

RESEARCH AS A PRINCIPLE OF CONCEPTUALIZATION FOR DESIGN

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Introduction

Scientific research is an extremely important issue not only for general and particular knowledge of sciences and disciplines, but also it supports the reflection of the investigated issue with the purpose of expanding the known. At the same time, deliberation about what it has been investigated represents a fertile field of development possibilities of understanding the current reality; theoretical and methodological positions from which research problems are addressed, ensure that the resulting arguments observe a systemic, useful, truthful and suitable course of which the content started out.

This knowledge is focused on general or individual problems that require to be updating or prospecting, either to extend or deepen the epistemic frame of disciplines and sciences –basic research– or to solve specific problems of precise necessity –applied research–, even a branch of this second is known as technological development in Mexico¹. In disciplines such as design, research becomes essential to structure appropriately society processes on the current existing hyper technique and mediated civilization.

However, design holds quite interesting both theoretical and methodological characteristics. Its relationship with arts, sciences and

¹ It is important to note that national policies in Mexico on science and technology observe this distinction, and even greater benefits are granted in financial support to technological developments, under the technocratic perspective so-called "first world" and bypassing the humanistic and cultural research. For example, design has not been included in the National Council of Science and Technology in Mexico (CONACYT by its Spanish acronym), which catalog of sciences or disciplines considers industrial design as part of engineering, disappearing entirely the graphic design and visual communication.

technology is always a complex subject to grasp. According to diverse design academic groups, pragmatic features in design's own nature have become a relatively new discipline whose practitioners were not necessarily trained as designers, and they have gotten ideas from different practices and disciplines, so theory has become equally broad and complex. Indeed, it results difficult to define design in a final or complete way, not only as objects, but as process as well.

Similarly as practice, research design has become wide and plenty of edges; however, since the beginning of this century different global organizations have been given the task of proposing research communities for design with numerous slopes, such as Margolin (2003, 12) states²:

The range of practices that can be incorporated into a design research community is quite broad: it can be topics about architectural, engineering, computer science, artificial intelligence, product design, ergonomics, graphic design, interaction design, interior design, design management and others.

According to the above, it results easy to understand the complexity of design in its practice, theorizing and investigation. Nevertheless, it is important to distinguish and differentiate between two types of research design: research conducted in academic spaces by researchers, graduate students or industries with product development studies, and the one used for

²According to Margolin, some of the organizations are the European Academy of Design, the Japanese Society for the Science of Design, the Korean Society of Design Science, among many others, besides various interdisciplinary events.

the conceptualization of design objects, a field quite eluded regarding the academic formalization.

The first is understood as formal investigation, the one which drafts research protocols that are generated and developed often with institutional or corporate financial support. The second one is only seen as a necessary part in the brief conception of design projects. It is important to highlight the value of the formal investigation that researchers and graduate students develop in order to expand theoretical and methodological design horizon by generating models of development of design projects, substantiating the necessary interdisciplinary, applying deep and comprehensive procedures, codes or signs for specific projects and others.

However, the importance of research to conceptualize design objects is essential, as it is precisely –in a methodological way– at this stage that all design projects must proceed. The questioned and contextualized substance that develops the designer as a student or professional comes originally from this research. Also, the intellectual process of design that sets it apart from the technical and cartoonists is research, to abridge: design poiesis. So, the concept is known as the mental construction of a particular topic; in other words, it is the knowledge of something from the life experience or documentation building mentally expressed.

Therefore, for designers the conceptualization is the beginning of creation of the object, it means that this is the obligatory reference to be

observed, the meaning or interpretation of reality on which something will be designed such an image or object, to sum up, it is the argument or raw material for design. As a process, concept is aimed at intellectual activity when it is expressed in a material substrate, leading to sketches that give rise to design object.

It is important to note that the concept is not only used in design processes, but also in art and science. For instance, artists use it to give an interpretation of a certain reality from their own baggage or point of view; then, particular signs that the artist creates represent this interpretation. Meanwhile, science uses the concept as an abstraction or intellectual synthesis of a series of reports that have been studied using research methods.

Then, the concept is the consciousness of something that has been observed, studied or lived. In this sense, the present work aims at developing the subject of research for the genesis or conceptualization of design objects, the necessary research and its intellectual process that must be considered with the importance it deserves, it means the essence of design.

Research and conceptualization to design

Research for design projects is one of the most important bases of the design process, it is necessary to consider it as the core that originates the conceptualization for the generation of the design object or concept. In

semiotic terms, it can be defined as a mental construct (meaning), obtained by a (significant) perception of an experience (referent)³.

Once the designer lives and recognizes through systemic perception or experience –it means that designer must hold diverse research skills–, therefore it is possible to create a concept from reflection. The deeper or wider this experience is, vaster the concept will be in richness and depth. In other words, a greater amount of conceptualization referents will be developed in terms of objects poiesis and user's identity references, when the designer has a larger amount of knowledge of life, or particular lives' contexts.

Importantly as it was stated earlier, the investigation involves two aspects. On the one hand, formal research carried out in all areas of knowledge with the purpose of expanding, updating or particularizing the sciences and disciplines. On the other hand, the investigation referred to in this work foster to generate conceptualization for design. Particularly this second aspect is quite important under which not only intense knowledge of consumers in their own context let us consider a deeper conceptualization, but also it opens up the possibility of determining the life cycle of the object⁴,

³The relationship between design processes of conceptualization with semiotic is evident.

⁴In terms of sustainability, i.e., –known as *from cradle to cradle*– from procurement of raw inputs (materials, processes, time), passing by the prosecution, manufacturing, distribution, consumption, to reuse or recycling the designed object, this procedure means strategy.

by building design discourse from its signs, codes and materials, that is, from the strategic language.

Research for design

The system of procedures for data analysis or qualities, which are theoretical or empirical order, is called research. It is a cyclical process, which means that the results obtained are considered as a new problem or research topic, giving rise a new investigation. In design, research origins the construction of discourse in order to place it on its contextual historicity and its results, i.e., as axioms of the means and its historical moment (spatial and temporal context). So, the objetual exercise in conceptual criteria that submit user or user group previously determined is the design origin, based on its correlated characterization in its intertext, a function of poiesis.

Design genesis –research and concept– observes an important implication for consumers⁵ as a form of social relationship that affects indirectly but significantly ordinary life. Objects or symbols, which human being daily coexists, transform human lives or conform their life worlds. The system of objects or the theory of objects that have been developed by authors like Baudrillard (1995) Moles (1975), or Durkheim (1995) on the symbolic, suggests the importance of social forms and even religious in which

⁵ The term consumer makes general reference to other forms of call, depending on the area of knowledge or the theoretical approach, can also be target, target market, recipient, among others.

human being moves as a social and symbolic animal. Several authors⁶ have noted the need to distinguish the involvement of design objects in the life experience of people, whose contents that are based on deep forms of experience, encourage the development of design projects not only useful and adequate, but also those that promote the improvement of life conditions as well.

Within this creative development of object process, knowledge of the designer, the object and the consumer or user, must be systematized supporting the common contextual code, in an epistemological cohesion to form the object holistically, namely dialectic, which means design this object becomes the subject of the investigation. The following diagram is used to visualize this idea:

Research / analysis
(knowledge of subject / of context)

Concept / synthesis (mental abstraction)	Design objet / hypothesis (abduction of graphic discourse)
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Scheme 1. Design process from the perspective of research (subject and context) as an analytical regulatory principle which gives rise to the concept as a synthesis of reality and, in turn, formal origin of the design object hypothesis. Source: Miguel Angel Rubio Toledo, 2014.

⁶ See the texts quoted about this topic at the end of this document: Victor Margolin, Gabriel Simon, Luz del Carmen Vilchis, Umberto Eco, among others.

The research process closes the circle of theory construction –or theoretical approximation of reality–, in which progresses, relations between prescript hypotheses –design objects– may have been isolated, are discovered. Hypotheses are tested systematically and regularities are formed, which are introduced to the same procedure to contain them. When connected, coherent order and hierarchy of these concatenated regularities are set; it is possible to talk about a theory or theoretical approach. For design, the latter must be performed by universal reinforcements to determine their pragmatic validity.

The theoretical construct is created, due to the propositions established by praxis from its conceptual configuration and end use, not as a single finished object but as a methodological process of interpretation (Irigoyen 1998, 74). The method of science warrants the development of theoretical and experimental research processes through the open imagination, but always guided by methods and technics to avoid unstructured thinking speech.

So, it is the necessary research for design, the one that comes before conceptualization and subsequent materialization. In design, this procedure follows the path of systematic doubt, using the analysis (research), synthesis, deduction and induction, which means it contains the logical operations in general and works based on concepts (synthesis), hypotheses (design

objects), definitions, variables and indicators, i.e., it is the center of the theoretical system of science, similar to design.

That is, the formal elements needed in an object or system design objects hold –or should hold– a logical reason to be in that exact place, even if the means of expression of the object observes an obvious rhetoric message, but it always must be founded on a particular intention, giving the possibility of a process theorizing. However, the method is not a guarantee or recipe for the veracity of reality, it is a set of perfectible procedures only to solve the approach of experiments and observations for the interpretation of the results. According to Vilchis (2002, 32):

When the creation process is reduced to formulas, it can be argued the need for research, for the designer this provides the ability to give different interpretations depending on the objective and subjective elements that might be involved in it.

In addition, Vilchis quoted Christopher Jones (2002, 46-51) suggests:

Every design problem begins with an effort to achieve a fit between the form in question and its context. The form is the solution to the problem; the context defines the problem (...) this means that it is essential to take into account the contextual characteristics that affect the design of a given object.

It is important to note that the analysis of the link among various components of the theories, the systematization of knowledge gained from research and its logical structure, so the success of the task of establishing

the methodology of science or design is reached. When the purpose of research has been defined, a plan to achieve is generated, and it is where the method is invoked, leading to the systematization of the investigation.

However, design can be started from formal elements as part of this process and the principles of functionality (timing and purpose) and space (objetual regulation, extent, biographical condition) subordinated to its conceptual discourse of which they are part. The design language, moreover, determines the symbolic aspects of images and metaphors expressed by meanings, signifiers and referents, an evident approach to semiotics, as mentioned. Thus, the discourse of the object / image involves the reading of the components as a text from its conventional signs, i.e., it is refer to ethnographic hermeneutics according to Geertz (2001) when he signifies the culture, purposes of appropriation of a particular reality, and for purposes of transforming this reality with a specific intention from that created image.

Further, proper research allows the reconception of a part of the universe of the subject, to construct a particular form of systemic knowledge from theoretical and observed on practical references. As an axiom of the referred above, it is clear that the signs are constructed by who interprets them, and where time and space are two dimensions of language in which reality is constructed in two terms, first individuality based on the subject antecedent, and the other as an integrant of the mass phenomenon of a singled person turning into the aforementioned process of universal dialectic.

From phenomenology, according to Simon (2009), Husserl emphasizes the need to learn to understand the experience of knowledge or through intuition, the current reality in the phenomena. That is, the substance is given from the eidetic essence; this is captured in the universal aspects of a concrete reality. According to the author: "in practical application, this technique would consist of a description of the genesis of concepts" (Simon 2009, 63-64).

Importantly, there are many types of possible research to generate design projects such as market research, competitive analysis, quantitative and qualitative research, visual exploration, ethnography, among others. The emphasized perspective here is the latter with a hermeneutic cultural bias or symbolic anthropology.

That is, ethnomethodology for thick description and deep explanation, in order to find, from the depths, sacred or religious references –nature mythical acts that involves all social dynamics⁷ – the elements to conceptualize an intense manner. Moreover, the signifiers of designed objects hold identity bonds with consumers, allowing to generate more robust and meaningful speeches, i.e. effective.

⁷ According to Emile Durkheim, religion is or theatrical representation of reality through ritual and mythical manifestations of an observable reality and everyday life. The sacred or religious is a conventional truth reproduced socially, but based on the logic of divine but not necessarily pagan belief, or in terms of Katia Mandoki, in Prosaic (2006).

Crucially, the methodological substance is based on cultural anthropology, particularly in the position of Geertz. This methodological approach, Geertz (2001, 68) argues "culture should not be an experimental science in search of laws but an interpretive science in search of meanings". This suggests what is sought is the explanation through interpreting social expressions that are apparently superficial, but they carry within itself the seeds of the explanation of that culture.

Symbolic representations with its nuances of expression such as modes of oral language, dressed and adorned bodies, forms of dance or music, facial expressions with colorful decorations among many others, allow researcher to know what is observed in social behavior to those belonging to a certain culture. This author indicates that culture is not an entity in which social events, modes of behavior, institutions and social processes are randomly caused, but this is a context in which all these phenomena can be described intelligibly or in other words thickly.

Thus, designer as researcher must make wide and deep interpretations by doing more abstract analysis, based on the wealth of information from seemingly small signs. Moreover, Geertz (2001, 76) argues that "the study of cultures should be performed by interpreting social expressions", i.e., an ethnology through elaborate explanations or "thick description". This implies to unravel the multiplicity of structures of meaning

(meaning and value) through language that gives a holistic explanation (thinking, content, intent) of the social phenomenon.

It is also important to emphasize that there should be a moderate relativism, an acceptance of cultural diversity, that is, from the perspective of integration; what is more, the meaning is socially constructed through language, which requires imaginative access and admission of a foreign approach as a cultural collage, the reason should be seen as moral act, not as a social act⁸. This anthropological perspective is extremely useful for the study of potential consumers as these tend to be formed by rhetorical-aesthetic agents that can be analyzed by means of the given signs, not only from the visual level but at the level of elaborate explanations from the meanings and values that give their own thoughts, contents and intentions.

That is, the social expressions are the ways in which people relate to others, whose verbal and nonverbal language is ethnologically analyzed to determine the form and content of their thoughts, intentions relationship, and the results, which is essential for the conceptualization of design. Thus, once the extensive research is done, the interpretation of the information should result in a broad sense of not necessarily rational meanings in terms of pure reason, but moral or symbolic reason, i.e., acceptance and understanding of

⁸ This "moral" perspective must incorporate the concept of society and democracy so it can be used holistically. The logic of social sciences, parts not only by rational logic but also of symbolic logic.

the reality studied, explaining their actions in a comprehensive manner or in other words wide and deep.

Design conceptualization

The main element which the form of cognitive perception occurs is consciousness, which in turn, relates to the human to his environment in order to be captured, but not without first determine the subject based on his own baggage. Thus philosophy, from which the theoretical foundations of thought for the explanation of reality emerge, Hessen defines it as: "an effort of human thought to achieve a conception of the universe through self-reflection of his theoretical valuation functions and practices" (1982, 14).

Particularly philosophy of science, which studies the ways of knowledge based on thought systems linked to their own causal perceptions. The philosophy of science can raise issues and test appropriate responses in all fields of expertise based on methods, techniques, logical structures, overall results, among other components. Meanwhile, design researcher must observe a number of inherent features in theory and practice linked directly with similar theoretical and methodological processes to those of philosophy of science, particularly the theory of knowledge. It means, that the construction of concept as knowledge comes from those ideas previously researched by a deep experience –thick description– and its consequent thoughts –wide and deep explanation–.

As such, distinguishing the object of design as a reality system –or part of human’s world of life– then, knowledge –or design as a system of object meanings– is observed as a phenomenological process in which the subject grasps an object and occur internally in the subject a series of thoughts or expressions over such object adjusting that reality, defining it as a general characterization of rational forms, such as the concept cognition, judgment and reasoning.

The act of knowledge assimilation involves a relationship between object and subject where the latter expands his cognitive panorama and gets from the object the characteristics, values, special features, among others, in other words the conceptualization of reality. In this sense, to recreate reality, the designer takes the plastic discourse of technical and creative expression –referents– to form objects that function as signifiers in the process of visual communication.

That is, the environment that will be part the object designed in its own historicity as primary consumption level, and the planning on when it will be discarded or forgotten –*sustainabilized* in the mentioned terms–. This relationship is directly linked with the mental representation or concept whose language enables the expression of the object in formal terms (sketching for design), it depends on the semanticized subject of a series of psychological, social, emotional, contextual factors and so on.

Irigoyen (2008, 198) in terms of foreshadowing: "It's the time of encounter between two worlds, of things belonging to two entirely different orders: the material context and thinking". As concepts are formed of references obtained from lived events, as declared by Paul Ricoeur (2001), just to mention a name, combinations of signs are produced, which help to mean the reference object, also coupled with this representation of it, and a denotation is also given. That is to say, it is assigned a meaning that is representative of the person and also gives a connotation which gives a speech about the meaning already referred to that object or experience that has had the subject.

Ricoeur (2001, 289) quotes Benveniste who says that words or references obtain a semantic value, i.e., they acquire a meaning which belongs directly at the rate of practice, so it can be identified and stored by subjects who have contact with this object: "Then the word has a referent, which is the particular object that corresponds to the word in the concrete circumstances or use". Dondis (2000, 87) asks how much we see:

This simple question covers a whole spectrum of processes, activities, functions and attitudes. The list is long: perceive, understand, complete, observe, discover, recognize, visualize, browse, read, watch. The connotations are multilateral: from identifying simple objects to the use of symbols and language to conceptualize from inductive to deductive thinking.

Each and every one of the ways in which a concept is generated in the life of a subject are fully related to what he lives, either directly or indirectly, since each of these experiences relates to another, i.e., as the essence of metaphor, understanding and experience something in relation to another. Here, Lakoff (2009) states that the concept is metaphorically constructed, the activity is metaphorically constructed and therefore, the language is metaphorically constructed as well, the main premise to designers. Also, Sánchez Valencia (2003, 10) argues that:

Designing is an etymological approach from its more frequent influences (affinity French and English by chance). It is observed that the original words in the expression "designate" demonstrate the concept of: setting a target for someone or something, name, indicate, give meaning, become in sign, ethically positioning from and to the social. Consistent with this, "design" is to designate in accordance with the creation of significance and significant, and objects designer would be a designator to establish the meaning, offering original significance from and towards an identified contextual situation (global or individual); through a process of conceptualization, designer constructs and produces a set of meanings, generating suitable projectable paradigms organized into a textual speech (towards, environment, context) and synthetic, and they are constituted in an expressed and configured message using a three-dimensional support material nature. Designing objects is to configure a shape as a carrier of messages and meanings that express a structure of organized physical principles based on a repertoire of acts in an object, specifying a cultural proposal, designating a user (role), self designating as volumetric morphology and claim to be a recognition element and expression of socio-cultural identity in a context.

Conclusions

Designing a formal speech, an idea or structure of ideas that give origin, demands a concept. This activity is seen as a process that articulates a coherent concept; its formal synthesis, the expression or conceptual projection in an object shape is never the same under question from various backgrounds. To tell Visocky O'Grady (2006, 18):

As designers, new objects for different audiences are continually being developed, so that they must strive to understand the detailed needs of customers. Human behavior is not easily quantified, so that strategies for qualitative research, which rise in the social sciences, are often a better choice for creative activities.

According to the arguments stated earlier, it seems clear that research is the basis of conceptualization in various areas of knowledge, but for designer is fundamental to the conceptual generation and, by extension, designing objects. At the same time, thinking or reflecting on what has been researched, an intellectual activity of designer, presents formal expressions that will be moved to a material substrate –paper, computer, photo paper, among others– by way to sketch, so it does not require to perform a lot of these to project, but only those obtained through research and conceptualization can optimize the physical work of draw by synthesizing the shape. It is important to remember that this research made by the designer – also called preliminarily– is made only for the purpose of conceiving the

conceptualization and not a substitute in any way the research that is done formally by researchers or graduate and undergraduate students.

As it can be seen, the project proposal begins with the investigation of a topic in relation to the context and the potential consumer. Later this information is used to represent a mental idea –colors, lines, dots, shapes, as language–, and then it is written or represent it as a sketch, in order to create the final concept of the design object. Once this is done, the graphical representation of the concept is initiated by the elements of visual alphabet, usually in specialized computer software. Then, in a sustainable way, production is manufactured and distribution programmed –implantation–. Finally, an evaluation of the work is perform from its substance, emphasizing the importance of systematic and methodological research to its conceptualization in order to represent the argumentative way, besides observing the topic of Social Responsibility.

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