Expanding the Toolkit: Service Design Thinking for Industrial Design

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As the role of 'designer' has changed dramatically over the last two decades, lines between disciplines and the work they do have become blurred. This change is reflected not only in the end product of design, but also in its process (Buchanan, 2001). There has been a shift from solo author to a position demanding more participatory approaches involving constellations of expertise. Perhaps the greatest challenge lies in the need for involvement with stakeholders and users as co-creators throughout the design process (Sense Worldwide, 2009).

> "Above all, [designers] are creators of experiences that enrich the fundamental human experience of being alive. Therefore their greatest concert is—or should be—with the humanity of our material culture" (Press & Cooper, 2002).

To address the changing face of design practice, additional skills, techniques and modes of collaboration should be added to the designers' toolkit. This is of particular importance to design education, as students should be introduced, not only to the grammar of design, but also the purposeful application of its process to fulfill the need for emotional significance (Norman, 2004). Here the authors assert that the mindset evidenced in service design may enable students and professionals alike to better identify, develop and communicate solutions more fitting to "real world" situations and should be introduced as soon as possible in industrial design education. Utilizing a workshop format, it has been shown that the people-centered mindset present in service design can be effectively adopted by students in the early stages of industrial design education and has much to offer the discipline through education and practice.

Moving away from the modernist conception of the designer as individual expert, the world is now defined by problems of ever-greater complexity that demand more holistic approaches. Such solutions require greater understanding and integration across a broader range of disciplines than ever before. As heterogeneous disciplines begin to coalesce, a more diverse set of tools will be required with which to effectively engage stakeholders as co-creators throughout the process of product, service and systems design (Sanders & Stappers, 2008). The need for change is no less true in the domain of industrial design where success is measured far beyond the artifact in isolation and is clearly evident in the emergence of service design as a discipline during the last decade (Vargo & Lusch, 2008). Benefiting from an inherent focus on users as people, the application of systemic approaches, consideration of the experiential journey and engagement with the individual (Engine Group), the service thinking mindset has a great deal to offer the practice of industrial design and may bolster the discipline at a time when the consumption of material goods is put into question.

What the service thinking mindset has to offer

> "Experience design and user experience have become overused, often confusing buzzwords. Regardless of their meaning, most of the people we talk

to believe that the desired end result is an emotional connection between a person and her experience with a product or service" (Gage & Kolari, 2003).

As economic and cultural interests continue to shift from the consumption of material goods, many professions will be forced to deal with the relentless erosion of disciplinary boundaries separating them. As product-oriented economies realign, placing greater emphasis on human-services and product-service systems, it will be necessary for traditionally trained designers to adopt new tools and strategies in order to realize solutions of lasting value.

In today's hyper-competitive global landscape, goods must be wrapped with services (Gilmore & Pine, 1999). Historically a great many services have been the result of the impromptu alignment of overlapping systems, created out of circumstance rather than by design. In recent years this haphazard approach to the creation of service offerings has been replaced by more rational methods (Morelli, 2004). An understanding of how artifacts, services and experiences create economic and societal value is vital to the lasting success of products like those created through the practice of industrial design. There is little doubt that users and providers both stand to benefit from the careful alignment of overlapping networks, or "sticky systems", of things and services (Dust & Prokopoff, 2009). Such emphasis on the union of designed eco-systems, and the scaffolding of meaningful user journeys is evident in the service thinking mindset and represents a pathway to the future of design practice.

The service thinking toolkit

Service designers apply established design methods and skills to the development of new services. Overlaying the tools used, the service thinking mindset places people, networks and sustainability at the core of services design and innovation (Live|Work, 2009). Though not always the case, service design leans heavily on participatory design methods that support a keen people-centered mindset and bring focus to the act of designing with, rather than simply for the people who benefit most from the end product. This is a natural progression for the discipline stemming from the fact that users remain at the heart of the process resulting in better-connected and more meaningful solutions. Such approaches will often return high-order societal value, fueling expectations for long-term, humanistic and more sustainable ways of living (Sanders & Simons, 2009).

Here the process, methods and tools involved in the creation of new services are categorized into one of four phases: *discovery* leading to the identification of needs and opportunities, *definition* focusing on the synthesis of new ideas, *design* creating solutions and *delivery* which yields the final product of service implementation.

Discovery

During the discovery phase, service designers borrow heavily from ethnographic techniques. Service designers utilize contextual interviews, user-empathy tools, contextual observation and focus groups focusing on qualitative information and uncovering latent user needs. Early stage participatory and co-design processes emphasize design 'with' users, drawing them closer to the designers' world, especially during the front-end 'generative' stages. This allows designers to serve as facilitators, developing tools that enable more people to inspire understanding. This process seeks to generate evidence of, rather than to simply ask users their thoughts on plausible solutions.

> "In the fuzzy front end, it is often not known whether the deliverable of the design process will be a product, a service, an interface, or something else. The goal of this exploration is to define the fundamental problems and opportunities and to determine what is to be, or should not be, designed and manufactured" (Sanders & Simons, 2009).

It is apparent that designers benefit from first-hand involvement in the research leading to the creation of new product/service offerings. The use of generative techniques for research and identification of user types allows designers to better understand who they are designing for and with. This affords a deeper understanding of their goals and needs, especially in relation to the emotional reasons why a user behaves in a certain way by allowing the designers to ask what, how and why. Discovery requires an open mind on the part of the designer and leads to acceptance and clear interpretation of the information they find. In many cases, research reveals new pathways that could not have been predicted at the beginning of the process. The leap from expert to participative designer can be difficult. If a discovery mindset is present, designers can connect much more easily with the situation they are designing for, resulting in the creation of far more valuable propositions than studio based work which is tested further into the process. A service and respects the reality seen by others. Finally the use of generative techniques promotes an opportunistic mindset allowing one to spot opportunities and interpret user "data" in an unbiased manner. The service mindset takes role of form giver, bringing other people's thoughts and ideas to life.

Definition

Through the process of definition questions raised during discovery are addressed using select tools from the service design toolkit. Customer journey mapping considers how users interact with a variety of touchpoints over time. This tool offers an approachable, multi-layered overview of a service including individual touchpoints, stakeholders involved, information flow and user emotion along a specific timeline.

Through journey mapping, designers are better able to walk in the shoes of the user and to explore how they experience services, while documenting steps in the journey. The map can be used to represent a variety of characteristics, from awareness to departure, allowing designers and co-creators alike to more clearly understand the relationship with an existing experience or to share a new service concept among stakeholders.

Qualitative and experiential aspects of a service such as the emotional state of a user can be overlaid onto the journey map itself. By attaching user perceptions in relation to specific service touchpoints across time, designers are able to identify key areas of the service interaction that were perceived to be exceptionally good as well as those that became frustrating or dysfunctional. These negative interactions are often called "pain-points" and often serve as the inspiration for both incremental and transformative change.

Journey mapping can be of particular use as a tool for the concept synthesis, as it can reveal a wide variety of unspoken needs. These latent opportunities potentially lead to the creation of artifacts based on their role as points of interaction linked to user experience, their value derived from links to the service rather than as objects in isolation. Recognition of this connection between designed triggers and human experience exposes the foundations of this service design mindset.

Storyboarding offers a means with which to flesh out ideas while thinking through the sequence of events necessary to achieve a particular outcome. Storyboarding is an essential technique for designers in any discipline. In the case of service design, it is probably one of the most valuable techniques as it brings sequencing and the interconnection of things and experience into focus.

The definition stage of the process is what some call, “the magic phase” (Smith, 2009). Analyzing and moving forward with large amounts of qualitative data can be difficult. A service thinking mindset has the ability of being able to interpret large amounts of information by spotting patterns amongst the data and reorganizing it into key principles to take forward into the design stage.

Design

Prototyping is an essential part of the development of effective services. Jane Fulton Suri defines experience prototyping as; “…any kind of representation, in any medium, that is designed to understand, explore, or communicate what it might be like to engage with the product, space or system we are designing” (Buchenau & Suri, 2000).

Experience prototyping brings an experience to life and can involve users and stakeholders in acting out the service. In service design, a variety of methods may be used including role-play or desktop walkthroughs. The intangibility of a service experience requires designers to think imaginatively about how they will bring the user journey to life. By creating stories that involve the user and staff's actions, role-play techniques can be used by industrial designers to identify opportunities for product development while defining functions that are needed by individual touchpoints to make them relevant to the system into which they will be integrated.

Blueprinting, a common tool used to carry concepts into the delivery stage was developed in the early 1980s. Service blueprints allow "…a company to explore all the issues inherent in creating or managing a service." Like customer journey mapping, this technique can serve to highlight failure points, spot new opportunities for service/product development, identify user and staff actions, establish a time frame and analyze potential profitability (Shostack, 1984).

Delivery

The delivery phase addresses plans and frameworks required to stage the service solution itself. Blueprints, storyboards, journey maps, and a variety of other tools serve to document the final solution, bringing ideas and methods of delivery closer to reality. The ability of service designers to choreograph and communicate service propositions is a key skill necessary for the realization of service driven value. Truly people-centered approaches require that the qualitative aspects of an offering be documented and communicated in addition to the means by which the service itself is framed. This documentation of the artifact and associated awareness is something not commonly demonstrated within industrial design presentations or process.

Service thinking workshop for Industrial Design

> “Students need to be taught how to appreciate the ‘bigger picture’—taking into account multiple stakeholders, and wider social, political and cultural forces that shape what is possible” (RSA, 2009).

During the spring of 2010, a group of 17, second-year industrial design students from Auburn University gained hands-on experience with the methods and mindset of the service designer. Over the course of a two-and-a-half day workshop style introduction at the Glasgow School of Art, these students were introduced to the user-centered techniques and mindset used in the creation of value added services. As a result of this experience, it is evident that by adopting key functional aspects of service design thinking in the early stages of industrial design education, that industrial design can take a more direct and strategic role in design, providing greater value to the discipline and end-users alike.

Day One

Day one began with a basic introduction to the discipline of service design as it is currently practiced in the United Kingdom. The group possessed little or no previous knowledge about service design. To bring home the notion that something intangible can be designed, the students were asked to reflect on the services that they use everyday and were encouraged to pay careful attention to those with which they've had negative experiences. When first looking at what "service" is, it can be helpful to look back at a poor customer experience. Everyone has had and can probably describe a poor retail experience or the frustration of sitting in a waiting room. It tends to be much harder to identify what makes a service work well. Students find it much easier to discuss real events than abstract scenarios.

Customer journey mapping was used as an introductory tool. Service experiences considered ranged from the shopping experience at a big-box retailer to frustrations with the university's own e-mail system. This leap in thinking provides a functional visualization of the offering and is an important first step to understanding design for service as it breaks the offering down into components, which can be individually described and measured. During this stage of the workshop, service design terminologies such as touchpoint were put forward, so that students would begin to recognize the elements that define any given service.

The description of a journey is often approached as a form of storytelling. The power of story is deeply rooted in cultural tradition and has much to offer modern designers. As part of a service design course, students at Carnegie Melon were asked to explore ways that they might improve the service flow of the "Transportation Security checkpoint" at a local airport. Using storytelling techniques, students were able to immerse themselves in the context of the experience before even visiting (Evenson & Dubberly, 2010). As was the case in Pittsburgh, the story based journey mapping process allowed students to break down the experience and to contextualize it as a series of touchpoint interactions realized over time.

[fig 1. Journey mapping existing services]

[fig 2. Representative personas]

At this early stage in the workshop, these novice designers noted very clear connections between the disciplines of service and industrial design, recognizing very specific skills that they could take back into the studio. The process of constructing a journey map encourages students to consider how different portions of a service connect to one another while also serving as a lens through which to view the 'big picture' and a multitude of details in unison. This first task immediately pushed the students to think more broadly about the context in which products exist, serving as a lens through which to consider the artifact more holistically.

Leading students further into the service mindset, the group was next asked to "servicize" an artifact in the spirit of Pine and Gilmore.

> "If you as a manufacturer start thinking in these terms—inging your things—you'll soon be surrounding your goods with services that add value to the activity of using them and then perhaps surrounding those services with experiences that make using them more memorable" (Gilmore & Pine, 1999).

To "servicize" an object resonates with the idea of adding the "-ing" to a thing. By connecting experiential value to objects we generate the potential for market differentiation and added value. Working in small groups students were asked to consider an everyday object in their immediate environment and turn it into a service. Through the process they addressed trash bins, projectors, scarves and even a pair of flip-flops as they were asked to think about how users might become aware of, engage, use and leave the service they propose. This exercise promotes a more holistic way of thinking about function in terms of the service it could be part of, and more widely, the experience surrounding it. The task was completed in 15 minutes and tested the student's service thinking mindset and ability to relate a good's final value. An asset to designers, this way of considering a product's eventual value allows them to design backwards, incorporating different functions depending on how a product will be used.

Armed with the fundamental of a service design toolset, students were charged with an open challenge to improve on the existing services offered by a library in Glasgow and to encourage visitation by new patrons. After learning to view interactions as part of a journey and to think emotively about the user experience, students visited two different libraries, one in urban Glasgow and another in a more rural part of the city. Their prescribed task was to investigate what problems current users face and what opportunities might be available for new and innovative solutions that will improve

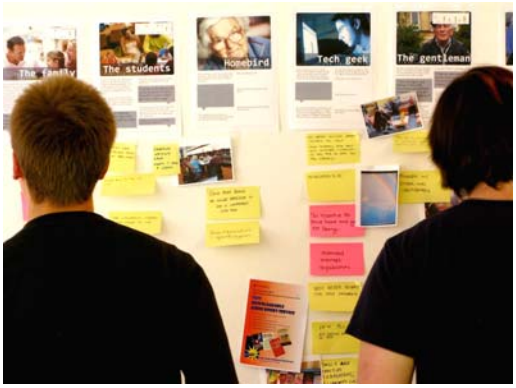
existing services and encourage a new set of users to engage with the library. The mock brief was written especially for the workshop, but was based on a concurrent, "live" project. Students were expected to conduct research, produce their own insights, identify problems and opportunities, and develop relevant models of interaction in order to generate any number of possible solutions. As is often the case in the design of services, consultancies will swim upstream to identify what the real problem is. Allowing the students the same autonomy to develop their own design brief encourages the pursuit of self-initiated projects and challenges them to explore a greater number of possibilities.

Before setting off, the group was asked to review a number of personas, each of which outlined a user profile and their motivations and attitudes towards the library. Due to time constraints and relative inexperience of the students, these examples were produced beforehand. Each sample persona posed questions to the students, challenging them to look through the eyes of users.

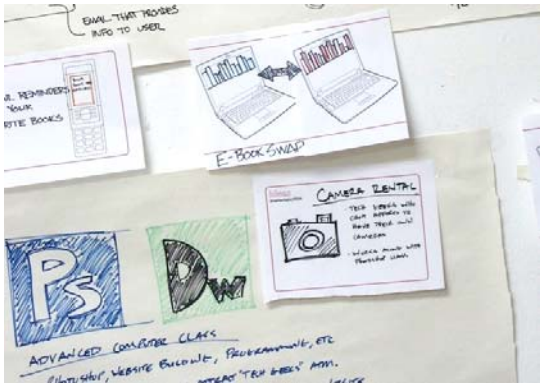
The studio was divided into two separate groups and directed to a prearranged meeting with staff at each respective library. Students were asked to document as much as possible about the existing systems and experience using written notes, photographs and video with an emphasis on visual thinking, as this is another key skill and mode of communication common in service thinking.

Day Two

To begin day two, the students returned to the studio to synthesize their findings from the day before. This period proved difficult for the students. When faced with a large amount of information, the grouping of patterns and themes can be tricky and often requires facilitation by more experienced individuals. In much the same way that designers serve as facilitators during participatory and co-design endeavors, these young designers needed assistance making the transition from research to the synthesis of new ideas. After a little help with the process of insight identification, the group was much more comfortable with the results of their study. For example, observation and direct interviews with library staff revealed that the travel section was very popular at both libraries. The groups involved quickly realized the opportunity presented for any number of travel-related services that would benefit patrons of all ages, based on those resources that the library already possessed.



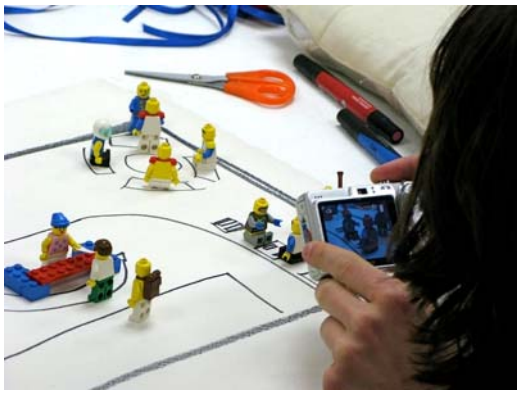
[fig 3. Students reviewing results of Discovery]



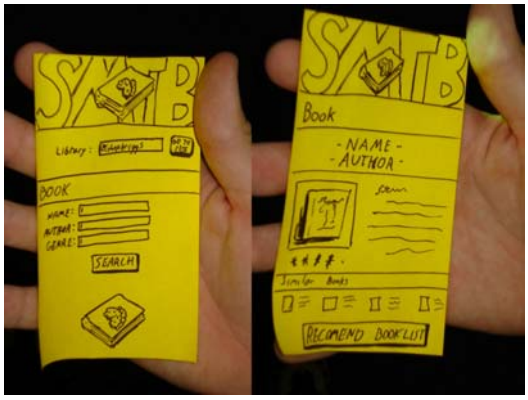
[fig 4. Documenting synthesis outcomes]

Using the previous customer journey mapping exercise as an example, each group mapped the experience for one of several personas. In doing this, the team was better able to identify weaknesses in their service propositions and began to validate their opportunity for positive change. Here personas serve as a vehicle with which students were able to formulate mini design briefs that could later be used to generate ideas for new products and services. Although legal and logistical constraints limited the students' contact with library patrons, they were clearly putting users at the center of the design process, using existing conditions to guide their design for future behaviors.

During the synthesis of responses to any design opportunity, it can be difficult to identify the deep-rooted motivations that really define the behavior of people. To bring this complexity into focus, a technique called "Five Whys?" can be used, in which one will ask "why?" in response to five consecutive answers (IDEO, 2003). This technique can be used to prompt people so that they look more deeply at the underlying reasons driving the things they do. This can also be used to reflect more deeply on how and why a design should be brought into existence.



[fig 5. Prototyping service interactions in Lego]



[fig 6. Low-fidelity interface prototypes]

To explain and test their proposals, students utilized a variety of prototyping techniques. Methods such as role-play and the desktop walkthrough were used to demonstrate how the sequence of actions might fit together. The primary objective of this effort was to have students physically realize their ideas and to experience the service propositions they've created. Prototyping facilitates the development of details surrounding touchpoints and to verify that the interactions make sense. Paper and pen were used to mock up low-fidelity interfaces and collateral materials. Lego was even used in place of human actors during role-play in order to evaluate the flow and sequence of information and interaction. In several cases students authored original short stories to introduce and present the idea behind their service. No matter what methods are employed, the goal of prototyping is to quickly and cheaply test the proposed solution so that it can be evaluated and modified in realtime. In much the same way that a physical prototype tells the industrial designer how something may look and feel, designers for service requires that people react as expected to the queues and frameworks joining touchpoints. At first the students had seem puzzled about this exercise and how it would benefit their designs. As they brought to life their ideas it allowed them to see the reaction of people's behavior and questions related to their touchpoints, for example, 'If I choose this option, what would happen next…' rather than just a functional or aesthetic reaction.

Day Three

For presentation on the third day, groups were asked to clearly document and communicate their concept using any combination of spoken word, on-screen presentation or ink on paper. Due to time constraints, presentation materials remained very simple, but quite effective.

[fig 7. Presentation storyboard, journey map, etc.]

[fig 8. Role-play demonstrating touchpoints]

In the end, proposals were developed by each of six teams, revealing more than a dozen new design opportunities. In order to address concerns over the patrons ability to find needed information, one group proposed a service called “Smart Book” incorporating a number of touchpoints involving an interactive map, a smart phone application and an offline messaging system. Another proposal revolved around the social aspects of online gaming and still another looked at the means by which to better utilize library facilities within the community. It was clear in every case that the students had a gained heightened sense of empathy for the users they designed for and found new opportunities through which to provide solutions. Their efforts highlighted a service-led, human-centered perspective, expanding their thinking beyond the product to the user experience and the creation of supportive systems.

Conclusion

Challenging the long held concept of the solo designer, “hybrid designers” (Barrett, 2008) are rapidly becoming a reality. Service design thinking offers the mindset necessary to assign value in the long view. Designers have long held the tools, but the act of creation demands the characteristics listed above: a humble and participatory mindset, an open-minded approach to research and design, and a strong reliance on intuition. These are the keys to more holistic and long lasting solutions.

> "…it is more about teaching a mindset and an approach than specific tools and techniques" (Polaine, 2010).

As Dr. Polaine describes, teaching Service Design is more about the mindset than the tools. What students left with was an “ability to think holistically, and to abstract meaning and value in multi-disciplinary collaboration” (Kira, 2009). The ultimate goal and benefit of the workshop was not to instruct students in the use of service design tools, but to challenge them to think differently about the way they approach their projects. The instructors hope was that they would leave with: an optional mindset, a more open approach to the beginning of the design process, an improved listening capacity that's

humble and empathic, focused on user needs, and the ability to consider the big picture while maintaining the ability to zoom in on specific details.

Finally, through the adoption of a service mindset, students will be better prepared to step into a profession that will have them develop products, as touchpoints that genuinely fulfill human needs and fit seamlessly into the futures they will create. By accepting a more open and co-creative role, this vantage point offers a new perspective on the practice of industrial design shifting away from the creation of products that simply help the user, to those that the user actually bonds with. It's time for design to fulfill its call to service.

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