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Service+Spatial design: Introducing the fundamentals of a transdisciplinary approach

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Abstract

The paper is a position paper attempting to frame the foundations of an emerging topic in design research, education and practice: a transdisciplinary approach defined here as Service+Spatial design. Starting from the insights acquired by the authors through basic research and educational activities exploring the mutual influences between Spatial design and Service design, the challenge is to disclose the fundamentals of Service+Spatial design in order to set up a qualitative comparison and discussion around their relationships. The paper explores the cultural dimension of design, trying to identify and highlight common ground and differentiation to frame, support and expand the comparison between these two design disciplines. The common ground is based on the relevant converging factors that create the current landscape of design; the perspective for comparison is structured through the identified key dimensions in the different evolution of Spatial and Service design; the comparative analysis is sketched around the ongoing findings and the evidences gathered from the theoretical research and the assessed teaching framework tested.

KEYWORDS: design research, spatial design, design education, systemic approach, product-service systems

Emerging positions in the design field as a common ground for S+S

Premises

This is a position paper which aims to illustrate an emerging thought in design research and in design education and practice: linking the theoretical background and the milieu¹ of Spatial design with the tools and the language of Service design.²

Spatial design encounters Service design in urban planning, in the design of workplaces, retail settings, 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. *What* the service designer provides has to be combined and formed but, however, they usually do not physically rearrange the physical components but only their representations (Blomkvist, Clatworthy, & Holmlid, 2016, p. 3). Although this may be understood, this is not yet an established area of practice or theory.

The focus of this position paper is not on the “objects” of the design: this is not a solution-oriented discussion but it refers to the design culture³ in which the challenge emerges. The design culture encompasses the converging factors characterising the contemporary landscape of design (paragraph 1) as well as the theoretical genesis of the two disciplines (paragraphs 2, 3). Thus, the paper establishes the discussion on a transdisciplinary reflection on the key dimensions of Spatial and Service design and on a processual critical analysis (paragraphs 3, 4 and 5).

The authors are not looking for an overlapping of the two disciplines but to lay the foundations for the development of a transdisciplinary approach and to imagine alternative future developments. Disclosing the fundamentals of Service+Spatial design (S+S) means, for the authors, defining supportive structures to design with an S+S approach. Services are, in fact, distributed in time and space (Kimbell, 2009, p. 3) and are introduced in a physical and social setting (Holmlid, 2009, p. 5). Assuming that, how can a transdisciplinary dialogue between Spatial design – with a longer history rooted in Interior Architecture – and Service design – with its holistic thought - can expand the comparison between design orders (Buchanan, 2001)?

Two premises are fundamental: first, the reflection here includes the evolution of the design research and education, encompassing the idea that the current shifts in the social, economic and professional realms inevitably affect design practice, with a phenomenological point of view (Bertola & Manzini, 2004). Second, the emerging thought is not sustained by a specific literature review on the topic since, as presented below, the subject is neither yet investigated in purely academic terms nor in the field of application.

The S+S discourse has been elaborated in the context of university research by the authors and it was the same teaching and research activity that brought this latent need to the fore. Therefore, the paper will present the emerging position by looking at the theoretical issues common to both disciplines, all of which are strongly grounded in the design discipline evolution over the past seventy years.

Key trend indicators defining the current landscape of design

¹ [Product] Milieu: “the aggregate of objects, activities, services and environments that fills the lifeworld [where] activities, services, and environments [are designated] as products in order to maintain the unity of the product milieu as a single field of activity and to make greater connections among its diverse components” (Margolin in Buchanan & Margolin, 1995, p. 122). See also: (Margolin, 1988).

² In this paper, the authors use “Service design” as well as “Spatial design”: to define a field of application of the discipline. Indeed, they share the concept behind the “Design for Service” definition: (Meroni & Sangiorgi, 2011), (Manzini in Meroni & Sangiorgi, 2011), (Sangiorgi, 2011), (Kimbell, 2011).

³ “Design culture” is the English translation of the Italian “Cultura del progetto”, where *progetto* has a broader meaning.

The current landscape of design is defined by changes that are connected to the shifts concerning the contemporary world.

“The subject matter of design is not fixed [but] it is constantly undergoing [, it concerns] matters that admit of alternative resolutions [and] the range of products or areas where design thinking may be applied continues to expand” (Buchanan in Buchanan & Margolin, 1995, p. 25).

The authors share the belief 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 (Buchanan, 1992), (Krippendorff, 2005), (Brown, 2009), (Manzini, 2015). That is why the discussion of the main issues of the contemporary shifts is considered below as major points in framing the emerging S+S design approach: 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 these shifts have an impact on the design research and practice in terms of approaches, languages and methodologies with which to tackle them: if the designer relates to the system, systemic shifts become fundamental in our discourse.

Converging factors characterising the contemporary landscape of design:

- The alignment and interdependency of local and global processes.

The diffusion of new ICTs gives an added meaning to the trans-faceted 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, overcoming physical proximity in a move towards transnational spaces, and networks of global cities made up of process and flow instead of places. 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” (Star & Ruhleder, 1996; (Björgvinsson, Ehn, & Hillgren, 2010) Hillgren, Seravalli & Emilson, 2011; Van Reusel, 2016), this ongoing alignment between levels – global into local and vice versa – has generated favourable conditions for innovative models to fit and to operate in 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 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 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.

“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” (Boyer, Cook, & Steinberg, 2011, p. 19).

- Towards transdisciplinarity.

The shift to a global, information-based economy and society is asking design to be a “multidisciplinary, committed to conceptualisation, configuration, and implementation of meaningful social environments, products, services, systems and brands” (Muratovski, 2010, p. 381). This opens the way to a merged-knowledge approach, enabling design practitioners to deal with the whole system of relationships within a *product milieu*. As a field that is constantly evolving, design requires a transition from an approach based on disciplines to an approach based on disciplinary skills, some of which are outside the field of design. While design practice requires designers to deal with multidisciplinary, design education had 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.⁴ In the past decade, in fact, there has been an inverse process: design education has moved towards a transdisciplinary approach.

The authors don’t claim that the design discipline has all the means to govern, deal with and solve such complexity; indeed, they believe that designers are becoming more and more involved in multi-faceted milieus, which 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; the development of new spatial orders and processes in the contemporary ‘fluid’ city. Regardless of the domain, a specific transdisciplinary approach must be designed to break the boundaries and expand the approaches.

After having briefly presented some of the more relevant key aspects of the emerging position in the design field, the authors will now focus on the specific framework of the Spatial Design discipline and its emerging hybridisation and crosspollination with Service Design: an important segment of the current paradigm shift into transdisciplinary research.

Informed opinion and experiences: the authors’ context

The authors are part of the Polimi Desis Lab (www.desis.polimi.it), a research team of the Design Department of Politecnico di Milano, which is part of the worldwide DESIS Network (Design for Social Innovation and Sustainability, www.desisnetwork.org) with Design Labs based in more than forty 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.

The authors run research projects at local, national and international levels and often combine their research with several educational programmes and courses, being part of the faculty of the School of Design in the Interior design (later called Interior and Spatial design) and in the PSSD master programme, with a design studio testing the S+S approach in Spatial design and in Service design courses. The relationship between theory and practice is studied and practiced by this research group on two levels: at the researcher 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.

⁴ The authors refer to the notions of hierarchy of increased complexity from multi-, to cross- and to inter-disciplinarity, theorised by Jantsch, E. (1972). *Technological Planning and Social Futures*, Associated Business Programmes Ltd, London.

Spatial and Service design: a qualitative comparison

Spatial design explores the user experience in spaces, which deals with their transformations, perceptions, and actions and interactions that take place there, and the experience of passing through the space. Nevertheless, as Andrea Branzi has often stated, spatial design has not yet been investigated as an autonomous disciplinary corpus. He places it between the history of architecture and the history of industrial design (Branzi in Crespi, 2013), and between “project” – as a “programmable action”⁵ (Crespi, 2013) – and “non-project”, made of continuous human actions, memories, rituals and symbolic relationships in the spaces. Even more precisely, Branzi states that the discipline of architecture fails to identify itself not only as a figurative act but also as an abstract and immaterial reality, embodying the wicked problems of the contemporary condition, of services, computer networks, product systems, environmental components, commercial information and perceptual structures (Branzi, 2006). Spatial design has, therefore, an elusive and multidisciplinary nature, which is the core of its foundation and genesis. Furthermore, it frequently encounters the redefinition of contemporary life’s parameters and shows the new configurations of a changing society (Branzi, 2006): the physical realm enables interactions among people and enhances a sense of shared ownership and the engagement of people.

Services are complex and relational entities (Sangiorgi, 2011). They are systems that involve many different influential factors and deal with strategies and structures, processes and interactions. Services are co-created values (Vargo, Maglio, & Akaka, 2008), human-centred, and are temporal in their nature (Holmlid, 2009) since they are distributed in time and space (Kimbell, 2009). Service design is the design thinking contribution in the processes, systems and practices of service, aimed at providing a holistic approach in order to get an understanding of the system and of the actors and factors within the system (Mager & Sung, 2011). Service design is the design of the area where the interactions between the service and the user take place (Meroni & Sangiorgi, 2011, p. 42, from the Elena Pacenti’s perspective), meaning that they always assume a social, interactive and relational dimension⁶.

A service designer can

“visualise, express and choreograph what other people can’t see, envisage solutions that do not yet exist, observe and interpret needs and behaviours and transform them into possible service futures, and express and evaluate, in the language of experiences, the quality of design” (Service Design Network, 2005).

Service design is essential to establish the service evidence, when intangibility is visualised in terms of physical evidence (Stickdorn, Schneider, Andrews, & Lawrence, 2011); thus, services incorporate tangible and intangible components (Meroni & Sangiorgi, 2011)(Sangiorgi, 2011).

Examining the basics of the two disciplines, the following key dimensions lay the theoretical foundations of the challenge. It is intended to demonstrate that Service and Spatial design approach are complementary: thus, to validate the transdisciplinary approach introduced here. Spatial and Service design deal with a chain of dependencies between the pinpointed qualitative dimensions⁷ that follow and, for each dimension, one aspect is related to Spatial

⁵ A strict, deterministic and finite methodological process.

⁶ See also the IHIP (Intangibility, Heterogeneity, Inseparability and Perishability) framework in Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *The Journal of Marketing*, 41–50. – and further development in Meroni, A., & Sangiorgi, D. (2011). *Design for services*. Gower Publishing, Ltd.

⁷ The comparison of key dimensions and on design orders mentioned in this position paper establishes a direct connection to previous articles on relationships among design disciplines:
- 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*.

design and the other to Service design. Each aspect is explained and the main references of it are quoted in the footnotes.

- ENVIRONMENTAL DIMENSION

Spatial design: dialectical⁸

Spatial design identifies, gives meaning and shapes places. The physical experience with the context is amplified by the endless dialectic of who is inhabiting the space that projects memories and values. Furthermore, the physical realm enables interactions among people and enhances a sense of shared ownership and the engagement of people.

> *Spatial design designs places with the symbolic added component.*

Service design: unfolded⁹

Services take place in physical environments and service design establishes - but do not arranges - the service evidence as physical evidence, which shapes the experience of services.

> *Service design designs service evidences with the sequential added component.*

- TEMPORAL DIMENSION

Spatial design: abstract (endless time of the memory)¹⁰

Spatial design: the place encloses and contains the time of the human experience, occurring in a space.

> *Spatial design designs places with a timeless component.*

Service design: experiential (limited time of the use)¹¹

Services exist only when the relationship takes place (designed touchpoint).

Otherwise, they fall back into non-existence. At the same time, the Service design process deals with pre-/during-/post-service phases that visualise the service as a sequence of interrelated actions.

> *Service design designs relationships with a defined duration (hic et nunc).*

- SOCIAL DIMENSION

Spatial design: semiotic¹²

Spatial design 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.

- Holmlid, S. (2009). Interaction design and service design: Expanding a comparison of design disciplines. *Nordes*, (2).

This elaboration needs further exploration from the authors and will follow this work with further publications on the topic.

⁸ Bachelard, G. (1957). *The poetics of space*.

Heidegger, M. (1971). Building dwelling thinking. *Poetry, Language, Thought*, 154.

Branzi, A. (2006). *Weak and Diffuse Modernity: The World of Projects at the beginning of the 21st Century*. Skira.

⁹ Stickdorn, M., Schneider, J., Andrews, K., & Lawrence, A. (2011). *This is service design thinking: Basics, tools, cases*. Wiley Hoboken, NJ.

Blomkvist, J., Clatworthy, S., & Holmlid, S. (2016). Ways of seeing the design material of service. In *ServDes. 2016* (pp. 1–13). Linköping University Electronic Press.

¹⁰ - Bachelard, G. (1957). *The poetics of space*.

- Norberg-Schulz, C. (1980). *Genius loci: Towards a phenomenology of architecture*. Rizzoli.

- Crespi, L. (2013). *Da spazio nasce spazio. L'interior design nella trasformazione degli ambienti contemporanei*. Milano: Postmediabooks. [*Space is born from space. The interior design discipline for the transformation of contemporary spaces.*]

¹¹ - Stickdorn, M., Schneider, J., Andrews, K., & Lawrence, A. (2011). *This is service design thinking: Basics, tools, cases*. Wiley Hoboken, NJ.

- Blomkvist, J., Clatworthy, S., & Holmlid, S. (2016). Ways of seeing the design material of service. In *ServDes. 2016* (pp. 1–13). Linköping University Electronic Press.

¹² - Branzi, A. (2006). *Weak and Diffuse Modernity: The World of Projects at the beginning of the 21st Century*. Skira.

- Crespi, L. (2013). *Da spazio nasce spazio. L'interior design nella trasformazione degli ambienti contemporanei*. Milano: Postmediabooks. [*Space is born from space. The interior design discipline for the transformation of contemporary spaces.*]

> *Spatial design designs through a figurative act that gives sense.*

Service design: relational¹³

Services are complex and relational entities and service design deals with the area where the interactions between the service and the user take place.

> *Service design designs relational entities through an experiential act.*

Through this comparison, the authors identify the complementary nature of Service design and Spatial design, towards a S+S approach embedding:

- the dialectic nature (between the user and the environment and among the users within the environment);
- the archetypical nature (embedded in the existential act);
- the phenomenological nature.

	SPATIAL DESIGN	SERVICE DESIGN	S+S NATURE
ENVIRONMENTAL DIMENSION	<p><u>dialectical</u></p> <p>The physical experience is amplified by the endless dialectic of who is inhabiting the space that projects memories and values. > <i>Spatial design designs places with the symbolic added component.</i></p>	<p><u>unfolded</u></p> <p>It establishes - but do not arranges - the physical evidence of services, which shapes its experience. > <i>Service design designs service evidences with the sequential added component.</i></p>	<p><u>DIALECTIC</u></p> <p><u>ARCHETYPICAL</u></p> <p><u>PHENOMENOLOGICAL</u></p>
TEMPORAL DIMENSION	<p><u>abstract</u> (endless time of the memory)</p> <p>The place encloses and contains the time of the human experience, occurring in a space. > <i>Spatial design designs places with a timeless component.</i></p>	<p><u>experiential</u> (limited time of the use)</p> <p>Service exists only when the relationship takes place, or, they fall back into non-existence. Also, it deals with pre-/during-/post- phases: service as a sequence of interrelated actions. > <i>Service design designs relationships with a defined duration (hic et nunc).</i></p>	
SOCIAL DIMENSION	<p><u>semiotic</u></p> <p>The figurative act embodies the contemporary wicked problems. In fact, places are a relational condition made up of cultural and ritual relationships. > <i>Spatial design designs symbolic places through a figurative act.</i></p>	<p><u>relational</u></p> <p>Services are complex and relational entities and service design deals with the area where the interactions between the service and the user take place. > <i>Service design designs relational entities through an experiential act.</i></p>	

Figure 1 – The Spatial and Service design dimensions

The systemic approach in the discipline of Spatial Design and its relationship with the discipline of Service Design

It is necessary to introduce the relation between spatial design and system theory, since a spatial context is always integrated in a complex system and this will help in understanding our challenge.

A system may be described as a complex of interacting components together with the relationships among them; the structure is the constitutive aspect of a system and the relationships make the system significantly useful (Ciribini, 1984, p. 50). To be able to understand the link between spatial design and system theory, we must take a step back to what happened in Italy 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. Thus, according to the Italian scientific community, this was influenced by considering the

¹³ - Meroni, A., & Sangiorgi, D. (2011). *Design for services*. Gower Publishing, Ltd.

- Kimbell, L. (2009). The turn to service design. *Design and Creativity: Policy, Management and Practice*, 157–173.

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 (cfr. Giulio Minoletti, Alberto Rosselli, Marco Zanuso). Theorists and designers questioned about how the university and the 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.¹⁴ Rooted in this debate, a need emerged throughout the 70s to include the system approach to the design process, thus bringing to the meta-design approach. In 1984, Giuseppe Ciribini spoke about the management of the design process as “an adaptive dynamic system”: as a sequence of actions of the programmatic action of the designer (Collina & Bertola, 2005). Pushing forward that discussion today, meta-design is not only the sequence of operations of a scientific methodological process for exhaustively listing functions, purposes, requirements, constraints and any other factor that can drive the project but, it 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). Hence, the design activity 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 through an iterative process.

Thus, the challenge of the authors is to formulate an S+S emerging discipline since it is perceived that:

- Service design lacked a perspective on the design of the cultural and ritual relationship with and within the physical environment of human beings as part of the physical experience with the context, while it does have a strong methodological quality towards human-centred design;
- Spatial design can find today in the strategic and resilient approach of service - needed to tackle the complex socio-technical system (Norman & Stappers, 2015a) - that approach which expands the design and value of the places and integrates the service soft components;
- Both Service and Spatial designs contained a complementary systemic approach towards the contemporary distributed and complex context.

Through the understanding of the fundamentals of the two disciplines, the authors aim to define new ways to approach the design of a space, assuming that:

- Services take place in spaces;
- Services generate spaces.

Therefore, the guiding questions are:

- How can spaces influence, generate, be set for and used through service?
- How can services influence, generate, be set for and used through space?
- How can service design processes add value in spatial projects and vice versa?

¹⁴ Cfr. “L’insegnamento dell’architettura nelle università italiane” [Architecture Education in Italian Universities], edited by Ludovico Quaroni 1959-60).

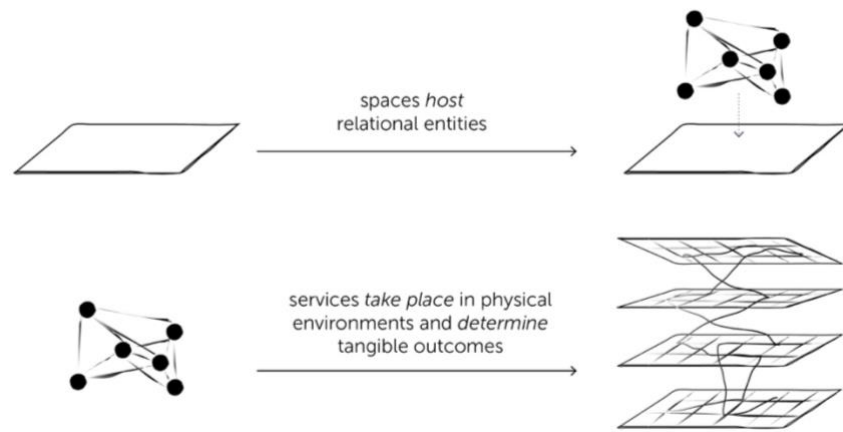


Figure 2 – Diagram by the authors

The ongoing research towards the expanding of the comparison of the disciplines is, therefore, established on a transdisciplinary approach. The approach is not multidisciplinary – where no direct cooperation among disciplines is expected; nor is it cross-disciplinary – where one discipline should support the other within itself; and neither is it interdisciplinary – where direct cooperation exists but it doesn't expect the borders of the different disciplines to be crossed.

The origin and the aim of the emerging position

The literature review revealed that this topic has not yet been explored. Many publications explore the interdisciplinary nature of service design: Stickdorn and Schneider, in their textbook on service design thinking (2011), explore the basics, tools and cases of the discipline and, especially, its relationships with product, graphic, interaction, strategic, social, management and ethnographic designs. Spatial and environmental components are often underlying and cited,¹⁵ but never explicitly researched.

In other European universities S+S experimentation has been done on teaching activities, but not at the research in design level. This is the case of:

- Thomas More University College in Mechelen (Belgium) with a brand-new programme in “Interior & Service Design” (final year of the Bachelor and post-graduate year of specialisation) where “graduates are equipped with the knowledge and skills needed to design objects, furniture and spaces in order to support socially oriented design projects, developing their knowledge of user-centred experiences, service contexts and research for design”;¹⁶
- the Master's programme in Product and Spatial Design at the Aalto University School of Arts, Design and Architecture; in 2015, a call for lecturer in Spatial and Service design was launched by the Design Department but unfortunately the position and the role no longer exists. At the Aalto School of Architecture, a research project (“School as a Service”) is ongoing, which connects Service design with an architectural approach close to urbanism; in fact, 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;

¹⁵ “[...] 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”, p.44

¹⁶ <http://www.thomasmore.be/about/interior-service-design>

- in the programme of Environmental Design at Tongji University in Shanghai, due to the double degree programme with the PSSD classes of the Politecnico di Milano School of Design, approaches and tools of Service design have been applied;
- the Middlesex University in London where, although there is no established programme on service design, they have required expertise from our research group during some teaching activities in the BA in Interior Architecture (2017).

Finding 1: The absence of a literature review and the insignificant number of courses and experimentations on this topic highlight that in-depth and rigorous research is needed to develop models, methods and theories about S+S. An adoption of this approach requires better understanding of its practices, methods to assess value and methods to approach the subject matters in order to break the silos of design approaches and to add a diverse perspective.

Finding 2: Service design and Spatial Service design all 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.

The emerging position: statements

As mentioned in the premises, the paper's challenge is to disclose the fundamentals of Service+Spatial design. The authors are not looking for an overlapping of the two disciplines but to the creation of a transdisciplinary approach, considering the current paradigms (paragraph 1) and imagining alternative future developments. Disclosing the fundamentals means defining principles and guidelines to the approach, and to design with an S+S approach.

The first main assumptions are:

- Service design and Spatial design share similar processes but speak different languages.
On one side, this is justifiable since “service design is an interdisciplinary approach that combines different methods and tools from various disciplines” (Stickdorn et al., 2011, p. 29) which are not necessarily borrowed from design. On the other side, Service design barely encounters Spatial design since it arose in the ‘90s growing economy of the service sector “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) with contributions from management, business and process engineering. Within that landscape, Spatial design appears to only be connected to its architectural roots and tangible sides, while its systemic and meta-design approach didn't find a way into the interdisciplinary nature of service;
- An S+S approach can expand the comparison between design orders (Buchanan, 2001)¹⁷ and thus overcome the disciplinary borders. If “services are complex, hybrid artefacts [...] made up of things – places and systems of communication and interaction – but also of human beings and their organisations” (Manzini in Meroni & Sangiorgi, 2011, p. 1), it is undeniable that spaces are also part of the service system. They share the attention on actions and interactions, but with a different point of view. In fact, the places are not spaces that are inside something, but a relational condition (Crespi, 2013). That is why the design of public and private spaces meets the relational nature of services, in a mutual influence that affects the creation of meaningful social environments (De Rosa in Camocini & Fassi, 2017)

¹⁷ Buchanan (2001) speaks about four orders of design identified by their object and the corresponding design disciplines: signs (graphic design), products (industrial design), actions (interaction design) and thought (environmental design).

However, as stated, the lack of exploration of this relationship limits the role of space in the service approach to “where something happens” with no further additions instead of being a component of the system to be designed.

The connection with the space underlies the Service design approach; the authors propose to systematically integrate it in the whole design process as part of the PSS process where required.

Finding 3: Adding the Service components to Spatial design means expanding the systemic view: Service’s approach and tools encompass the human-centred design.

Framing the connection with PSS

By calling for an integrated approach between Spatial and Service designs, the discussion has been established around the rapid change in contemporary society, demanding new solutions and a systemic view that includes a wider network of actors (social bodies, enterprises, companies, institutions). Furthermore, the theoretical reflection pays close attention to tangibility and intangibility, both in terms of the object and the relationship. We can say that 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). The PSS dimension 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).

For the authors, and within the PSS curricula at Politecnico di Milano, the tangible side includes not only products in the traditional sense but also spaces.

The actual predominance of the soft components in PSS requires coordination within the System design approach for integrated inclusion of the spatial expertise.

Goedkoop et al. (1999) define PSS as a “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; all these parts are inseparable in order to deliver a required user functionality in a way that reduces the impact on the environment.

The authors transcend the hardware/software antinomy and for the clearer tangible/intangible one.

- Tangible (product): extension of the traditional functionality of a product 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)¹⁸.

As stated above, the tangible, intangible and systemic components of the Spatial design have been illustrated as:

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

¹⁸ “Tangible” and “Intangible” terms have been introduced instead of “hardware” and “software” as for the original source.

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. Since PSS includes acquiring knowledge about the end users and may include the engagement of them in all/some phases of the design process, a PSS must be designed, made and delivered on a case-by-case basis and viewed from the clients' perspective (Baines et al., 2007, p. 1549). This perspective is explored through processes of co-creation and co-design that are frequently discussed in Service design and which found their origins in strategies of inquiry in the Social Sciences, e.g. Participatory Action Research (PAR).¹⁹ Due to these premises, the authors assume that, in order to understand the identity of a territory/place within the Spatial design discipline, these processes have to be taken into account. In fact, the current context is much more complex and flows of information are much faster so that, unlike before, the identity of a place is less fixed, constantly changing and has non-permanent qualities; and so, to address these components, a contextual methodology is needed.

The comparison, based on tangibility and intangibility, highlights the extension of the relationship between Service design and PSS where the physical environment is part of its tangible milieu, thus expanding the relationship to Spatial design.

Finding 4: The authors identify how designing for Spatial design with the user implicates actions and interactions (intangible aspects) with and within the environment. These actions and interactions are part of the Service design development process and Spatial design can benefit from this consolidated methodological development. With a S+S approach, the service designer side can influence the material reality of services and the spatial designer side can enhance its human-centred side through a methodological discourse.

Finding 5: The authors identify that an integrated design of all components could avoid the Spatial design development being merely a frame for Service design but being an integrated part of it.

Collecting evidences: the work in progress

The research is under way and, as stated above, it has been developed through teaching experimentations in real contexts – through the application of Grounded Theory and Participatory Action Research methodologies, Co-creation and Co-design tools and Prototyping actions – that still need further analysis. In these research experimentations, design tools hybridisation has progressively conversed with the design process itself, becoming process codes. In fact, the authors don't believe that a systemic and integrated approach works by applying tools and toolkits across design domains (Norman & Stappers, 2015b, p. 102). This process has been fundamental in informing reflection and in testing tools typical of Service design with the design practice of Spatial design.

The teaching experimentations followed the following S+S disciplinary process of integration:²⁰

¹⁹ Participatory processes had little impact on service development, while they have been strongly assimilated by service design because of its co-created nature. See:

- Holmlid, S. (2012). Participative; co-operative; emancipatory: From participatory design to service design (pp. 105–118). Presented at the Conference Proceedings ServDes. 2009; DeThinking Service; ReThinking Design; Oslo Norway 24-26 November 2009, Linköping University Electronic Press.

- Gilmore, T., Krantz, J., & Ramirez, R. (1986). Action-based modes of inquiry and the host-researcher relationship. *Consultation: An International Journal*.

²⁰ Field experimentation has been disseminated in the following books and papers:

- Camocini, B., & Fassi, D. (Eds.). (2017). *In the Neighbourhood. Spatial Design and Urban Activation*. Franco Angeli.

- Fassi, D., Rebaglio, A., & De Rosa, A. (2017). Designing a cultural event as an inclusive educational activity. *The Design Journal*, 20(sup1), S988–S999.

- Calvo, M., & De Rosa, A. (2017). Design for social sustainability. A reflection on the role of the physical realm in facilitating community co-design. *The Design Journal*, 20(sup1), S1705–S1724.

- design processes with a *multidisciplinary approach*: tools and methods of the Service design discipline informed the Spatial design development.
- design processes with a *crossdisciplinary approach*: tools and methods of the Service design discipline supported the Spatial design development.
- design processes with an *interdisciplinary approach*: tools and methods of the Service design discipline merged with tools and methods of the Spatial design discipline to achieve S+S solutions.

TEACHING EXPERIMENTATIONS						
	CAMPUS WITHOUT BORDERS	"ARNOLD" ART IN NOLO SOCIAL DISTRICT	#NIGHTCLUBBING: CONNECTING THE COMMUNITY	OPPORTUNITIES BY DESIGN FOR RIO DE JANEIRO	PERMA-PODS	DESIGN+EAT = SPACES
S+S disciplinary process of integration	<i>multidisciplinary</i>	<i>crossdisciplinary</i>	<i>crossdisciplinary</i>	<i>interdisciplinary</i>	<i>interdisciplinary</i>	<i>interdisciplinary</i>
A.Y.	2015/16	2016/17	2016/17	2016/17	2016/17	2017/18
Teaching staff	Davide Fassi Laura Galluzzo Anna Meroni Silvia Girardi	Davide Fassi Laura Galluzzo Anna Meroni Xiaocun Zhu	Laura Galluzzo Francesca Murialdo	Annalinda De Rosa Carla Cipolla	Annalinda De Rosa Mary Polites Davide Fassi	Davide Fassi Laura Galluzzo Anna Meroni Anke Strittmatter
Course / University	Final Design Studio / School of Design, Politecnico di Milano	Final Design Studio / School of Design, Politecnico di Milano	Interior Architecture 2 Studio / Middlesex University, London	Design Studio / Universidade Federal do Rio de Janeiro	Co-creation Studio / College of Design & Innovation of Tongji University, Shanghai	Final Design Studio / School of Design, Politecnico di Milano
Beneficiaries	BSc Interior Design	MSc Interior Design	BA Interior Architecture	MSc Management Engineering	MA Industrial, Service, Environmental Design, Digital Media	MSc Interior and Spatial Design

Figure 3 – Diagram of the teaching activities run to collect evidences and test findings

Conclusions

The reflection presented here considers the current paradigm of the two disciplines and is linked to an ongoing research activity based on the development and application of knowledge through teaching and research project experimentations.

Since this is a position paper, the authors aim to present the ongoing theoretical framework and to state the emerging position. A valid number of experimentations in research projects and didactic activities have been developed to test and validate the ongoing reflections on the S+S transdisciplinary approach. The intention of going beyond the borders of the disciplines means the definition of supportive structures to design with a S+S approach. These validations need further refinement to be presented together with a more defined and developed theoretical reflection.

- Fassi, D., Galluzzo, L., & De Rosa, A. (2016). CampUS: co-designing spaces for urban agriculture with local communities. *PAD*, 13, 254–278.

- Fassi, D., Galluzzo, L., & De Rosa, A. (2016). CampUS: How the Co-design Approach Can Support the Social Innovation in Urban Context. In *Advances in Design for Inclusion* (pp. 609–621). Springer.

- Galluzzo, L., & De Rosa, A. (2016). How educational processes and social entrepreneurship can support an urban regeneration in Milan. In *4th International Scientific Conference A.L.I.C.E. 2016, GoingGreenGlobal International Design Week, Sustainable Design Paradigms* (pp. 72–77). Ljubljana: Faculty of Design, an independent higher education institute, Associated member of the University of Primorska.

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