THE IMPACT OF 'SERVICE DESIGN' ON THE INDUSTRIAL DESIGN ENGINEERING CURRICULUM

Froukje Sleeswijk Visser[1], Pieter Jan Stappers[1]
[1]ID-StudioLab, Delft University of Technology, The Netherlands

ABSTRACT
Recently, both media and practice are dealing with a wave of interest in "service design". Some present this as a radically new approach to product development that overarches the established disciplines. Others regard it as the natural next step in emerging specialisations of design, in the line of interaction design, experience design, and systems design, but don't see anything particularly new in it. Examples of the 'service design' phenomenon are that a sizeable number of design graduates now work in disciplines beyond classical product design or interaction design. Some work in the building industry or urban planning, some in financial services, some in developing complex organisations; in the fuzzy front end of development, methodical approaches to design seem well applicable for many purposes.

In order to better prepare our students for coping with the situation in practice, and to better equip our curriculum with the means to teach this, we analysed the current academic literature, discussed with peers of other academic institutions who are trying to integrate these new mindsets and tools into their education system as well. Based on the findings we have set up an elective course 'service design process' for Master students of Industrial Design Engineering (IDE). The course addresses the overlaps and differences between the design processes of products and of services. This paper discusses these developments and how we aim to promote a critical discussion about the positioning of the new generation of graduated designers from our school in design practice.

Keywords: industrial design curriculum, service design, new roles of designers

1   INTRODUCTION

Service Design is hot! Both in the commercial and academic world the term is gaining much attention. Here are some signs of the times:

- *In traditional product industries*, many companies such as e.g., Xerox and IBM have shifted their business models, and gain their income more from services (supply of toner for printers, supply of education, training, support for software) than from core products.
- *In software design*, products are more and more released in a limited form and continuously upgraded after that (e.g., web services, apps on the Iphone). It becomes less and less clear to speak of a 'finished product', and in some circles, the model of 'infinite beta' is regarded as the norm.
- *In business and management*, the term 'service design' is often mentioned together with 'design thinking'. Tools and techniques of designing are introduced in other disciplines.
- *In the media*, a UK national newspaper devoted an entire 10-page supplement to the topic [1].
- *In design practice* in the Netherlands and abroad, various studios and consultancies are offering 'service design' as part of their competences. A service design perspective encompasses a human-centred approach and an outside-in perspective in contrast to the service development perspective [2].
- *In research*, national, regional, and international bodies are sponsoring applied research projects on design projects including the design of services and product service systems, with the aim of invigorating the local economies (e.g., [3]).
- *In education*, various art academies, business schools, and universities (technical, regular, and

applied) are starting to offer courses on service design (a quick inventory at a workshop in the SERVDES 2012 conference already yielded over 15 courses [4]).

- *Of our alumni*, already several students who graduated in the last years are now working in companies developing services (insurer *Achmea*, service consultancy *Engine*, airport *Schiphol*, etc). They report that what they learned at IDE has been valuable and provided them with useful skills and knowledge, but also mention that they miss some skills and knowledge such as dealing with the back-end of a system, software design, stakeholder involvement and the business strategy around it.

With all these developments, the question arises on how education should cope with this. Is there need for new specialization, a subfield of service design next to product design, interaction design, experience design, systems design, etc? Or is the service perspective a new addition relevant to all design principles, like sustainability, people-centeredness, and business orientation? In looking for an answer to these questions, we reviewed developments in education, work practice, and academic research. The discussion in this paper summarizes our main findings.

2   SO WHAT IS 'SERVICE DESIGN'?

Despite the widespread attention, a clear definition of service design is rarely given. This is not helpful, as the term 'design' already carries many meanings for different people, and also the meaning of the term 'service' varies between different disciplines. In the traditional 'service sector' it refers to non-tangible deliverables, in IT and software design to software infrastructure that ties together internet apps, and in many product areas it refers to after-sale replacements, such as new toner for a printer, or the cups and pads for coffee machines, repairs, or end-user training.

What most rhetoric in the 'service design' has in common is that it refers to service as a holistic unity of everything that needs to be considered for satisfying people's needs in a certain area over a longer period of time. In many respects, it builds on earlier developments such as 'user-centred design', 'experience design' and 'interaction design'. This inheritance is not always acknowledged by authors in the service design community, witness the quote: 'I would love to see designers thinking about what design really is and the added value it can bring to society. Wouldn't it be great if the focus was no longer on the shininess of a vase, but the value the designer van bring to the lives of everyday people?....Forget the uncomfy chairs. Think people!' [5] This quote sets service design off to a very limited form of product design (if not to say a caricature), in which product designers would not think about the people they are designing for. Also much emphasis is laid on tools to visualise the intangible aspects of a service or an experience, such as customer journeys, touchpoints, and methods such as role playing, storyboarding, while such tools and methods often originate from the product-, software-, interaction-, and experience design field.

But despite the shallowness of some of the sales rhetoric, there are some genuinely new elements and approaches. From our review of the popular and academic literature (e.g., journals as International Journal of Design, magazines as Touchpoint) and conferences such as SDN [6] and ServDes [7], we compiled a list of often-mentioned aspects which provide interesting starting points for comparing the new service design wave to the various existing design disciplines (see Table 1). The aspects in the table are not independent (the emphasis on brand is logically connected to the longer-term relation between user and provider), and the list may not be complete, but an overall picture is emerging. In service design projects, a holistic and broad approach to designing and delivering valuable things (products, experiences, functions, 'services') to people, and many hitherto separated players collaborate. King & Mager describe service design as 'a discipline occupying a new space between design and marketing agencies, management consultancies and research agencies, exemplifying the virtues of people-centredness and co-creation as fundamental processes.' [8]. Others see service design as complex, multidisciplinary projects that are too broad for a single discipline, but which require many disciplines to collaborate in a common playing field.

Table 1. Often-mentioned aspects of service design

Aspect	Notes
A focus on user experience	Also in experience design, interaction design
Active participation of users and stakeholders	Also in participatory design
Many solution elements are considered simultaneously.	e.g., IT, logistics, human resources, structure of organizations, and business model
A long term provider-client relationship	With product design, ownership of the product is typically transferred at moment of sale
A complex business model	In classic product design, the customer pays at the moment of sale, in services different models exist, and these codetermine the form the service takes.
An outside in approach	A service system often consists of a complex network, of which its relations and actors must be understood and designed. This organisation is often more complex than in product design.
Brand (the promise of what provider and client offer each other)	As in strategy and branding
A blurring distinction between phases of the design process: prototypes, implementation, and consumption.	Unlike with physical products, a prototype of a service is typically an instantiation: indistinguishable from 'the real thing'
Infinite beta status of services, which can be tuned after release.	Unlike with physical products, where a warehouse of stock has to be sold before the improved model is released.

3 INDUSTRIAL DESIGN ENGINEERING (IDE) AND SERVICE DESIGN

Industrial design engineers (in our school, as in others) are taught many of the above aspects which are claimed to be important for service design. In graduation projects, for many years the end results have included products, services, concepts, strategies, prototypes etc. It has not been restricted to a physical product. Often, the outcome is not fixed at the start of the project. Moreover, we see a substantial overlap of 'service design' and 'product design', when it concerns the mindset and toolset of user-centred design, especially in the fuzzy front end of the design process. Many user research methods used in product design such as ethnographies, observations, a day in a life, contextmapping, diaries, co-design sessions serve the design processes for products and for services. Already, the IDE curricula support students to develop knowledge, skill, and attitude in several areas that are deemed important in service design as well:

- **Becoming T-shaped designers**, engineers or managers [9]. These are professionals who are equipped with a core in-depth skill (the vertical bar), together with general skills connecting them in multiple domains (the horizontal bar), and are therefore better equipped to function in multidisciplinary teams than either 'overall superficial generalists' or 'narrow specialists'.
- **Holistic approach of the user.** Especially in the early phases of the design process, students are equipped with skills and knowledge to explore the users in their context of everyday life.
- **Visualisations of the intangible**. Visualising and prototyping are traditional skills for design students, and have diversified considerably in the past decades. Whether it is a service or a product, students are trained to visualise the product, its functioning, its use, and its context and make their earliest concepts experiential, by using storyboarding, prototyping, storytelling, roleplaying, walkthroughs etc.
- **Finding integral solutions**. When detailing a concept many aspects are addressed in parallel. Figure 1 shows an overview of how the product concept, an interactive cupboard supporting kids to search for books in the library, could operate. The student presented this overview to map out all aspects that need to be thought of to realize her product concept. She had never heard of service design, but has drawn the scheme to explore and express roles of people who need to be activated along the service, including the back end of the system.
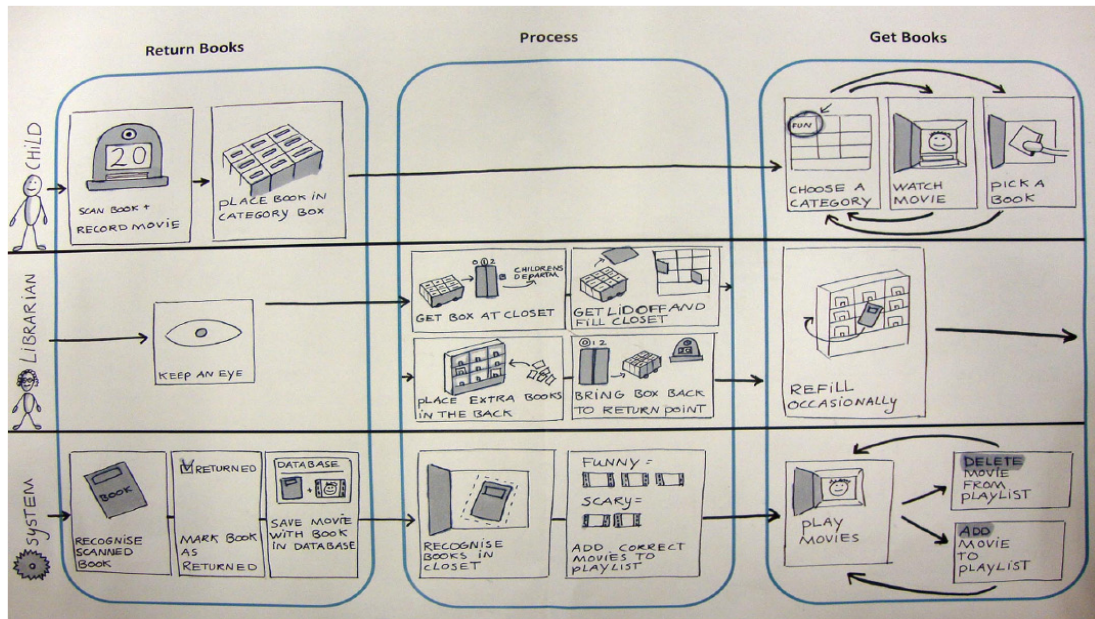
Figure 1 A scheme showing roles of people and the back end system along the designed service for the library [10].

Comparing the existing curriculum at our school with the challenges proposed for service design, we find a great overlap in mindset, methods and tools. The present IDE education lays a good basis for service design, but there are differences as well, as Figure 2 illustrates. The differences lie especially in the phases after explorative user research, ideation, and early conceptualization and before marketing, branding and sales, i.e, in the phases of concept refinement, prototyping, and implementation.

In product design a designer has to materialize the core concept, detail and construct it, evaluate it, and make it ready for mass production. In a service design project, manufacturing does not take in a separate phase, but the new business model (and required change in the organization) can heavily influence the concept that is being developed. Also, with the fuzzying boundaries between development, implementation, and delivery, the notion of a 'final design deliverable' needs modification.

The area of service design is starting to develop their own methods and tools, which are valuable additions to the IDE toolset, such as blueprints, back-end design, etc. In service design teams, a broader range of skills and knowledge disciplines is needed, such as software coding (DBMS), training staff at providing the service, customer relationship management (CRM), adapting the organization of a company etc. Most importantly, the larger and more complex service design projects demand a yet higher degree of multidisciplinarity of all disciplines involved. Industrial design students are trained to be T-shaped professionals, but we should be aware they should not only become the horizontal bar of the T within this movement of service design [11].
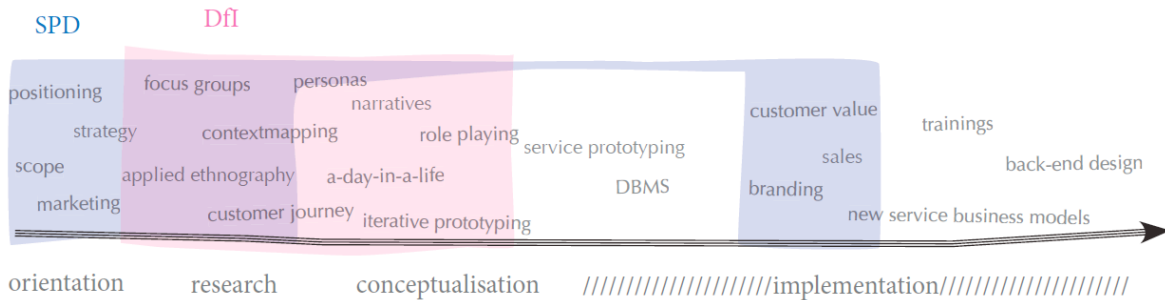

Figure 2 Rough sketch of parts of the service design process, and their relation to IDE master programmes 'Strategic Product Design' and 'Design for Interaction'.

4   DEVELOPING THE CURRICULUM

Service design appears to bring some ingredients which are here to stay. We expect that a substantial number of current students will find jobs which are advertised under that name, and for which the list of aspects mentioned above are essential. But the second aspect, that of further increasing multidisciplinarity is going to affect most, if not all, design disciplines.

What needs to be done? For that reason, we find it important to prepare our students for this upcoming area in the following ways:
*   clarify the service design perspective,
*   indicate where the (substantial) overlaps and complementarities with their skillset lie,
*   establish how the professional needs for service design skills relate to those emerging from the current programmes, and see whether this calls for a specialization track in existing MSc education, an elective or minor open to students from various disciplines, entirely new MSc programmes, post-academic education, or a mix of all of these.

To work towards these goals, a discussion is needed with students, recent and established graduates in design practice, and those practicing service design projects. Since there is a lack of a shared definition of service design [12], the discussion should always start from the discipline we look at it. We are trying to narrow down the discussion to get a more clear perspective by focusing on the new challenges in the design process itself. This means we are focusing on 'designing for services' instead of the general term 'service design'. One of our current activities is bringing in practitioners from practice into the school and ask them to openly discuss the challenges they face with designing for services with our students. The students are asked critically reflect on these developments in design practice and to formulate their view on how our curriculum should look like according to these developments. This exchange of knowledge and thoughts is realized in the form of an elective course.

5   CONCLUSION

New trends in design typically arise in leading design practice, to be followed by academic research which further structures our understanding of the problems involved and develops methods for dealing with them; these are in turn applied in education, and so enter back into mainstream design practice. In the past decade we've seen that happen with user-centered design, experience design, interaction design, and participatory design. All these streams have affected our mainstream education and given rise to larger or smaller specialisations. It looks like service design is a new trend in town, which will likewise find its way into design education.

As before, this requires educational institutions to gain experience with the needs of practice as well as the structures brought forward by research, and develop ways of instilling this appropriately into the curricula.

What is appropriate for which educational institution is still an open question. In this paper we described the situation very much from the perspective of our own school and research. In other schools the situation may be different. For instance, in our school the links between technology, human factors, and business aspects have been present for decades, and the deepening of experience design, interaction design, and participatory design came naturally through the research portfolio, but elements like business model development, organizational change, and incorporating IT infrastructure are less represented. In other institutes the balance will lie differently.

In the coming year, we will continue this search and discussion on the impact of service design on design education through workshops with academics, projects with design students and practitioners, and by forging connections with the growing, international networks in this area.

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