

Chapter 30

Design and Innovation Beyond Methods

Caroline Gagnon and Valérie Côté

30.1 Introduction

Nowadays, society and companies are challenged by numerous issues. For instance, the coming of new technologies, the collaborative economy, the aging population, the environmental and social crises as well as the pressure on public finances. In fact, some authors suggested that design, as a strategy for innovation, is a promising way to rise up to these challenges [1, 2–4]. Moreover, the recent enthusiasm for design thinking [5–8] in management contexts tends to show that an innovation model oriented towards design would offer really interesting perspectives and tools to address the many issues that society faces presently [1, 9–12]. In that view, design thinking gathers a variety of tools and methods in order to generate innovation based on how designers reason as well as solve problems holistically and iteratively. Therefore, design thinking is considered as an innovation methodology [8, 11, 13]. However, Kimbell [13] underlines the difference between the practice of design usually focused on the doing and the design thinking centered on the thinking, the latter being increasingly generalized outside of the traditional practice of design [13]. Therefore, this article will integrate the design thinking notion, namely an approach with a set of methods for designers to tackle the different practices and knowledge of design.

A growing number of international publications are trying to demonstrate that design, as a strategic approach, could be a powerful drive for innovation [2–4, 9, 11, 14]. Furthermore, in the new economic context, Holston [15] underlines that the designer is more of a strategist whose abilities go beyond the formal aspect and

C. Gagnon (✉)
Laval University, Quebec, QC, Canada
e-mail: caroline.gagnon@design.ulaval.ca

V. Côté
University of Montreal, Montreal, QC, Canada
e-mail: valerie.cote.5@umontreal.ca

manufacturing process of objects, but is also able to collaborate, to manage complex socioeconomic issues, to better understand processes linked to users, to increasingly be part of the decision making and to reveal business opportunities. Similarly, the Design Council [11] proposes that design centered innovation is based on three features: multidisciplinary work, engagement towards users/citizens as well as a holistic approach in the development of products and services. Thus, it is also mentioned that this perspective can lead to surpass silo organizational structures and favor collaboration; that it is a continuous validation process through iteration and prototyping, generating low risks; that it is centered above all on human needs, on diverse and extreme users as well as being linked to the question of consumers' heterogeneity and mass customization; and that its tools offer actual results to raised problems with tangible solutions [6, 11]. These elements are the basis of design thinking and so, a prerequisite for innovation by design.

30.2 The Design Innovation Models

In the design field, some models were elaborated to sustain this perspective. After a literature review on design innovation, relevant and thorough models were chosen to address a framework on innovation by design and our article is mainly based on Manzini [2, 16], Gardien et al. [4], and Verganti [17, 18] models. Nevertheless, it is important to keep in mind that, more often than not, publications on the subject are statements of intents rather than real empirical studies.

For Manzini [2, 16], innovation in design should be of social nature to address, firstly, challenges generated by the enduring economic crisis (mainly in Europe) and, secondly, to favor the transition towards sustainability. The notion of social innovation can be defined as a transformation approach. In other words, and very succinctly, social innovation can be understood as "a new idea that works in meeting social goals" [19]. Furthermore, Mulgan [19] offers that "[a] more detailed definition could be the following: Social innovation is a process of change emerging from creative re-combination of existing assets (from social capital to historical heritage, from traditional craftsmanship to accessible advanced technology), the aim of which is to achieve socially recognized goals in a new way" (p. 57).

Moreover, Manzini [3] highlights that social innovation evolves with society and has a window of opportunities never explored at the moment [20–23]. Manzini [3] also proposes that design could offer a variety of initiatives that would allow for the creation of more realistic, efficient, sustainable, and reproducible social innovations. Furthermore, Manzini [3] emphasizes that design for innovation assumes a dynamic process of creative and proactive activities where the designer is often seen as a mediator between the different stakeholders and as a facilitator of ideas as well as initiatives from participants. The designer's role is then more one of conceiving and carrying out design opportunities through creativity. Specific know-how enabling designers to promote, sustain, and orient socially innovative projects. Even more so, Manzini [3] suggests that the designer can be more than a facilitator by becoming a social change agent. Thus, designers can do more than assume the traditional role of facilitators often attributed to them in co-design teams by becoming

design activists who provoke socially significant initiatives [24–26]. In doing so, Manzini [3] considers that designers could take advantage of their unique skills and their empathy to create initiatives and generate new discussions in regards to current social problems of our societies.

The perspective regarding design in a transformative economy of Gardien et al. [4] introduces the different changes in design practice in line with the present socio-economic issues. The authors based their arguments on the categorization of the different economic paradigms that the history of design practice went through (industrial, experiential, knowledge-based, and transformative) and suggest that to innovate in a perpetual shifting society we have to know how to adapt to social change. However, most of the players presently adapting to the changing economic paradigms are usually start-ups rather than established companies often resulting in outdated mindsets in traditional business models. The transformative economy presented by Gardien et al. [4] suggests that design should address social needs. For instance, through living-labs that can allow contextual experimentations and data collection in order to get a greater understanding of social problems and design opportunities that could solve them.

The idea of design as an interpretation [17] is less centered on social innovation and more on innovation in the design field. Verganti [17] highlights that the unique knowledge of tools and techniques, as seen in the solely application of design thinking methods, are not enough and that design should be, first and foremost, a capacity to interpret the world and give it meaning through a product or a service. Furthermore, it should allow the transformation of negative experiences into positive ones, in other words, to go from a hostile environment to a comfortable environment [18] or at least a socially acceptable one. Norman and Verganti [18] also suggest that design projects based on design innovation research can lead to radical innovation to the meaning given to products and/or services if the goal is to get a new interpretation of what is important to people. Moreover, Norman and Verganti [18] suggested that design innovation research based on interpretative processes could lead to radical changes that would be recognizable and reproducible.

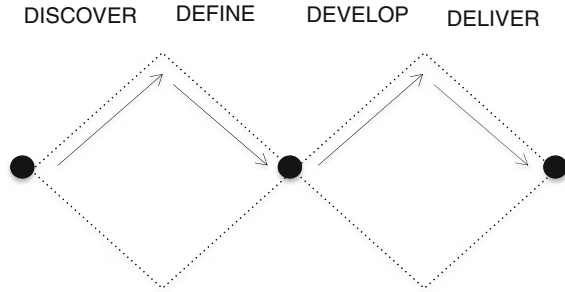
In this perspective, we think, after a broader literature review on design thinking, design and innovation as well as with the experience of teaching design research tools associated with design thinking but within design practices [1], that design if seen as an innovative approach can enable three types of business changes, in: the changing processes, the generated human experiences, and the organizational structure.

30.3 Three Types of Business Changes

30.3.1 The Changing Processes

Design thinking is increasingly adopted as a creative approach allowing innovation in businesses. The design thinking process inspired by the way designers tackle problems holistically is generally translated into four or five steps based on convergent and divergent thinking. The Design Council proposes that the approach unfolds,

Fig. 30.1 The double diamond diagram explaining design thinking as divergent thinking and convergent thinking.
Source: Design Council [11]



firstly, by a discovery phase where different perspectives fuse and then converge towards a problematic definition. Thus, some qualify this phase as the empathic stage aiming at collecting information to get a better understanding of the lived and felt experience of the people linked to the products and/or services. Afterwards, the concern is to develop propositions and to deliver them [11] (Fig. 30.1).

For Kimbell [27], the design process is characterized by different but connected phases going from exploration, to interpretation, to proposition, and to iteration often pulled off in a disorderly or not always in a linear way. Furthermore, the author adds that design thinking and design practice are two different perspectives and that the design thinking methods have frequently evolved outside of the traditional design practice where brainstorming is often realized implicitly and intuitively [13, 27]. However, designers adopt these tools increasingly and their use will vary with the project parameters.

In 2007, the Design Creates Value, National Agency for Enterprise developed an integration design ladder for the Danish economy (Danish Design Ladder) going from a minimal integration at the first level to a strategic integration at the fourth level [12]. Specifically, design in the first phase of the ladder is not involved in the product and service development (no design). In the second phase, design is considered as styling (design as styling) and, in the third phase, design is an integral part of the development process (design as a process). Finally, in the fourth phase, design is seen as one of the key strategic means to encourage innovation (design as strategy). In 2011, the Sharing Experience Europe (SEE) also considered a scale enabling the SEE to understand the design range of intervention in design politics and the maturity level of its integration; going from no politics to a vision for industrial design, to service design, and finally, to strategic design. Messier [28] drew his analysis from this ladder and suggested that design as innovation in Quebec is situated at the second level, meaning that design is a strict vision of industrial design for businesses. In 2013, the Design Council published a study on the role of design for the public goods where a three-level scale was developed to gain a better idea of the impact of innovation by design in the public sector. The design for discrete problems is the first level of this ladder and describes design essentially as a professional practice helping to improve particular situations inscribed in a limited project. This approach which is limited to product and service design in a constrictive way is not

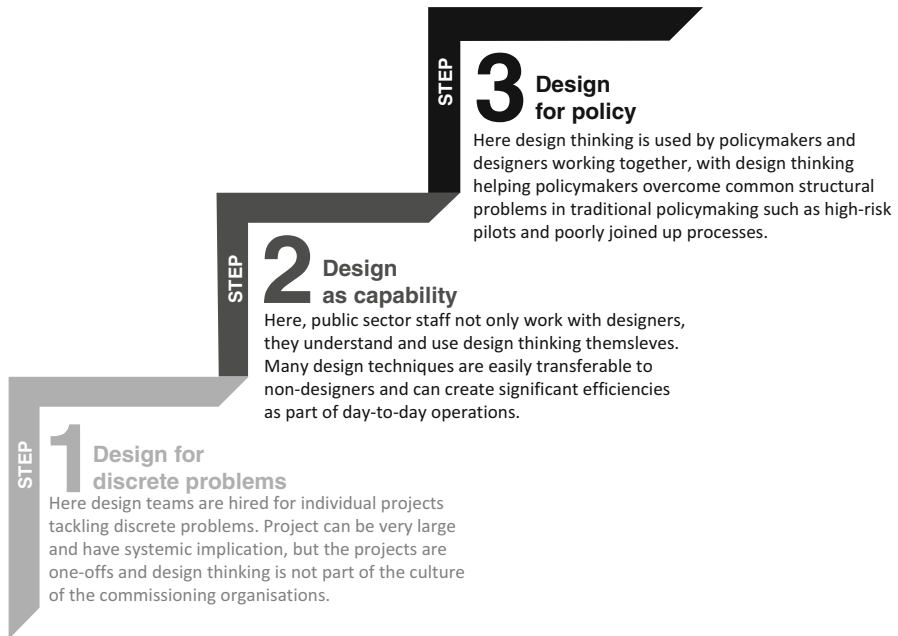


Fig. 30.2 The public sector design ladder. *Source:* Design for Public Good Report, <http://www.theservicedesignprogramme.org/wp-content/uploads/2013/07/design-for-public-good.jpg>

properly called design thinking because it is not inscribed in the strategic development of broader services. The design as capability is the second level of the ladder and proposes the integration of design in the public service project culture, both, in the way of operating them and in the decisional process. In this approach, the manager skills to capture the design role are present and allow design professionals to integrate a project as well as encompass problems with an overall design innovation procedure (design thinking). The final level of the ladder considers design as a strategic approach of political innovation. In this perspective, design thinking is included in the development of public policies. In a nutshell, the second and third levels of this ladder allow designers to act as facilitators of innovation processes as well as letting ideas generated by all the stakeholders involved (managers, citizens, experts, designers) materialize in tangible projects, meaning deliverable products and services (Fig. 30.2).

This changing process usually implies the integration of a higher level of sensitivity to human experiences in order to develop the desired innovative solutions. This kind of sensitivity was largely handled by the introduction of empathy in the design process as demonstrated by design thinking and illustrated by the work of the IDEO firm [29]. For the most part, these approaches are getting designers to grasp a better understanding of the complexity of a design problem, first and foremost, from a user's and/or citizen's point of view in everyday life. Furthermore, this

perspective overlaps what is now called design thinking on research methods and data collection aiming at feeding the design project [13, 30]. Therefore, empathic design is an ensemble of approaches, techniques and tools insisting on the creative understanding of user/citizen experience with the objective of feeding and orienting the design project [1]. In fact, in the product design field, it is often mistaken for the user-centered approach, as we pointed out in our study on empathic design teaching: “In fact, user-centered design is primarily concerned with the functional usage of a product and little with the overall experience brought by it, like empathic design is seeking to accomplish” [1].

30.3.2 The Generated Human Experience

In the Norman and Verganti [18] article, the authors are questioning the contribution of design in leading to innovation, and particularly to radical innovation. In this line of thinking, even though design thinking may be considered as a sensitive approach to human experiences, it does not always generate innovation. In this perspective, Verganti [18] also suggests that it is the contribution of a significant experience that leads to innovation in design and that changes in product and service experiences can bring radical innovation. Moreover, the example of Philips is quoted in the article and highlights that the major transformation for the healthcare experience is not linked to a new technology, often associated to radical innovation, but rather to the lived experience itself. For instance, all the possible medical examinations were reevaluated, notably scans, to offer a reassuring and immersive experience to people in the healthcare system who often suffer from anxiety and have a certain apprehension of invasive health check-ups. In doing so, Philips seeks the experience of a real connection with people. These approaches based on experiences are also supported by innovation strategy in services. Thus, the last Design Council report showed that the global product and service experience is extremely important to value creation in businesses. These experiences linking the tangible to the intangible are leading to what many are defining as service design [13, 27, 31]. These approaches integrate right away the design thinking strategies and methods.

On this basis, the upstream introduction of empathic approaches (transversely to idea refinement techniques or in a technology) induces this experience transformation more significantly and is greatly supported by service design approaches. This understanding of the human experience could allow for the establishment of opportunities in line with perceived and lived realities. However, Postma et al. [32] as well as Köppen and Meiner [30] showed that it is still difficult to introduce the interpretation and translation of experiences into design opportunities in the different organizational structures of products and services development. In fact, Postma et al. [32] noticed this situation in design teamwork because the emotional character of the experiences gathered in the discovery and problem definition phases is often

lost in the process. Thus, the authors suggest a sharable framework allowing design teams to quickly identify and structure data to prevent losing analytical sharpness. The authors also proposed to support the work with a reference framework derived from a literature and study review linked to the problematic. Moreover, an incomprehension towards the argumentative role and strategic approach of the positioning of a design project is still persistent in the traditional design practices and even more so, in the standard management structures.

30.3.3 The Organizational Structures

The findings discussed earlier brought us to question the strategic role of design in businesses. In the same way, Postma et al. [32] showed that the introduction of empathic approaches in the project processes and the emphasis on human experiences are not sufficient and that this perspective should be supported more and preserved across all the organization's departments, from the design team to engineering and marketing. Furthermore, the recognition that design is an innovation factor in businesses is not surprising to the extent that the managerial approach is design-driven and is supported by the company's management team [33–36]. Thus, it is comprehensible that if design is to be profitable it has to transversely integrate all of the organizational components (marketing, engineering, etc.). This kind of transversal integration is possible when the company's management team states its need and supports its integration, is brought by a strategic culture of design as an innovation methodology rather than a unique and punctual professional and creative expert design intervention in a project. In this way, design should become more of a strategic approach than an operational expertise. However, there is still a lack of studies on that subject matter to draw more general conclusions. Nonetheless, organizational changes are an important aspect of innovation by design even if they are difficult to set up and are often one of the major obstacles to their integration in businesses.

30.4 Discussion: Towards Value Creation Within the Business by the Creation of Sensible Products and Services?

In a very recent study [37], an analysis of design for innovation in services was conducted and it was noted that designers tend to work in the traditional logic of product delivery to give an answer to the differentiation of the market offer. However, service design is more associated with an approach implying more profound changes in organizations and in the offer configuration as a whole. Furthermore, Bason [38] in his recent work on design in the transformation of

political contexts explains that design is also changing and that we can no longer consider its purpose uniquely as a way to create tangible products.

“Design as a discipline is thus undergoing a significant transformation, which perhaps places it more squarely at the heart of an organization’s ability to create new valuable solutions. Variations such as participatory design and service design, which focuses on (re)designing service processes from an end-user perspective, are in rapid growth [38, 42]” (p. 4).

Moreover, service design is inscribed in an interdisciplinary perspective in design and is often confused with User Centered Design in web-based application development. Nonetheless, Kimbell [27] points out that the service design perspective adopts a broader attitude and embrace towards innovation in businesses. The author, inspired by the works of Herbert Simon [43] on design as a process to resolve problems and by Christopher Alexander [44] on design as object shaping, also suggests that design is particularly successful when generating transformations in organizations [27]. In this way, Kimbell [27] proposes a model that combines the ideas of knowledge generation and idea development between the internal company perspective and the users’ world. We think that this perspective of innovation by design is interesting and should be considered because it proposes design as an approach to create value in businesses by the development of organizational processes as well as by the proposal of products and services adapted to consumers. Moreover, this perspective unites the three aspects discussed in this paper, namely the changing processes, the generated human experience, and the organizational structures. Kimbell [27] also argues that innovation should come upstream of the design process contrarily to traditional practices where design tardy intervenes. The innovation process should have more influence and should be conducted at the beginning of a project to lead to more efficient and less costly transformation approaches (Fig. 30.3).

30.5 Conclusion

To value the interpreter status of the designer it is essential to better comprehend the role of creativity and innovation in society and its underlying models [17, 45] as well as its facilitator or strategic role in the development of innovative design opportunities [10]. When the stakeholders of a project are engaged and valorized in the change processes with different tools and approaches, design can allow the visualization and the proposition of future scenarios, which are more powerful and innovative alternatives to traditional solutions in the different sectors of society and management [6]. Cope and Kalantzis [10] suggest that design acts at the interface of the knowledge society and the creative economy. Therefore, design can be considered as the capacity to act in the world where many stakeholders interweave with needs and aspirations waiting to be seized, understood, and analyzed. Finally, Best [6] underlines that design is concerned with creative economy and green economy

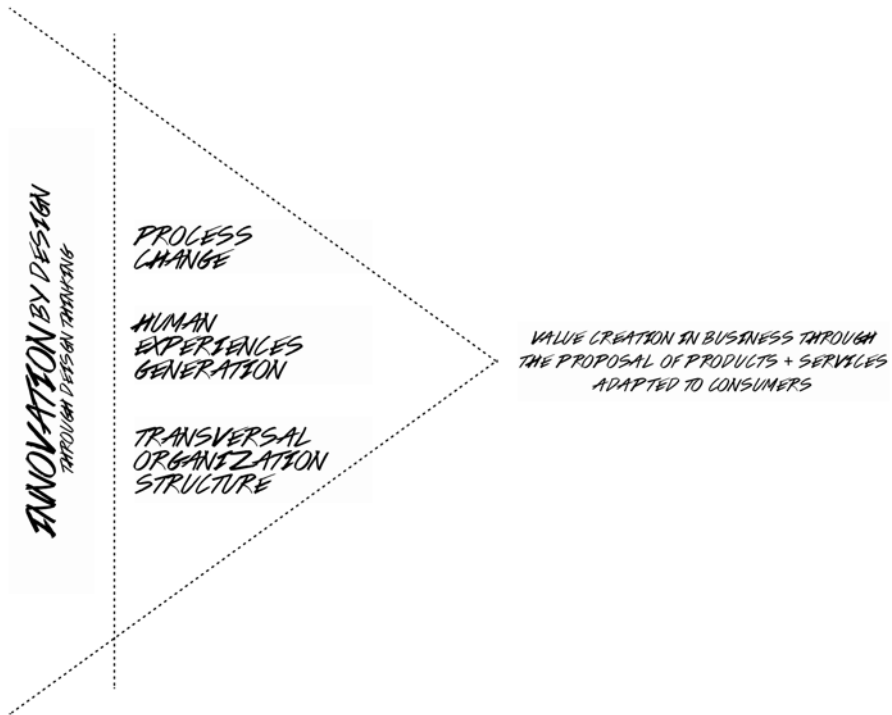
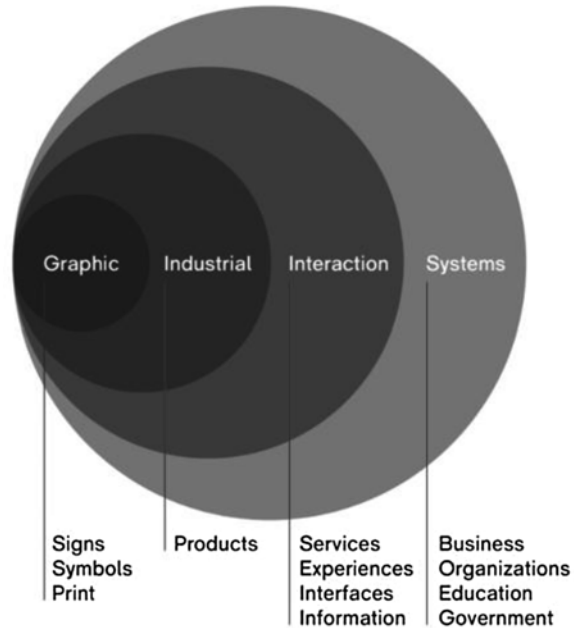


Fig. 30.3 Innovation by design framework

enabling the combined integration of the creativity benefits and the generation of new ideas; the environmental and social equity questions as a means of stimulating the economy and increasing the well-being of populations. The author also proposes that design is a transformation process centered on humans and moving beyond traditional management approaches to trigger a major shift in the way socioeconomic problems are tackled. This can also be translated in the Design Orders model of Richard Buchanan that illustrates the expanding scope of design practice [46] (Fig. 30.4).

In this way, we think that design can bring interesting perspectives to the table. In fact, in the light of this paper, we think that it is essential to act on the design processes and the development of innovative design opportunities with design thinking, to create value mainly from the product and service experience and transformation as well as, to integrate design in organizations transversely. Thus, these changes bring us to consider design as a strategic approach in businesses and as an innovative approach by service design.

Fig. 30.4 Design orders diagram by Richard Buchanan. *Source:* Design for Europe, <http://www.designforeurope.eu/news-opinion/we-need-new-ways-discuss-design>



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