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UNDERSTANDING THE ORGANIZATION IN LIGHT OF DESIGN*

Christophe Schmitt

ABSTRACT

Herbert Simon used design as a cornerstone of his studies on the Sciences of the Artificial. This article aims to show the

contribution of his work in understanding the organization. Even after more than 50 years, his work is still considered of high topicality. Hence, this article first shows how the concept of design was formed

over time, then depicts the contributions and perspectives of design to understand the organization, and finally, discusses the implications on the positions to conduct research, support and train on design.

Keywords: Design, situation, artefact, experience, gaseous state

RÉSUMÉ

Herbert Simon a fait de la conception une pierre angulaire de sa réflexion sur les sciences de l'artificiel. Cet article se propose de montrer l'apport

de ses travaux pour la compréhension de l'organisation. Même ayant plus de 50 ans, sa réflexion est encore largement d'actualité. L'article aborde donc la construction de la notion de conception dans le temps, puis les apports

et les perspectives de la conception pour comprendre l'organisation et, enfin, les implications sur les postures pour faire de la recherche, accompagner et former à la conception.

Mots-clés : Conception, situation, artefact, expérience, état gazeux

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After reading and rereading Simon's *The Sciences of the Artificial* (1996), it becomes clear that Chapter 5 entitled "The Science of Design: Creating the Artificial", inspired me most. This chapter encouraged me to integrate design within entrepreneurship at a very early stage of my research (Schmitt, 2007; 2009; 2015; 2018; Schmitt and Filion, 2009; Schmitt, Julien and Lachance, 2002). I even had the opportunity to make some presentations of my work on entrepreneurial design, and what struck me most was mainly the lack of awareness concerning Simon's work on the Sciences of the Artificial. In fact, for most of the people with whom I discussed this issue, Herbert Simon is known for the theory of bounded rationality and the Nobel Prize in Economics he received in 1978. This can be easily understood by considering economics and management as interrelated disciplines. In organizational theory, who wouldn't have heard of Simon's work on decision making or the book written in 1958 with J. G. March (*Organizations*, March and Simon, 1958)? Yet, in many respects, limiting the focus to these aspects of Simon prevents us from considering the various prospects that his work offers us, especially through the Sciences of the Artificial, and more particularly, the Sciences of Design.

Through this article, the concept of design is proposed as a framework for analyzing the managerial activities of our society. In fact, we must acknowledge the increasingly important role of activities in our organizations which help create artifacts in the daily lives of managers. This takes different forms, from a simple table to illustrate data to the development of new products. Nowadays, the figurehead of design from a managerial point of view corresponds to entrepreneurship, where one or more individuals called "entrepreneurs" aim to create a particular artifact: an organization. As Filion recalls (1999), "one of the great differences between the entrepreneur and the other stakeholders who work in organizations is that the entrepreneur defines the object that will determine his own future".

In this article, I would like to first revisit the concept of design and its role in research studies on the organization. Secondly, I will tackle the contributions and perspectives of this concept to understand the organization and, thirdly, I will discuss the impacts relating to the positions of research, support and training.

1. THE ROLE OF DESIGN IN THE STUDIES ON THE ORGANIZATION

The little case of the role of design as seen in studies on the organization can be first approached through a historical-religious perspective. In fact, design refers above all, as Joas (1996) underlines it, to a divine dimension making it difficult for any human to grasp this concept. Design mainly falls within a Judeo-Christian perspective "creating the world from scratch by the action of the one and only Creator, God" (1996, 83), inherited from the Greek tradition. Gods as demiurges are to take care of creation, and humans to deal with the results of the divine manifestation through work (Saliba-Chalhoub, 2019). Therefore, design would mean transcendence and work, immanence. Design

would be gladness, not to say enjoyment, work would be labor and suffering. If we refer to the beliefs shared during the Antiquity, there are also demigods, mixture between gods and humans, endowed with special abilities like those possessed by gods. As such, the entrepreneur has often been precisely considered this way, as a hero of modern times. This Christian tradition is still found nowadays in the field of organizations. In fact, studies conducted on the organization focus mostly on the achievement activities: work. These are activities for which the operating rules already exist. We find here the idea that the human being is mainly devoted to achieving what has been planned. Finally, studies correspond above all to the optimization of existing activities.

In this perspective, design would not involve work. It wasn't until the rise of Protestantism that another approach to design emerged. Protestantism allows a human to be the creator of his environment. This is a decisive step in approaching the concept of design and especially in relation to the role given to a human within his environment. As noted by Schmitt and Rosker (2015: 73), "from a Protestant perspective, the main challenge of entrepreneurship and doing business is the attempt to be equal to the Creator». Design and achievement are the two inseparable pillars of work. Work must be regarded as an activity to be renewed in order to improve oneself and become closer to God; in other words, to assert oneself as creator, as the Parable of the Talents teaches us. Thus, novelty, particularly through innovation, becomes an integral part of organizational management. This is of course reflected in Schumpeter's work on innovation. From a managerial point of view, it was not until the 1950s that the development of design within organizations was systemized, particularly through the R & D (Research and Development) function, and reached its peak in the 1990s¹ through what Boltanski and Chiapello (1999) call the "projective city" or the "city of projects" (*la Cité par projets*) compared to more traditional cities, such as the domestic city (family, tradition), the commercial city (competition, rivalry) or the industrial city (efficiency, scientific development). In this perspective, Weber's work (2013/1905) on the Protestant mind at the origin of capitalism is considered highly relevant in our present society. Current managerial studies consider design, above all, as a distinctive skill, more so as a skill expected of managers. The number of training courses in this field is increasing to prioritize the development of a skill in the range of skills to be acquired through what is called design thinking, lean management, lean startup or business canevass.

Hence, approaches to design seem to fall within a dichotomous approach along with, on the one hand, a Christian view where design is regarded as a playground reserved for God and, on the other, a Protestant view where design is an asset for humans to prove themselves worthy of God. These two approaches should be considered as two sides of the same coin. They form an essential part of a natural paradigm based on mastery and optimization (Lorino, 2018) in an analytical perspective. However, the contribution of Simon to design through the Sciences of the Artificial is quite different; it is primarily part of a new paradigm based on the interaction between humans and nature where artifacts play a central role between the two. This new paradigm places

1. See also Boutinet, 2014; Bréchet and Desreumaux, 2006; Gareil, 2012

design at the heart of the human process. More precisely, Simon recognizes the ordinary aspect of design in human activities. He states: “Everyone designs who devises courses of action aimed at changing existing situations into preferred ones” (1996; 111). In practice, design is the engine of our organizations, as Martinet points out (2000; 121); the situations encountered by the company’s stakeholders “are increasingly similar to those which characterize the design and development of new products”. Teulier-Bourgine (1997; 99) argues that “management, as well as many tasks in the organization are increasingly turning into, from a cognitive point of view, design tasks”. In other words, managers are led to deal with design situations characterized by their human complexity and uncertainty. Therefore, the Sciences of the Artificial encourage us to break free from linear logics believing that individuals act on their environment or that the environment acts on individuals. The richness of Simon’s ideas makes it possible to go beyond this Manichean approach and propose another one calling into question the analytical approach in favor of a systemic approach.

2. PERSPECTIVES ON DESIGN TO UNDERSTAND THE ORGANIZATION

Let’s start from the model which I developed in my book entitled *La fabrique de l’entrepreneuriat* (Schmitt, 2018). The 3M model, inspired by Simon’s work on design, proposes to link three dimensions which seem to be addressed as unbreakable: **Me**, **My project** and **My ecosystem**.

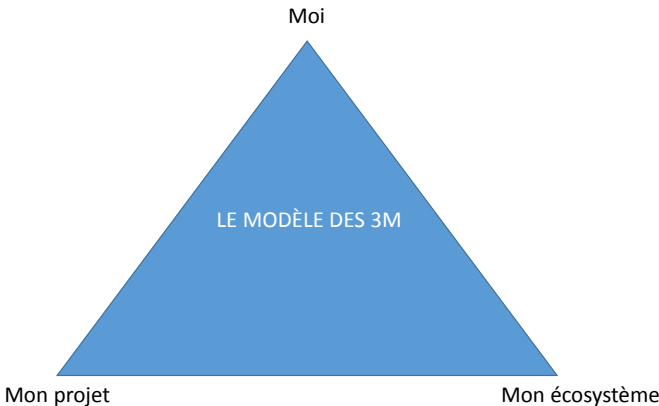


Figure 1. The 3M model for the design of artifacts

The 3M model corresponds to the interactions between the entrepreneur’s intentionality and the translation of his intentionality through the design of an entrepreneurial project that will serve as a link with the actors of his ecosystem in relation to the understanding he has of it. The entrepreneur’s intentionality is the desired future mentioned by Simon to define what he meant

by design; the project is the artifact designed by the entrepreneur in relation to his understanding of the needs and expectations of the ecosystem; the latter is the outer environment described by Simon. The purpose is not to break down this triptych into three elements; it would only be like considering the model analytically from a reductionist perspective. Not only should the three elements of this model be examined simultaneously, but also dynamically. In fact, this triptych evolves over time. The entrepreneur is no longer exactly in $t + 1$, just like the actors of the ecosystem who can also evolve over time. This evolution corresponds not only to the evolution of people in connection with the entrepreneurial project, but also to the appearance and disappearance of people as the entrepreneurial project evolves. Ultimately, different evolutions emerge within the entrepreneurial project. This design model can be generalized at the organizational level, considering an individual in an existing organization that designs artifacts to work with actors of his ecosystem. The 3M model becomes **Me**, **My** artifacts and **My** ecosystem. Hence, the design of artifacts seems to be necessary to understand human organizations; it is the keystone because it particularly promotes the relationship between an individual and his ecosystem actors. There is no interpersonal relationship without artifacts. Thus, Simon's concept of design leads us to move beyond the design of goods and services to consider design as a mechanism nurturing interaction within an organization. To a certain extent, design is an element of communication between individuals within organizations. Without design, there is no artifact and without artifacts, there is no interaction between individuals because, as Simon (1996; 113) points out: "the artificial world is centered precisely on this interface between the inner and outer environments. [...] The proper study of those who are concerned with the artificial is the way in which that adaptation of means to environments is brought about and central to that is the process of design itself".

The focus on design to address the complexity of organizations contributes to the emergence of new research themes. Through the following point, without being exhaustive, I propose to tackle some research results that seem important for the understanding of organizations. The first theme deals with Simon's link between the inner and outer environments. The first aspect of this link is mainly to go beyond the inner/outer dichotomy, which has shaped the studies in the field of organizations for a very long time. Both are in fact closely related. It is not possible, unless we revert to an illusionary linear and therefore dichotomous causality, to consider which between the two comes first. It is particularly important to consider the inner/outer interaction and to overcome the structuralist approach which considers the inner and outer aspects of the organization as two separate entities. In our case, the outer can correspond to people within the organization and outside of it. There are many cases where, for example, an individual collaborates with people from the same department or company, and from outside the company as a supplier, a funder, etc. The inner and the outer must be understood in relation to a person's experience. In this perspective, the design of artifacts will help examine these interactions between the individual (inner) and the actors of his ecosystem (outer). Thus, more than nature or the structure of elements, the Sciences of the Artificial remind us of the need to study interactions. In fact, as we have been able to show it (Schmitt, 2012), the creation of value in the organization

results from these interactions between the inner and the outer, and thus from the design of these artifacts which will establish the link between the inner and the outer. The second theme refers to the concept of situation. The interaction between the three elements of the 3M model forms what is called a situation (Girin, 2011; Schmitt, 2009). Using the situation as a starting point makes it possible to consider the situation as the smallest unit of analysis to understand the organization. Resorting to the concept of situation is not neutral. It particularly commits us to consider the situated experiences of individuals rather than to look for a reproducible norm. Research is thus evolving. It is shifting from an explanatory approach to a comprehensive approach that focuses on ordinary practices of design in the here and now; from a causalist approach to a systemic approach where any person within a situation can understand, comment and do self-analysis. The researcher becomes the one who allows it and no longer the one who dots the i's. The third and last theme is the consideration of the gaseous state in the design process within an organization. The main studies in the field of organization are conducted by viewing the organization as an existing data source, what may be called the crystallization state. However, within the organization, as it can be also seen in the field of entrepreneurship (Schmitt, 2018), both the gaseous state and the crystallization state of a situation can be examined.

The gaseous state, for its part, corresponds to the initial conditions² of a situation within an organization as suggested by Prigogine and Stengers (1979).

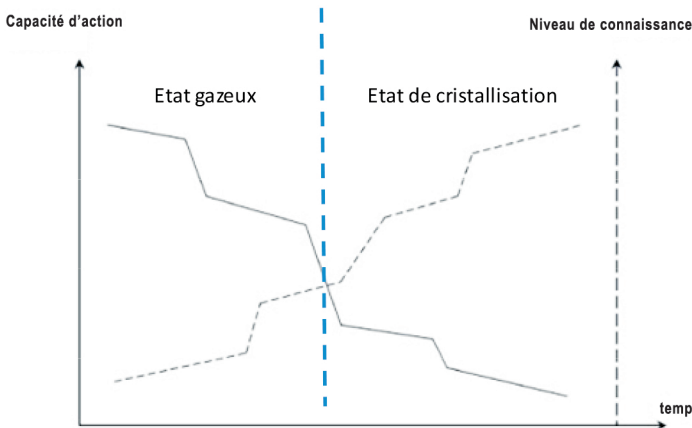


Figure 2. Situations: from the gaseous state to the crystallization state

Through the gaseous state, it is important to pay particular attention to the design of situations encountered within an organization. Studies on the organization have rather focused on the crystallization state encountered by the organization. In many cases, studies seek to identify recurrence rather than focus on the individualization of situations. These situations depend not only on the actors' capacities for action but also on the level of knowledge of such

2. Initial conditions are the elements that help a situation develop. Depending on these initial conditions, the implicit and explicit operating rules will differ from one situation to another.

capacities. Thus, in the gaseous state, the capacity of action is often strong and knowledge with respect to the situation is weak, and vice versa in the crystallization state. Concerning the crystallization state, it corresponds to the routines that are implemented within an organization. It is therefore more difficult to address routines than situations that are being established. It becomes clear hence that the strength of a situation takes place mainly in this gaseous state. Resorting to the differentiation between the gaseous state and the crystallization state helps value the importance of dynamics to approach a situation, because the latter is never the same over time. I can use here the image of water running under a bridge, which gives the impression that it is always the same water that flows, even though it is not the case.

3. IMPLICATIONS FOR APPROACHING DESIGN WITHIN THE ORGANIZATION

In this third and final point, the focus is on the implications of using design to address the organization. Three points should be considered: the position of the researcher to address design, support within the organization in terms of design, and design training. Regarding the first point, it is important to question the position of the researcher in relation to his field of study. If we consider that one of the contributions of the Sciences of the Artificial, especially through the concept of design, is to examine the situated experience of individuals and no longer to identify the recurrence of a situation, the objective of research thus becomes to grasp this singularity. The researcher's position is therefore modified. He is no longer the distanced observer, a position in which research has confined him for several decades, but the witness of the experiences that the actors of the design situation went through. Individuals have no identical experiences, but they assume they are identical at all levels: actors within the organization, researcher in his quest for knowledge, politician in approaching a problem, etc., from a practical perspective, as recalled by the Palo Alto School and, more particularly, Watzlawick *et al.* (Watzlawick, Weakland and Fisch, 1974). From a constructivist point of view, only the situated experience of individuals is accessible. This is why we shift from the position of excluded third party to that of the included third party. In this perspective, it is therefore misleading to separate the researcher from the situation he wants to address. From this point of view, I support the position of Foerster (2000; 73) according to whom "if the fundamental principle of scientific discourse requires separation between observer and observed, it is our duty to infringe it". Thus, the nature of knowledge produced evolves as well. In fact, it is no longer a question of becoming aware of what we know thanks to the research conducted on the generic "What?" question, but rather of how we know it, to use von Foerster's (2000) words. This shift from the "What?" to the "How?" is not irrelevant, and the implications of this change in perspective are significant. Research moves from an explanation of reality by the researcher toward an understanding of mechanisms to address reality (Glaserfeld, 1984). Methodologically speaking, the consequences are also significant. Addressing design requires to focus on the action also when it is carried out. In general, however, the focus

of research conducted on organizations is limited to ex-post action in a context of rationalization afterwards. The perspectives of action-research, research-intervention or even engineering research find their legitimacy to approach the situated experience of design. Not only do these research methods contribute to understand the design mechanism within the organization, but also to promote awareness in the action of people related to the situation. In the Sciences of the Artificial, these research methods provide the general framework for research on organizations, as David points out (2000).

In terms of support within an organization, design activities also lead to a change in perspective. If, in general, support within an organization takes the form of repair, support to design takes the form of facilitation. The metaphor of Caillé's Alpha and Beta planets (1991) is a good illustration of this change in position.

	Position of the repairer	Position of the facilitator
Type of state	Crytallization state	Gaseous state
Objective	Optimization	The construction of meaning
Role of the supporter	Facilitate optimization	Facilitating the construction of meaning from a final situation in relation to an initial situation
Type of approach	Problem solving	Problematization and problem solving
Approach	Expert	Promoting questioning
Recommended steps	Four steps: identification; analysis; solution; implementation.	Two steps: <ul style="list-style-type: none"> ● lead the entrepreneur to respond to a problem in the ecosystem; ● identify what the entrepreneur is doing with respect to his ecosystem.
Link between observation and action	Dominance of observation over action	Strong relationship between observation and action
Need of information	To establish a business plan to be completed	In relation to the need to establish meaning
Success	Feasibility	Coherence
Adopted approach	Deductive	Inductive
Point of intervention	Linear causality	Intersubjectivity
Position	Normative	Maieutic
Relationship to the entrepreneur	Advice	Suggestion
Relationship to reality	Truth	Representation
Participant regarded as	Excluded third parties	Included third parties
Structuring principle	Principle of non-contradiction	Principle of contradiction

Table 1. Different positions to approach the organization: from the repairer to the facilitator (according to Schmitt, 2018)

It is no longer a question of advising as the repairer who holds the solution would do, thanks to his expertise and in relation to the situation encountered, but rather to propose, from a maieutic perspective in order to bring out solutions by individuals themselves. Hence, helping to design requires various methods. In the field of entrepreneurship, I had the opportunity to present some of these methods used to help design an entrepreneurial project (Schmitt, 2018). The purpose is to work on the entrepreneur's experience related to his ecosystem with regard to his representations of a situation to make them evolve. The success of these methods stems, first of all, from the appropriation by the various people of a representation of the situation which is consistent with everyone.

Promoting design to understand the complexity of the organization also requires substantive work through the training offered. The reader will have understood that it is not a question of being interested specifically in training on design, creativity or even change. No, it is rather a question of how to approach training, to understand the mechanisms of the organization and, more particularly, the design of artifacts and not simply a training that provides explanations of the reality. In his book *The Sciences of the Artificial*, Simon emphasizes the need to develop training courses on design while regretting the twist that dominated the ones which already existed in his time. For him, "design, so construed, is the core of all professional training; it is the main mark that distinguishes the professions from the sciences. Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are all centrally concerned with the process of design" (1996, 111). After the Second World War, the expertise has taken over the Sciences of the Artificial. This is very clearly seen in management schools, whether private or public, because they follow the same model: reproduction and optimization of the realization model. Not only are they structured by major fields, human resources, accounting, marketing, finance, etc., creating a partition between these various fields, but they are also based on primarily descriptive approaches, little related to experience. The methods taught there are above all methods to describe rather than methods to help design. Today, especially in the Anglo-Saxon world, the interest in global studies is growing, as I have been able to show it with Nicole Saliba-Chalhoub (Saliba-Chalhoub and Schmitt, 2018); such studies are an opportunity to leave behind the logic of expertise and develop global approaches based on design. A whole set of research avenues will become available to us for the coming years.

CONCLUSION

The purpose of this article is to shed light on the concept of design introduced by Simon in Chapter 5 of his book *The Sciences of the Artificial*. For this end, the first part of the article depicted how the understanding of the concept of design has developed through time to reach the meaning proposed by Simon on which the following part of the article is based. The various meanings of the concept of design were rooted in a religious heritage, notably Catholic and Protestant. Simon's work on design helped us understand that we are dealing with two

faces of the same coin, and consequently propose a different and original conceptual framework. The objective is to focus on the design of artifacts by individuals for the functioning of the organization. In this perspective, the second part presents the contributions and perspectives of design to understand the organization. I was able to show that design referred to the articulation of the triptych Me, My artifact and My ecosystem, and that this triptych should be approached in parallel with a situation to be studied in what is called the gaseous state of the organization. Finally, in the third and last part, I discussed the implications of design on three levels: research, support and training. In all three cases, the contribution of Simon's work to design leads us to change our perception and our way of doing things. In general, individuals in connection with the organization should be given the appropriate means to design artifacts for their actions and, consequently, should play a major role in the functioning of organizations by raising awareness about their experience. The path is thus extended, even more consistently, to make design a central element in the mind of the various actors related to the organization.

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