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## DRS2022: Bilbao

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**Editors**

Dan Lockton, Sara Lenzi, Paul Hekkert, Arlene Oak, Juan Sádaba, and Peter Lloyd



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# Proceedings of DRS2022 Bilbao

Design Research Society International Conference

Bilbao, Spain,  
25 June – 1 July 2022

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## **Spatial design + service design: Framing a transdisciplinary perspective**

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# S+S, Spatial Design + Service Design: Framing a trans-disciplinary perspective

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**Abstract:** Design-driven praxis aimed at the transformation of spaces in relation to social and relational practices confront 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 influenced. 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, and this paper aims to contribute filling this gap through a preliminary framework as means to explore a possible scenario of Spatial Design + Service Design (S+S). The paper presents S+S as a potential approach to designing spaces and delivering services as a single entity. In this scenario, the separation of disciplinary design areas ceases, and a design approach emerges, where places and social practices are fully interconnected.

**Keywords:** design research, spatial design; service design; investigation process; transdisciplinary analysis

## 1. Introduction

By focusing the attention on the more complex, dynamic, and networked nature of our organisational and sociotechnical systems, the need for transdisciplinary innovation (Dorst, 2018) concerns not only the relationship between the design disciplines with other knowledge areas, but also how the silos-based structure of the design discipline itself requires to be broken to address this complexity. The focus of this paper is further illustrating the ongoing reflection that aims to explore the influences between the design of spaces and the design of services from a disciplinary point of view, defined as S+S - Service Design + Spatial Design (Fassi et al., 2018; De Rosa, 2019; De Rosa, *Forthcoming*). The S+S approach is un-



der exploration within a group of researchers from the Polimi DESIS Lab - part of the worldwide DESIS Network (Design for social innovation and sustainability) - of the Department of Design of Politecnico di Milano (Italy) in recent years. To clearly outline the boundaries of this epistemological reflection, the design-based research projects that raised this need were focused on the incubation of participatory processes within the context of urban public space transformation for improving social cohesion and intercultural dialogue. Therefore, S+S wants to carry on a theoretical investigation emerging from a design-based approach combining practices from the two fields of knowledge (their models of representation, tools for project development, processes) and that outlines the emerging transdisciplinarity. To do so, this paper investigates this correlation building on a preliminary framework as the means to explore S+S: the focus lies on moving from multidisciplinary, towards transdisciplinary, and bringing this towards S+S.

### *1.1 Aim of the research*

Although the relationship between spatial and service design is an emerging area in design research, education and practice, various experimentations have not yet framed an integrated panorama. The aim of the ongoing research – within the above-mentioned boundaries – is to understand and define the relationship between Spatial Design and Service Design to outline a possible S+S scenario. This paper would like to be a contribution to the contemporary reflection of the relation between the two fields of knowledge. This work is based on the following assumption: “new services are influencing and identifying spaces, and new uses of them: Spatial design encounters Service design in urban planning, in the design of workplaces, retail settings, private interior spaces, public services and infrastructures” (De Rosa, 2019, p.4). However, in this framework – despite a clear and evident interconnection between the two – there is a gap of corresponding design culture and supporting theory. The main goals of this paper are the following:

- analysing the occurring relationship between the two fields
- outlining a possible future S+S scenario
- detailing the characteristics of this mutual connection

## **2. Understanding disciplinary levels: a needed factor**

### *2.1 From distinct disciplines to nowadays complexity*

Nowadays it seems impossible to think about a disciplinary practice without taking into consideration its relationship with other disciplinary areas and related fields. The word *multidisciplinary* is used – and often abused – broadly and in several different contexts, from the educational systems to research contexts. In the definition given by the online Oxford Dictionary (consulted in 2018), multidisciplinary is a way to “combine or involve several academic disciplines or professional specializations in an approach to a topic or problem”. However, it has not always been like this. Back in the days, disciplines used to be progressively organised

in a variety of subject matters, with specific characteristics and clear spheres of action (Buchanan, 2001). Each field worked independently and in its own field of interest, according to the normative orientation of science, education, and innovation (Jantsch, 1972b) with few or no dialogue with other disciplines. The increasing complexity of contemporary societies and systems and related challenges have brought to the necessity of finding new articulated answers that could not fit in the boundaries of a single discipline. As Callari Galli and Londei (2003) have observed, the need for multidisciplinary is connected to the instability of knowledge – so specialized to reach competence partition – caused by an increasing disciplinary imperialism during the first decades of XX century. Thinking – forced within a singular discipline – showed impatience. This more and more diffused discomfort brought to multidisciplinary: to overcome the mono-disciplinary knowledge, it was necessary to rely on the merger of different specialists – coming from several fields – to solve the same problematic sphere.

Nowadays complexity emerges also from a political dimension where multidisciplinary approaches are applied to twisted issues to solve the so-called big challenges – or wicked problems – to face and address. At academic and educational levels, multidisciplinary approach has been experimented becoming the common ground across academic disciplines to innovate in the creation of new products, systems, and processes for the benefit of all societies' growth and wellbeing.

## 2.2 How complexity reflect on the designer's figure

The more complex, dynamic, and networked nature of our systems raised the demand, within the design research reflections, for new solutions and unconventional approaches. To satisfy this need, the design focus from mainly *product creation* to *process creation*, able to cover a broader matter of design. The design profession has moved from *signs* and *symbols* in graphic design, and *things* or *tangible artifacts* in industrial design, towards *action* and *environments* as the fundamental terms of practice and reflection, as Buchanan illustrates in *Design research and the new learning* (2001). However, this revolution of design hasn't given up on signs, symbols, and artifacts in the design practice, but it has put them into a new context and significance. Therefore, the design process has evolved in time, nurtured by the contributions that several disciplines got in shaping the inner interdisciplinary nature of design itself. That is why, when speaking about a step further, a transdisciplinary vision is needed, as “design needs to be combined with several academic disciplines or professional practices to be fully effective” towards a “more robust and multidisciplinary, committed to conceptualisation, configuration, and implementation of meaningful social environments, products, services, systems and brands” (Muratovski, 2010, p.379).

This global processing is influencing the design discipline that is going from being a *craft-oriented* one to a *multidisciplinary* one. A discipline committed to conceptualization, configuration, and implementation of social environments, products, services, systems, and brands instead of being focused on individual creativity (Muratovski, 2010). Friedman (2002) also

suspects that in the future there will be no distinction between roles in the field of design: *designers, researchers, analysers, and creators* will fade gradually, leaving space to only the 'designer' role. In fact, all designers will be considered as such, because all of them will be engaged in the process of defining, planning, and configuring artifacts and systems.

This brief framework supports the definition of how design is evolving to position the need for a S+S epistemological reflection raised from practice-based experimentations within our research group.

### 2.3 From multi- to trans-disciplinary

The systemic complexity is not merely a modern characteristic, although is generally conceived in such a way. The complexity of our times is increasing the gap among two opposite tendencies in the extension of knowledge within each discipline. On one hand, fields are going through a higher and higher level of specialization, a tendency that brings to a more vertical and profound knowledge. On the other hand, the twisted nature of contemporary design issues demands to break the barriers among disciplines – in this case the design ones – to face this complexity through collaboration and synergy. Whilst the "*theoretical investigations of subject matters in the sciences and arts*" (Buchanan, 2001, p.6) are valuable and indispensable, it is also true that the vertical development of knowledge has caused a difficult situation.

The path to reach a transdisciplinary design is not easy at all. As was apparent in the 2009 Transdisciplinary Design Research Symposium, the complexity of this approach needs a high level of academic proficiency and full support from institutions. A starting point can be found in Erich Jantsch's work (1972b) where he transcends field application and explores the need for an increasing cooperation and coordination of disciplines at research and educational levels in line with the systemic transformations in technology and society. As reported in Fig. 1, he clarifies the hierarchical levels of complexity that define the relationships among disciplines, going from *multidisciplinarity* to *transdisciplinarity*.

Later Muratovski (2011) defines a transdisciplinary approach as a sort of *transgression* of disciplinary norms. Reflecting on the evolution of doctoral education in design, he conceives transdisciplinarity as ideal for the encouraged environment where fusion of *disciplines* can occur (Lawrence & Després, 2004). Moreover, Muratovski highlights how a transdisciplinary approach possesses the best equipment "to deal with the complexities of real-world problem-solving activities" (2011, p.5). Acknowledging this, the transdisciplinary approach may be considered as the best means to address the issues raised by current complex challenges but a consequential shift from one to another level is required.



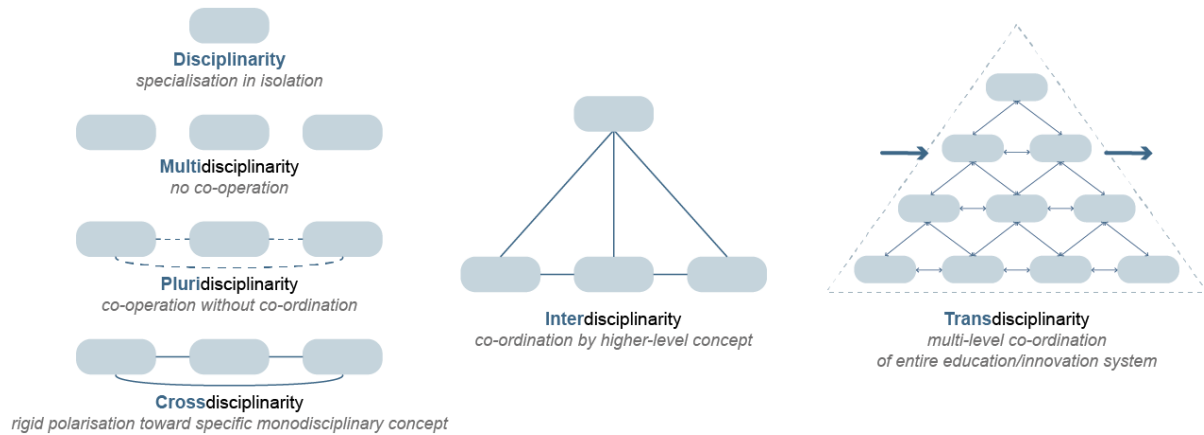


Figure 1. Scheme of the disciplinary levels according to Erich Jantsch: "Steps toward increasing co-operation and co-ordination in the Science/Education/Innovation system". Jantsch, 1972b, p.223.

### 3. A transdisciplinary perspective within the relationship between service design and spatial design

#### 3.1 The reference framework

In this paper we explore the ongoing reflection on the influences between the design of spaces and the design of services from a disciplinary point of view. To apply the concepts mentioned above to the relation between Spatial Design and Service Design, it is useful to see first what they have in common and how they may relate to each other. To do so, the work made by Edeholt and Löwgren has been used to start framing the epistemological knowledge for S+S. In their article *Industrial design in a post-industrial society-a framework for understanding the relationship between industrial design and interaction design* (2003) they developed a framework as a basis for a discussion of the relations between industrial design and interaction design. The framework built by Edeholt and Löwgren (2003) has been then retrieved by Holmlid (2009), who adds Service Design at the relation between ID and IxD. Holmlid traces the comparison relying on the same framework, using the same guiding parameters. Here, the same framework has been reworked adding Spatial Design.

Considering that disciplinary relationships are difficult, if not worthless, to explore in an abstract way, a specific focus is needed: if Edeholt and Löwgren examined the relations between industrial design (ID) and interaction design (IxD) in the face of the development of ubiquitous computing - as ID and IxD are seen as main actors in the production of ICT systems -, we are doing the S+S one in relation to societal issues, participatory and design for social innovation practices since social transformations occur in the physical environment, and "the behaviours occurring within a space [can help] to understand how a service works" (Retrieved from an interview by Gea Sasso to Jan Christoph Zoels, founding partner and Creative Director of the international experience design consultancy Experientia -

<https://www.experientia.com>). Thus, the further use of their framework is used for a methodological purpose that starts with the same assumption about the impact of contextual transformations on the activity of design.

The starting point of their reflection takes into consideration the transformations of our time, where major changes are affecting not only design but the world itself in several and multiple ways, noticing an emerging discrepancy among the increasing speed of complexity and specialization of disciplinary fields. In fact, specialization and diversification are not able to keep up with the exponential growth of convoluted issues and problems – the ones resulting from the intricacy of nowadays systems, products, connections and so on. This mismatch has reached unprecedented levels, that is why Edeholt and Löwgren called for a *profound kind of integration* (2003). What they do is create a framework to discuss this relationship, starting from the background and the core characteristics of the two disciplines. This framework is relevant for its simplicity and clarity as it provides the perfect conditions to make a parallelism between the two. This comparison is useful also because the disciplines involved have a different historical background and a different design practice, a condition that exists also between Spatial Design (SpD) and Service Design (SD).

The framework is structured as illustrated in Fig.2. The macro-areas of investigation are three: *Process, Materials, and Deliverables*. There are then three dimensions each for the macro-areas. Each dimension is labelled with the first letter of the area as follows: P1, P2, and P3 for Process and so on. Every dimension is characterized by two adjectives (aspects) that are not linear or opposed on an axis, even if in some cases they are more or less opposite. “For each aspect [...] are scored on a three-point scale: the discipline is *highly oriented, somewhat oriented, or not to any significant degree oriented* towards the aspect” (Edeholt and Löwgren, 2003, p.6). The intent of the authors is to create a highly simplified characterization, rather than a broad and descriptive classification to represent the current best practice of the disciplines. They refer to a mainstream practice that is diametrically opposed to ideal ways or visionary and isolated cases. We have then added SpD to this framework on ID and IxD, and to the one on SD made by Holmlid.

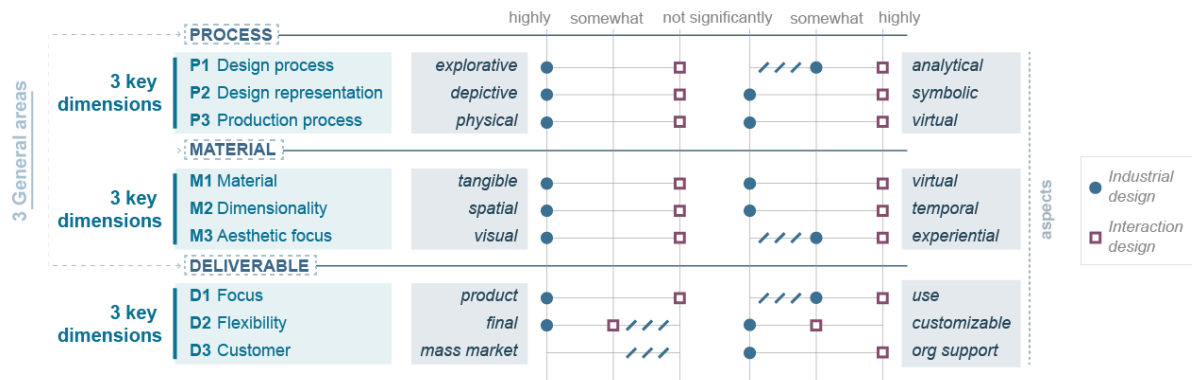


Figure 2. Diagram of the framework with the investigated macro-areas by Edeholt and Löwgren: “Industrial design in a post-industrial society-a framework for understanding the relationship between industrial design and interaction design”, 2003.

### 3.2 The application of the framework to S+S

The following statements refer to the application of the reference frameworks: we use the structure Edeholt and Löwgren, from a methodological perspective, and we explore Spatial Design in relation to the SD framework given by Holmlid, from an analytical and interpretative perspective.

#### PROCESS. P1 - DESIGN PROCESS (explorative/analytical)

For what concerns Service design, its “process covers so many aspects it would be easy to say that it is explorative as well as analytical” (Holmlid, 2009, p.3). However, according to where the analysis locates within the process, the result could go in both directions. This duality is also one of the main pillars of SD, widely known for its capacity of both narrowing down and opening up. Holmlid defines the service design processes as characterized by divergence, convergence as well as selection (2009). Spatial Design has a highly explorative process too because it usually investigates several different ways to answer the project question. It usually collects case studies and faces the research mainly through the exploration of existing good practices 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 always must answer technical requirements, even if they are not connected to the evolution of the process. Spaces must meet the standards imposed by the law.

<p><b>ID</b> processes are: highly explorative, somewhat analytical. (Edeholt and Löwgren, 2003, p.6)</p>	<p><b>IxD</b> processes are: not significantly explorative, highly analytical. (Edeholt and Löwgren, 2003, p.6)</p>	<p><b>SD</b> processes are: highly explorative, and somewhat analytical. (Holmlid, 2009, p.3).</p>	<p><b>SpD</b> processes are: highly explorative, and somewhat analytical.</p>
<p>LEGEND</p> <p><b>EXPLORATIVE</b> "An explorative design process is open and searching, in terms of problem framing as well as proposed solutions. It is acknowledged that the understanding of the problem and the ideas of appropriate solutions grow in tandem, where partial solutions can be proposed early in the process with the purpose of probing the design situation and reframing the problem. An explorative process is also divergent at times, in the sense that it develops multiple alternatives" (Edeholt and Löwgren, 2003, p.6).</p> <p><b>ANALYTICAL</b> "An analytical design process starts from the assumption that the problem can be analyzed and specified first, then solved through design. A common ambition is to formulate requirement specifications that drive the design and development process in a traceable way and provide the baseline for delivery testing. If the requirements in the specification are fulfilled, then the design process is successful" (Edeholt and Löwgren, 2003, p.6).</p>			

Figure 3. The Design Process key dimension: adding the Spatial Design field.

### PROCESS. P2 - DESIGN REPRESENTATION (Depictive / symbolic / Enactive)

The type of representations that can be found in the service design process include drama, scenario and storyboard sketching, service interface analysis, and so on, as reported by several authors (Shostack, 1984; 1987; Kalakota & Robinson, 2004; Moritz, 2005). According to who uses the representation for which purpose, the nature of the representation can go from being depictive to being symbolic (Holmlid, 2009). Service Design deals often with goods, products, and physical spaces as touchpoints of the process where models, sketches, and prototypes are largely used. The use of theatrical prototyping perfectly embodies an enacted representation because it uses dramaturgy or choreography to tell the service process.

The representation in Spatial Design is highly depictive and it is intrinsically connected to the core nature of the discipline. Most Spatial Design's means of representation are visual and depictive. The 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, as there is no particular use of theatrical forms, even if space could be a potential stage for mise-en-scène.

<p><b>ID</b> representations are: highly depictive, not significantly symbolic (Edeholt and Löwgren, 2003, p.6), and not significantly enactive (Holmlid, 2009, p.4).</p>	<p><b>IxD</b> representations are: not significantly depictive, highly symbolic (Edeholt and Löwgren, 2003, p.6), and somewhat enactive (Holmlid, 2009).</p>	<p><b>SD</b> representations are: somewhat depictive and highly symbolic, and highly enactive (Holmlid, 2009, p.4).</p>	<p><b>SpD</b> representations are: highly depictive, highly symbolic, and not significantly enactive.</p>
<p>LEGEND</p> <p><b>DEPICTIVE</b> "Depictive design representations, simply put, look like the intended final result. Examples of depictive representations are sketches at various levels of detail, volume models in various materials, and presentation drawings" (Edeholt and Löwgren, 2003, p.6).</p> <p><b>SYMBOLIC</b> "A symbolic representation is one that expresses aspects of the final result other than its appearance. For instance, flowcharts, information structure diagrams and user task sequences are examples of symbolic design representations" (Edeholt and Löwgren, 2003, p.6).</p> <p><b>ENACTIVE</b> An enacted representation is one that is communicated through action. For example, the use of theatrical forms is a way to represent in an enactive way, especially when it comes to human interactions (Holmlid, 2009).</p>			

Figure 4. The Design Representation key dimension: adding the Spatial Design field.

**PROCESS. P3 - PRODUCTION PROCESS (Physical / virtual / ongoing)**

In the case of this dimension, Edeholt and Löwgren (2003) limit the reflection on artifacts, where tangible spaces may be included. But for what concerns services, they are “composed of ready-made artifacts, inventory, IT-systems, artifacts produced during the process, etc.” (Holmlid, 2009, p.4). In fact, the separation between production, manufacture, and distribution is not so defined for services, also considering their intangible nature. While Edeholt and Löwgren refer to a before-usage production processes, Holmlid interprets the physical process as the one including goods and products, while the virtual one as a container for software, manuscripts, etc.

Considering the redefinition of the parameters made by Holmlid, 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, as most part of SpD takes place in environments 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, sometimes they are subject to requalification and restoration.

**ID** production is: highly physical, not significantly virtual (Edeholt and Löwgren, 2003, p.6), and not significantly ongoing (Holmlid, 2009, p.4).

**IxD** production is: not significantly physical, highly virtual (Edeholt and Löwgren, 2003, p.6), and somewhat ongoing (Holmlid, 2009).

**SD** production is: highly physical, highly virtual, and highly ongoing (Holmlid, 2009, p.4).

**SpD** production is: highly physical, not significantly virtual, and somewhat ongoing.

LEGEND

**PHYSICAL**  
 “Physical production refers to material artifacts that are manufactured from physical parts. The manufacturing process consumes raw materials; it requires machinery and tools. In physical production, each unit to be produced carries a production cost that sometimes represents a significant part of the consumer price” (Edeholt and Löwgren, 2003, p.6).

**VIRTUAL**  
 “Virtual production, on the other hand, refers to software and similar artifacts which in principle have no production cost. Once the first instance of the final product is completed, it can be manufactured in infinitely many copies with costs incurred only for distribution” (Edeholt and Löwgren, 2003, p.6).

**ONGOING**  
 An ongoing production process differs from the first two, which are two types of production related only to manufacture and distribution. Ongoing processes embody all the phases of creation, production, and development, including also the possibility of reiteration (Holmlid, 2009).

Figure 5. The Production Process key dimension: adding the Spatial Design field.

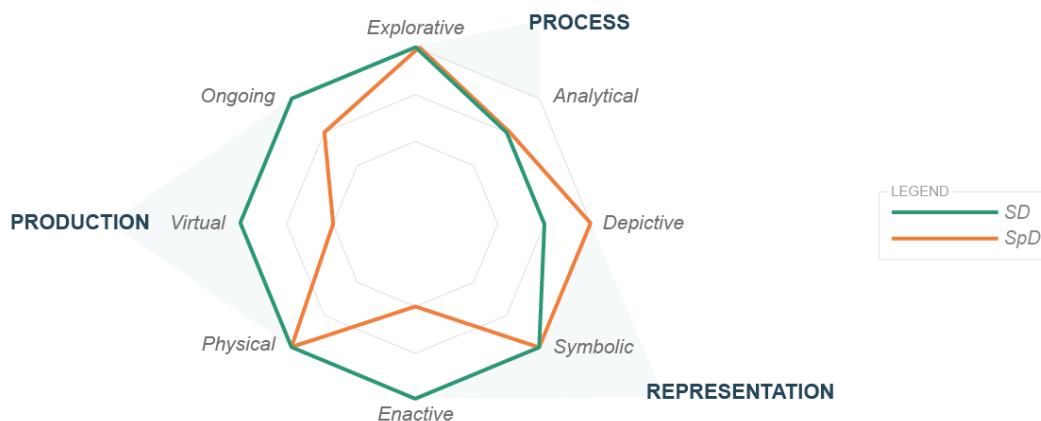


Figure 6. Diagrams by Holmlid (2009, pp.4-6) with the Spatial Design analysis provided by Gea Sasso: the dimensions of the Process area for Service Design and Spatial Design.

## MATERIALS. M1 - MATERIAL (Tangible/virtual)

As the considerations made for the production process, the service’s material can be both made of atoms and bits. While the material of space is highly intangible and not significantly virtual.

<b>ID</b> materials are: highly tangible, not significantly virtual (Edeholt and Löwgren, 2003, p.7).	<b>IxD</b> materials are: not significantly tangible, highly virtual (Edeholt and Löwgren, 2003, p.7).	<b>SD</b> materials are: highly tangible and highly virtual (Holmlid, 2009, p.4).	<b>SpD</b> materials are: highly tangible and not significantly virtual.
<b>LEGEND</b>			
<b>TANGIBLE</b> “A tangible design material is one that is built out of atoms that can be touched and sensed” (Edeholt and Löwgren, 2003, p.7).			
<b>VIRTUAL</b> “A virtual design material is built out of bits. Virtual materials correspond roughly to the notion of software” (Edeholt and Löwgren, 2003, p.7).			

Figure 7. The Material key dimension: adding the Spatial Design field.

## MATERIALS. M2 - DIMENSIONALITY (Spatial / Temporal / Social)

A service happens and acts always in a social and physical frame. Even when it has a prevalent virtual connotation, its touchpoints will relate to the physical realm. Holmlid claims that “service is temporal in its nature, it is hard to imagine a service that does not unfold over time” (2009, p.5). The social component is essential within a service ecosystem, where even the simplest service is built around the relationship among different actors. 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 influence on the dimensionality of the space that usually is perceived as a container.

<b>ID</b> dimensionality is: highly spatial, not significantly temporal (Edeholt and Löwgren, 2003, p.7).	<b>IxD</b> dimensionality is: not significantly spatial, highly temporal (Edeholt and Löwgren, 2003, p.7).	<b>SD</b> dimensionality is: somewhat spatial, highly temporal, and highly social (Holmlid, 2009, p.5).	<b>SpD</b> dimensionality is: highly spatial, somewhat temporal, and somewhat social.
<b>LEGEND</b>			
<b>SPATIAL</b> “A spatial design material extends mainly in the three dimensions of physical space. Concepts such as volume and three-dimensional form are closely connected with spatiality” (Edeholt and Löwgren, 2003, p.7).			
<b>TEMPORAL</b> “Temporal design materials unfold over time. Temporality entails concepts such as story and interaction” (Edeholt and Löwgren, 2003, p.7).			
<b>SOCIAL</b> The relational dimension consists of the interactions among people that can occur both in physical or virtual dimension (Holmlid, 2009, p.5).			

Figure 8. The Dimensionality key dimension: adding the Spatial Design field.

## MATERIALS. M3 - AESTHETIC FOCUS (Visual / Experiential / Active)

A service can be considered experiential as it can be tested only when it is used. But, at the same time, the service’s tangible touchpoints – such as goods, spaces, and products – reflect its aesthetics, connecting 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 (Holmlid, 2009).

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 not as important as its visual aesthetics. There is great attention to the possibilities of usage of the artifact, 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.

**ID** aesthetics are:  
highly visual, somewhat experiential  
(Edeholt and Löwgren, 2003, p.7).

**IxD** aesthetics are:  
not significantly visual, highly experiential  
(Edeholt and Löwgren, 2003, p.7).

**SD** aesthetics are:  
somewhat experiential, highly visual, and highly active  
(Holmlid, 2009, p.5).

**SpD** aesthetics are:  
highly visual, highly experiential, and somewhat active.

LEGEND

**VISUAL**  
"A visual aesthetic focus is concerned with the form of an existing or proposed artefact in itself" (Edeholt and Löwgren, 2003, p.7).

**EXPERIENTIAL**  
"An experiential aesthetic concentrates on how the existing or proposed artefact is perceived, considering mainly the moment of its use" (Edeholt and Löwgren, 2003, p.7).

**ACTIVE**  
Active refers to the aesthetics of the activity, where activity means the moment of encounter between humans (Holmlid, 2009, p.5).

Figure 9. The Aesthetic Focus key dimension: adding the Spatial Design field.

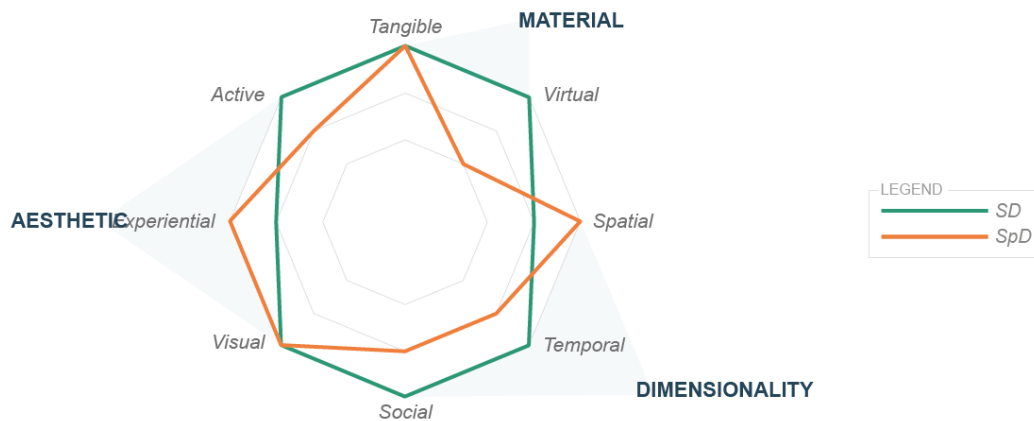


Figure 10. Diagrams by Holmlid (2009, pp.4-6) with the Spatial Design analysis provided by Gea Sasso: the dimensions of the Material area for Service Design and Spatial Design.

**DELIVERABLES. D1 - SCOPE OF DELIVERABLE (Product / Use / Performance)**

The central service's deliverable is in a temporal dimension where the experience is the protagonist. Products are included in this activity which concerns the service experience. "To make this perspective justice one would need to find a way of qualifying the scope with respect to the customer, as well as the customer's customer" (Holmlid, 2009, pag.5). That's why also the scope of the deliverable is highly performance for SD. For what concerns SpD, the scope of the deliverable is highly product, because there is great attention to the production aspects of the space, in a material sense. The deliverable scope is somewhat useful, because space is part of the ecosystem of actions, so it is somewhat performance too.

<b>ID</b> deliverable scope is: highly product, somewhat use (Edeholt and Löwgren, 2003, p.7).	<b>IxD</b> deliverable scope is: not significantly product, highly use (Edeholt and Löwgren, 2003, p.7).	<b>SD</b> deliverable scope is: somewhat product, highly use, highly performance (Holmlid, 2009, p.5).	<b>SpD</b> deliverable scope is: highly product, somewhat use, and highly performance.
<b>LEGEND</b>			
<b>PRODUCT</b> "The product scope of a deliverable implies a perspective where the artefact itself is at the focus of attention for manufacturing, marketing and retail" (Edeholt and Löwgren, 2003, p.7).			
<b>USE</b> "if the deliverable is scoped in terms of use, then the artefact is embedded in multiple layers of activities and other artefacts, making it more of a service offer" (Edeholt and Löwgren, 2003, p.7).			
<b>PERFORMANCE</b> The deliverable's scope consists of the union of several factors such as the experience of participation, action, and contribution together with physical objects and artifacts (Holmlid, 2009).			

Figure 11. The Scope of Deliverable key dimension: adding the Spatial Design field.

### DELIVERABLES. D2 - FLEXIBILITY OF DELIVERABLE (Final / Customizable / Dynamic)

Concerning SD Holmlid says that "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 customizable. Given that the service design is not finished until the service is performed, there is a high degree of dynamicity in the deliverable" (Holmlid, 2009, p.5).

On the contrary it is quite difficult to modify the space after, it could happen but usually with spaces imagined to be subject of transformation.

In this sense, SpD deliverables are somewhat customizable, because they may be designed to evolve or transform, or in some cases, they can be adaptive. Space is rarely dynamic because, to change it, it is necessary to do hard operations that are usually difficult.

<b>ID</b> deliverables are: highly final, not significantly customizable (Edeholt and Löwgren, 2003, p.7).	<b>IxD</b> deliverables are: somewhat final, somewhat customizable (Edeholt and Löwgren, 2003, p.7).	<b>SD</b> deliverables are: somewhat final, highly customizable, and highly dynamic (Holmlid, 2009, p.5).	<b>SpD</b> deliverables are: highly final, somewhat customizable, not significantly dynamic.
<b>LEGEND</b>			
<b>FINAL</b> "A final deliverable is relatively static after delivery. It is largely used as delivered and in particular, no functional modifications to the artefacts are anticipated by its designers" (Edeholt and Löwgren, 2003, p.7).			
<b>CUSTOMIZABLE</b> "Customizable deliverables are intended to be modified and further developed after delivery. Customization is sometimes performed by the customers, sometimes by the designers or by third-party actors" (Edeholt and Löwgren, 2003, p.7).			
<b>DYNAMIC</b> The deliverable is dynamic when it is modifiable and transformable until the end, leaving a high degree of freedom (Holmlid, 2009, p.5).			

Figure 12. The Flexibility of Deliverable key dimension: adding the Spatial Design field.

### DELIVERABLES. D3 - CUSTOMER OF DELIVERABLE (Mass-market / Organisational support / Customer's customer).

Services are known to fit both mass market and specific customers. The deliverable from a service design point of view often is influential for the customer's customer and the experience of the service, but also for the delivery of high-quality services. On the other hand, SpD customers are always mass market as spaces are designed to be used by anyone, their value is related also to this capacity.



**ID** customers are: highly mass market, not significantly organizational support (Edeholt and Löwgren, 2003, p.7).

**IxD** customers are: somewhat mass market, highly organizational support (Edeholt and Löwgren, 2003, p.7).

**SD** customers are: highly mass-market, highly organizational support, and highly customer's customer (Holmlid, 2009, p.5).

**SpD** customers are: highly mass-market, somewhat organizational support, and not significantly customer's customer.

**LEGEND**

**MASS MARKET**  
 "A mass market view of customers entail consumer-oriented marketing, large numbers of potential customers that are essentially unknown to the designers, and in most cases the possibility for the customer to choose whether to buy and use the product. On certain markets, the mass-market view also implies a competition between products aimed at the same customer purchasing decision" (Edeholt and Löwgren, 2003, p.7).

**ORGANIZATIONAL SUPPORT**  
 "An organizational support view of the customers is related to bespoke development, consulting and contracting work where a single customer organization receives a tailor-made deliverable. Typically, the eventual users of the deliverable are identified and relatively few. In many cases, they have no choice of whether to use the deliverable or not" (Edeholt and Löwgren, 2003, p.7).

**CUSTOMER'S CUSTOMER**  
 The attention for the customer of the customer (Holmlid, 2009, p.5).

Figure 13. The Customer of Deliverable key dimension: adding the Spatial Design field.

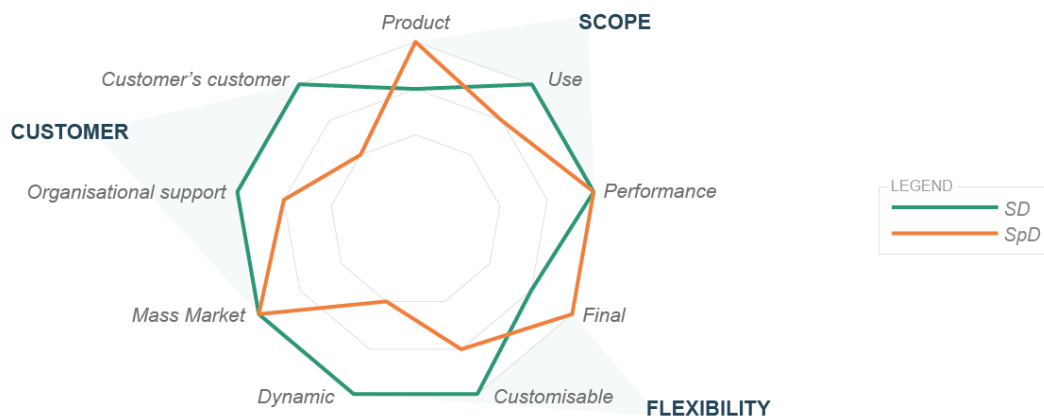


Figure 14. Diagrams by Holmlid (2009, pp.4-6) with the Spatial Design analysis provided by Gea Sasso: the dimensions of the Deliverable area for Service Design and Spatial Design.

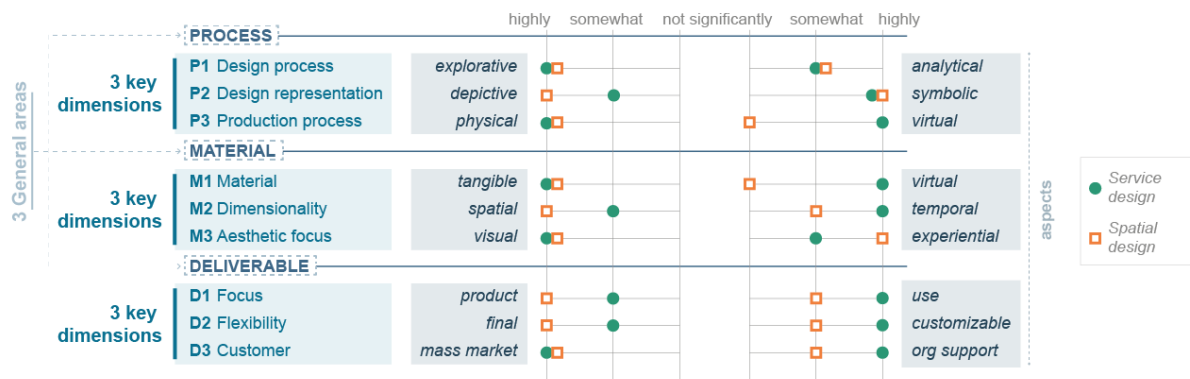


Figure 15. Diagram by Edeholt and Löwgren (2003, p.8.) with the Spatial Design analysis provided by Gea Sasso together with the Service Design analysis provided by Holmlid (2009).

### 3.3 Connecting the dots between Spatial and Service Design: an early framework

Considering the graphic representation of the dimensions above, it is clear that Service Design, as a disciplinary field, entails many dimensions of Spatial Design. The dimensions in

which the fields diverge are mainly related to design representation, production process, material, dimensionality, aesthetic focus and flexibility of the deliverable. Looking at SD and SpD diagrams instead, there are way more peaks where SpD overcomes the borders of SD's diagrams. The cluster of dimensions defined by Edeholt & Löwgren (2003) - where spatial, temporal, and social parameters are - is related to objects more than spaces. While the spatial dimension of SD and SpD deals with macro-areas and spaces, that rarely are delimited as objects.

As already stated by Holmlid, "it is also obvious that service design cannot operate on its own, it depends on specialist competence from Interaction as well as Industrial design" (2009, p.6) and - as demonstrated by this paper - Spatial Design too. For what concerns Service Design, there are some areas where it requires specialist competencies. For example, Service Design has not a highly depictive representation, a dimension owned instead by Spatial Design. On the contrary, the parameters of spatial dimensionality and visual aesthetics are well mastered by Spatial Design, which could provide the means to fill the equivalent lack in Service Design.

What emerges from this framework, could appear as a contradiction. On one hand, Spatial Design is part of a bigger picture that competes with Service Design, as organized in Buchanan's orders. On the other side, what emerges from some of the parameters is a lack within the Service Design discipline that could be filled by Spatial Design. In fact, some of the dimensions mastered by Spatial Design are some of the core competencies within the discipline.

Considering the classification of Jantsch (1972a), the first relation that can occur among the two fields is the multidisciplinary approach. In this case, the two disciplines work separately on the same and the coordination is done on a higher level of project management. Here, both disciplines are confident within their own field, developing what they need in their habitual ways. This approach occurs when the project brief is not too complex, and the system is divided into clear areas of competence. As observed by Edeholt & Löwgren (2003), a multidisciplinary approach is the most common way today of integrating disciplines. The following step is a cross disciplinary approach, where the integration has a strong polarization toward one side. This has happened already: many firms and consultancies with a strong tradition in Spatial Design have already integrated Service Design inputs in their expertise. In this framework the short-term effects may be beneficial but, as observed by Jantsch, the continuous subordination "threatens to blur aims and purposes in the development toward higher forms of coordination" (1972b, p. 222).

Moving to interdisciplinary work, disciplines and their competencies are truly integrated and coordinated through a shared vision. Contents and practices of both disciplines evolve together to better face common challenges. In particular, the goals of the two will evolve under the same influence of integration. In this case, it is possible to address issues that go beyond the individual borders of each discipline. Examples of interdisciplinary approaches are

difficult to be brought up. Building, sustaining, and accomplishing interdisciplinary projects is extremely expensive in terms of human, economic, and organizational resources.

To conclude, the relation that occurs between Spatial and Service Design needs to be supported with “tools, work practices and methods” in order 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. In fact, the analytic frameworks illustrated above are limited to a theoretical analysis of the contents and values. “A continuous need to develop powerful tools for understanding and characterizing design disciplines” is needed, as claimed by Holmlid (2009, p.7).

Broader research - of which this paper is part - is dedicated to narrative evidence of the state of the art of both fields and to analysis and organization of their tools and processes. The attempt is to create the basis for a common ground in terms of vocabulary, processes, tools, and complementary lacks, through the support of interviews made with experts from the academic and professional practice, and the analysis of existing case studies.

#### **4. Conclusion: Insights for an S+S approach**

The first framework regarding the characteristics of a S+S approach is given by Fassi et al. (2018) and by the doctoral thesis of Annalinda De Rosa (De Rosa, 2019; De Rosa, *Forthcoming*). This work is trying to lay the foundations of an emerging opportunity for future developments in design research and education. It identifies and highlights which are the common ground and differences of Spatial Design and Service Design, structuring a possible taxonomy made of key dimensions regarding the two fields.

The starting point is acknowledging that “spaces host relational entities and, vice versa, services take place in physical environments and determine tangible outcomes” (Fassi et al, 2018, p. 2), which is also the common ground on which this paper is built. The authors do not try to overlap the SD and SpD, but instead they lay the foundations on which a transversal approach can be imagined and structured. They claim that “a lack of a specific literature review and the insignificant number of courses and experimentations on this topic” highlights that an “in-depth and rigorous research is needed to develop models, methods and theories about S+S”, as the effective use of such approach would require “better understanding of its practices, methods” needed to break the silos of the two diverse perspectives (Fassi et al., 2018, p. 10) and to focus on an approach going beyond the boundaries of the two disciplines. As they state: “Service design and Spatial design share similar processes but speak different languages” (Fassi et al., 2018, p.10).

This wide investigation around the relationship between Spatial Design and Service Design has opened the door to the definition of a future S+S scenario. This is not meant to be a fixed point but as to be intended as a wide exploration that has allowed to join only some of the dots between the two disciplinary contexts. As this field is constantly evolving, the main requirement of this scenario is a continuous push toward the transition from an approach

based on individual disciplines to an approach based on more and more trans-disciplinary coordination (De Rosa, 2019). Trans-disciplinarity is a needed factor to break the existing boundaries between areas of knowledge. However, this is a higher purpose that requires a massive collaboration, coordination, and intention in terms of willingness to merge the two spheres. In fact, “Service design and Spatial Service 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” (De Rosa, 2019). This research fits into a “return of attention” towards the tangibility of services artefacts, which are no more dominant but worthy to be reconsidered considering the ongoing evolutions and in light of a cultural discourse on research in design. New needs have been detected to approach the design of spatial environments intertwined with the design of services, and, therefore, that new approaches and new tools have become necessary in the design process to elaborate them.

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