies a permanent crisis of networks, flows and the design culture; a positive crisis, since it encompasses the dynamic of continuous development (Branzi, 2006, p. 16).

The link between places and network of services has been seen as more suitable in the research about the existing literature on this topic. To mention it, the SD discipline was explored for a while in the 90s through the concept of *servicescape* (cf. Chapter 2) where service and landscape are two ingredients.

4.1.2 TANGIBILITY AND INTANGIBILITY

There has been much discussion on the tangibility and intangibility of the design object within the discipline of SD (Vargo & Lusch, 2004), especially in the '90s, when the increased interest in the discipline questioned and investigated its relationships with the traditional categories of design research. The reflection on the design object qualities specifically gave rise to the comparison between service and product design and the then prevalence of intangibility designated the SD object as strategies, interfaces, technologies, and interactions. Certainly, the whole design domain was interested in the process of expanding the boundaries of design through attention towards semiotic values, technology advancements, information data, the relationship with the user and so on; although with a prevailing pivotal focus on the object in the traditional sense; in fact, SD was positioned relative to industrial design.[30]
However, if SD is the application of resources for the benefit of another party and service designers design to enable new services to happen, then SD objects could range from tangible to intangible things. More importantly, by avoiding focusing on the objects, it emerges that there is no sense in detaching one concept from another: a design approach goes beyond the single, material, or non-material artefact, including relationships, interactions, processes, and technologies within the environmental and temporal awareness. The material manifestation of services is inherent to more than objects, processes and technologies combined, through physical artefacts and spaces, digital interfaces, and devices (Penin, 2018, p. 34) and *"no divide exists between goods and a service, as a service encompasses goods"* (2018, p. 29). The actual predominance of the soft components in PSS requires coordination within the System design approach for integrated inclusion of the spatial expertise. The tangible, intangible and systemic components of the SpD can also be illustrated in parallel with the PSS logic:

- Tangible aspects are form, structure, and functional infrastructure
- Intangible aspects are light, memories, rituals, and symbolic relationships
- Systemic aspects are the system of the technological infrastructure, issues of the contemporary condition, computer networks, product systems, environmental components, commercial information, and the social value of meaningful social environments.

This comparison highlights the extension of the relationship between SD and PSS where the physical environment is part of its tangible milieu, thus expanding the relationship to SpD.

[30] See the development of the reflection at the Hochschule für Gestaltung in Ulm in the 1950s and '60s with Tomàs Maldonado and Guy Bonsiepe. See also: Margolin, V. (1988). Expanding the boundaries of design: The product environment and the new user. Design Issues, 4(1-2), 59-64. and Margolin, V. The product milieu and social action. In Buchanan, R., & Margolin, V. (1995). Discovering design: explorations in design studies. University of Chicago Press.

The design process is essentially a strategy aimed at achieving a goal, initially only discerned, of materiality and of human experiences to be made alive, towards which a random process proceeds to the search for systemic balances that are always reached and always elusive, because they are open to the future (Ciribini, 1984). The *certain/uncertain* of the design act is linked to the tangible/visible and the intangible/invisible of the design outcome: it is in a balance between the project, as a programmatic action, and non-project, the human actions, memories, rituals, and symbolic relationships in the spaces (Crespi, 2013).
The materiality of services is still a multifaceted issue, focused on its touchpoints (the points – digital, physical, person, object, place – of interactions of the user with the service, where users meet the service) or on its evidence, when intangibility is visualized in terms of physical evidence (Stickdorn et al., 2011). In the design material dimension of the illustrated framework of Edeholt & Löwgren (2003), carried on by Holmlid (2009), the materiality includes not only tangibility but also its unfolding in time and space, and its social and aesthetic experiential aspects. However, this dimension is not the physical object of SD, but only its representation. In that, it represents the ontological ambiguity of materiality: as a constituent of the whole, as something to be formed, as the object of study or as the plot of the performance (Blomkvist et al., 2016). SD thus owns the materiality in a multiple dimension, in its elaboration (components and procedures) and its fulfilment (actions, interactions, experiences and locations) as well as in its representation (visual evidence). The materiality of spaces stands as both space and place (see Dialogue 3).

Finding 3. **The design object of Service Design is the design process, and it enacts the design object within the process.**
Finding 4. **The systematic nature of the design object of services and spaces implies the reconsideration of tangibility and intangibility of services through a spatial perspective.**

SECOND COMPLEMENTARITY INDICATOR FOR AN S+S TRANSDISCIPLINARY APPROACH:

If spaces are relational phenomena and are permeable platforms offering the material support for social practices that operate through flows, this permeable platform is indissolubly a complex network of relationships and interactions; this exists thanks to an overlapping network of services able to link them and, equally, thanks to spaces that are enablers of the service network

4.2 NARRATIVE AND MISE EN SCÈNE: EXPLORING THE NARRATIVE DIMENSION AND THE AESTHETICS OF THE RELATIONSHIP

Dialogue 2 explores the narrative dimension of the design process and of design representation, and their impact on the aesthetics of the relationship within the design outcome. It relates to P2 (*Process area, Design representation* key dimension) and M3 (*Material area, Aesthetic focus* key dimension) of the reference framework.
Dialogue 2 creates a linkage between the sequential dimension of the operational design process – see above – into the sequential dimension of the physical evidence of the service interface. The inadequacy of a single intuitive procedure as a unique design methodology was argued, towards complex, non-linear, systems of previsions (models) able to understand the relationships among components within a higher level of complexity and of variables. These models provide sequences of actions towards infinite possible solutions (Collina) and encompass the unexpected (Crespi). By reaffirming the focus on the design process rather than on the final design solution, the approach of SD is embraced: SD is about the process of designing rather than about the outcome (Stickdorn et al., 2011, p. 14). Thus, the focus on the deconstruction of the design process into steps is fundamental. Focusing on that does not mean to deny attention to the solution but, rather, denying an attention only to the result that would prevent the capacity to judge complex and dynamically changing situations, with emphasis shifting from know-how – in the strict sense of being single-track professionals – to know-what (Jantsch, 1972, p. 228). In fact, the object of the project tends to blend with the project

path (Manzini, 1993). If, for Pacenti (1998, p. 104), the fact of dealing with a range of possibilities could mean a loss of the programmatic nature of design, towards the concept she proposed of expanded direction *[regia ampliata]*, it emerges the need for a specific sensitivity including the coordination of the process (management) together with coordination of the overall identity of what is designed. The concept of an expanded direction opened the way to the one of performance. SD is strongly embedded in the experience economy (Pine & Gilmore, 1998), since services happen in the moment of the encounter when the interaction takes place. It is when the service is performed (through face-to-face interaction, a digital one or through a combination of channels between the user and the provider) that the scene of the performance becomes alive. However, as Kimbell states:

> *"Pine and Gilmore's argument that value creation is about creating experiences is not matched by conventional ways of analysing gross national product. Experiences do not feature – yet – as measurable and governable economic outputs, but services do." (2009, p. 1).*

In that, the service scene includes the design of the physical environment, the tools used by the operators, the products that the user uses directly to obtain the result and of the communicative and visual elements. The physical evidence constitutes the scenography and the props of the service interface. Nevertheless, the design of the interface also includes the plot of the interaction between the user and the delivery system as a whole, including the interaction with service operators and the human elements of the interaction scene (Pacenti, 1998, p. 97). This plot is potential among infinite but defined possibilities.

In the same way, the interpretation of the space is not univocal; spaces are also *possible mises en scène*, depending on the variables and on the complexity of the context as well as depending on the plot of the interaction. Crespi (2013, p. 41) sees the connection to worlds that are contiguous to SpD – such as cinema, visual arts, theatre, and television – as inspirational for the connection between human beings and places, for the elaboration of the programmatic design idea in terms of narration, allegories, and metaphors. Thus, the narrative dimension of spaces stands both in their uses and in their elaboration: spaces are the *enabler* and the support for interactions to take place, within a higher level of *unpredictability*. The relational space between artefact and observer/user is a concept that evolved throughout the last century especially with the contribution of visual art: art movements such as futurism, constructivism

and surrealism researched, in the occupation of the space by the artwork, the relationship with the observer, questioning the notions of space and time in different ways (Krauss, 1981). This cultural process merged into the loss of ability to govern the space and the need for solutions that are not univocal but flexible. This is one of the core processes of SpD: the deconstruction of the process corresponds to the structured embedding of the other components – actions, interactions – integrated into the narration of the *journey [percorrenza]* into spaces. In this way, the no longer static understanding of spaces could have found in its dynamic narrative a new way to design and interpret it, where the univocal correspondence of positivism does not exist anymore. Architecture triggers a process of exchange, being a system that creates and defines relations and exchanges between the subjects. It acts on time; it is not a closed but open and flexible system, potentially ready to accept changes (Crippa, Di Prete, 2011, p. 38). Thus, the narrative structure is open: open to the unexpected as well as to an operational act. In terms of visualization of the process, SD usually adopts the concept of sequencing to break down actions and interactions and to focus on the different components of the service. This is the service period, divided into pre-service, during-service and post-service phases: various methods and tools are used to explore and exploit the steps and the variables along the sequence, both as generative tools and as representational ones. The first is the case of live narratives such as: *the desktop walkthrough* (Auricchio et al., 2022; Blomkvist, Fjuk, et al., 2016; Blomkvist & Wahlman, 2018), a physical model where designers play out the sequence of interactions to envision insights; the *bodystorming*, where the experience of a service is acted with props and scenes. Representational tools are i) the *storyboard*; ii) the *journey map* (also called *customer journey map* or *experience map*), focusing on the journey of a user in a service, described through a chronological sequence of actions and through corresponding touchpoints; iii) the *system map*, a visual description of the service's technical organization showing the different actors involved, the mutual links among them and the flows of materials, energy, information, and money through the system. Also, iv) the *service blueprint*, not focused on the user's point of view since it is an overall view of the service within its whole organization (frontstage + backstage). Without going in-depth in the description of these tools, codified and shared by the whole scientific community (both in the academic as well as in the agency and practice environments), it is interesting to highlight how SD has identified structured ways to deal with the processional nature of services and to transfer them into the design process, at the operational level and at the

representational one, to operate the creation, validation and capacity of communication of the complexity of the object to be designed. Instead, SpD, even if has itself defined within the development of a design methodology as illustrated above, has not yet incorporated sequential, temporal and narrative components in its representational tools, still more connected to a static visualization of the overall physical evidence, and limiting the communication of possible futures embedded in the design of a place. Plans, sections and 3D models, at the same time, have the capacity to provide an overall representation of the physical side and diagrams of flows or functions are unlikely to be able to provide the sense or the *aesthetics of the relationship*, meaning the narrative structure of the story (Pacenti, 1998, p. 105) that includes any time-span. Aesthetics, which has traditionally been connected to the spatial dimension and to its symbolic values transferred through words-images- forms, has then acquired a temporal dimension and unfolded into the time of the interaction, the engagement, the participation; then, of the relation (Bourriaud, 1998; De Rosa & Galluzzo, 2023; Di Stefano, 2017; Haapala, 2005; Rancière, 2004; Saito, 2007). Even if the focus on *relationship* and *interaction with design objects* has been acquired as a core value of the design act – with an attention to the community of use, expectations and needs, supported by strategic planning, participatory design and human-centred design – a shift must be considered when considering products *"as a mediating influence in their interactions with other people and their social and natural environments"* (Buchanan, 2001, p. 14), thus as a temporal phenomenon. The design discipline moved a step further to what Castiglioni stated:

> *"a good project arises not from the ambition to leave a mark, but from the desire to establish an exchange, even a small one, with the unknown person who will use the object you have designed; the research phase is everything and the final result is just a milestone" (Vercelloni, 2008, p. 115).*

Design has been affected by ecology, human geography and environmental psychology studies, acquiring the influence of the study of relationships – various, changing and complex – between the environment and society, of the study of people's and communities' relations with and across space and place, and of the place construct as a central socio-physical unit of analysis (Bonnes and Bonaiuto in Bechtel & Churchman, 2003, p. 30). Representational and generative tools from SpD and SD could then be explored as possible *complementary approaches,* including the physical evidence, the aesthetics of the relationship and the sequencing within the timespan. The author focuses here on the

visual aspect of representation in the design process, balanced out by the strong diagrammatic nature of its processes: in fact, this last aspect has been strongly exploited, as illustrated above, since it was needed for the communication of a service to final users as well as in the final process. This need emerged when SD emerged as a discipline. As Diana et al. state,

> *[Visualization took on a crucial role] "as it could make the ideas more tangible, complexity more readable and alternatives shareable, [in order to] support the communication between all the actors involved, the development of the process itself and its outcomes" (2009, p. 2).*

The issue of visualization certainly concerns the typologies of recipients to whom the content is addressed: other designers, other professionals involved in the design process, clients, users, and so on. This aspect will not be explored in this book, which remains set upon the exploitation of the layers of transdisciplinarity within the design community and towards design education. However, it is interesting to highlight the

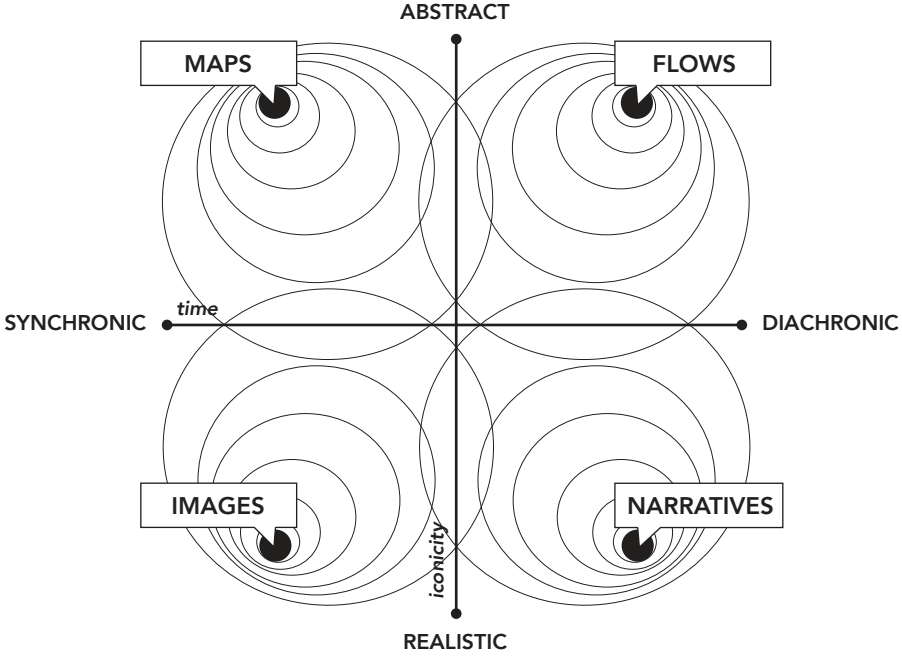


Fig. 13 – Representation field diagram in Diana, C., Pacenti, E., & Tassi, R. (2012). Visualtiles: Communication tools for (service) design. In Conference Proceedings ServDes. 2009; DeThinking Service; ReThinking Design (pp. 65–76). Linköping University Electronic Press.

work done by Diana et al. around this concept: they evidenced two basic parameters for service visualization, *iconicity*, and *time*, and the related opposite polarities, *abstract-real* and *synchronic-diachronic*. Iconicity is the coherence between the representation of an object and the real appearance of the object itself: i.e., while a pictogram is abstract, a photo is closer to reality. The continuous shift between these two polarities during the design process and the progressive level of detailing during it, distributes the typology of tools used according to the content to be shown: systems are represented necessarily in abstract ways, and envisioning can deal with realistic visualizations. The relationship with time, instead, explores the use of tools to express *"an instantaneous picture of the service – synchronic – or can either visualize the sequence of actions and stages that compose the service experience – diachronic [narration]"* (2012, p. 3). By the intersection of the two axes of parameters, the authors built a representational field diagram, which positions maps, flows, images, and narratives according to the polarities.

Focusing the attention on the diverse methods and tools of SD for representing and managing the complexity, for making tangible the service performance and for expressing assumptions and processes, offers a codified range to represent the full story of a service broken up in fragments and to expand the SpD methods and tools, that tend to represent the object of the design itself as a complete story.

It is valuable to realize the capacity of **SD to have developed a diverse range of methods and tools for representing and managing the complexity of the systems considered and to be designed, aware of the fact that there is no unique way to represent the full story of a service. Visualizations serve to make tangible the service performance, and to express and highlight assumptions**. Visualizations are used in SD, especially in the research phase, mainly as tools for translating raw data into insights and to communicate these; more to interpret data than to describe them, while the prototyping phase is less interested in its use, according to the research done by Segelström and

Holmlid (2009). Conversely, **SpD has explored, throughout its history, linked to the discipline of Architecture, methods and representational tools aimed at representing the object of the design itself and with codes and regulations, but lacking the rest of the story, in other words lacking in defining codes and tools to generate, communicate and visualize the place capacity to be an enabler for interaction to take place within its exploitation**.

The unfolding of services in the physical environment implies and determines a narrative dimension where the physical evidence constitute the scenography and the props of the service plot. Both the design of services and the design of spaces are possible *mises en scène*, enabled by the design itself and within unpredictability. The sequencing nature of SD's object and process is codified into operational and representational tools while SpD representational tools are still more connected to a static visualization of the physical evidence. Time sequencing and spatial aesthetics should merge in a complementary orientation towards the *aesthetics of the relationship*, including the spatial dimension and its symbolic values as well as the time of the interaction, the engagement, and the participation. This leads to an integrated design of spaces considering the narration of flows.

Finding 5. **The unfolding of services in the physical environment implies and determines a narrative dimension where the physical evidence constitutes the scenography and the props of the service plot. Both the design of services and of spaces are possible mises en scène, enabled by the unpredictability of the design activity.**

Finding 6. **The sequencing nature of SD's object and process is codified into operational and representational tools. The SpD representational tools are still more connected to a static visualization of the physical evidence, thus limiting the exploration of the possible futures embedded in the design of a place.**

THIRD COMPLEMENTARITY INDICATOR FOR AN S+S TRANSDISCIPLINARY APPROACH:

Time sequencing and spatial aesthetics should merge in a complementary orientation towards the aesthetics of the relationship, including the spatial dimension and its symbolic values as well as the time of the interaction, engagement and participation. This leads to an integrated design of spaces taking into account the narration of flows passing through it

4.3 SPACE AND OWNERSHIP: EXPLORING THE INTRINSIC EXPERIENCE OF PARTICIPATION

Dialogue 3 explores the intrinsic experience of participation in the design deliverable, linking the co-design of the design process with the place ownership embedded in the design outcome. It relates to D1 (*Deliverables area, Scope of deliverable* key dimension) and D2 (*Deliverables area, Flexibility of deliverable* key dimension) of the reference framework.
Throughout the concepts uncovered so far, an in-depth analysis of the meaning of space, place and context is necessary, especially to highlight the author's perspective in dealing with the understanding of the relationship between the tangibility and intangibility of spaces and services within forms of reciprocal encounter.
An analysis of the physical evidence of human artefacts and the spreading impact on multiple layers, has been seen as a way of understanding the cognitive design act, necessary to guide an integrated design of spaces by considering the narration of flows passing through it. Within this complex reflection, a definition of the world of references for the concept of space is now necessary.

These values are embedded in the human experience of the physical environment, the one that Norberg-Schulz (1979) defines as an existential foothold connected to the Heidegger concept of *dwelling* (1971), defined as the scope of architecture. For Norberg-Schulz, within a phenomenological approach influencing the environmental sciences (cf.

also paragraph 1.3), human beings *inhabit/dwell* when they can orient themselves in an environment and when they can find identification with it, or more simply, when they experience the meaning of an environment. In this sense, an inhabited space is a place: a meaningful place supporting the human action of inhabiting. A place is the phenomenology of a space, and architecture – the physical artefacts defining a place – is the physical manifestation of inhabiting because it discovers meanings potentially present in the given a priori environment. The discussion between space and place has been analysed in many domains that will not be reported here. As Graumann (in Bechtel & Churchman, 2003, p. 108) summarizes:

> *[Space] "is the term for abstract geometrical extension indifferent with respect to any human activities" and place "in contrast, has in itself a strongly experiential connotation [...], constructed in our memories and affections through repeated encounters and complex associations".*

This is influenced by the Poetics of Space by Bachelard, where he states that places, in their thousand cavities, enclose and compress time since it is a *psychological diagram* that transcends the geometrical space (1957, p. 73). SpD has made these theories its own, melding them with its peculiarity – in relation to architecture: a design thinking and a human-centred approach, a practice based on technologies and other materials and towards reversible interventions.

> *"The spatial arrangements express the group's identity [...] the group is established, assembled and united by the identity of the place" (Augé, 1992, p. 45).*

Yet, the place value of a space has not easily found ways to be expressed and communicated, nor it has been integrated and highlighted in an interdisciplinary process, to become a dialectical counterpart in the design of spaces. In this book, the aim is exactly this: to highlight the fundamentals of the design of spaces and of services, to highlight the inner connections present – the *dialogues* – and to influence the design process of spaces + services through cooperation among the disciplines.

Thus, the relationship between human beings and places shapes social identities and community engagement, building cohesion within the physical realm: correspondingly, space undergoes social processes and changes. In that frame, practices of co-creation, co-design and co-production could enter the spatial discourse. Those are incorporated into SD, since services are irremediably co-produced by all the actors involved to generate value and to, actually take place. This discourse enters not

only into the practical implications of providing services (industries and production), but also into public sector innovation supporting democratic challenges within an overall participatory mindset and within a diffuse design perspective (Manzini, 2016), where SD strategies stimulate personal motivation (design as a living agent in communities) towards change and to make room for co-design through their (non-designers') own action. For what concerns the far less-explored topic of co-creation of spaces, the point of view of Fuad-Luke is interesting:

> *[Exploring how] "co-designing our services could be the next critical evolution of service design [could] ensure the sustained integration of human and natural ecologies of our cities" (Fuad-Luke in Kuosa & Westerlund, 2012, p. 103).*

That recalls a connection to the space of flows and space of places conceptions by Castells (cf. paragraph 4.1), whose question Fuad-Luke redefines within the SD as

> *"How the design of services, many of which operate within the space of flows, genuinely affect the space of places (and so the lives of the civic population)" (Fuad-Luke in Kuosa & Westerlund, 2012, p. 109).*

Forms of participation, in fact, are strongly affecting places and, today, the city still remains *"the tangible symbol and historical framework of the state of society"* (Bourriaud in Bishop, 2006, p. 160). This affection is explored through different points of view: from a community psychology perspective – a multidisciplinary area of psychology addressing social problems at the local levels concerned about human diversity, common good and community participation and empowerment, and behavioural factors (Perkins et al., 2002), from the reflection on design and democracy, to agonism. Agonism is a term that denotes a democratic model that defines the political as the dimension of confrontation, which is inherent to human relationships (Mouffe, 2000). Hence, agonistic space refers, within this model, to a permanent (abstract) space where such interpersonal confrontations can be expressed and re-channelled in a collective positive way through the compromise of diverse standpoints – observing the conflict as an opportunity to create positive change. Democratization helps turn *"antagonism into agonism"* (Björgvinsson et al., 2010, p. 48) and is fundamental in enhancing a sense of shared ownership, engagement and legitimization of the process of transformation of a given space (Calvo & De Rosa, 2017). By turning this discourse into design education and through informal learning, spaces could be explored as testing environments able to generate and support

collective activities. This reflection suggests that, as well as services that are less discussed as design object and more as a means for supportive collaborative societies and economies (Sangiorgi, 2011), spaces could also be more understood as *enactive* of interaction and processes and not only studied and communicated in design disciplines as a physical object. Together with the concept of agonism, *infrastructuring* is also relevant in this discussion. Infrastructuring is a notion with a specific meaning in organizational transformation from an ecological point of view. It has been theorized by Star and Ruhleder (1996) and occurs in the work of Björgvinsson et al. (2010); Hillgren et al. (2011); Van Reusel (2016). Framing an infrastructuring process means going beyond the design project in the task of creating favourable conditions to build long-term relationships and to create networks by providing an open-ended design structure. In fact, Star and Ruhleder define it as a *"relational concept since it becomes infrastructure in relation to organized practices"*: a structure we rely on, integrated into other structures, supporting them, reachable beyond a single use and occurring *"when local practices are afforded by a larger-scale technology, [resolving] the tension between local and global"* (1996, pp. 4–6). The direct involvement of people in a performed test contributes to the process of establishing long-term relationships between people and places. Practitioners and users run part of the prototyped scenario: by this, it is intended a long-term effect of temporary solutions, in their capacity of instructing public spaces and *"building long-term relationships with stakeholders in order to create networks from which design opportunities can emerge"* (Hillgren et al., 2011, p. 1). Corresponding to the temporariness of places and settings is the temporariness of users, the so-called *"interim user"* (Belloni, 2008) who lives here and now in the urban place and generates the transformation.

To conclude, the relational indicator is decisive. As illustrated, design outputs are relational phenomena, dealing with social needs, towards a complementarity between culture and method. Spaces are enablers and the support for interactions to take place, within a higher level of unpredictability, as arenas for infrastructuring and agonistic scenarios. However, the co-creation of spaces is not yet entered in these terms in design theory and practice, therefore it could take advantage of its consolidated discourse in SD. Places are seen as containers of values that can be supported and enhanced through a strategic design encompassing phenomenological, aesthetic, relational and co-produced values, and approaches. Services are also complex and relational

entities (Sangiorgi, 2011), where SD is the design of the area where the interactions between the service and the user take place (Pacenti, 1998). Throughout this exploration, the purpose has been to cover the main points of investigation towards the understanding of places as physical, complex, and relational entities, enabler of interactions and owned by people through forms of identification.

Finding 7. **The design object of SpD is an enabler for interaction to take place within its exploitation.**
Finding 8. **Design products are temporal phenomena within the place construct that are meaningfully part of the human system rather than of the system of things.**

The qualitative comparison that follows will reach its assessment and consolidation through an explanatory framework. The critical background knowledge covered so far already contains the basic milestones of the research path to building on the core framework of this research.

FOURTH COMPLEMENTARITY INDICATOR FOR AN S+S TRANSDISCIPLINARY APPROACH:

Co-design practices should enter Spatial Design towards the co-creation of spaces. Since processes of space ownership are constructed by the human action of dwelling and spaces are enactive of interaction, spaces enter with full rights in the reflection of design and democracy through agonism and infrastructuring notions

4.4 THE QUALITATIVE COMPARISON

This paragraph concentrates on the definition of the explanatory framework that specifies the relationships among the concepts identified. The aim of this framework is to propose conceptual tools (interpretative models) and operative tools (design methods and tools) for an integrated approach to the design process based on disciplinary cooperation (Jantsch, 1972).

The comparison relies, first, on Buchanan's framework on design orders, illustrated in section 2.3.2, and questions the comparison among design orders through the lenses of the research topic. The comparison specifically refers to the framework provided by Edeholt and Löwgren (2003) and advanced by Holmlid (2009), which has been presented in section 3.3.

The critical background knowledge done so far has already contained the basic milestones of the research path to build on the core framework of this book. Thanks to the previous theoretical development through the *three dialogues*, the related *findings* and *complementarity indicators* for S+S are structured here into the Qualitative Comparison framework. The findings and the complementarity indicators encompass the declaration of the core evidence of the disciplinary dialogue towards transdisciplinarity, developed to *connect the dots* within the critical work on the literature review and to build the perspective for the proposed framework.

As stated, the Qualitative Comparison proposed is built on a broad range of topics as key dimensions that arise from the analysis of the frameworks of reference. The scope of framing the fundamentals of a transdisciplinary approach means that – here as in any of the infinite number of possible frameworks for a comparison of the disciplines – the disciplinary coordination and cooperation should be explored exactly where each discipline expresses its contribution to the wider reflection on the design research.

For these reasons, the key dimensions identified relate to the primary dimensions on which research aiming at understanding the fundamentals of a transdisciplinary approach should rely: **phenomenological dimension, temporal dimension and relational dimension**. They lay the theoretical foundation of the overall scope and, throughout each aspect identified for the two disciplines, the purpose is to demonstrate the complementarity towards the possible coordination and cooperation between them.

4.4.1 PHENOMENOLOGICAL DIMENSION

Spatial Design: dialectical – SpD identifies, gives meaning, and shapes places. The physical experience with the context is amplified by the **endless dialectic** between the inhabitants of the space and this last feature.

This dialectic is embedded in the human experience of physical environment, the one that Norberg-Schulz (1979) defines as existential foothold connected to Heidegger's concept of dwelling (1971). Human beings 'inhabit' when they can orient themselves in an environment and when they can find an identification with it. In this sense, an inhabited space is a place: a place is the phenomenology of a space, and the built environment – the tangible artefacts defining a place – is the physical manifestation of inhabiting because it discovers meanings potentially present in the given a priori environment.

> *[A place] "has in itself a strongly experiential connotation [...], constructed in our memories and affections through repeated encounters and complex associations" (Graumann in Bechtel & Churchman, 2003, p. 108).*

Places, in their thousand cavities, enclose and compress time since it is a *"psychological diagram"* that transcends the geometrical space (Bachelard, 1957, p. 73). SpD has made these theories its own, melding

them with its peculiarity – in relation to architecture: a design-thinking and human-centred approach, a practice based on technologies and other materials and towards reversible interventions.

> *"The spatial arrangements express the group's identity" [...] "the group is established, assembled and united by the identity of the place" (Augé, 1992, p. 45). (cf. Dialogue 3)*

Service Design: unfolded – Services are experienced through interactions that unfold in the service scene, which become alive in the moment of its exploitation.
SD has identified structured ways to deal with the processional nature of services and to transfer them into the design process, at the operational and representational levels, to operate the creation, validation, and capacity of communication of the complexity of the object to be designed. What is interesting is the capacity of SD to have developed a diverse range of methods and tools for representing and managing the complexity of the systems taken into account and to be designed, aware of the fact that there is not a unique way to represent the full story of a service. Visualizations serve to make tangible the service performance, to express assumptions and to highlight assumptions (Dialogue 2).

Fig. 14 – Diagram by the author. First level of the Qualitative Comparison: the Phenomenological Dimension.

Towards a transdisciplinary coordination and cooperation S+S – Services take place in physical environments and SD establishes – but does not arrange – the service evidence as physical evidence, which shapes the experience of services. Yet, the place value of a space has not easily found ways to be expressed and communicated, nor has it been integrated and highlighted in an interdisciplinary process, to become a dialectical counterpart in the design of spaces.

By establishing a cooperation between the deconstructed plot of the interaction scene with the design of the physical evidence constituted by the scenography and the props, spaces can be seen as possible mises en scène integrated into the narration of the journey [percorrenza] into spaces, possessing a multilevel dialectic with the designed environment.

> *Spatial Design designs places with the added symbolic component.*
> *Service Design designs service evidence with the added sequential component.*

4.4.2 TEMPORAL DIMENSION

Spatial Design: abstract (endless time of the memory) – Places enclose and contain the time of the human experience, occurring in a space; and the human experience in the place projects memories and values (Bachelard, 1957). Furthermore, the physical realm enables interactions among people and enhances a sense of shared ownership and engagement of people. The certain and uncertain aspects of the design act are linked to the tangible/visible and the intangible/invisible of the design outcome: it is in a balance between the *project*, as a programmatic action, and *non-project*, the human actions, memories, rituals, and symbolic relationships in the spaces (Crespi, 2013).
However, SpD's representational tools are more closely connected to a static visualization of the physical evidence, thus limiting the exploration and the communication of the possible futures embedded in the design of a place. At the same time, plans, sections, and 3D models have the capacity to provide an overall representation of the physical side, and diagrams of flows or functions are unable to provide the sense or the aesthetics of the relationship, meaning the narrative structure of the story (Pacenti, 1998, p. 105) that includes any timespan. (cf. *dialogues* 2 and 3).

Service Design: sequential (limited time of the use) – Services exist only when the relationship takes place (at a designed touchpoint). Otherwise, they fall back into non-existence. At the same time, the SD process deals with pre-/during-/post-service phases that visualize the service as a sequence of interrelated actions to be performed both in the service's design and in the service exploitation. SD usually adopts the concept of sequencing to break down actions and interactions and to focus on the different components of the service. This is the service period, divided

into pre-service, during-service and post-service phases: various methods and tools are used to explore and exploit the steps and the variables along the sequence, both as generative and representational tools (live narratives such as the *desktop walkthrough*; the live act of *bodystorming*; the representations of chronological sequences with storyboard; journey map; or the overall view of the service within the organization of the service blueprint). These are codified methods and tools, shared by the whole scientific community, in the academic, agency and professional practice environments (cf. Dialogue 2).

KEY DIMENSION	SPATIAL DESIGN	SERVICE DESIGN
TEMPORAL	***abstract*** ***(endless time of the memory)*** *Spatial Design designs places with a timeless component*	***sequential*** ***(limited time of the use)*** *Service Design designs relationships with a defined duration (hic et nunc)*

Fig. 15 – Diagram by the author. Second level of the Qualitative Comparison: the Temporal Dimension.

Towards transdisciplinary coordination and cooperation S+S – It is clear that the space-time spans considered in Service and SpD are different, as in the design process and design representation. And this is strongly dependent on the time span of the object designed. While SD focuses its attention on the interaction moment between the user and the service, making the rest of the design consistent with that, the time span of SpD researches a longer relationship between the user and the space designed, building a world of references in the design as well as envisioning the intangible connection that, through time human beings create with the space.
Aesthetics, which has traditionally been connected to the spatial dimension and to its symbolic values transferred through words-images-forms, has acquired a temporal dimension, unfolded into the time of the interaction, of the engagement, of the participation, of the relationship. By creating a cooperation between the endless memories of spaces, tracing the rituals and symbolic relationships of human actions, with the sequencing breakdown of actions and interactions in a designed

environment, the design of spaces can be explored and supported with the structured enhancement of its human-centred side by taking advantage of the consolidated methodological discourse of SD on co-design and co-production processes that also explores the steps of the actions. The sequencing dimension of the performance, overlapping its time component with the unfolding of the actions designed in the space, can inform the design of spaces by narrating all the sequences of the interactions and of the activities in a complex view. The design of spaces can mutually inform the service's design with its invisible values since SpD explores the user experience in spaces (Arìs, 2002; Bachelard, 1957; Norberg-Schulz, 1979).

> *Spatial Design designs places with a timeless component.*
> *Service Design designs relationships with a defined duration (hic et nunc)*

4.4.3 RELATIONAL DIMENSION

Spatial Design: semiotic – SpD explores the user experience in spaces. The figurative act embodies the wicked problems of the contemporary condition and shows the new configurations of a changing society. In fact, places are a relational condition made up of cultural and ritual relationships.

Spaces are relational phenomena and are *permeable platforms* offering the material support of social practices that operate through flows. A *permeable platform* is a complex system and network of relationships and interactions that is possible thanks to an overlapping network of services that can connect them and, thanks to spaces, are enablers of the service network. The phenomenological nature of design finds its disciplinary origin in the influence of phenomenological approaches on environmental psychology, *"the study of human behaviour and well-being in relation to the socio-physical environment"* (Stokols & Altman, 1987, p. 1), trying to explore the ecological context of behaviour that traditional psychology neglected. Through an environmental psychology perspective, a place is a socio-physical unit of analysis, with a specificity of place, localized, and dynamic because of human interventions that are *"able to influence and also to be influenced by individual behaviour and experience outside of personal awareness"* (Bonnes and Bonaiuto in & Churchman, 2003, p. 31). The intertwined link between the notions of place-centred and trans-territorial expresses a redemocratization of cities through a co-created

sense of belonging that is possible thanks to a democratization of flows and spaces. Thus, the relationship between human beings and places shapes social identities and community engagement, building cohesion within the physical realm: equally, space undergoes social processes and undergoes changes. In that frame, practices of co-creation, co-design and co-production could enter the spatial discourse. Forms of participation, in fact, are strongly affecting places and, even today, the city remains *"the tangible symbol and historical framework of the state of society"* (Nicolas Bourriaud in Bishop, 2006, p. 160). This affection is explored through different points of view: from a community psychology perspective – a multidisciplinary area of psychology addressing social problems at local levels concerned about human diversity, common good and community participation and empowerment and behavioural factors (Perkins et al., 2002) – from the reflection on design and democracy to agonism (cf. *dialogues* 1 and 3).

Service Design: relational – Services are complex and relational entities and SD deals with the area where the interactions between the service and the user take place.

> *"[...] Services are not anymore conceived as an 'end' in itself, but are increasingly considered as an engine for wider societal transformations. [They] are less discussed as a design 'object', but as a 'mean' for supporting the emergence of a more collaborative, sustainable and creative society and economy." (Sangiorgi, 2011, p. 2).*

The design object of SD refers to the understanding of what the results of the design process should be, as a way to enact the design object within the process (cf. *dialogues* 1 and 2).

KEY DIMENSION	SPATIAL DESIGN	SERVICE DESIGN
RELATIONAL	***semiotic*** *Spatial Design designs social identities through a figurative act*	***relational*** *Service Design designs relational entities through an experiential act*

Fig. 16 – Diagram by the author. Third level of the Qualitative Comparison: the Relational Dimension.

Towards a transdisciplinary coordination and cooperation S+S – By turning this discourse into design education, spaces could be explored as testing environments able to generate and support collective activities. This reflection suggests that, as well as services that are less discussed as design object and more as a means for supportive collaborative societies and economies (Sangiorgi, 2011), spaces could also be better understood as enactive of interaction and processes and not simply studied and communicated in the design discipline as a physical object. Together with the concept of agonism, infrastructuring is also relevant in this discussion, supporting the cultural and meaningful enhancement of democratic development of social territories. By setting a cooperation between the figurative act that embodies the wicked problems of the contemporary condition with the relational focus of the experiential act with the wider spectrum of SD, it introduced an added value of the narrative dimension of SpD, the one that underlines the performing of social roles and the hierarchies of relationships through the actions and the actors involved in a timespan.

> *Spatial Design designs social identities through a figurative act*
> *Service Design designs dialogical entities through an experiential act*

4.5 FRAMEWORK FOR S+S

Here follows the complete visualisation of the Qualitative Comparison proposed.

Sum up of the development process:

First, the reference frameworks analysed served to

- explore possible models to build supportive structures for the S+S relationship, meaning disclosing the fundamentals
- understand that a S+S relationship, at this moment, can be explored only by transcending the design process, material, and deliverables, remaining on an upper level of analysis since disciplines are *boundary openers* and not strictly classifiable and since the design object shifted from defined categories and entities to complex and systematic ones.

Then, the identified Key dimensions:

- attempt to highlight the most relevant contribution for Spatial Design and Service Design
- are not descriptive classification, such as the dimensions of the reference frameworks
- are wide dimensions, serving to synthetize the gaps identified between the two disciplines. These gaps are opportunities to discover where Spatial Design and Service Design could be complementary to each other (and contains the relevant macro-areas of investigation of the reference frameworks).

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The *Dialogues*:

- explored the relationship between Spatial Design and Service Design, discussing about common ground of the two design branches to explore areas of differentiation and of balance
- act as converging factors in the direction of the foundational act towards transdisciplinarity between Spatial Design and Service Design
- focused on a mutual and reciprocal theorizing across the design branches.

The resulting Complementarity Indicators:

- have the scope of describing the core evidence of the dialogue towards transdisciplinarity, developed to "connect the dots" within the critical work on the literature review and to build the perspective for the proposed Qualitative Comparison.

THE QUALITATIVE COMPARISON DIAGRAM

SPATIAL DESIGN	SERVICE DESIGN
dialectical *Spatial Design designs places with the added symbolic component*	***unfolded*** *Service Design designs service evidences with the sequential added component*
abstract ***(endless time of the memory)*** *Spatial Design designs places with a timeless component*	***sequential*** ***(limited time of the use)*** *Service Design designs relationships with a defined duration (hic et nunc)*
semiotic *Spatial Design designs social identities through a figurative act*	***relational*** *Service Design designs relational entities through an experiential act*

CHAPTER 05

TESTING GROUNDS IN THE EDUCATIONAL FIELD

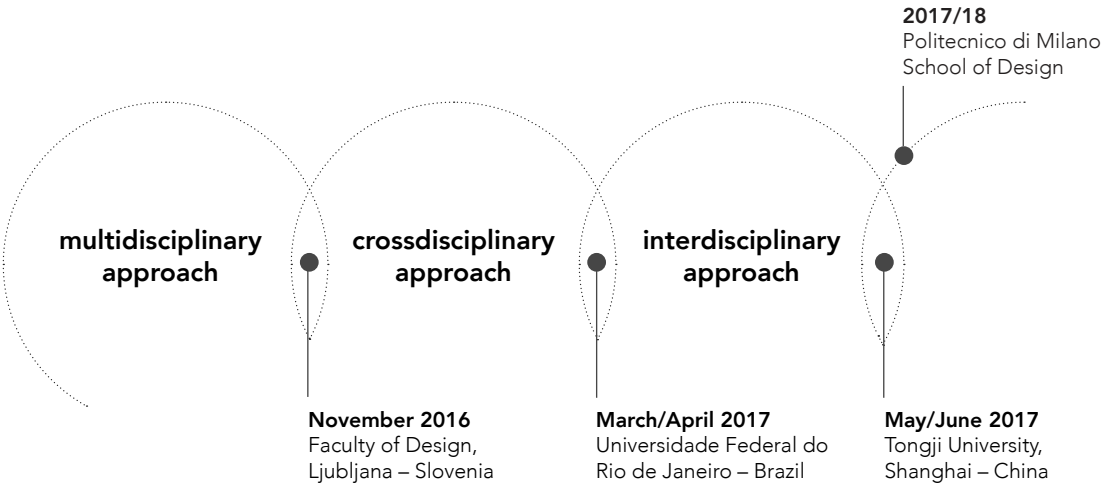


Fig. 17 – Progressive evolution from multidisciplinarity to interdisciplinarity of the experimentations.

This chapter is devoted to the illustration of the actions conducted in four different academic environments. The understanding of the initial stage of this foundational act for a S+S approach restricts the presented experimentations as case studies for future developments and for criticism. These have the role of building a back-and-forth process of questioning and validation of the Complementarity Indicators reflections and of the Qualitative Comparison that has been elaborated and presented in the previous chapter. Here, they highlight the passage from the model to the design and test approach, to question the process and the testing of the *dialogues* to understand the impact of the coordination approach proposed.

The experimentations have been an important field test with which to gain insights together with the theoretical reflections, and they act as the first stage of longer research.

Chapter 5 reports the design studios and workshops run at the Design Faculty in Ljubljana (Slovenia), at UFRJ in Rio de Janeiro (Brazil), at Tongji University in Shanghai (China) and at the School of Design of Politecnico di Milano respectively, describing the theoretical framework behind them and the didactic processes used in terms of phases and tools applied.

5.1 EXPERIMENTATION 1 FACULTY OF DESIGN, LJUBLJANA – SLOVENIA

Experimentation data:

- Title: Design of solutions: the contemporary city as a platform for social change
- Duration: 6 hours (November 14th, 2016)
- Beneficiaries: BA Interior Design, first and second year

On November 14-17, 2016, the author had the chance to participate in a workshop at the *4th International Scientific Conference A.L.I.C.E. 2016, GoingGreenGlobal International Design Week, Sustainable Design Paradigms* in Ljubljana (Slovenia), which was organized by the Faculty of Design, an independent higher education institution, and Associate Member of the University of Primorska.

This collaboration came out of the European network *GIDE, the Group for International Design Education. "GIDE was formally established in 2003 and is a unique network of eight higher education art and design institutions which evolved from an earlier inter-cultural network established in the nineties. GIDE exists to enrich the intercultural experiences of students, educators, and institutions by providing opportunities for collaboration, benchmarking, and knowledge exchange"*.[31] Thanks to a call for workshops to be set for the students at the organizing university, the activity proposed was the first opportunity for the viewpoint to be tested.

[31] https://gidegroup.wordpress.com/about/

Topic – The activity was set to ask the students to work on their own context, the city of Ljubljana, and through their own eyes as young citizens, to push their ongoing training in design to envisage solutions for their environment, and in order to narrow the boundaries of the design action and to focus the students' attention on the design methodology. The students were encouraged to assume a proactive role as contemporary citizens through the development of activities and actions: by the introduction of heterogeneous material objects and artefacts into the urban field of perception, the mission was to reconfigure the urban territory by disruptive uses, perceptions and the impact of the solution proposed.

This approach was based on a process of inquiry into social innovation to be tackled using the design thinking approach and applying a participatory action research methodology. Due to the short duration of the workshop, the participatory component was not highly developed, and, for this reason, the students were required to use their own experiences and reflections to build up the design process. In this way, the intention was to develop a sense of commitment to real-world questions in the minds of the design students. The contribution of design methods and design thinking is, in fact, increasingly recognized as being fundamental in facing social and public policy challenges in the student's capacity to see possibilities, carry out problem-solving, adapt methods of ethnography and prototype approaches that allow fast, collaborative creation of systems and services and, therefore, to be strategic.

The theoretical framework – The theoretical framework presented to the students proposed a series of examples through which contemporary urban public spaces are changing towards social cohesion and inclusivity through:

- new or already established forms of mobility: car-pooling, car and bike sharing, free-floating systems
- new forms of interaction between service and city users through remote encounter, indirect personal encounter, or direct personal encounter (Shostack, 1982), with a focus on bottom-up actions: social street phenomenon, participatory models for city development,[32] and community gardens
- new or already established forms of workplaces: co-working phenomena in general, as well as more specific cases and experimentations.[33]

By focusing on unexpected ways of creating relationships of forms of interactions and generation of meeting areas, cities are recognized

[32] Cf. the participatory model developed by the City of Helsinki – World Design Capital 2012 and UNESCO City of Design in 2014 –, also with the collaboration of the service design agency Hellon under the direction of the Helsinki City Executive Office, to replan the whole city's employees system according to citizens' needs and co-design and co- creation sessions with city employees: https://www.hel.fi/helsinki/en/administration/participate/channels/participation-model/

[33] Cf. the provocative action "Public-Office" by Studio Shelf in 2013: shelf.co.za/spaces-places

as *"laboratories for sharing practices with a central role in shaping an entirely new economy"* (Smorto, 2016) and design artefacts can influence situations of use and be part of a context of experience and action within larger systems, cycles, and environments (Buchanan, 1992). Urban territories have thus been defined as permeable platforms of sets of services to be travelled, that are:

- user- and community-centred (Meroni, 2007) within the global city (Sassen, 2011),
- co-created in a scenario of temporariness of configurations (Markussen, 2013) and of interrelated actions
- both tangible and intangible within a holistic system of geography of politics and civics beyond subnational spaces (Sassen, 2004),

Their design is facing not only with a programmatic approach but also in supporting located actions. By reconfiguring the contemporary urban territories by design and through new strategies, public spaces are not isolated entities independent of one another but constitute an endless urban territory. Furthermore, by modifying the urban experience, design can influence the citizens' everyday life, eliciting social and behavioural change. Starting from these assumptions, which deal with a wide range of questions, the workshop's goal was to identify citizens' needs to create scenarios of an innovative service in urban settings, to create meaningful solutions.

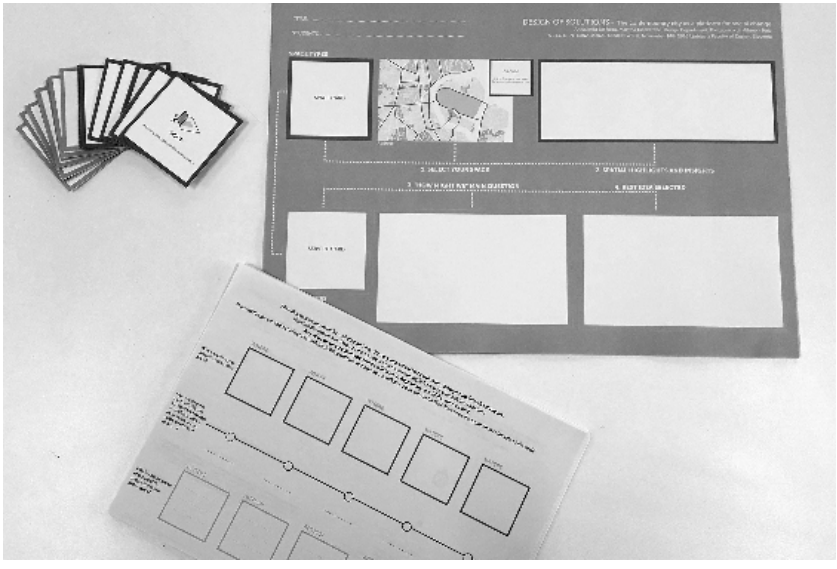


Fig. 18 – The tools for the workshop. November 14th, 2016 – Faculty of Design, Trzin (Slovenia).

The methodological process – The methodological process has been structured by providing the group of students with three cards:

- two cards: *spatial elements*, with abstract spatial elements and composition associated with a specific urban space in Ljubljana. These have been inspired by the *Elements of Architecture* exhibition by OMA for the Venice Biennale 2014[34]
- one card: *category of action*, proposing a general category of action that could trigger the ideation of a service-oriented solution.

Those cards were already linked in groups of three, with two *space cards* to propose complex spatial compositions (Fig.20).
Students were provided with a design form with information, data, and the steps to fill in, to get a systematic framework of the process to design, and at the end, the final scenario to present.

• *Phase 1, Spaces and Opportunities: IDENTIFYING PROBLEMS*
1. Select your space in the city of Ljubljana and post three pictures
Starting from the *spatial elements* card, students had to identify a possible space in the city with those perceived characteristics and provide the three best images to communicate it.
2. Spatial highlights and insights
Students were asked to draw and write on the pictures: their observations on the physical appearance; behaviours that were prevented or facilitated; misbehaviours to be limited or prevented; and visual guidelines. To do this, they have been inspired by the work of Gabriele Basilico in *Lezioni di fotografia*.[35] In this way, they were required to highlight the spatial evidence of the selected space, to let the intangible side of it emerge and, therefore, to let possible expectations emerge: How is the space perceived? Which are the problems encountered that allow or do not allow future usages? This step was meant to be a diagnosis phase.
3. "How might we" questions: FROM RESEARCHING TO CREATING
Thanks to the previous diagnosis, students have been guided into a brainstorming session by answering the questions.

> *Which are the people's needs? And their inspirations? Who are you designing for? What is now not working in this place? What is missing? What would people like to do in this place? What can be done? How can this place change thanks to a new solution? How can this place change through the actions of people?*

They were asked to list challenges and opportunities, so as to define one shared *"How might we ..?"* question, and to transform the problems and issues found in a design opportunity and to express it as an implied

[34] http://oma.eu/projects/elements-of-architecture

Fig. 19 – Classwork. November 14th, 2016 – Faculty of Design, Trzin (Slovenia).

> **This process invited students to identify familiar spaces through spatial components, to reinterpret the physical composition around new ways of inhabiting and understanding the potential *mise en scène*. The output was a final representation – in the shape of a scenario – of the sequence of actions taking place, in relation to the type of service assigned and the type of space identified.**

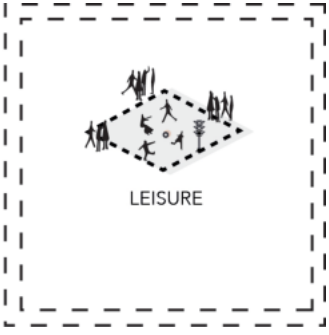
suggestion for a change. Multiple solutions were then turned into a single selected one.

• *Phase 2, Concept: TESTING TIMING + INTERACTIONS + PLACE*
This step was meant to break the idea into bite-sized pieces in order to visualize the experience over time. The guiding questions were:

> *How will citizens find out about your solution? What will their first experience with the space/service be like? How does the experience culminate?*

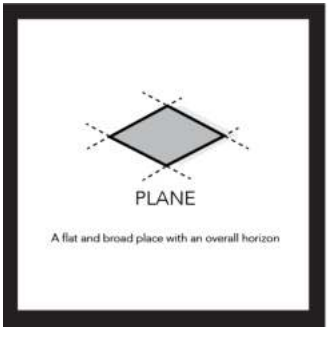
TEAM 1

• ***spatial elements card 1:*** ceiling and façade: an enclosed square or an enclosed courtyard bordered by façades and projected towards the ceiling
• ***spatial elements card 2:*** shifting spot: a disorienting space, with no privileged points of view
• ***category of action card:*** leisure



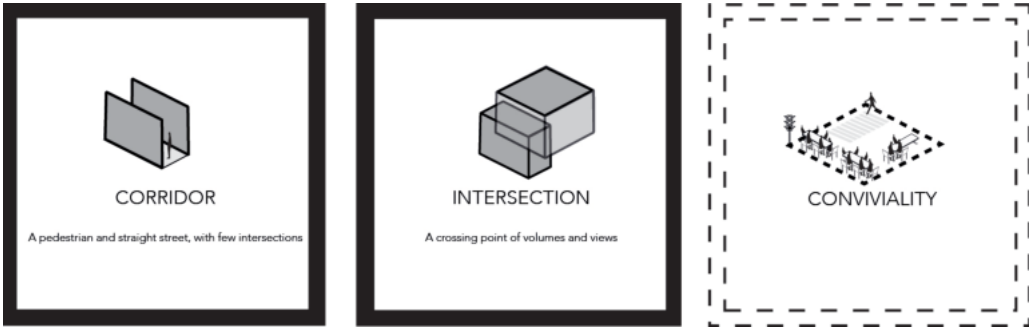
TEAM 2

• ***spatial elements card 1:*** plane: a point of view on the city, a frame
• ***spatial elements card 2:*** door: a crossing gate, a passage that marks a change
• ***category of action card:*** urban living



TEAM 3

- ***spatial elements card 1:*** corridor: a straight pedestrian street, with few intersections
- ***spatial elements card 2:*** intersection: a crossing point of volumes and views
- ***category of action card:*** conviviality



TEAM 4

- ***spatial elements card 1:*** window: a point of view on the city, a frame
- ***spatial elements card 2:*** bridge: a passage from a place to another
- ***category of action card:*** urban market

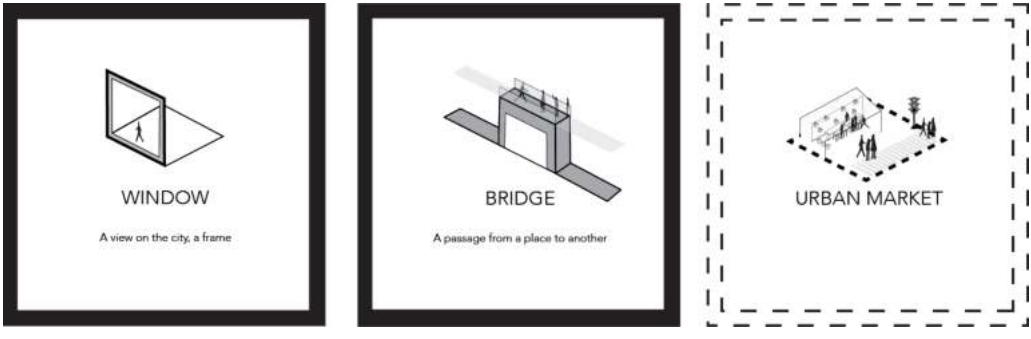


Fig. 20 – Cards provided with the «spatial elements» and the «typology of action».

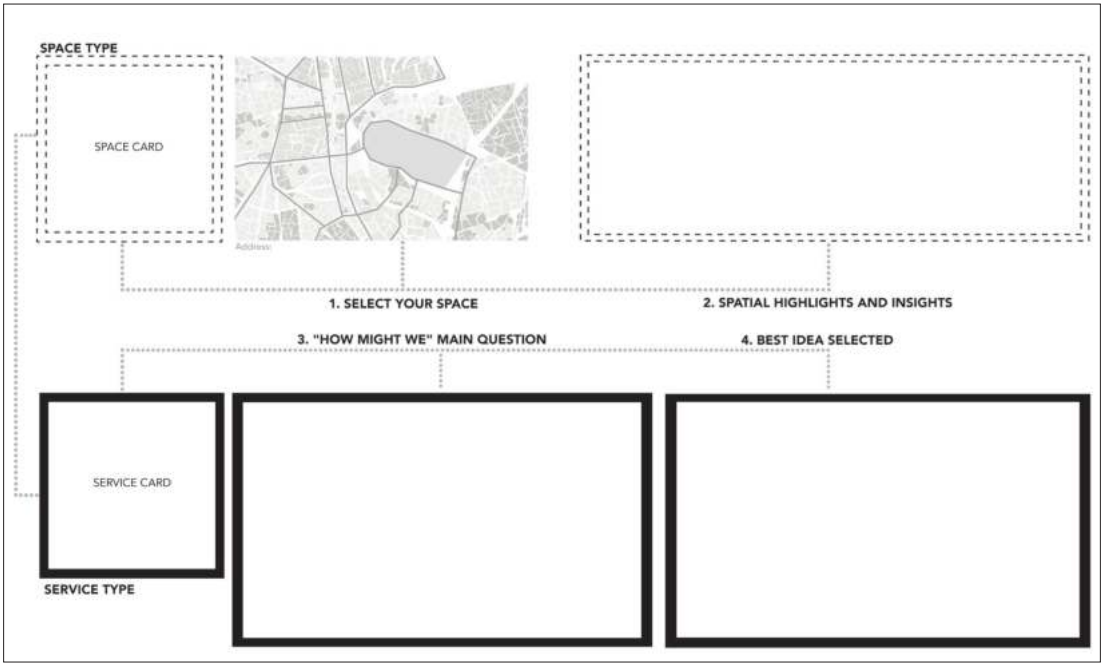


Fig. 21 – The form provided to the students with the systematic framework of the process to design.

The **sequencing** was built as a guided and simplified customer journey map for BA interior design students, already implemented for an S+S approach. In fact: every *action* (*Which is the sequence of actions of the people in this new public space?*) must be associated with a *spatial visualization* to highlight the correspondence to the *physical evidence* (*Where exactly in your space does the action takes place?*), and to the *touchpoint* (*How do people get in touch with this new solution?*).

• *Phase 3, Spatial Storyboard: IMPLEMENTING*
Students were asked to represent the final solution using two tools:
1. scenario: they had to represent a plausible situation around which the scenario could be based and to convey the key aspect of the service proposed in as straightforward a manner as possible
2. spatial storyboard: they had to find a way to encapsulate the experience of people using the *service sequencing approach into the scene of the place.*

[35] Basilico, G. (2012). Lezioni di fotografia. Rizzoli Edition.

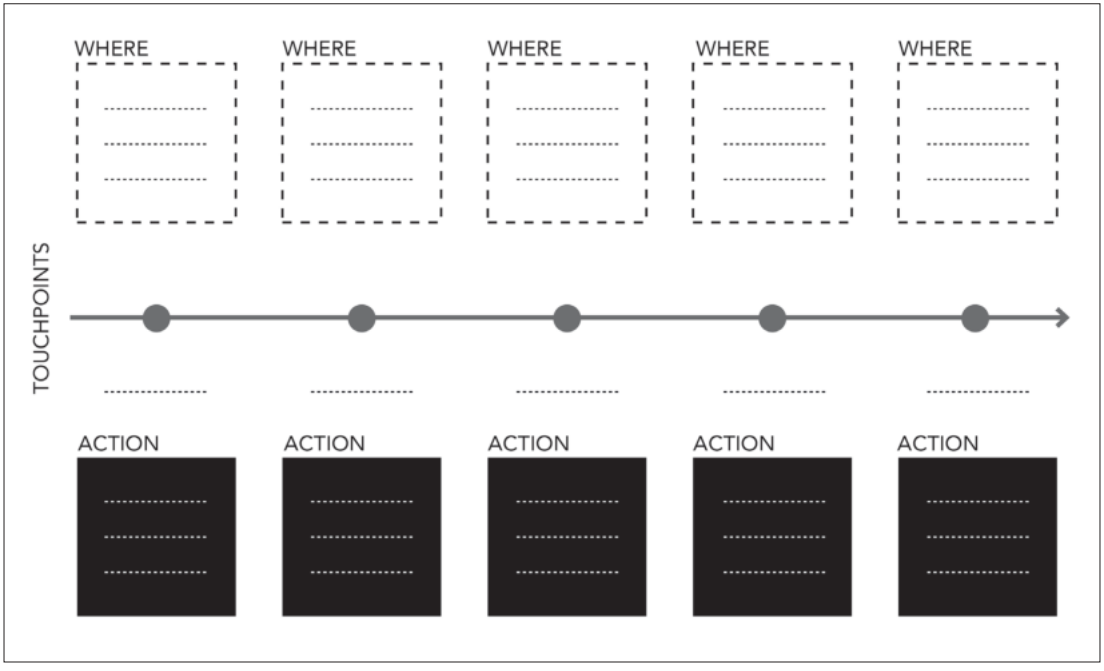


Fig. 22 – The form given to the students to illustrate the sequencing of where, touchpoints and actions.

Fig. 23 – Final presentation: scenarios disposed in the city map and illustration of a spatial storyboard.

5.1.1 DISCUSSION

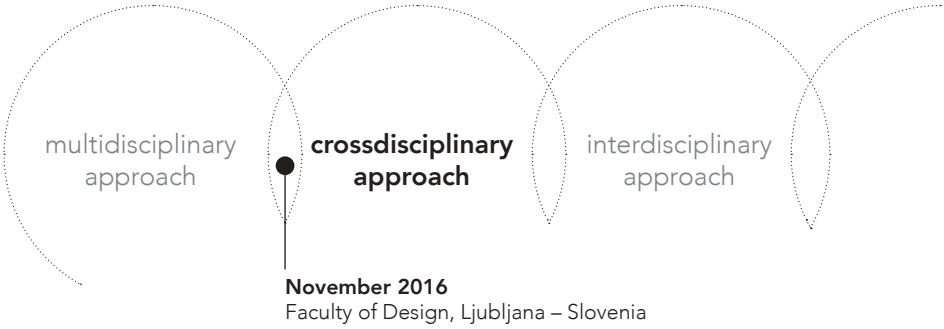
The first experimentation showed the seminal approach that was then exploited in the following ones.
First, it is important to highlight that the duration of the educational activity, the background and the level of students are relevant factors in the testing environment. The level of the students – mainly in their first year – required the use of simplified methods and tools.
In this case, the service side of the process was strongly simplified, and service tools were implied in it. The duration of the workshop prevented the possibility of providing in-depth insights about the service discipline, but
it was a perfect testing environment to verify the first integration of service components within the Spatial Design process.

The systematic process proposed was supported by set formats to be filled in a way that already systematized the data collected and elaborated it so it could then be transformed into the final output.
The spatial contents were organized in a sequence in line with the service ones, to become a synthetic panorama of the work analysis to then nurture the list of problems and opportunities (phase 1: IDENTIFYING PROBLEMS + FROM RESEARCHING TO CREATING). This part acted as a foundation for the TIMING + INTERACTIONS + PLACE (phase 2), which was the first attempt to connect multiple levels of actions/interactions/ place as illustrated in the following section.

Phases 2 and 3 allowed the dialogic relationship between the service sequencing and the spatial evidence tested in the first test of the spatial storyboard to emerge.

The testing process has been based on cross-disciplinarity: the Service Design insights and approach only supported the main framework based on a Spatial Design approach and within it. The design process had direct cooperation among the disciplines but with a strong polarization towards tools and methods of Spatial Design.

1.POSITIONING IN THE PROGRESSIVE EVOLUTION OF THE EXPERIMENTAL PHASE:



2.SUMMARY OF THE DESIGN PROCESS *:

Phase 1	Phase 2	Phase 3
Spaces and Opportunities	**Concept**	**Spatial Storyboard**
IDENTIFYING PROBLEMS	**TIMING + INTERACTIONS + PLACE**	**IMPLEMENTING**
- Place identification through cards (SpD) *- Spatial highlights (SpD)* *- "How might we" questions (SD)*	*- Physical evidences (SpD)* *- Sequence of actions and Touchpoints (SD)*	*- Scenario (SpD and SD)* *- Spatial Storyboard (S+S):* *a way to encapsulate the experience of people using the service sequencing into the scene of the place*

(SD and SpD in brackets specify the disciplinary origin of the approach used for that method or tool.)*

3.INSIGHTS:

Students have been conducted in **designing spaces by deconstructing a sequence of interactions unfolding in space and time**.
However, the form provided (fig.21), mainly based on SD tools, was **not enough developed to support students in the definition of a complex design strategy of the place.**

5.2 EXPERIMENTATION 2 UNIVERSIDADE FEDERAL DO RIO DE JANEIRO – BRAZIL

Experimentation data:

- Title: "What if issues turn into opportunities? A workshop for developing solutions by design"
- Duration: 16 hours (March 23rd – April 13th, 2017)
- Beneficiaries: MSc Management Engineering, second-year students

In March/April 2017, the author joined the Universidade Federal do Rio de Janeiro, invited by Carla Cipolla, Associate Professor and coordinator of the UFRJ Desis Lab and now international coordinator of the DESIS (Design for Social Innovation and Sustainability) network. In fact, the exchange is also part of the common membership of DESIS (Polimi Desis Lab and UFRJ/Coppe Desis Lab). In the panorama of a network of Design Labs based in design schools and other design-oriented universities, DESIS promotes and supports international exchange among its members for research and academic purposes. The global network fosters possibilities for doing research in diverse settings by taking advantage of a host's local link with academics, communities, enterprises and practitioners. This nurtures research exchange among DESIS partners worldwide.

The research was carried out as part of the Product Design course within the Management Engineering (Engenharia de Produção) programme of the Escola Politécnica - Universidade Federal do Rio de Janeiro,

with a specific theoretical and applied teaching activity on the design methodologies of spaces and services.

The topic – Also in this case, the theoretical framework presented to students proposed a series of ways and examples through which contemporary urban public spaces are changing towards social cohesion and inclusivity and the workshop's topic calls for attention towards design for social innovation and design practices for city making. This was done in a more structured way thanks to the longer duration of the trialling and to the higher academic level of the students, even though their background is far from the spatial and service disciplines.
However, specific knowledge was needed to tackle the distinct challenges that Rio de Janeiro's public spaces offer to the investigation, and to the specific approach that management engineering students bring to this topic. In fact, the widespread sense of insecurity in Rio has a strong impact not only on newcomers but also on its inhabitants.
Therefore, the author sets the activity by putting the personal experience of students as citizens of the context in analysis. Students compared observations of their own daily use of public spaces and their personal experience as citizens (both as locals and newcomers) with the experiences of other citizens. Students were encouraged to act as problem-seekers more than problem-solvers when they researched urban contexts. This fostered their capacity to understand socio-cultural, political, and commercial factors when they designed scenarios for brand new interactions in the urban context. Unlike the Ljubljana investigation (see previous paragraph), this choice was not taken because of the short duration of the activity, but because of the complexity of the dynamics of the city of Rio's public space. In this case, it prevents the willingness to explore unknown areas and, indeed, all the groups automatically selected areas in the southern part of the city where the richest and, in some cases, more touristic neighbourhoods are.

The theoretical framework – The aim of the experimentation was not only to test interdisciplinary methods and tools, but also to go through the comparison between more formally institutionalized areas rich in basic infrastructure and the marginalized or underserved areas affected by social exclusion, informing research in education within the design for social innovation thoughts.
The investigation provided interesting insights in understanding the many problems and opportunities of a big city, where the absence of a strong social network and safety issues challenge the students' experiences as citizens.

The topic focused on how people's actions can be the driver of change concerning the transformation of urban public spaces through new forms of mobility, new forms of interactions, unexpected forms of interactions, unexpected workplaces, and unexpected meeting areas. The social context is transforming, due to the active involvement of people in the transformation of their existence, acting in their environment to achieve social change. People are assuming a proactive role, also through the development of bottom-up activities and actions and, on a larger scale, all these complex processes are implicating an awareness of general and specific problems, thus generating a more participatory mindset. This is design aims at reconfiguring contemporary urban territories through new strategies. Public spaces are not isolated entities independent of one another, but they compose an endless urban territory. The network of spaces exists because an overlapping network of services can link them; in fact, spaces are not a system in themselves unless there is a network of fluxes (fluxes of people and goods through infrastructures, of data, of knowledge, of mutual impact and influences). By modifying the urban experience, design can influence the citizens' everyday life, eliciting social and behavioural change.

The strategy of applying an experiential learning method to design education for social innovation processes had a twofold potential outcome: to enrich students' design skills and to trigger their level of engagement, and by leading to new dynamics and opportunities for dialogue. By enacting a *"legibility process"* on the context, as the perceptual clarity of an urban environment and "*the ease with which its parts can be recognized and can be organized into a coherent pattern"* (Lynch, 1960, pp. 2–3), the immaterial value of legibility of the city is in relation to the concept of agency by its inhabitants. In this context, the possibility for the design project to find a critical and civic role is formulated through the exploration of an involvement with the social environment. This involvement is concrete in the alteration of the conditions of the urban experience, through interventions on the sensorial material of this experience and re-encounters on the concepts of duration, memory, and registration. Spontaneous or more designed actions modify the urban experience and influence the citizens' everyday life, eliciting social and behavioural change (De Rosa, 2017).
The educational activity elaborated at the UFRJ university tried to test how this approach can be transferred into design education, within a different context and through the main testing of the interdisciplinary approach object of this book.

The methodological process – The design process was structured in three phases. Each of them lasted one week, divided between classwork – for presentation, feedbacks, and exchanges – and homework (desk and field research) (Fig. 28). Students worked in groups of 2 or 3.

• Phase 1/ discovering: LEARN ABOUT THE CONTEXT
This phase required on-site field research, based on observation, interviews and mapping activities. These three directions were meant to build a complete analysis of the selected area in terms of understanding the physical evidence and the social aspects by getting in touch with other citizens from the relevant components that favour misbehaviours, and thus identifying an opportunity for design.
a. Define the area
Students were invited to identify an area of the city that, from their previous direct experience, they could recognize as a potential place as the object of the reflection. As stated before, the level of exploration that could have been required of the students was not as high as in the European contexts, as suggested by the course leader and through other useful exchanges. The closer the place was to their daily life; the more insights would have already been collected unconsciously as citizens to be reframed and nurtured into the design process. The selection of the area was made on the first day, after the kick-off of the course, to start with a joint brainstorming and discussion on the topic and related issues. The reasons for the choice were already a way to perceive explicit practical or emotional meanings within the spatial environment, uses and misuses, and variables.
b. Big issue
Students were required to identify one specific aspect of a *big issue* in their chosen area and context. The *big issue* was intended to be a general issue, a so-called *wicked problem* that could be recognized in the specific context to frame it in a wider – and not simply local – panorama. By opening the lens of the issue identified, students were directed to situate the highlighted problem within a panorama of complexity, in order, first, not to embrace the whole complexity and, second, to be aware of this complexity and to immediately downsize it, which means to recognize the peculiarity of the context's issue and to look at it in separate parts.
c. Analysis of the area
This analysis was structured using the so-called Lynch approach, a classification of five types of elements composing the contents of the city's image (1960, pp. 99-102). Lynch speaks about the environmental image as the strategic link in the process of orientation of human beings,

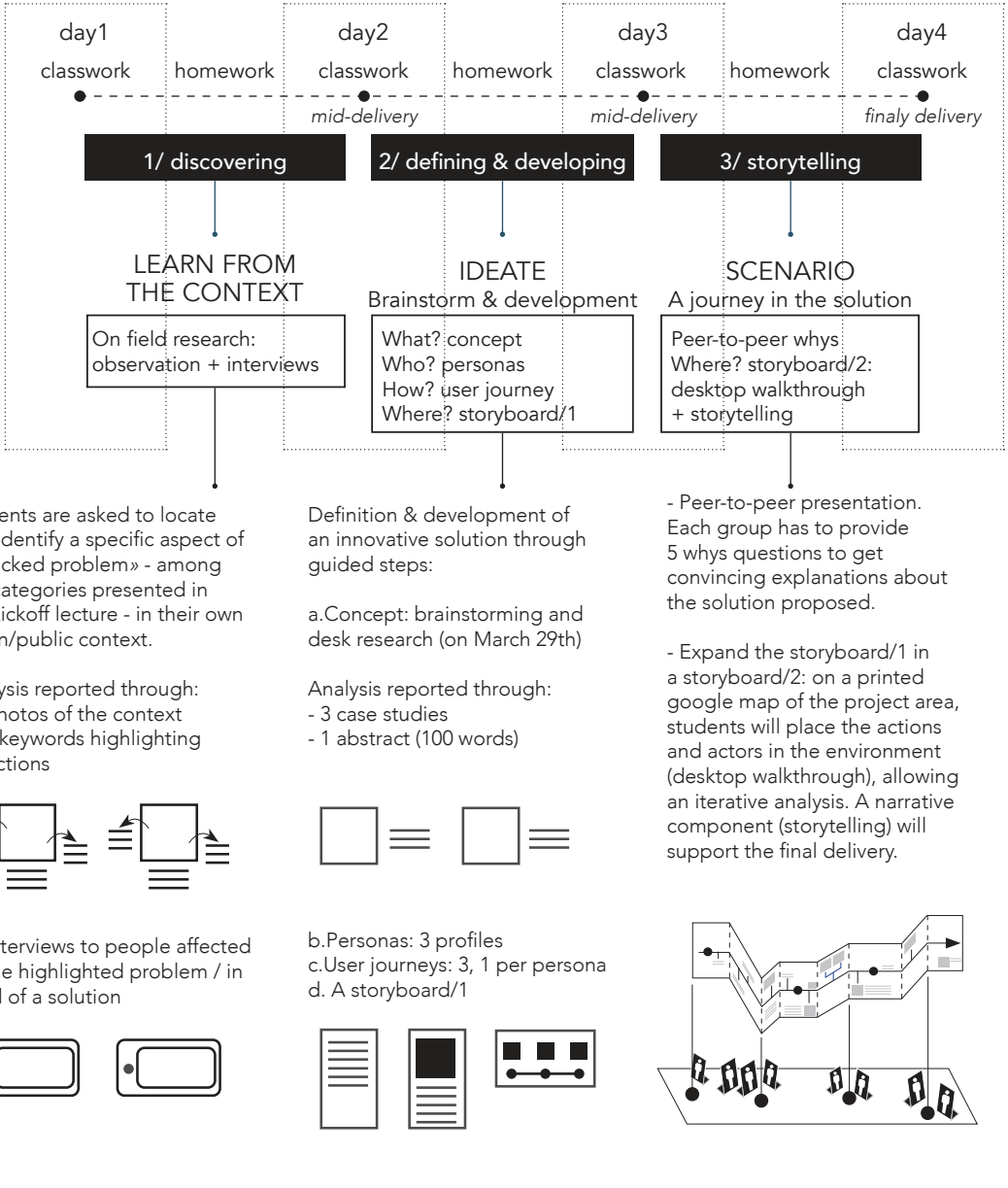


Fig. 24 – Explanation of the design studio process: calendar, phases and focus on tools and methods.

> *"The generalized mental picture of the exterior physical world that is held by an individual. This image is the product both of immediate sensation and of the memory of past experience, and it is used to interpret information and to guide action. The need to recognize and pattern surroundings is so crucial, and has such long roots in the past, that this image has wide practical and emotional importance to the individual. [...] it may serve as a broad frame of reference, an organizer of activity or belief or knowledge" (Lynch, 1960, p. 4).*

The Lynch approach was a way to help students mentally organize and understand the physical shape of the space and to build a map to build a perceived image between observer and observed. This analysis was done individually by the students, not in groups, to develop teamwork through different perspectives and perceptions. This approach classifies the physical form of an urban space image into five types of elements: path, edges, districts, nodes, and landmarks:

- Paths: connections and flows.

  The channels along which the observer customarily, occasionally, or potentially moves
- Edges: lateral references.

  Natural or human-made boundaries, barriers.
- Districts: areas, neighbourhoods.

  Section of the city, recognizable as having some common, identifying character
- Nodes: meeting or gathering places.

  A crossing or convergence of paths, concentration of uses, an enclosed square
- Landmarks: recognizable elements.

  Physical object (building, sign, store, mountain, monument, etc.).

d. Photos analysis

Students were also required to take pictures to communicate spatial highlights and insights and to report through the photos themselves and by reporting their observations on physical appearance, behaviours that were prevented or facilitated, misbehaviours to limit or prevent, and visual guidelines.

e. Interviews of people

Finally, together with the understanding of the structure, composition, perception and meanings of the area, students were asked to interview inhabitants who regularly frequented the place, to collect data – on an experiential base – on uses, perceptions, and stories, and to compare them with the highlighted issue.

Students were directed to conduct basic interviews, due to the

compressed duration of the course: to organize themselves in their team with a clear role (i.e., interviewer, note-taker, photographer); to prepare a set of questions, starting with broad questions about the person's life, values, and habits, before asking more specific questions related directly to their challenge; and to observe the person's body language and surroundings.[36]

• *Phase 2/ defining & developing: IDEATE*

Phase 1 encouraged students to implicitly systematize the data collected to get their interpretation of a multifaceted environment: a personal exploration; direct contact with citizens; and a critical understanding of the physical components and framework of the local issue in a bigger panorama. Phase 2 required a process of organization of these data to brainstorm them. It was organized along three parallel purposes: defining what is the focal point of the design, who is the beneficiary of it and how it is unfolded in time and space.

a. Defining the concept: WHAT?

The first brainstorming step led students to write down the identified *Big Issue* and the identified Design challenge summarized in a sentence. Students were challenged to focus down the complexity gained in a synthetic, clear, and not too broad fashion. Then, they were required to write down the key learnings from the first phase and to turn them into *"What if...?"* questions: these are useful tools to explore input and suggestions since they suggest that a solution is possible, and they offer the chance to answer them in a variety of ways. A final brainstorming was needed to leverage the creative power of the group by engaging with the design team, listening carefully, and building on each other's ideas to encourage them. To support it, students were pushed to seek inspiration through case studies, so as to focus on specific aspects to be compared through the different cases. This facilitated the understanding of the design idea, especially for students who were not trained in this kind of processes.

b. Defining personas: WHO?

Personas are a useful method to define and engage the different interest groups, providing a range of different perspectives for a design solution. Personas are archetypes built after an exhaustive observation of the potential users. Each is based on a fictional character, developed as a way of representing a particular and existing social group based on their shared interests. In this way, the personas assume the attributes of the groups they represent: from their social and demographic characteristics, to their own needs, desires, habits and cultural backgrounds.

[36] From: IDEO.org. (2015). The Field Guide to Human-Centred Design.

c. Customer Journey Maps: HOW?

The Customer Journey Map is a tool generally used in Service Design and finds its origin in the management and marketing disciplines to describe through a chronological sequence of actions and through corresponding touchpoints the journey of a user in a service, showing its user's experience. It provides a high-level overview of the factors influencing the user experience, constructed from the user's perspective, and it enables the identification of both problem areas and opportunities for innovation. This structured visual representation makes it possible to compare several experiences in the same visual language and facilitates quick and easy comparisons.

• *Phase 3/ storytelling: TELL YOUR SCENARIO, A journey in the design solution*

After the definition of who, what and how, the final phase was dedicated to understanding where the developed idea takes place and how in relation to it. The general goal was to tell an innovative spatial story, showing the actions done, the actors involved, the time of the action and the spatial values. To do so, the tool tested was the *Spatial Storyboard Plus*, a mix of existing tools – Desktop walkthrough, Scenario description swimlanes and Storyboard – chosen to find ways to express the complexity of multiple factors, its variables and its unfolding in space and time. Furthermore, it tries to meet the capacity of management engineering students in some aspect.

As for the previous steps, short descriptions of the tool are provided here:

- *The Desktop walkthrough* (Auricchio et al., 2022; Blomkvist, Fjuk, et al., 2016; Blomkvist & Wahlman, 2018) is a small-scale 3D model of a service environment. Employing simple props, lets designers bring a situation to life, acting out common scenarios and helping develop the idea. Common situations can then be acted out by moving the characters around the model and simulating the interactions they may have. It allows iterative analysis of the situations depicted.
- *The Scenario description* swimlanes are deliverables that visualize the activities of multiple actors in a flow of events and prove that a holistic perspective is greater than the sum of its parts. Scenario description swimlanes can benefit any project where several processes or actors have to come together to shape the outcome of the same flow of events. Its direct, visual nature provides a bird's-eye view of all the moving parts within a story.[37]
- The Storyboard is a tool derived from the cinematographic

[37] Hanington, B., & Martin, B. (2012). Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions. Beverly, MA: Rockport Publishers.

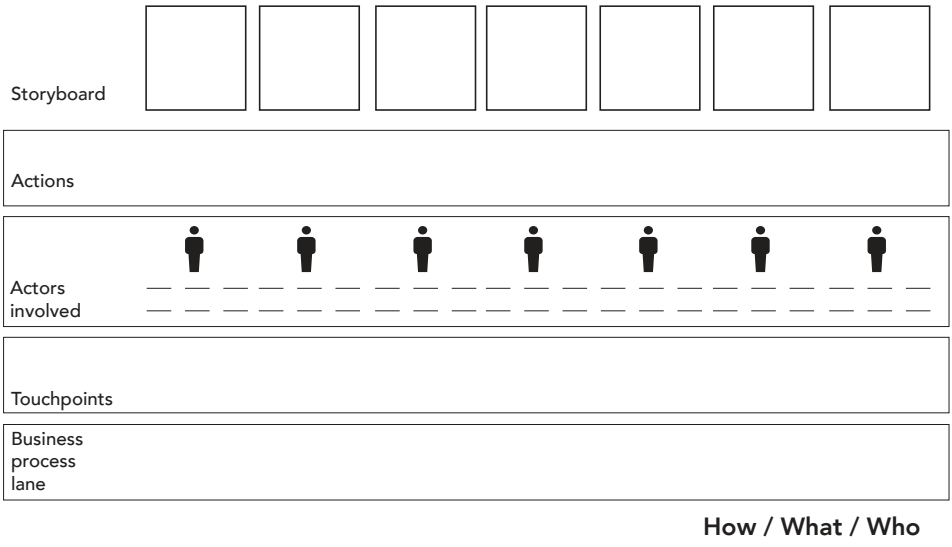


Fig. 25 – The Scenario description swimlanes form provided to the students.

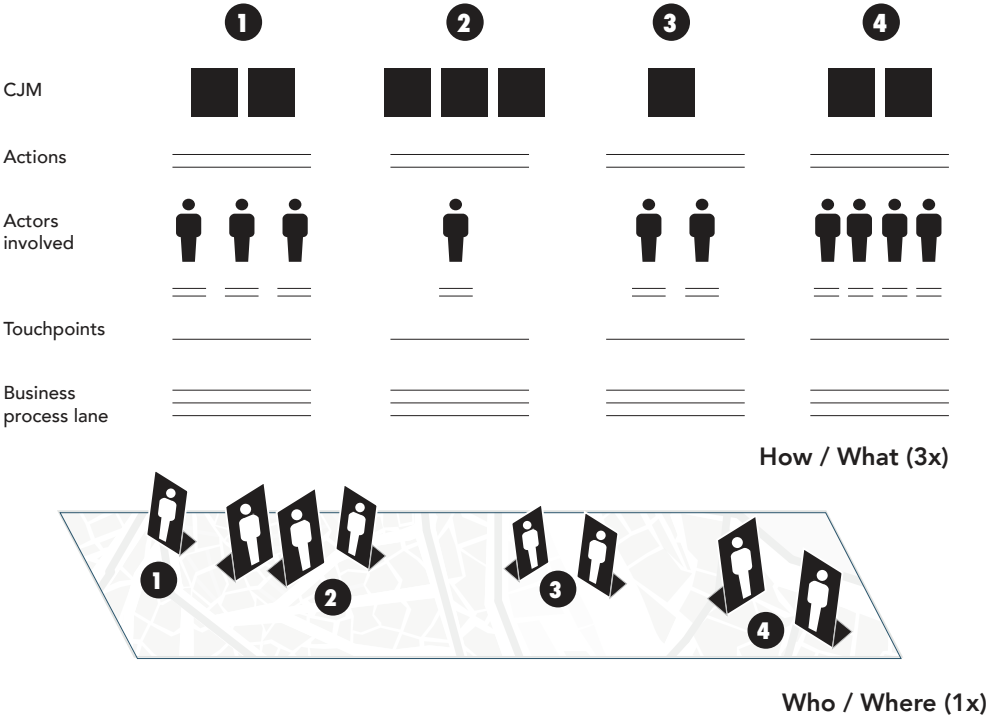


Fig. 26 – The Scenario description swimlanes visually matched with the Desktop walkthrough components.

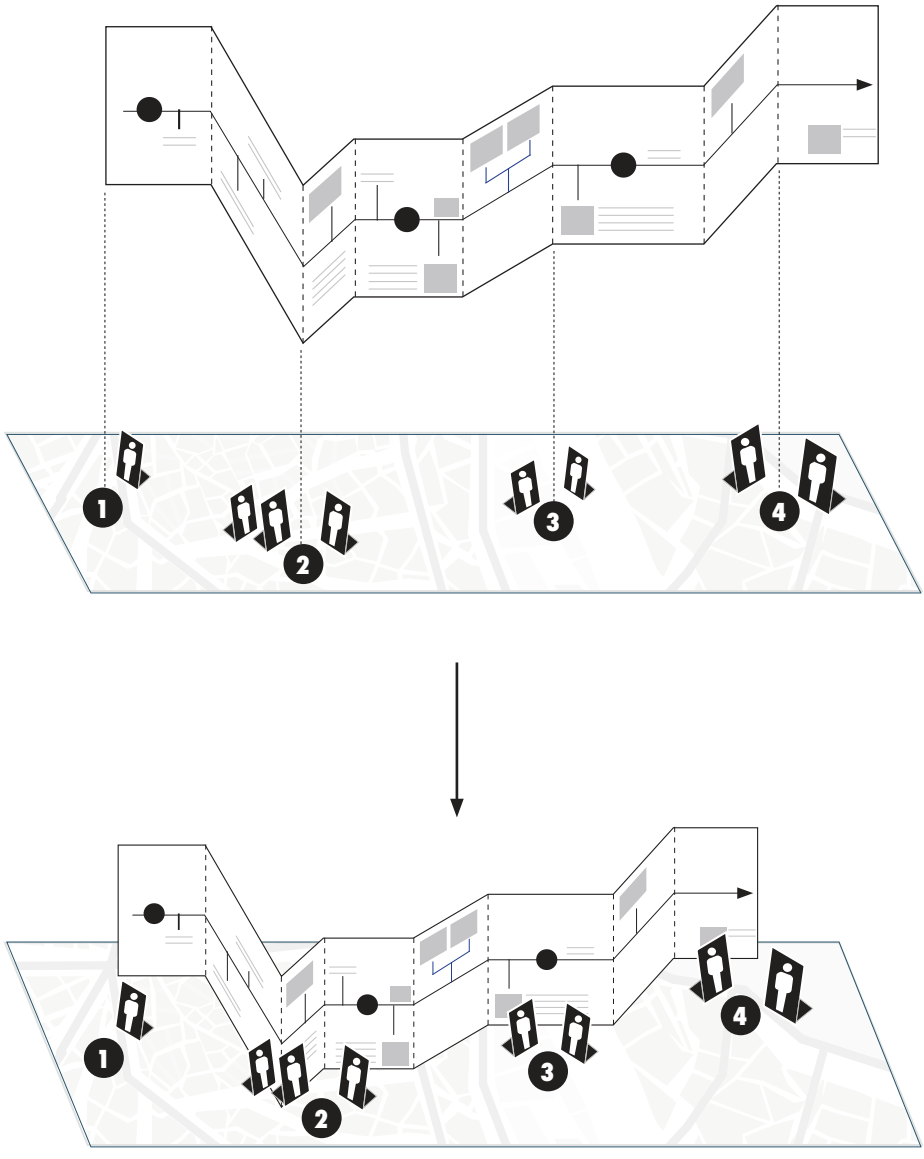


Fig. 27 – The Storyboard integrated and «inhabited» within the Desktop walkthrough.

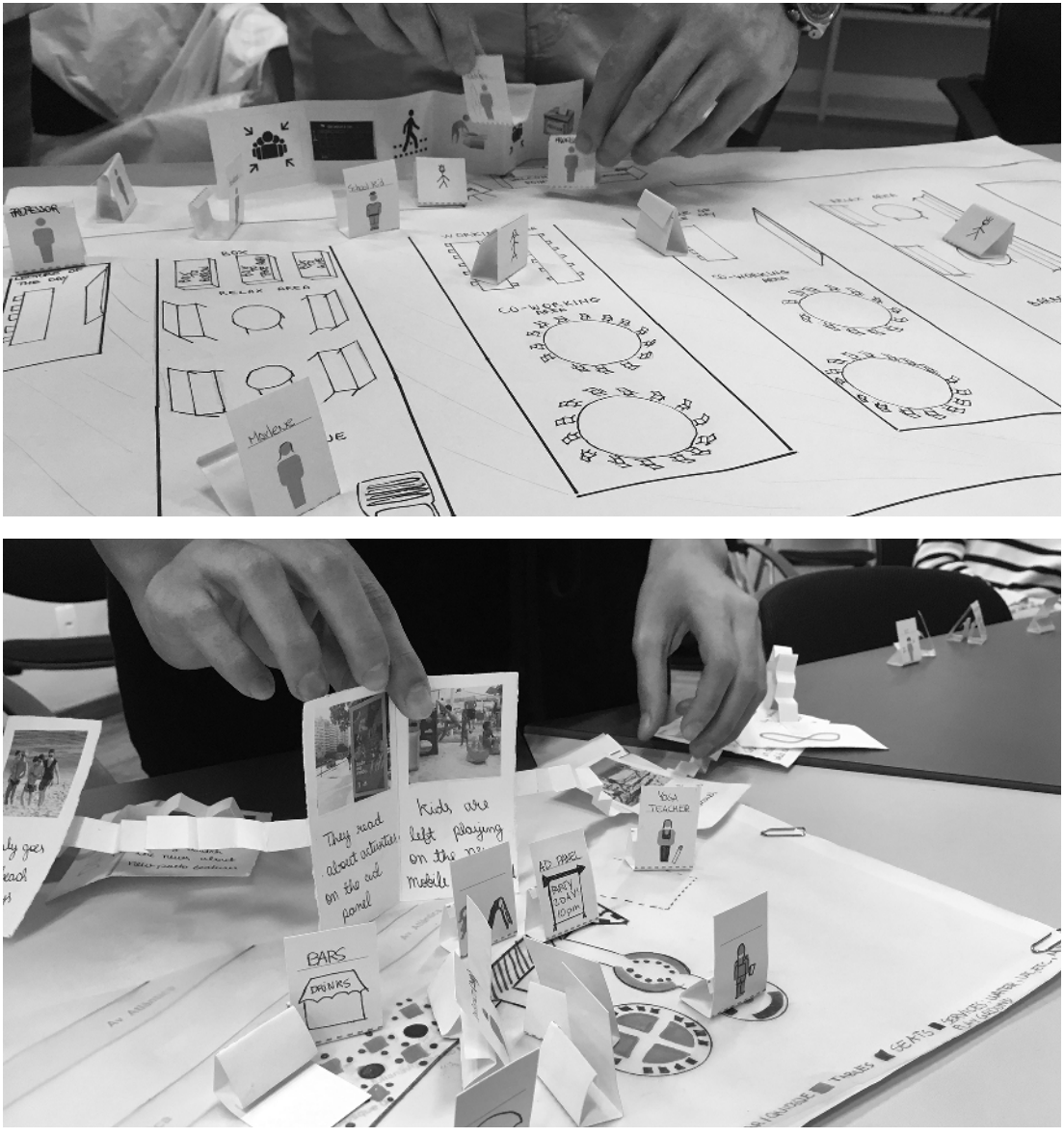


Fig. 28-29 – Final presentation. April 13th, 2017 – UFRJ, Rio de Janeiro.

tradition; it is the representation of cases through a series of drawings or pictures, put together in a narrative sequence. The service storyboard shows the manifestation of every touchpoint and the relationships between them and the user in the creation of the experience.

As shown, the tools were mainly described from a Service Design point of view but this experimentation has still tested an interdisciplinary approach, since there is no one dominant perspective. Surely, this is an evident transition from cross-disciplinarity to interdisciplinarity.

By matching these tools, the *Spatial Storyboard Plus* provided a way to transform the students' final presentation into an acting performance, overlapping its time component with the unfolding of the actions designed in the space designed. This tool was further developed in the following experimentation, providing additional insights.

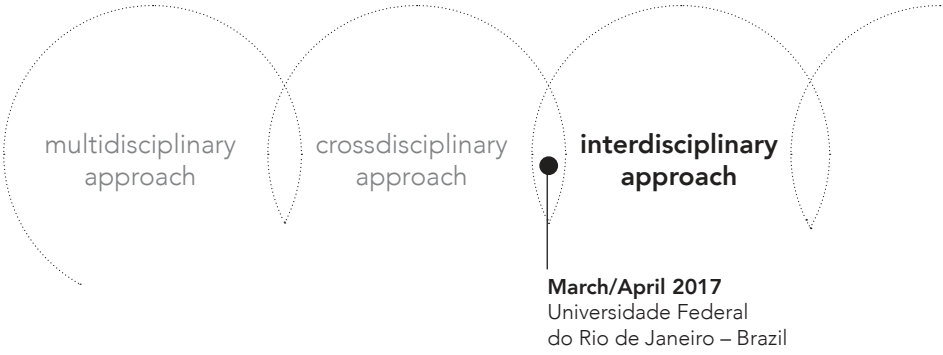
5.2.1 DISCUSSION

The expected results were to explore the way in which students approach the problem-seeking instead of the problem-solving process. Since dealing with management engineering students, it was not so evident for them to deal with the unpredictable side of the creative process, to make iteration familiar in a short amount of time. Also, for this reason, the process was strongly guided by specific tools and methods, all of which were brand-new ways for them to approach a project.

Expanding the understanding of the experimentation within the book's focus, the goal has been to provide the environment to test for a deeper hybridization of tools and approaches from Service and Spatial Design. The workshop in Ljubljana was developed at an early stage and lasted one day, while the course in Rio lasted four weeks

The process tries to turn a cross-disciplinary approach into an inter-disciplinary one by testing an hybridisation of approaches between SD and SpD in both directions.

1.POSITIONING IN THE PROGRESSIVE EVOLUTION OF THE EXPERIMENTAL PHASE:



2.SUMMARY OF THE DESIGN PROCESS *:

Phase 1 **Discovering** **LEARN FROM THE CONTEXT**	Phase 2 **Defining & Developing** **IDEATE**	Phase 3 **Storytelling** **SCENARIO**
- Place identification and analysis through Lynch approach (SpD) *- Spatial highlights (SpD)* *- Interviews (SD)*	*- "What if ..." questions (SD)* *- Key learnings (SD)* *- Case studies* *- Personas (SD)* *- User journeys (SD)* *- Storyboard (SD and SpD)*	*- Spatial Storyboard Plus (S+S):* *a mix of existing tools – Desktop walkthrough, Scenario description swimlanes and Storyboard – to express the complexity of multiple factors, its variables and its unfolding in space and time.*

(SD and SpD in brackets specify the disciplinary origin of the approach used for that method or tool.)*

3.INSIGHTS:

The elaboration of the "Spatial Storyboard Plus" tool served to explore **the deconstruction of a sequence of actions (time-component) in a space**, in order to define its uses. However, **the impact on the design of spaces has not been relevant as well as for the representational purposes.**

5.3 EXPERIMENTATION 3 TONGJI UNIVERSITY, SHANGHAI – CHINA

Experimentation data:

- Title: "Perma-pods"
- Duration: 50 hours (May 14th to June 16th, 2017)
- Beneficiaries: MA in Environmental Design, Industrial Design, Service Design and Digital Media, second-year of master

In May/June 2017, the author took part in the conception and development of *"Studio 2: Co-creation"*, coordinated by professors Mary Polites – D&I Environmental Design, Assistant Professor at Tongji University – and Davide Fassi – Assistant Professor at Politecnico di Milano and Visiting Professor at Tongji University –, a collaboration between the research teams *"BiDL – Biomimetic Design Lab"*[38], the *"Tongji Desis Lab"*[39] and the Polimi Desis Lab to which I belong. This exchange is also part of the international network DESIS, as previously illustrated.
The experimentation was carried out from May 14th to June 16th.
The Co-creation course took place within the Environmental Design programme of the D&I – College of Design and Innovation at Tongji University, with a specific theoretical and applied to teach activity on the design methodologies of spaces and services.

In the spring of 2016, the DESIS Lab and BiDL teamed up for a combined approach to garden design in Shanghai. This project allowed for research and a realization of student projects within the context of the Siping community adjacent to the D&I college in Tongji. The work was successful

[37] bidl.tongji.edu.cn
In 2012, the BiDL team was started in the College of Design and Innovation (D&I) at TongJi University, Shanghai, with the goal of applying biomimicry in design education, to generate more sustainable artefacts and services for human society.

[39] desisnetwork.org/courses/ tongji-shanghai-china/

as it generated meaningful proposals which showed how to integrate the intangible aspects of the community with tangible outcomes.

The topic – The topic of the course, in contrast with the other experimentations, was not based on contexts familiar to the students. The continuation of this studio in spring 2017 went on to a similar topic, which required insight into environmental design, service design, and permaculture methods, but was applied to a rural area in the Yunnan region of China. The project Perma-pods looked at methods to develop a concept idea of a systemic service and environment for and with multiple actors, able to activate and support eco-tourism in the Yunnan region, enhancing the traditions of the area while raising living standards and improving infrastructures. Together with the elaboration of a participatory economic system, the creation of contextualized inhabitable structures for local farmers of a permaculture farm was also needed. This complex system is meant to be realized, built, and lived in by the farmers who provide beans for Caféchi Green Coffee, a Shanghai based company that sourced the farm based on their sustainable growing methods. The structures must address local environmental conditions, accessible local materials and simple construction methods that can allow for improved living conditions for the farmers. Currently, the famers' houses are the standard concrete structures that do not promote healthy lifestyles conditions or adequate access to sunlight, ventilation, or human comfort. These projects looked to the methods of permaculture as the main generator for developing connections between ways of living, ways of cultivation
and ways of materializing liveable forms. The students' work researched techniques, forms and methods that can be quickly constructed and improve the farmers' living conditions.

The theoretical framework – The theoretical framework was based on an approach integrating permaculture logic and methods with notions from the System theory, Service/Strategic/Spatial Design for sustainability, situativity theory and contextual design, towards the support of social innovation and community-centred design.

By providing basic notions on *system theory*, where a system may be described as a complex of interacting components together with the relationships among them that permit the identification of a boundary-maintaining entity or process, attention was placed on the subjective aspect of it, as a group of elements chosen by the observer and

considered interesting by the observer for the aim of his/her study (Jordan, 1969). Students were encouraged to analyse the reality to make the interpretation of it easier than using traditional methods and to observe and work on some parts of the complex system while always considering the relationships among themselves. This approach was connected to the integrated approach of *product-service system design*, where any design output (graphics, interior, objects, furniture etc.) interacts with a service – special artefacts co-created and co-experienced with, by and among the users (Meroni & Sangiorgi, 2011) – within a complex system of interacting components. The link with permaculture is clearly traceable since it is a method for designing and managing artificial landscapes so that they are able to meet the needs of the population, such as food, fibres and energy and at the same time present resilience, richness and stability of natural ecosystems. This method was developed in the '70s by the Australian ecologists and agronomists David Holmgren and Bill Mollison. *Permaculture One* (1990), defined permaculture as an evolutionary and integrated system of animals and plants useful for human beings, and as a process of designing lands to *copy* schemes and relations among components of the natural system to produce food, fibres and energy to meet local needs. The link to the design ability is clearly mentioned by Holmgren, stating that permaculture is the ability to use the systemic approach and design principles to define the framework to achieve sustainable human settlements. Another important link is with the environment and space, since it is based on the observation of the natural ecosystem and even on the knowledge of traditional cultivation methods together with modern technologies.

The design principles in permaculture are: i) biodiversity and relationships between components; ii) the interdependent positioning of the elements; iii) the elements' multifunctionality; iv) the multiple relationships between functions and elements; v) the use of local resources; and vi) the Boundaries Effect. Furthermore, the design methods in permaculture are: i) tone analysis (proximity and functionality); ii) sector analysis (wind, water, sun, sights ...); iii) elements analysis; iv) spatial and time analysis; v) designing from model to details; and vi) the intensive system on a small scale. The impact on space design is the application of zone theory, which assigns different *functions* (typology of cultivation, use destination) to concentric areas: the further the zone is from the centre, the less care, frequency of use and maintenance is needed. Both permaculture and the PSSD approach are about connecting the dots between components, understanding, and designing with a systemic approach.

The specific context was characterized to be an underserved area and low-resource setting, and its factors needed to be holistically approached by the students. That is why a systemic approach encountered situativity theory and contextual design in the framework for this educational activity. Contextual factors need to be deconstructed and understood in their elements: any artefacts need to be designed to be sympathetic (context-based) within the local conditions. As the context is a

> *"Set of spatial-temporal elements related to the person or product, [...] deconstructing or understanding the context layer is fundamental to the design process to characterize the product-user interactions as a pre-cursor to developing a design solution. The context layer does not describe the technical dimensions of a product, but rather contains ideas, views or other considerations about people, their lives, culture, nature, society and technology" (Aranda Jan et al., 2016, p. 44).*

The complexity to challenge, as stated, was to elaborate a concept idea of a systemic service and environment
for and with multiple actors, able to activate and support eco-tourism in the Yunnan region, enhancing the traditions of the area while raising living standards and improving infrastructures. Three environments had to be considered: the natural-physical environment, the human socio-cultural environment and the artefact's techno-physical environment (Rosenman & Gero, 1998), within a users/interactions/settings triangulation.

The educational activity in the context of the Yunnan region was in line with a national and international focus on sustainable development of the Chinese rural areas, where one person out of seven on the globe is living, thus causing a disproportion in the development of urban areas, the risk for modernization not taking care of what to maintain and how to change, and the impact on global climate change. An example is the EU-China consortium of the research project *"SUCCESS – Sustainable Users Concepts for China Engaging for Scientific Scenarios"*, funded by the European Union between 2003 and 2005, composed of researchers and practitioners from six countries working on models for seven villages in six areas of China on energy systems, future development of villages, raising living standards, improving infrastructures, promoting health systems, providing education and improving a conservative development of the traditional process, models and cultures in general.[40]

Considering the specific settlement of the Caféchi Green Coffee sourced farms, the goal was to consider the superposition of the following system layers:

[40] Dumreicher, H. (2008). Chinese villages and their sustainable future: the European Union–China–Research Project "SUCCESS". Journal of environmental management, 87(2), 204–215. Shaw, V. L., Hunter, A. J., & Mortimer, N. D. (2008). Sustainable Energy Development for Rural China. In Proceedings of ISES World Congress 2007 (Vol. I–Vol.V) (pp. 2578–2582). Springer, Berlin, Heidelberg.

• designing a *dome* system with building techniques considering the climate and environmental components and within a sustainable system for water, energy, and waste re-use, while raising living standards*: landscape quality and environmental sustainability*

• an economic system not only based on agriculture in its primary role but also as a source for sustainable tourism, for the valorisation of the traditional methods and techniques and of locally made goods: *economic sustainability and protection of traditional habits and social systems*

• designing a joint management of services and goods, improving micro and macro economies, generating interactions and new sustainable and community businesses: *improvement of community development*.

From one side, an eco-tourism model was needed, to deal with macro-economic related issues such as community businesses and an attention towards the typology of interaction between inhabitants and tourists; from the other, micro-economies could also be improved with the development of local services and educational processes supporting local traditions and a back-and-forth knowledge transfer.

The methodological process – To do so, the methodological process was set up by dividing students according to their educational backgrounds, as shown in the diagram below.

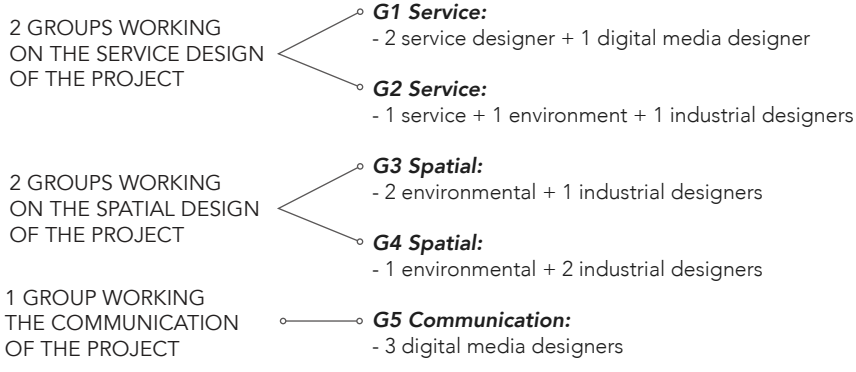


Fig. 30 – Composition of the groups according to the students' backgrounds.

The aim of this form of organization was to focus on the development of the service and of the spatial process in a separated way and to fix three moments of encounter, at the end of the three phases of the course, then to focus on the reciprocal influence for the following step.
For this experimentation, the traditional tool of the Desktop Walkthrough tool has been transformed into the *Desktop Walkthrough Encounter*: at the end of each phase, the groups of students created their canvas together in class, providing each other with data, needs and hypothesis through sketches and diagrams on a map of the environment in analysis, from the rough sketches to the more detailed documents at the end of the process.

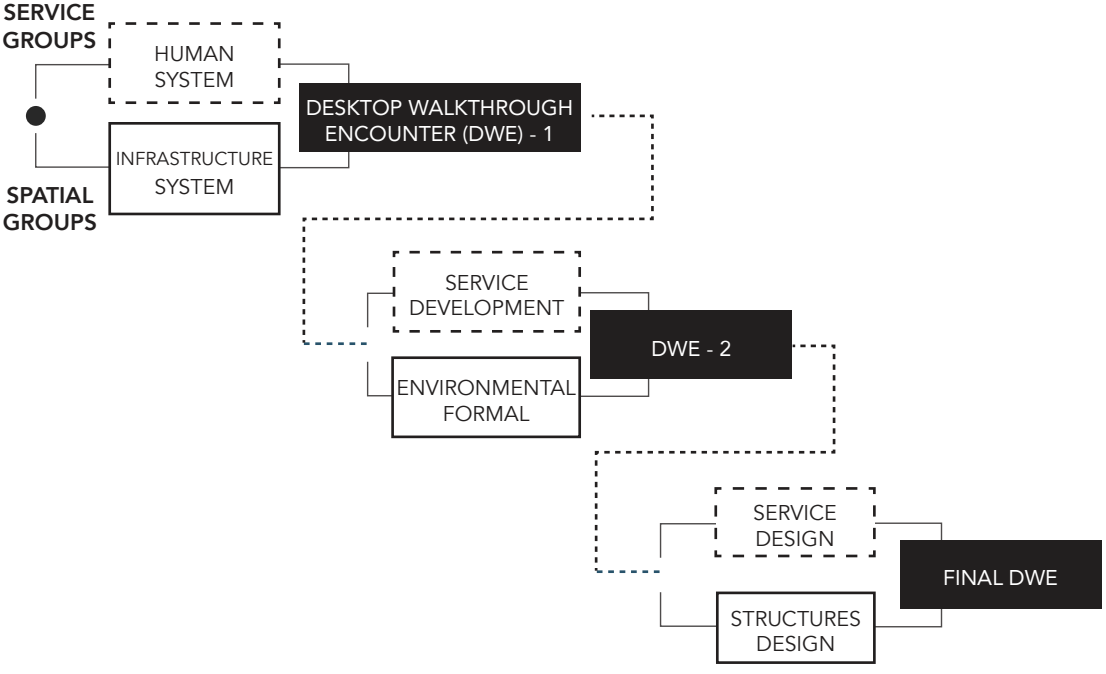


Fig. 31 – The course process.

It is important to specify that, in the end, it was not possible to set visits for ethnographic research and co-design sessions in the Yunnan region, to support the contextual approach applied. To overcome this, students collected a series of questions to put to our partners in the Caféchi company, who are in contact with and have a good knowledge about

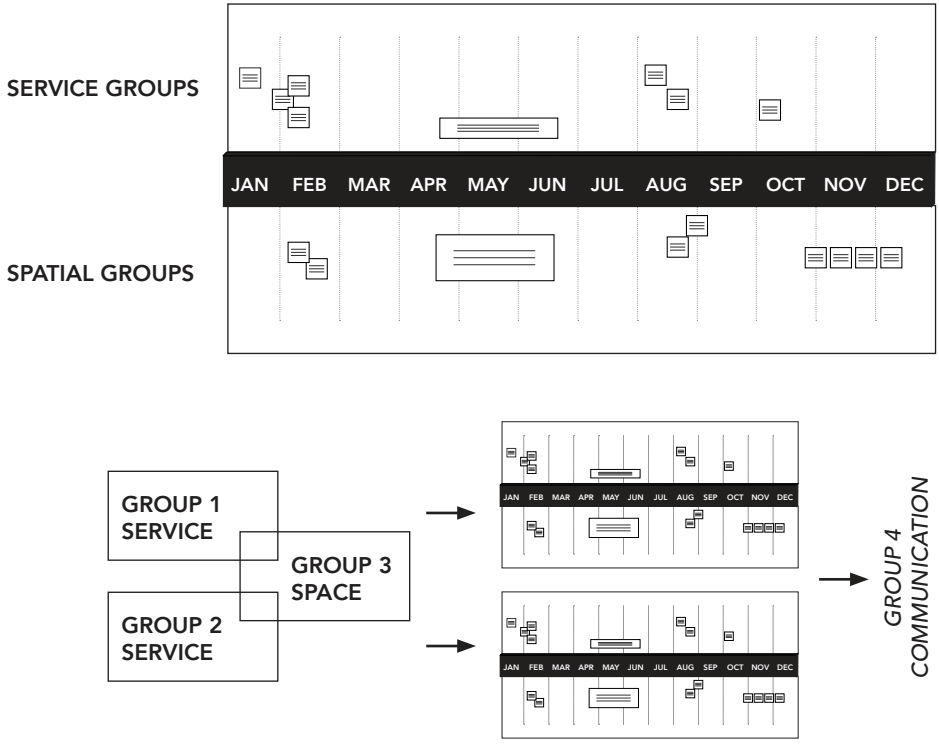


Fig. 32 – The «working timeline» and its use within the design process.

the area. The questions were focused on social insights, such as equality between men and women or the family system, the role of elderly people in families and in the whole community, the practice of mindfulness in children's education; the qualitative data about what this community can learn – recycling issues,
plastic trash, the harmfulness of chemical fertilizers – and what they can teach – the use of natural forest plants, the methods of cultivation, local weaving traditions. Finally, quantitative data were also needed: numbers of families involved in the actual economy, the number of villagers employed during the harvest period, and the yearly calendar (cultivation phases, local festivals, and traditions).
All this information was fundamental in order to design around an integrated timeline, systematizing the seasonal impact on climate and cultivation phases and the local festivity calendar with the proposed eco-tourism system that has to consider who is coming, when, for which reason and for how long.

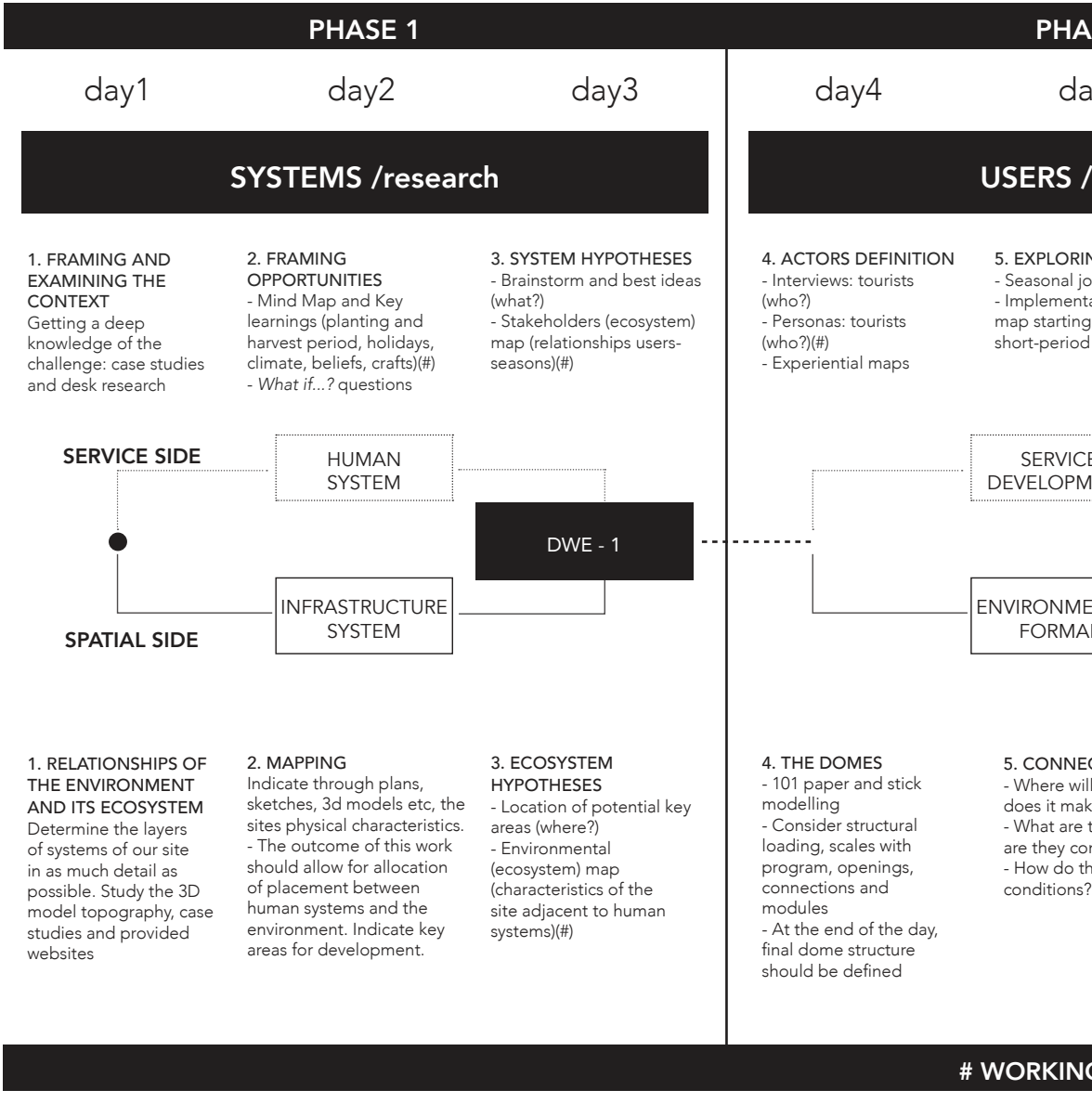


Fig. 33 – Diagram of the course process.

SE 2

PHASE 3

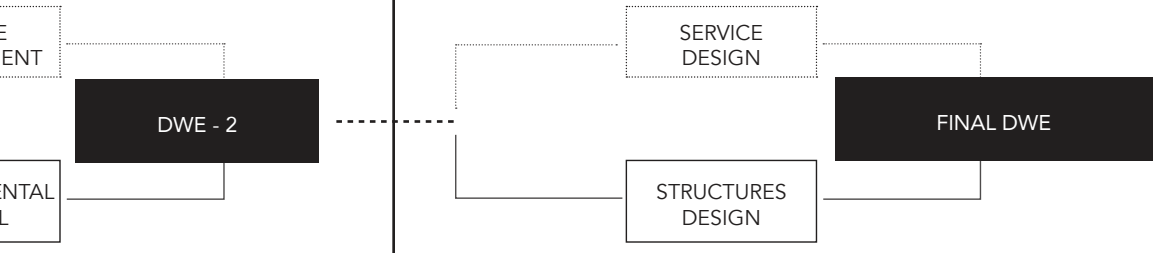
y5 day6 day7 day8 day9

/concept

DESIGN /prototyping

NG HYPOTHESES
urney maps: tourists and community (#)
ation of the Stakeholders (ecosystem)
from the Seasonal journey maps: long-/
tourism (#)

6. PROJECT DEFINITION AND PROTOTYPING
- Definition of the service components and typologies
- Project prototyping



CTIONS & PROGRAM
l the domes be located on site; where
e sense with the community? (#)
the development programs and how
nnected to the community?(#)
ese domes improve the living
(#)

6. PROJECT DEFINITION AND PROTOTYPING
- Construction techniques
- Space planning of the modules
- Instructions
- Materials
- 1 MODEL 1:20
- 1:100 plan + transparent overlayer of zones of use
- Scenario of massing 1:100

G TIMELINE

Students were asked to build a shared working timeline during the research phase, in order to collect data from their different research interests and to take advantage of the different information collected. Those were meant to be shared: one for the first service group and the spatial group and one for the second service group and the same spatial group. The spatial group was encouraged to be able to provide different – or the same – information to the service groups according to their research direction and specific interests, especially during the concept phase.

• *Phase 1: SYSTEMS /research. The human system and the infrastructure system*

Going into the details of the phases and the tools employed, the first phase was focused on a research process on the wider spectrum of the systemic analysis, to explore concepts of culture and structures associated with permaculture and farming to develop sensitive proposals for eco-tourism.

HUMAN SYSTEM / service side: students analysed the context through desk research and the data provided by Caféchi to frame its social system in terms of roles, actors, responsibilities, and dynamics related to worker communities as well as data about its traditions. The process was supported by case study research and using these tools: mind maps, for the visual delivery of thoughts and associations towards a deeper understanding of the problems and the opportunities related to the subject; a set of key learnings and initial *What if ...?* questions to generate ideas; inputs for exploration and to develop concepts; and an initial ecosystem map in the shape of an early-stage system map. Even if the idea was not already set, this tool was useful to start understanding the complexity of the system of relationships of the actors involved, their mutual links and the flows of materials, energy, information, and money through the system (Morelli & Tollestrup, 2009).

INFRASTRUCTURE SYSTEM / spatial side: students explored the relationships of the environment and its ecosystem to determine the layers of it in detail to build a 3D model topography and to present the site's physical characteristics. This part provided useful information on the location of potential key areas, presented through an environmental map to juxtapose the *human system* with the characteristic of the site. Through designs that reflect the varied aspects of community along with new structures that promote this connection, the relationship between culture and space started to be framed. The service ecosystem map and the environmental ecosystem map revealed first reflections to be tested

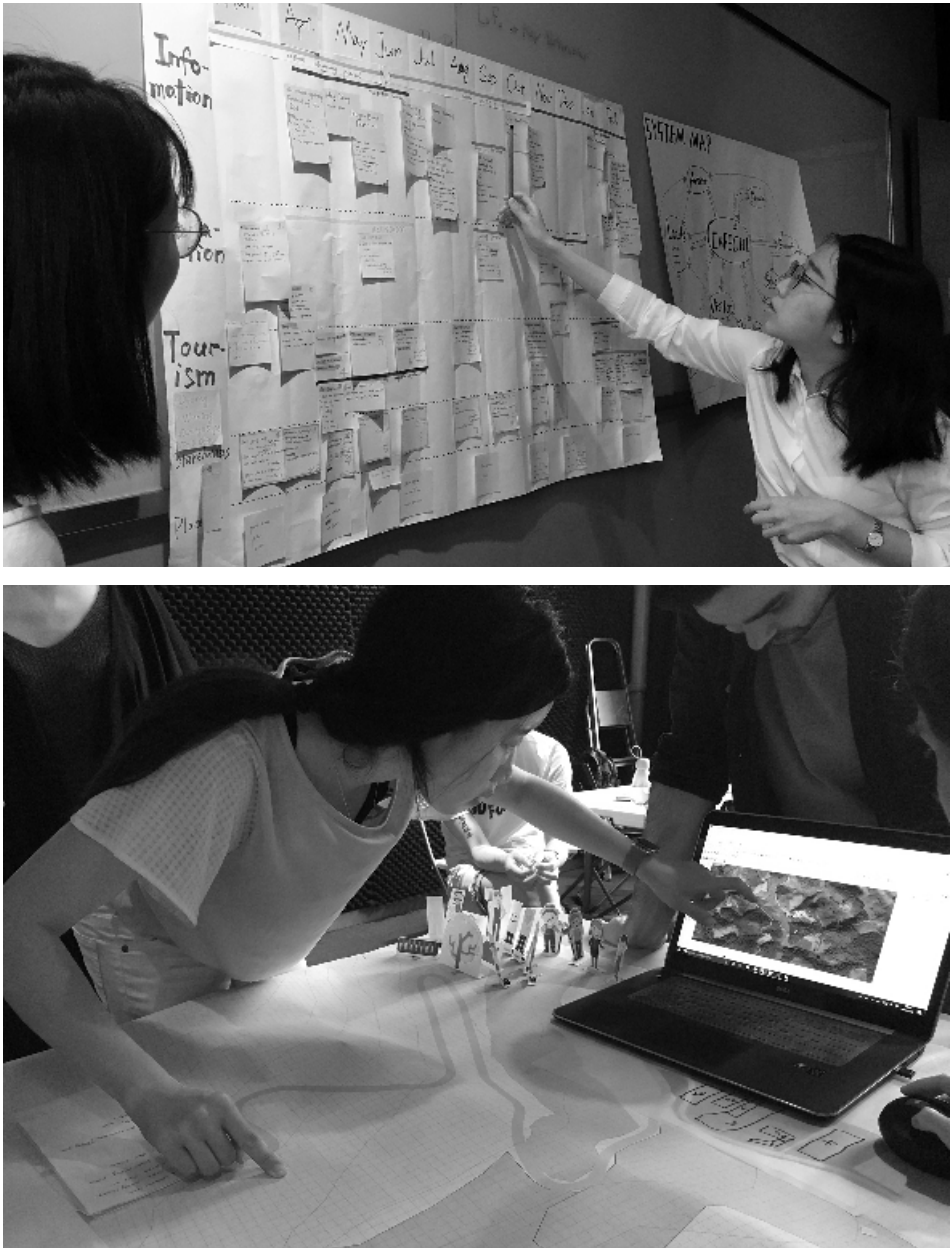


Fig. 34–35 – Shared Working Timeline and first Desktop Walkthrough Encounter.

in the first Desktop Walkthrough Encounter and the mutual design needs and reflections influenced each other in the following step.

• *Phase 2: USERS /concept. Service development and environmental and formal development*

The second phase, dedicated to the development of the concept, focused more on the users, going down to a smaller scale of analysis. *SERVICE DEVELOPMENT / service side*: students further analysed the actors involved according to the first hypothesis, both from the tourist and inhabitant sides. As for the first, students conducted interviews and created an expectation map – with the communication group – to define expectations, needs and wishes, and to chart what customers expect when interacting with a service/space. As for the second, they gained further insights from their contact in the Yunnan region and, together with the data collected in the first phase and in the expectation map, they built persona profiles of tourists interested in the typology of eco-tourism they were trying to design and of inhabitants engaged in it. The first sequencing of the concept idea was drawn on what was called a Seasonal Journey Map: journey maps exploring the different components and sides of the service proposed connected to the complete time range of the year, to integrate all the data from the working timeline within the system of action and interactions of and within the actors identified. Through those tools, students then upgraded the ecosystem map created during the first phase to have a complete system view, defining the typologies of tourism proposed, connecting the period of the year to its profile of

visiting tourists, for what kind of interests and for short or long periods of vacations and receiving what kind of proposal in terms of activities and experiences in the village. These diagrams provided information about the hierarchies of relationships of the community activities and how they overlap with the touristic and productive systems. These last two were never separated: the tourism experiences through services and spaces were always meant to be exploitation and support for the other, towards contextualization and cultural valorisation.

Fig. 36–37 – Second Desktop Walkthrough Encounter.

ENVIRONMENTAL AND FORMAL DEVELOPMENT / spatial side: students scaled down to the first design of the domes, understanding the structural loading, openings, and connections, as well as their location on site according to the climate insights collected and the insights received from the service groups to support the actions and interactions identified to spatially makes sense of community and of encounter.
A second Desktop Walkthrough Encounter acted as a validation test, an exchange of information and of influence.

• *Phase 3: DESIGN /prototyping. The service design and the structures design*
The third and final phase was devoted to the design prototyping.
SERVICE DESIGN / service side: students were asked to define the service components, touchpoints, sequencing and offer, and to prototype it through a performative act in the final and shared desktop walkthrough, as illustrated below.

Fig. 38 – Final Seasonal journey map by Bao Jiaqi, Cao Hongyi and Zhang Fan.

STRUCTURES DESIGN / spatial side: students were asked to define the construction techniques, the spatial planning of the modules and the area distribution, to define the materials and to build an instruction diary for it.
The final Desktop Walkthrough Encounter, as stated, was built to collect the two final designs: the service design 1 with the spatial variant 1, and the service design 2 with the spatial variant 2. The spatial group was able to design specific variations of their project according to the typologies of

activities, experiences and services designed.
The final Desktop Walkthrough Encounter was built as a shared performative tool, presenting the whole system. It was implemented, progressing the Rio de Janeiro experimentation, with the Seasonal Journey Maps to have a final Spatial Storyboard Plus.
It was built as follows:

- The spatial group provided the final plan 1:100 with topography + roads + water + vegetation + catalogue of modules dimensions
- The service groups worked on their graphic refinement, and they designed a rehearsal of the final presentation with a full narrative.

Fig. 39 – Final spatial layout: two variants for the two service proposals. By Zhao Yuanxing, Tim Schwarz and Ying Yihan

Fig. 40 – One of the final Desktop Walkthrough Encounters.

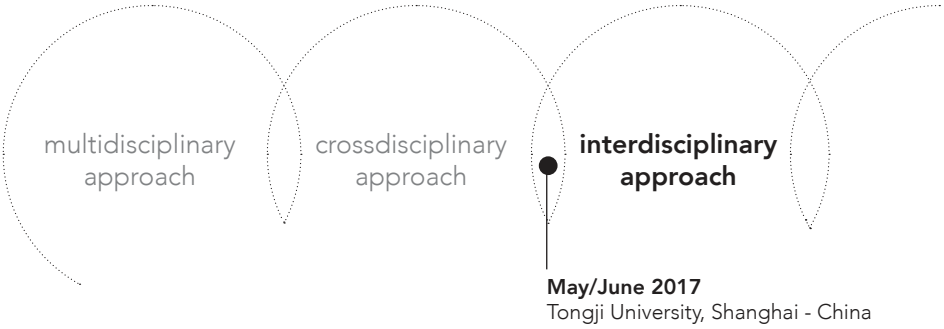
5.3.1 DISCUSSION

The Desktop Walkthrough Encounter acted as:

- **Narrative**: by performing the social roles and the hierarchies of relationships through the actions and the actors involved in the timespan selected
- **Sequencing**: by narrating all the sequences of the interactions and of the activities in a complex view
- **Spatial**: by placing all the above in their environment, showing the reciprocal interaction and value influence.

> **Within an implemented processual tool, it has been tested a way to introduce the narrative dimension of Spatial Design, by performing the social roles and the hierarchies of relationships through the actions and the actors involved in the timespan selected within the connotation of a scenic movement.**

1.POSITIONING IN THE PROGRESSIVE EVOLUTION OF THE EXPERIMENTAL PHASE:



2.SUMMARY OF THE DESIGN PROCESS *:

Phase 1 **Research** **SYSTEMS**	Phase 2 **Concept** **USERS**	Phase 3 **Prototyping** **DESIGN**
- Case studies *- Mind Maps (SD)* *- "What if ..." questions (SD)* *- Key learnings (SD)* *- System Map (SD)* *- Topography study (SpD)* *- Plans, sketches and models (SpD)* *– Shared Working timeline (S+S)* *– Desktop Walkthrough Encounter (S+S): as a processual tool*	*- Interviews (SD)* *- Personas (SD)* *- Experiential Map (SD)* *- Structures and models (SpD)* *– Seasonal Journey Map (S+S)* *– Desktop Walkthrough Encounter (S+S): as a processual tool*	*- Plans, sections, materials and models (SpD)* *– Seasonal Journey Map (S+S)* *– Desktop Walkthrough Encounter (S+S): as a shared performative tool*

(SD and SpD in brackets specify the disciplinary origin of the approach used for that method or tool.)*

3.INSIGHTS:

Students have been conducted in designing spaces through the analysis of the actual social dynamics; the **DWE served as a processual tool to visualize the sequencing of the actions in the space and to affect its design**. However, **the semiotic aspect has been weak** since the spatial side has been more focused on the design of structural and infrastructural components.

5.4 EXPERIMENTATION 4 SCHOOL OF DESIGN OF POLITECNICO DI MILANO – ITALY

Experimentation data:

- Title: "Design+Eat=Spaces"
- Duration: 180 hours (September – December 2017)
- Beneficiaries: MSc Interior Design, second-year students

The course was held by Davide Fassi, Laura Galluzzo and Anna Meroni, all part of the Polimi DESIS Lab.

The methodological approach – In the methodological process of the studio there was the possibility to integrate interior design, urban space design and service design, by having the chance to approach the projects in a holistic way and by nurturing the design steps with key aspects borrowed from social science methodologies and interlacing them with specific approaches and design tools to develop an educational process based on a contextual design approach. Key concepts from Ethnography, Grounded Theory and Participatory Action Research have been reframed into interior and service design approaches and tools: from the needs of the research to the design opportunities; from the preliminary proposals to the technical executive ones; from the understanding of the *personas* to their involvement in the prototyping activities; and from concept to the final settings. During the research, the continuous relationship with the stakeholders and the citizens has been maintained through on-site co-design processes, by the integration of the service perspective and by prototyping the ideas. The output can be linked to the discipline of landscape design, intended as design of complex urban landscapes

where design for social innovation and participatory design play a crucial role.

These theoretical notions have been reframed into interior and service design tools through desk and field analysis. The design outputs required, and the tools provided aimed at supporting a data collection that varied according to the approach to the context (desk and field-based) and for the typologies of midway assessment; students were encouraged to implicitly systematize the data during the collection, to help their interpretation of a multifaceted environment and to validate the data themselves from the source's point of view thanks to a human-centred design approach and qualitative inquiries. The design process has been based on contextual factors, not only in the research phase but also during development and prototyping. The human, social and cultural environment has been deconstructed and understood to develop context-based design solutions (interactions between users and environment), with input from the local stakeholders and inhabitants who have provided data, creativity and suggestions.

Grounded Theory is a strategy of inquiry for qualitative research and consists *"of systematic inductive guidelines for collecting and analysing data to build middle-range theoretical frameworks that explain the collected data"* (Charmaz, 2005, p. 509).

It relies on two main principles: a context is not static but continually changing in response to prevailing conditions; and the responses to these contextual factors depend on people, who have the means to be influenced by them and to influence them (Corbin & Strauss, 1990, p. 419). For that, the approach is far from formulaic; instead, it is sequential and flexible since it is framed through the flow of data, it is durable since it accounts for variation and it is open to refinement. With a constructivist approach,

> *[The strategy] "assumes the relativism of multiple social realities, recognizes the mutual creation of knowledge by the viewer and the viewed, and aims toward interpretative understanding of subjects' meanings" (both respondents' and researchers' meanings) (Charmaz, 2005, p. 510).*

An ethnographic approach has also been fundamental to an in-depth study about groups of people by observing uses and habits and with fieldwork research that gave students the possibility to understand the social environment and the interactions taking place, engaging with the community and identifying key informants through semi-structured interviews, focus groups – in some cases – and structured oral history interviews.

Co-design and co-creation processes have been fundamental components of the courses, which have sought to design spatial solutions considering the users and their interactions in the spaces with a holistic and systemic approach. The courses were characterized by a continuous relationship with the stakeholders and the citizens, achieved via on-site co-design processes, the integration of the service perspective and a hands-on approach to prototyping. The theoretical notions from the previously presented Grounded Theory and Ethnography have nurtured these field activities, from the preliminary preparation, the planning, and the execution to the conclusion.
Thus, the contextual factors referred to three environments to be taken into account within an users/interactions/settings triangulation: the natural-physical environment, the human socio-cultural environment – concerning two specific communities (local artists and shop owners in one case and the Public Market shop owners in the other, and a wider one of the neighbourhood inhabitants) – and the artefact's techno-physical environment, where the design is a considered process in which the socio-cultural and natural environments are translated into a techno-physical environment (Rosenman & Gero, 1998).
The relationship between theory and practice was explored on two levels: at the researchers' level by avoiding an arbitrary division between research and didactics, which becomes a field of experimentation for topics and methodologies in design education, and which nourishes the very development of theoretical research; and at the didactics level itself, where the link between theory, research and practice is taught.
The design education approach employed between the university environment and the societal one is a strategy that enables community synergies. By breaking the silos of design approaches and connecting using all the tools presented *"what people say and do"* (contextual design) and *"what people make"* (participatory research, co-design and event design), this diversity adds perspective and cross-pollination and communication among different fields of study.
The systemic approach has been essential in the two processes as well as in the final design output. The studio process supported the idea through an interdisciplinary and qualitative approach to a design project, which is not unsystematic compared to more traditional and quantitative methods; indeed, it is a structured foundation for integrated solutions, which require multiple and associated inputs and a systemic view.

The topic – This course was focused on the indoor public space of the Public Market in the NoLo neighbourhood, a commercial gallery used

as a municipal market. It was designed by the engineers L. Secchi and L. Massari, and built in 1933 by the Municipality of Milan. At the time of construction, its surface covered 1322 square metres. The building is one of the first covered markets created in the city, which until then had only temporary and small local markets. It is constructed entirely of concrete, with a rectangular shape and consisting of a single floor. The vaulting in the ceiling is very interesting because it recalls the large metal roofs of 19th-century railway stations. The space inside was not divided into separate stalls; it was originally conceived as an *open space*. The current false ceiling was installed in the 1960s, which means that the beautiful, vaulted ceiling is no longer visible. The market could accommodate 140 linear metres of stalls, and was designed in such a way that, with small structural changes, it could be transformed into a public car park or an entertainment space. Students were required to develop seven visions for the future of the Public Market: the main topic of the course is Food & Design, using food to connect the different cultures within the (migrant + local) communities living in the area, and as a way to activate co-designed activities for spatial solutions. The studio investigated, imagined, experimented, and prototyped innovative spatial solutions for market stalls, street food structures and temporary stalls in connection with the Public Market. By designing an innovative scenario for the Public Market, the course used the urban spaces as experimental hubs for social interactions by making the spaces the central focus of a neighbourhood community built around food. Food was therefore at the centre of a set of scalable and systemic activities and related spaces, bringing together multiple stakeholders.

The methodological process – The process has been based on three scales:

- The market scale, research, and analysis: the goal was to get to know the area through site visits, interviews and through desk research on communal markets. Students were required to do functional diagrams and visualizations of spatial interactions; spatial and service maps of the characteristics of the market; investigation of food shop typologies (market stalls, street food devices and temporary food shops).
- The market scale, co-design, and concept generation: development
  of the overall strategy for the spatial concept of the project together with specific insights from the service design discipline, strengthening the systemic view of the food network and system hosted in the Public Market space.

• The booth scale, and project development: managing the exchange with local actors through presentations and co-design activities; concept validation; detailed definition and final exhibition.

• *Phase 1: THE MARKET SCALE: research and analysis*

The guiding question of this phase was: *Do human behaviours shape the environment or do the environment constrain human actions and interactions?*

By focusing directly on this question, the aim was to put spaces and uses in relation to see spatial interactions, problems, and opportunities: who (action) is involved, when (time) and where (space). This phase was based on fast-ethnographic research, to guide students to gather insights into how people live, what people do, how they use things, and what they need in their everyday or professional lives. This methodology was matched with co-design as a source of these insights: inputs from the users and interactions with the users in a bounded context, in a short time and with a selected group of people is a fast way to conduct a fast-ethnography and to become immersed in the context.

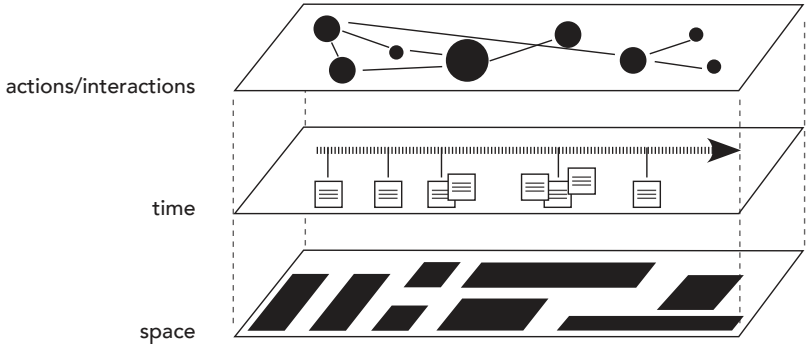


Fig. 41 – Scope of Phase 1. Diagram of the analysis on multiple levels: space – action – time.

The analysis of multiple levels of space – action – time was developed as follows:

• *People + time*: observation of what people do and how they interact in the market

• *Actions + time*: observation of the logistics and position of goods–variety, storage in the single stand according to the

interaction with clients to critically analyse how the space is used (both for storage and interactions with the client)
• *Space + people*: understanding of the social insights related to the place such as people's stories, expectations and needs

To achieve this, students were required to develop diagrams reporting and analysing space + service insights:

• 2D and 3D survey
• spatial analysis: context, building, exterior, entrances, interiors, details, food flows
• people flows: shop owners, clients (time and fruition typology), food suppliers
• video-interviews about the shopkeepers' stories
• photography, interviews, current mood board

In this experimentation, by never isolating the observation of the complementary environments to be explored, transferred an integrative method from the only data comparison to the data gathering itself, trying to test how the theoretical exploration of breaking silos between disciplines could be put in place already in the on-site research and not only in the merging of design tools by the educators. This shift was fundamental, because the attention was focused more on the complex nature of the process than on the construction of the tools to simply observe the results. Furthermore, it transferred the reflection on the potentiality of structures owned by the nature of a service (Shostack, 1982) into the preliminary research process of the spatial potentialities.

• *Phase 2: THE MARKET SCALE, concept generation and co-design*

The guiding question of this phase was: *What is your systemic view of the design of a food network and system hosted in the Public Market space?*, with the aim of developing the spatial concept of the market. In this phase, students were provided with specific insights from the service design discipline and guidelines to act as co-design activities to exchange with local actors. The process was set with parallel actions, to make visible the coordination of the components for the design development.
After the systematization of the inputs gathered from Phase 1, design tools were matched around the multiple levels *space – action – time* for the concept generation and adding the visuals of service and of space for the concept representation. Even if some tools were more suitable for the initial stage of concept generation and others for an advanced stage of it, they were intentionally provided in terms of theoretical explanation and outcomes required at the same moment, to allow students to build

their process-sequencing by understanding step by step what data and research actions were needed to go further.

a. Who?

The levels of action–time have been isolated and added along with the interaction component. The tools employed were:

- System map
- Personas
- Spatial Journey Map: while in the previous experimentations, the Spatial Storyboard Plus tool was tested for the final representation of the design process (to provide an overall vision of the project combining the narrative of the performance, the sequencing of interactions and the spatiality of the place), in this last experimentation the tool was reset to be more process-oriented and less representation-oriented. To do so, it was implemented with components from the customer journey map, the touchpoints, from the disciplined method of the scenario and by also adapting the sequencing, typical of service, to spaces.

The Spatial Journey Map was defined as the journey (experience) of a user in a service and developed in a space, described through a chronological sequence of actions and through corresponding spatial touchpoints.
The spatial touchpoint is the way in which the user interacts with the space and how (s)he perceives
it, since the space influences human actions and interactions. It is the spatial interface of a product,
a service or a brand. It enables the identification of both problem areas and opportunities for innovation and the focus on specific touchpoints allows the experience to be broken down into individual stages for further analysis. The aim of creating and testing this tool was to process in the same moment the actions, which makes them and where they happen.

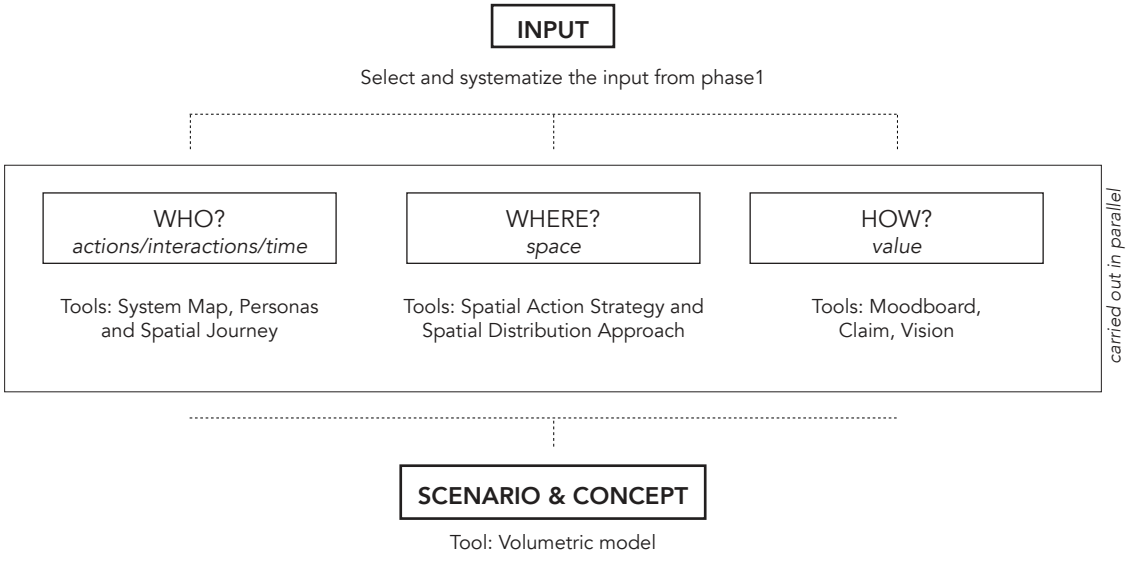


Fig. 42 – Process of Phase 2. Coordination of the multiple levels space – action – time for the concept generation.

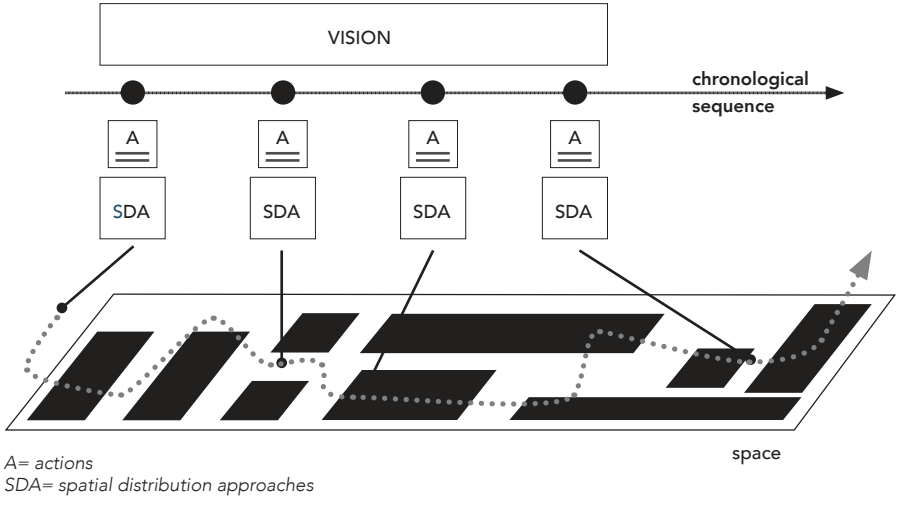


Fig. 43 – The Spatial Journey Map process.

This process helps the definition of the spaces through the typology of actions. The definition of the space, in fact, has been paired with a chronological sequence of the actions of the service outlined.
Starting with the *spatial elements* cards tested during the Ljubljana experimentation (see Section 4.1.3), these have been reframed to build a toolset defined as *Spatial Action strategy* with *Spatial Distribution approaches*, which has been systematized in the Where? parallel section.
b. Where?
Here, students were required to understand their spatial strategy of the Public Market space. At first, they had to fix their overall spatial strategy around two general possibilities:
1. doing a *tabula rasa* of the existing physical elements
2. keeping (almost) all and operating a more adaptive design

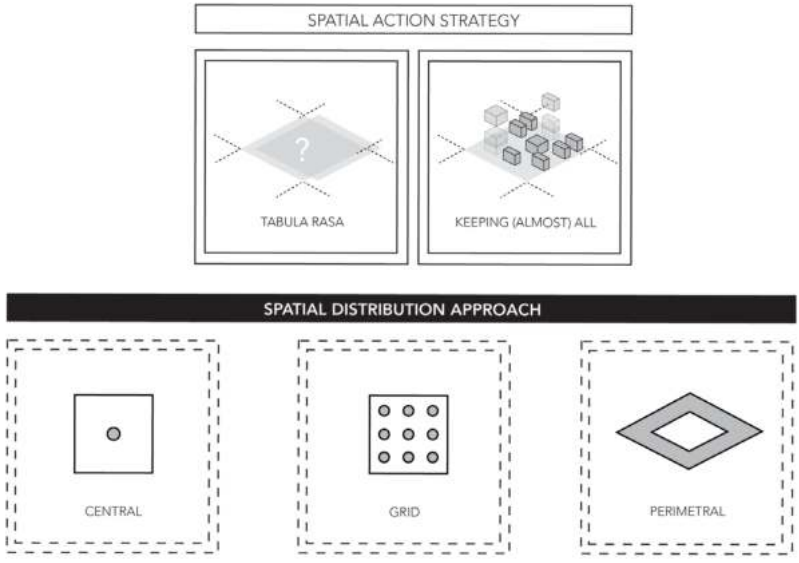


Fig. 44 – First step of the Spatial distribution approach: understanding the spatial action strategy and the general approach.

Then, the first level of categories proposed three kinds of approaches to deal with the general distribution: these were hierarchical (with a central focal point), distributed (with a grid composition), or based on a perimetral distribution and a centre.
Students had to operate one stage at a time, defining how the space is,

according to actors, actions and perceptions. The other levels could have been applied to parts of the space, where some actions and functions would have been located. These were organized into four levels: elements – attention on the visible and invisible planes; development – the unfolding of the elements and their density; crossing – the way in which all the single space components are crossed; and observation – the way in which all the single space components are perceived.
All these levels were translated into three main coordinates – horizontal, vertical, and multiple:

- element / horizontal: plane. A portion of the space read as a flat surface, more in its bi-dimensional aspect: this space is inhabited in a way to highlight this characteristic, i.e., to be read as a square
- element / vertical: multilevel. A portion of the space read as a superposition of surfaces
- element / multiple: wall, partition. A portion of the space where the horizontal and the vertical components have the same level of importance.
- development / horizontal: courtyard. The unfolding of a space around a primary, or secondary, flat area with a different function or purpose.
- development / vertical: monolith. The unfolding of a space around a denser component.
- development / multiple: combined. A combined development around bi- and tri-dimensional primary components.
- crossing / horizontal: height difference. It stresses the attention on different and flat passages.
- crossing / vertical: ramp, stairs. It stresses the attention on ramps and stairs as passages.
- crossing / multiple: corridor, door. It stresses the attention on the corridor dimension of a physical or a visual passage, creating a more focal movement.
- observation / horizontal: frontal. When a component is perceived from the ground as a display, a façade, or a scene.
- observation / vertical: from the top to the bottom and vice-versa. When a component is perceived on the vertical axis, generating a bijective hierarchical relationship.
- observation / multiple: through an opening. When a component is perceived through a frame.

Each level determines a consequential impact on, and need for, the following one in terms of design decision.

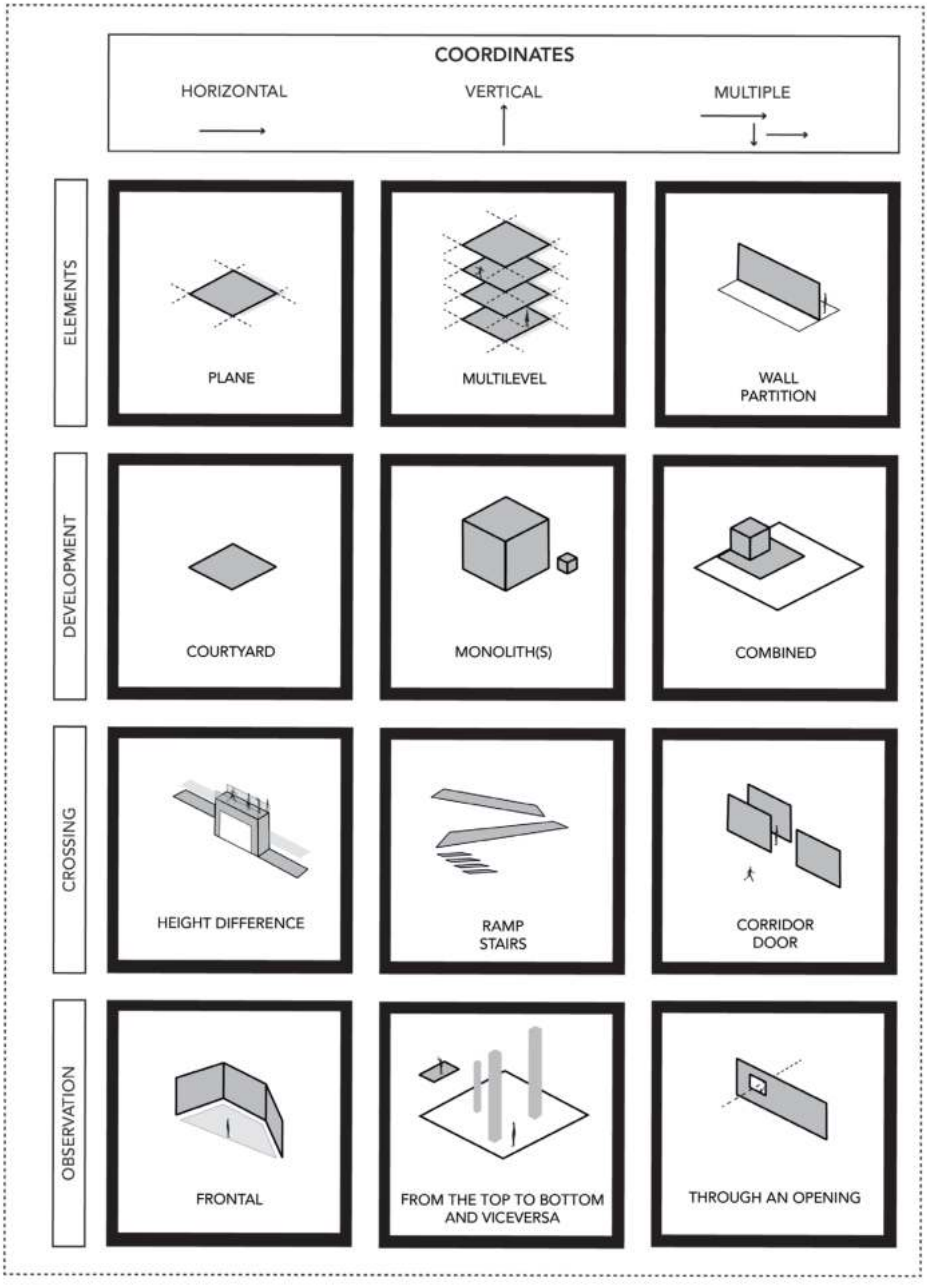


Fig. 45 – Second step of the Spatial distribution approach: understanding the spatial coordinate levels.

It is important to underline that these cards were not meant to set the interior design with fixed categories, but to investigate the space understanding, definition, and design according to the service understanding, definition, and design with abstract categories. This tool guided students in breaking down the space into pieces, into smaller components, to design the specific spatial requirements in terms of a human-centric view according to physical components, service requirements and values of perceptions, by always having the big picture as a reference.

c. How?

Students were also required to start defining how these actions, interactions and spaces would have been in terms of mood board, with a title and a claim. A vision would have suggested the visual idea of the spatial and chronological sequencing designed and then turned into an overall scenario of the possible future imagined and a volumetric model.

• *Phase 3: THE BOOTH SCALE, project development*

The final phase was devoted to the project development through the detailed definition of the spatial journey map, of the material- and tech- boards, the drawing of plans and elevations, and the realization of physical models on different scales. This phase no longer required a processual methodology to be presented and explored.

Some of the final outcomes are presented here to document the design results but it was especially through the students' oral presentation that the integration of the process was also evident in the results.

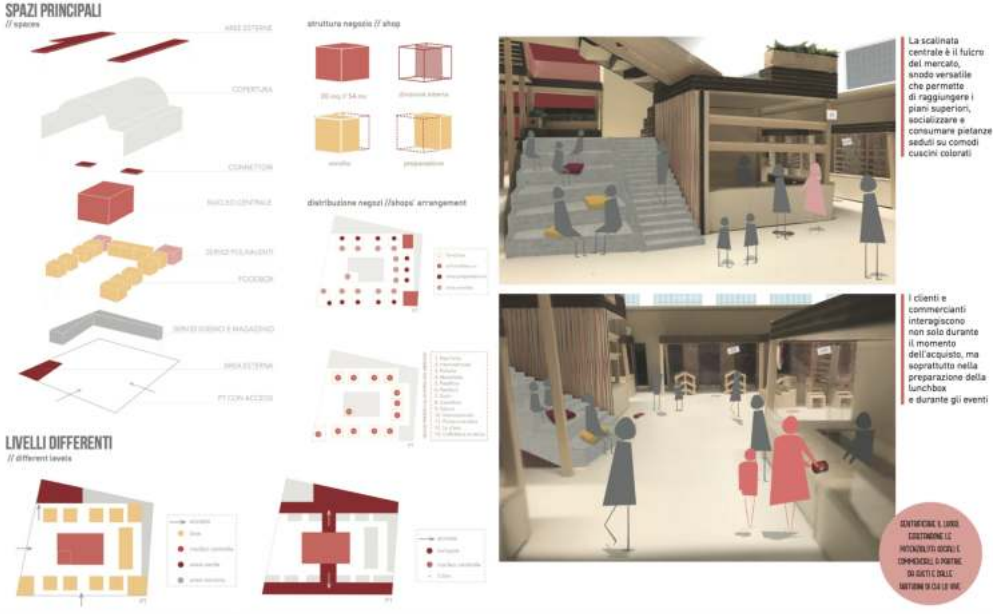


Fig. 46 – "Schisciamo" spatial strategy. Project by Ambra Borin, Michela Funari, Laura Marien, Margherita Rasio.

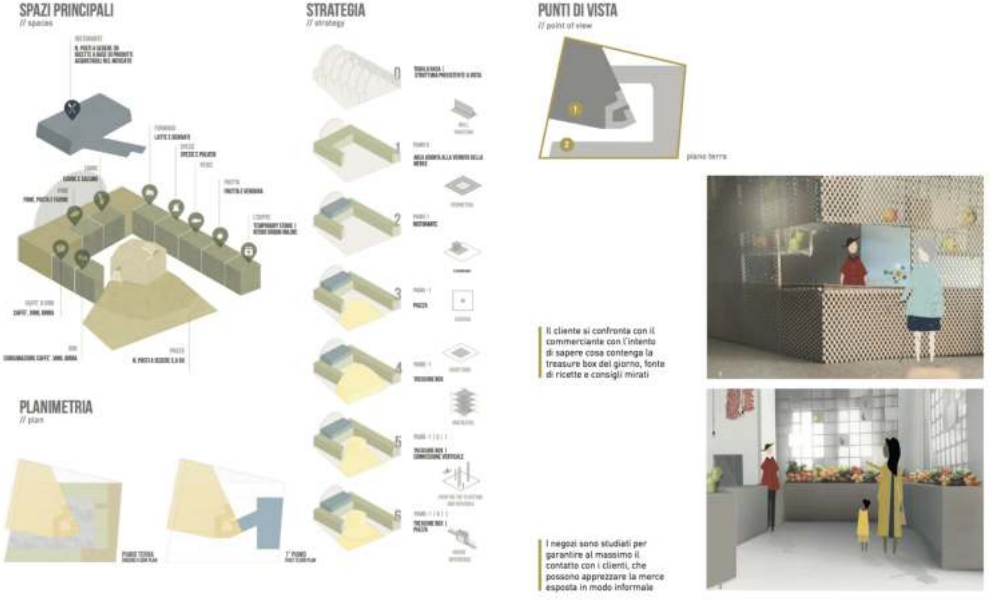


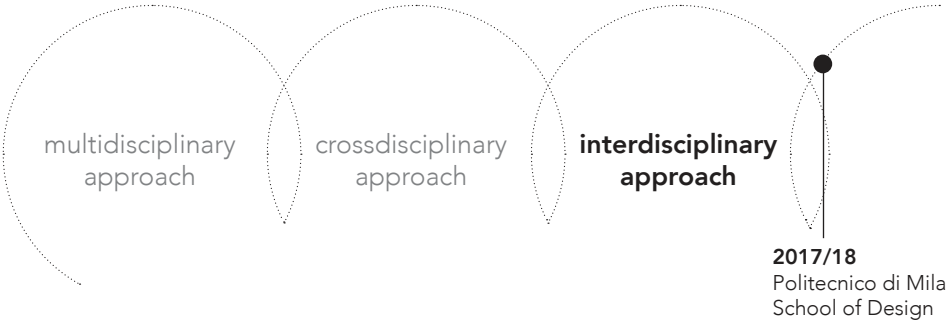
Fig. 47 – "Inshide" spatial strategy. Project by Celina Broekmans, Davide Rizzetto, Salomeeh Kataee Tabrizi, Alessandra Troisi, Marco Zucchelli.

5.4.1 DISCUSSION

In this experimentation, the service has not yet been a focal interest, either in the goals to be achieved, or in the main tools employed, but it has informed the educational process and enabled the context-based process. In fact, starting from the two basic meanings of *service* researched in Elena Pacenti's doctoral dissertation (Pacenti, 1998, p. 6), i.e., service as the nature of the final design object and service as the characteristics of the work, this experimentation included the attention to the process as well as to the final result and to the performance.

The educational process of "Design+Eat=Spaces" combined in all the steps the narrative of the performance, the sequencing of interactions and the spatiality of the place, testing tools not in a representation-oriented way but in a process-oriented one, always merging the spatial-temporal elements of the design with the human-socio-cultural dimension of the context of research. Anyway, the boundaries of the two disciplines were still evident.

1.POSITIONING IN THE PROGRESSIVE EVOLUTION OF THE EXPERIMENTAL PHASE:



2.SUMMARY OF THE DESIGN PROCESS *:

Phase 1 **Research & Analysis**	Phase 2 **Co-design and Concept generation**	Phase 3 **Project develpment**
- 2d and 3d surveys (SpD) *- Spatial analysis and flows (SpD)* *- Video interviews* *- Moodboards*	*- System Map (SD)* *- Personas (SD)* *- Moodboards and Vision* *- Spatial Journey Map (S+S)* *- Spatial Action Strategy (S+S): definition of the space paired with a chronological sequence of the actions of the service outlined*	*- Plans, sections, materials and models (SpD)* *- Final Spatial Journey Map*

(SD and SpD in brackets specify the disciplinary origin of the approach used for that method or tool.)*

3.INSIGHTS:

Students have been conducted in **designing spaces while designing the plot of the interaction scene**. The physical evidence, constituted by the scenography and the props, is seen as one possible mises en scène, integrated in the narration of the journey [percorrenza] into spaces.
Despite intentions, the "Spatial Journey Map" was used more as a representational tool than as a processual one. For this reason, the analysis of its effectiveness failed. However, it pushed the students' attention towards a more integrated approach between environmental, temporal and social aspects for the design of innovative spaces.

LESSON LEARNT: THE INSTRUCTOR PRINCIPLES FOR FUTURE DEVELOPMENTS

In the presented research, it appears that new needs have been detected to approach the design of physical environments and, therefore, that new approaches and new tools have become necessary in the design process to process and elaborate them. Disregarding the specific issue of the design action, the design of a physical environment is inextricably linked to the complexity of the human and relational dimensions, whose superposition, reciprocal influence, and impact must be considered when dealing with the understanding and design interventions. A contextual-based approach is not a plus, but it is also an undeniable part of the research and practice. The phenomenological nature of design is not only a matter of its final output relationships with any kind of environment, but it is involved as a factor from the beginning of the process.
Thanks to the progressive experimentation path, the weaknesses of an unintegrated design have been demonstrated along with the way in which the two disciplines can connect to build dialogue within design education. Representational and generative tools from Spatial and Service Design have been explored as possible complementary approaches, to include the physical evidence, the aesthetics of the relationship, and the sequencing within the timespan: thus, by putting the visual of service into the visual of space.

• ***Criticalities on the phenomenological dimension:*** **the materiality of the relational value of services is unfolded in a dialectic with spaces; further exploration is needed to understand how to match**

the dialectic between human beings and places with the design of innovative services.

The need to represent the service material, and its impact on the performance of spaces and on the human experience resulted in looking for visual tools and methods able to implement the very limited visual evidence of services into the essential visual evidence of spaces. The tested tools had the aim of making visible the material impact of the service while being defined in parallel with the Spatial Design (*Spatial Journey Map*), or the aim of highlighting the service needs and requirements impacting the spatial human dimension and for its validation (*Desktop Walkthrough Encounter*), or the aim of expressing the complexity of multiple factors, its variables and its unfolding in space and time (Spatial Storyboard Plus). Thus, an approach to the «visual» issue through these tools allowed the spatial dimension of human relations in their environment, their value influence, and their reciprocal interaction to emerge. Furthermore, it reconsiders the tangibility of services through the Spatial Design perspective.

• ***Criticalities on the temporal dimension:*** **the immateriality of spaces is co-produced; further exploration is needed to understand the impact of participatory design in designing spaces through the analysis of the actual social dynamics to integrate the narrative components.**

The design of spaces has been explored and supported with the structured enhancement of its human-centred side by taking advantage of the consolidated methodological discourse of Service Design on co-design and co-production processes. Through the added value of an ethnographic approach, of situativity, and grounded theory, co-design actions have been tested in the co-creation as well as in the prototyping actions for the design of spaces, introducing the idea of a co-production of spaces. This co-production takes place in the data collection, in the intellectual participation for the generation of information and in the emotional participation of the stakeholders. The performative dimension is part of the co-design activities and of the prototyping (final event) activities as well as of the *Desktop Walkthrough Encounter* and *Spatial Storyboard Plus* actions. Thus, a way was tested to converge the endless relationships of human actions with spaces with the sequencing dimension of the performance. By overlapping its time-component with the unfolding of the actions designed in the space, and by narrating all the sequences of the interactions and of the activities in a complex view, spaces have been co-produced.

• ***Criticalities on the relational dimension:*** **the design of contextualized services can contribute to the narrative of social roles in a scenic movement connotation of places; further exploration is needed in designing spaces while designing the plot of the interaction scene.** By focusing on the impact of service features in the physical dimension, attention has been given to design of services that have a direct relationship with the user. What has been demonstrated is that the spatial dimension is not only the place of the *mise en scène*, with its static connotation, but also of the narration, with the connotation of a scenic movement. This expansion of meaning concerned with the Spatial Design discipline creates an analogy with the seminal work of Pacenti (1998), which leaned towards an approach that put the service aside as only an organizational and management structure towards the themes of the cultural qualities of design, which was a shift developed and understood with the added involvement of the temporal dimension through the concepts borrowed from interaction design and the design of the interfaces and the language of the performance[41] *(ed. linguaggio dello spettacolo)*. Thus, by matching design tools features in an implemented processual tool, it tested a way to introduce the narrative dimension of Spatial Design, by performing the social roles and the hierarchies of relationships through the actions and the actors involved in the timespan selected within the connotation of a scenic movement.

In conclusion, the Experimentations used as critical case studies for the Framework demonstrated that an integrated design avoids Spatial Design development being merely a frame for Service Design. Moreover, through the experimentations it has progressively attempted to go beyond the use of tools from one discipline into the other, to get through the isolation of their fundamental interpretative structures. These have merged into the theoretical framework of the experimentations, into the methodological process and have been tested, combining tools for the specific purpose, to validate strategic coordination and cooperation among the disciplines. By putting the visual of service into the visual of space, it has explored the way in which the materiality of the relational value of services is unfolded in a dialectic with spaces; the way in which the immateriality of spaces is co-produced; and the way in which the design of contextualized services can contribute to the narrative of social roles in a scenic movement connotation of places. I believe that future explorations should, however, go in the direction set, that of pushing for a more and more integrated approach between phenomenological, temporal, and relational aspects for the design of innovative spaces.

[41] In the '90s, Pacenti's work introduced and expanded the design culture dimension of Service Design further than its simply organizational and management structures. The language borrowed from design of performance that highlighted the temporal and interactive dimensions of services was strongly connected to the work of Giovanni Anceschi, especially in: Anceschi, G. (1992). Choreographia universalis. L'oggetto della raffigurazione, ETAS Libri, Milano.

CONCLUSIONS

In the research and in the experimentations presented here, it appears that new needs have been detected to approach the design of spatial environments and, therefore, that new approaches and new tools have become necessary in the design process to process and elaborate them.

First, the research found a way to set this comparison, and the two frameworks by Edeholt & Löwgren (2003) and Holmlid (2009) served as a model to frame it and supported the understanding of how the two disciplines could connect.
Then, the theoretical exploration and the comparison proposed must be intended as a first step to start a S+S discussion.
The complementarity indicator for a S+S transdisciplinary approach are:

- The structured methodology of the design process of Service Design can *expand* the operational capacity of the one of Spatial Design considering the understanding of the common ground they share.
- If spaces are relational phenomena and are permeable platforms offering the material support for social practices that operate through flows, this permeable platform is indissolubly a complex network of relationships and interactions; this exists thanks to an overlapping network of services able to *link* them and, equally, thanks to spaces that are *enablers* of the service network.
- Time sequencing and spatial aesthetics should merge in

a complementary orientation towards an aesthetics of the relationship, including the spatial dimension and its symbolic values as well as the time of the interaction, engagement and participation. This leads to an integrated design of spaces considering the *narration of flows* passing through it.

• Co-design practices should enter Spatial Design towards the *co-creation of spaces.* Since processes of space ownership are constructed by the human action of dwelling and spaces are enactive of interaction, spaces enter with full rights in the reflection of design and democracy through agonism and infrastructuring notions.

Considering the disciplinary level of analysis of Spatial Design and Service Design, and the fact that the experimentations were a parallel test field for the ongoing theoretical reflections along the researc path, these lasts as to be considered more as a supporting process than a scientific endorsement, acting as an iterative process within the ethnography of the research. From the experimentations, it emerged that:

• the deconstructed and sequential approach of Service Design methods and tools could be applied to methods and tools for the design of spaces but this is not enough to support the definition of a complex design strategy of a place

• the experimentations have not provided a clear idea on the effective value of hybrid tools: the tested approaches had, unfortunately, a more relevant impact for representational purposes than for processual ones. The same happened in the bigger impact those tools had in the design of structural and infrastructural components, not balanced with the same impact on added identity values for the places designed.

These conclusions are valid if we consider the outcomes point of view. In fact, the following paragraph aims at highlighting the theoretical insights that can be a starting point for future explorations.

The scope of framing the fundamentals of a transdisciplinary approach has meant drawing one of the infinite number of possible frameworks for a comparison of disciplinary branches. The one emerged explores the findings developed by the *dialogues*, and it aims to highlight the areas in which each area expresses its contribution to the wider reflection on design research, where disciplinary coordination and cooperation should be further explored.

The current landscape of design research related to the issue explored

has been framed within the changes concerning the contemporary context. This has been useful in illustrating the widespread, multifaceted subject matter of design, fundamental to frame not only the shifting from fixed and defined entities (technology-centred) to processes and complex living entities (human-centred, human-non-human ecologies), but also to frame the topics of the teaching experimentations, to connect the complexity of the object to the higher complexity of the process needed, in parallel to the *dialogues*' discussions. In fact, *"design today is no longer about designing objects, visuals, or spaces; it is about designing systems, strategies, and experiences"* (Muratovski, 2016, p. 138); that is why speaking about the main issues of the contemporary shifts has been considered here as a major point in framing the emerging S+S design approach.

The definition process of the Qualitative Comparison and the experimental research arrived at these overall conclusions for this book:

- Service Design and Spatial Design share the development of the design culture towards a direct and integrated cooperation between disciplines and towards a balance between socio-cultural and techno-physical environments
- Adding the Service components to Spatial Design means expanding the systemic view, while Spatial Design contributes to design contextualized services
- With an S+S approach, the service designer receives contributions to the materiality of the relational value of services, and the spatial designer makes contributions to the co-production of the immateriality of spaces, within a coordinated narration of actions and interactions in places considering both the abstract and the sequential timespan
- The research identifies that an integrated design of all components avoids Spatial Design development being merely a frame for Service Design but being an integrated part of it, only if a transdisciplinary dialogue overcomes the conceptual distances.

These are based on the confrontation with the stronger challenge for a transdisciplinary dialogue: the translation of frameworks, concepts, logics, terminologies, levels of analysis and tools from a research field to another to overcome the conceptual and methodological boundaries from different ontological stances (Gustafsson et al., 2016, p. 6). For this reason, the *dialogues* have been built upon abstract concepts and notions: in order to identify parallelism, comparisons and possible complementary areas to attempt first joint research not yet explored.

This research fits into a *return of attention* towards the tangibility of services artefacts, which are no more dominant but worthy to be reconsidered in light of the ongoing evolutions and in light of a cultural discourse on research in design.
The scope of the research is certainly determined by a lack of specific literature on the topic, that necessitated the search for fundamentals. An adoption of this approach requires a better understanding of its practices and of methods to assess values and evaluate processes of the added diverse perspective, since the separation and distance in the terminology and in the community of reference by the two branches have entailed few exchanges so far for supportive structures.

Why a transdisciplinary approach and not a transdisciplinary method?

> *"If we understand approach as both the way of gaining access to a goal, such as the solution of a problem, and the process of getting closer to a destination, then approach may involve a whole set of techniques and methods plus the rules of how to use them. That is why, from a phenomenological perspective, approach, which always includes the approaching agent, that is, the researcher, may be taken as a more comprehensive term than method. It covers the whole rule-guided process of getting close to the solution of a problem, from the definition of the point of departure and viewpoint (perspective), to the proper way of asking meaningful questions, through the consideration of the relevant context, to the (experientially) faithful description of the phenomenon under study" (Graumann in Bechtel & Churchman, 2003, p. 95).*

This citation is useful in the explication of why this research has been structured towards the outline of an approach, rather than of a set of methods and tools, or design guidelines. The Service Design discipline, with its recognized and shared toolsets, demonstrates that a proliferation of tools produces an outstanding number of variations with a loss of the overall design methodology and strategy. Even in this case, the hybridized tools developed within the experimentations were intended to be testing environments for the claims, systematized for the specific teaching contexts, and not highlighted as the core contribution of the book itself. The scope has not been to propose new linear thinking but to attempt a seminal work towards an approach that enables the evolution of complex skills that can adapt to dynamic contexts.

The overall methodology of the research connected the specific approaches and methods of the disciplines for collecting empirical materials. These comprise the connection between the approach of the research (based on grounded theory), the approach in the experimentation (based on participatory action research), and the cross-pollination of design fields in the experimentations.

Key findings:
By establishing a cooperation between the deconstructed plot of the interaction scene with the design of the physical evidence constituted by the scenography and the props, spaces can be seen as possible *mises en scène* integrated into the narration of the *journey [percorrenza]* into spaces, possessing a multilevel dialectic with the designed environment.

KEY DIMENSION	SPATIAL DESIGN	SERVICE DESIGN
PHENOMENOLOGICAL	***dialectical*** *Spatial Design designs places with the added symbolic component*	***unfolded*** *Service Design designs service evidences with the sequential added component*

>> The materiality of the relational value of services is unfolded in a dialectic with spaces; further exploration is needed to understand how to match the dialectic between human beings and places with the design of innovative services.

By establishing a cooperation between the endless memories of spaces, tracing the rituals and symbolic relationships of human actions, with the sequencing breakdown of actions and interactions in a designed environment, the design of spaces can be explored and supported with the structured enhancement of its human-centred side. The sequencing dimension of the performance, overlapping its time component with the unfolding of the actions designed in the space, can inform the design of spaces by narrating all the sequences of the interactions and of the activities in a complex view.
The design of spaces can mutually inform the service's design with its invisible values since SpD explores the user experience in spaces.

KEY DIMENSION	SPATIAL DESIGN	SERVICE DESIGN
TEMPORAL	***abstract*** ***(endless time of the memory)*** *Spatial Design designs places with a timeless component*	***sequential*** ***(limited time of the use)*** *Service Design designs relationships with a defined duration (hic et nunc)*

>> The immateriality of spaces is co-produced; further exploration is needed to understand the impact of participatory design in designing spaces through the analysis of the actual social dynamics to integrate the narrative components.

By setting a cooperation between the figurative act that embodies the wicked problems of the contemporary condition with the relational focus of the experiential act, in the wider spectrum of SD, it introduced an added value of the narrative dimension of SpD, the one that underlines the performing of social roles and the hierarchies of relationships through the actions and the actors involved in a timespan.

KEY DIMENSION	SPATIAL DESIGN	SERVICE DESIGN
RELATIONAL	***semiotic*** *Spatial Design designs social identities through a figurative act*	***relational*** *Service Design designs relational entities through an experiential act*

>> The design of contextualized services can contribute to the narrative of social roles in a scenic movement connotation of places; further exploration is needed in designing spaces while designing the plot of the interaction scene.

GLOSSARY OF KEY TERMS

Dialogue
This is used to strengthen the main scope of this work, that of lack of theoretical development in design research of a connection between spaces and in-designed service, despite the extensive debates on the relationship between Service Design and other disciplines. For this reason, the *dialogues* act as an encounter and converging discussion area. They explore this relationship by discussing an identified common ground between the two design branches to examine areas of differentiation and balance. They focus on mutual and reciprocal theorising across them; however, they are only the beginning of reflection in the direction of the foundational act towards S+S.

Key dimensions
They are wide dimensions that synthesise the gaps identified between the two design branches. These gaps are opportunities to discover where Service Design and Spatial Design could complement each other (and contains the relevant macro-areas of investigation of the reference frameworks). They are not descriptive classifications, such as the dimensions of the reference frameworks by Edeholt and Löwgren. They attempt to evidence one aspect of the two design branches, analysed to highlight the most relevant contribution for each.

Complementarity Indicators
They describe the core evidence of the S+S dialogue, developed as a way to *connect the dots* within the critical work on the literature review and to build the perspective for the Qualitative Comparison.

Supportive structures
With this, the aim is to express this work's theoretical interpretation of the S+S relationship, meaning disclosing the fundamentals.

Design object
The *design object* is not an object, a visual or a space; in fact, it has shifted from defined categories to a complex system on the experience of human beings depends. It is a solution for the physical world and its added cultural value in the socio-cultural world (Manzini, 2016, p. 55). Therefore, it is also shifting away from fixed and defined entities (technology-centred) to processes and complex living entities (human-centred), i.e., to a systemic view and impact on the cultural, social, economic, and physical dimensions (Buchanan, 1992; Krippendorff, 2005; Brown, 2009; Manzini, 2015).

Design orders

In Buchanan (2001), the author explores the changing conception of the *product of design*, not as a physical object but as orders that are *"a place for rethinking and reconceiving the nature of design [where] «places» [are meant] in the sense of topics for discovery, rather than categories of fixed meaning"* (2001, p. 10). Holmlid (2009, p. 7) describes Buchanan's orders as a *"partial model, […] valuable to interpret the design disciplines as integrative disciplines or as boundary openers of the model"* itself. This observation is essential: from one side because it underlines the impossibility of strictly categorising established design disciplines but helps orient their initial conception; from the other, it supports the outreach of the design disciplines towards transdisciplinary cooperation.

Place and Space

Through an environmental psychology perspective, a place is a socio-physical unit of analysis, with a place specificity, localized and dynamic because of human interventions that are *"able to influence and also to be influenced by individual behaviour and experience outside of personal awareness"* (Bonnes and Bonaiuto in Bechtel & Churchman, 2003, p. 31). Human beings 'inhabit' when they can orient themselves in an environment and when they can find an identification with it, or more simply, when they experience the meaning of an environment. In this sense, an inhabited space is a place: a place is the phenomenology of a space, and the built environment – the tangible artefacts defining a place – is the physical manifestation of inhabiting because it discovers meanings potentially present in the given a priori environment. As Graumann (*Ibid.*, p. 108) summarizes: *[Space] "is the term for abstract geometrical extension indifferent with respect to any human activities" [and place] "in contrast, has in itself a strongly experiential connotation [...], constructed in our memories and affections through repeated encounters and complex associations".*

Cultura del progetto

This concept does not have an univocal and shared definition, also due to its complex nature. This Italian concept (i.e., *Italian design culture* or *Culture of the project*) refers to the idea that the act of designing is a mode of thinking and building a dialogue with the present challenges, owning a cultural value in the broadest sense (symbolic, aesthetic, social, political), far beyond design as solely «solutionism». Maurizio Vitta in *The Meaning of design* (1985) states that *"this phrase is meant to suggest the totality of disciplines, phenomena, knowledge, analytical instruments, and philosophies that the design of useful objects must take into account, inasmuch as those objects are produced, distributed, and used in the context of economic and social models that are ever more complicated and elusive"* (p.3).

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