

Design and Social Innovation: A Systemic Approach

Marco Ogê Muniz, and Luiz Fernando Gonçalves De Figueiredo

Abstract—Design, as an area of knowledge, is subject to changes that affect it through different approaches, both theoretical and practical; it includes matters related with responsibility, environment, social worries, and things alike. Commensurately, such contemporary aspects open room for social initiatives. This scenario begins to be looked at, especially in creative communities. Such proposal for a systemic approach of design is seen as a way to involve the stakeholders in the processes of investigation and of social innovation, which can decisively contribute for the development of traditional local communities. As a theoretical basis for the research, this paper outlines some especial features of design and social innovation, in their particular and in their complementary aspects, as well as in the way they relate with each other.

Keywords—Responsible design, social innovation, creative community, systemic approach, network.

I. INTRODUCTION

THE societies, in which design appeared, became available and well-developed, faced diverse transformations. In the old days, one would project with the belief that the world natural resources had no limits, context in which designers used to contribute with products that used to feed the system. Nowadays, however, it is actually possible to think about new well-being forms which are not only linked to the product's physical question but to its whole environment. This involves the process of production, of communication and so forth. Designing, in these conditions, while an active element within this changing process, must also be inserted into a phase of modification [1].

One can observe two situations which demand changing. On the one hand there is the cause and effect reaction between the global economy production methods and its effects upon the world natural resources, and, on the other hand, the long-term damages these effects might cause to economy. Having said that, it is possible to have a panorama of how intense and depth future crises might be and of the urgency to manage

them [2]. From this evidence, one can infer that we are passing through a directional phase in which company leaders, consumers, community members, academics, students and public are putting effort into the way to sustainability [3].

Furthermore, the discussion about designing is also profoundly changing and directing towards a more holistic and systemic view, in which the process, the competence and the people are elements whose actions must be deeply considered. Therefore, the regional territories might benefit from the Design's strategic proximity, which is able to link people and places with a different developmental view, where local resources and the people's creativity are determined to the challenging task of dealing with human relationships [4].

Taking into consideration the fact that we live in a society in which we are all invited to be designers, that is, in a society in which one has to be the designer of his own life, interfering with a greater system which involves collectivism [5], designers are able to practice the task of finding ideas, solutions, initiatives and so forth among people, in a way that they can be configured as social innovations [6]. In this matter, the Design's systemic approach can contribute to the developing of this kind of innovation.

There are two functions which can be attributed to research in the Design area: raising our expertise in products and clarifying the ones that could actually be produced, and improving our comprehension of how products work as part of the social world. The first function relates to the practice of designing, while the second one connects the comprehension of Design to the understanding of the great project, in which there is the participation of human and social sciences, of the comprehension of the dynamics and of the society's goals [7]. The challenges and the opportunities of research in the Design field when investigating contemporary phenomena and when fostering sociocultural innovations consist in the consideration of the emergent phenomena in all their complexity and in the comprehension of their relations with social dynamics and contemporary lifestyles. Consequently, by aiming at the construction and diffusion of knowledge, the research into Design might facilitate the diffusion of sociocultural and technological innovations [8], as in this theoretical investigation.

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II. THE DESIGN APPROACH

A. Industrial Design

The great variety of products¹ available for consumption, some of them offered with similar qualities, turns Design into a present element in the everyday life of people in the contemporary world. Nowadays, Design can be considered as an ordinary element. People make use of its attributions without even realizing that their set is the outcome of the process of a project.

Inserted within this context, one of the designers' attributions turns to responsibility. In this regard, the Design considered with responsibility is aimed at contributing to social well-being:

Design is one of the basic characteristics of what being human is and it is a determining element as to people's life quality. It affects everybody in every single detail of all aspects of everything people do throughout a day [9].

In actual fact the products, as a result from the design project, facilitate people's life. They satisfy the needs and wishes of their users, taking into consideration the fact that everyone needs clothing, food, means of transportation, among other daily activities and that the artifacts projected by designers contribute to the performing of such daily tasks.

Therefore, Design is opened into a wide range of definitions and descriptions in the post-modernism, due to the necessity of the characteristic pluralism at that time. Burdek [10] suggested a list compiling the problems that designers will always have to pay close attention to and solve. This happened at the turn of the XX century to the XXI century and substituted a new definition of the term design. Thus, for the referred author, designers will always aim at:

- Visualizing technological progress;
- Prioritizing the use and the easy handling of products (either hardware or software);
- Making the production, consumption and refilling;
- Promoting services and communication, and also, when necessary, energetically perform the task of avoiding meaningless products.

These assumptions are not limited to industrial Design only; they include all design areas, such as graphic Design, digital Design among others. Taking the above into consideration, being aware of technological evolutions encompasses the awareness of new materials, new production processes, new management tools, among other topics. This issue demonstrates how dynamic Design is and its constant updating activity. As to the use and handling of products,

designers must always project for the final user. This means prioritizing the aspects which might facilitate the interaction between the product and the final user, in other words, ergonomics, semiotics, and aesthetics, amongst others.

In order to make the context of the process of production, consumption and refilling more transparent, designers must establish the product's life cycle parameters. This can be unleashed through the Life-Cycle Assessment (LCA)² which includes all phases of the process of design (pre-production, production, distribution, use and discard).

While promoting service and communication designers contribute to a new discourse which focuses on dissociating the activity from the dependency of the creation of a physical product. In this attribution, graphic designers will be able to contribute more effectively, as it is the industrial designer the one with the task of projecting large-scale physical products. Even though, this production should only occur if it is extremely indispensable. In relation to this issue, one can verify highly effectiveness nowadays due to the flowing use of the World Wide Web. Along with the internet consolidation, came new possibilities of products (virtual products³), which do not require a material reproduction.

B. Graphic Design

The definition of Design can be altered according to the context to which it is inserted. The environment is under the influences of characteristics linked to the organizational and social whole and to the material and institutional structures. Under these circumstances, a great variety of acting possibilities is attributed to the activity, such as, for instance, the fashion Design, the jewelry Design, to name but a few. In these action fields, designers might have several functions and roles. Besides, it is fully expected that designers, while performing these tasks, do it by means of interlocution, interaction and partnership with different stakeholders [12].

In the publication of the theorist Frascara, "*El diseno de comunicacion*"⁴, the author elaborates a definition of the area which is suggested in the book:

Projecting Design is coordinating a wide range list of technical and human factors; it is translating the invisible into visible, and communicating. Projecting Design implies assessing, raising awareness, programming knowledge and using the experience as guidance on taking decisions. In this book, the word "design" will be used to refer to the process of conceiving, programming, projecting, coordinating, selecting and organizing a set of facts and elements – usually textual and visual – aiming at the realization of products intended at producing visual communications [13].

¹ Despite the fact that in this item we are referring to the theme of industrial design, whenever the word "product" is mentioned, it refers to the solutions which result from the process of designing, which are expressed through industrial products, graphic products, virtual products, services, etc., including design in its various manifestations (industrial design, graphic design, digital design, service design, etc.). It is understood, by this means that industrial design stands as a wide-ranging denomination, which includes, mainly, product design and graphic design, and some other design attributions as well.

² The term Life-Cycle Assessment (LCA), according to Fiskel [11] is "A Method to evaluate the environmental burdens associated with a set of business processes, assess the impacts on the environment, and evaluate opportunities for improvement".

³ Virtual product, in this paper, has the meaning of a product whose use is finished through the World Wide Web.

⁴ "*El diseño de comunicación*" (Buenos Aires: infinito, 2006) it is the corrected and unabridged version of "*Diseño Gráfico y Comunicación*" (Buenos Aires: infinito, 2005) both written by Frascara.

The author cited above states that the term “graphic design”⁵ deeply emphasizes the graphic, the physical, apart from omitting other essential aspects of this profession. In his point of view the main objective of Design is not to create shapes, but to create effective communication which reaches the target results. That is why; the Argentinean theorist suggests the denomination “visual communication design”⁶ to describe Design. Within this definition there are three elements required to distinguish an activity field: a method (design)⁷, an objective (communication) and an environment (the vision). Therefore, this subject becomes much more precise and, at the same time, subject to new dismembering [14].

In Hollis’s [15] view, the three main graphic design functions are: identifying, which means stating what certain things are; informing and instructing, which means identifying the relation of one thing to the other; and presenting and promoting, which means making the message unique. In order to perform all these tasks designers resort to the principles of the determination of shape⁸.

C. The Complementary Concepts of Design

As it has been mentioned before, Design is an activity which is in constant evolution. Having this considered, the projectual focus of design has widened, and this evolution occurred by several factors:

At first centered in the project of physical products, its aim has been evolving towards a systematic division. The main challenge of design in the contemporary period is, precisely, develop and/or support the development of solutions in relation to highly complex questions, which require a broad view of the project, involving products, services and communication, in a combined and sustainable way [16].

It is precisely within the context mentioned above by the referred author, that the two specific characteristics of Design (the interpretative wealth and the visionary ability) might contribute to the developing of a plurality of solutions and for the creation of future scenery. In addition to this, the evolution of the view of the organizational competitiveness (centered in the resources and results) to the view of the systematic competitiveness (value chain, net and nation); “has reinforced the potential of the Design as a strategic element for the innovation centered in the resources and in the competences of a territory” [17].

The responsibilities of designers have been informed since long ago:

The designer-planner shares responsibility for nearly all of our products and tools and hence nearly all of environmental

mistakes. He is responsible either trough bad design or by default: by having thrown away his responsible creative abilities, by ‘not getting involved’, or by ‘muddling through’ [18].

Based on these, Papanek [19] illustrates the questions which are cared by designers and the real positioning of the problems:

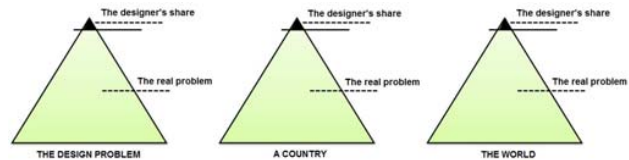


Fig. 1 The problems and responsibilities of designers

Source: Adapted from Papanek (1984).

In relation to Graphic Design, the issue of responsibility includes four distinct areas: the professional responsibility, creating a detectable, attractive and convincing message before the public; the ethical responsibility, creating messages which support basic human values; the social responsibility, messages which might bring out positive contributions towards the society; and the cultural responsibility, messages which might contribute to the cultural development [20].

Other relations can be established while stating that “ecological conscience and Design are closely related. There is no discussion about ecology without simultaneously discussing Design, as each man is the creator of his own environment.” [21]. In this regard, we are able to build, nurture and educate sustainable communities, in such a way to satisfy our needs and aspirations without jeopardizing the possibilities of the generations to come, learning along with the live ecosystems [22]. With this conception, the importance of the consideration of the interdependency as a guidance is highlighted, as “[...] it might be either related to the biosphere or to human organization: whichever phenomenon does have repercussions on the whole, which, in turns, sooner or later and in a not so intense way, ends up having its repercussions on the source of the phenomenon.” [23].

Designers are expected to project both macroscopically and microscopically, in order to broaden their point of view and understand where things come from and why. Having these situations in mind, the macro and the micro, Designers are able to project in a different way compared to how they do it nowadays [24].

As a result of the above, Santos [25] suggests an approach in which Design is considered as a data-processing system:

⁵ Author’s own translation, being the original term in Spanish “*diseñador gráfico*”.

⁶ Author’s own translation, being the original term in Spanish “*diseño de comunicación visual*”.

⁷ Author’s own translation, being the original term in Spanish “*diseño*”.

⁸ Principles which determine shape are: the laws of Gestalt (unit, segregation, unification, closing, etc.), the properties of shape (shape or figure/point, shape/line, shape/plan, among others.) and the fundamental categories of shape (harmony, balance, contrast, and so forth).

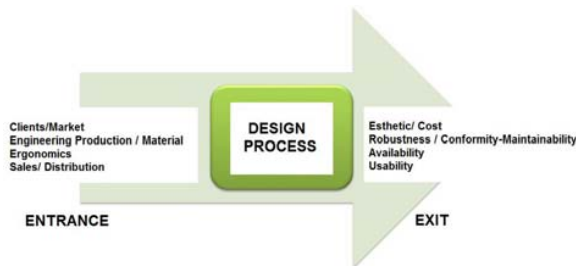


Fig. 2 Design as a data-processing system

Source: adapted from Santos (2000, p. 24).

Therefore, both in the entrance and in the exit of this system, information is processed. In this configuration, the Design process is fed by technical specifications (Engineering, Production, Industrial Design, Materials, and Ergonomics), information about the market and the consumers (Marketing, Sociology, Psychology, Anthropology and Economics) and strategic information (Sales and Distribution), amongst others. The result will not be only a product, but a collection of fundamental information for the projecting of Design. These crucial pieces of information will clarify several questions related to the product itself, such as the final cost, the esthetics, the robustness, the maintainability, the availability and so forth [26].

Moreover, the utilization of a systemic approach of Design might delegate to the activity the function of servicing the complexity of the system which involves the institution or situation which lies as a whole, dealing with the interrelation among the factors of this arrangement and its conditioning:

A company such as McDonald's is not able to maintain a daily control over all the details of each franchised store in the world, however, it makes use of Design not only in the products but also in the systemic approach of its preparation, service and atmosphere as essential resources for the consolidation and maintenance of standard patterns. [27].

This approach, however, is not related only to the physical aspects of the systems, but also to the role of the information⁹, which plays a crucial role in the communication process with the final user [29]. One example of this appropriation can be noticed in the project of the map of London's public transport¹⁰, created by Harry Beck:

⁹ Our understanding of information is the one disseminated by Wurman [28], which, unlike data, leads to comprehension. Therefore, the author completes state that: "Rough data might contain information, but is not a fact. Unless they are used for informing, they have no intrinsic value. They must be impregnated with form and put into practice in order to become significant information."

¹⁰ The London Underground public transport map, projected by Harry Beck in 1933, is used as a model for the projecting of maps. Its greater quality is in the fact that it turns extremely complex pieces of information into very easy and simple ones.



Fig. 3 London Underground Map

Source: Internet, available at: www.harrybeck.co.uk/.

Even taking into consideration the high degree of complexity of this scheme, Design is able to deal with this complexity organizing it in such a way to make it clear for the final users. By doing so, the Designs' systemic approach will be able to contribute to different goals in several different contexts. Thus, society is taken:

[...] as a chain of projectual nets: a complex and interlaced system of Design processes which involve individuals, enterprises, non-profit organizations, local and global institutions which imagine and put into practice solutions for a variety of social and individual problems. [30].

These considerations open room for Designers to perform by means of a systemic approach with the participation of the university, of the support institutions, of the involved communities and stakeholders in general, aiming at social benefits.

III. THE SOCIAL INNOVATION APPROACH

A. The Innovation

The social innovation is the compound of the reunion of unpredictable relations, of a gathering of a great diversity of reasonableness which acquire a circumstantial conformity from the sharing of experience among the productive sectors, the consumers, the public managers and experts, amongst others. The remarkable connection among the members of the technological advance consisting of the organization (invention – innovation – growth) starts to face a change in its concepts, following the current tendency under the influence of the constitution of a technoscience. In the fields of innovation, one must take into consideration the elements which come from the cultural heritage and from the peculiar creativity of a social group, which, usually are not taken as components of the innovative whole [31].

Thus, the innovation is a factor which has been considered as fundamental element in the fierce market competition for a long time now. Close to the end of the decade of the Nineties, Bonsiepe [32] listed its behavior in the fields of science, technology and design:

TABLE I
 TYPOLOGY OF INNOVATION IN THE FIELDS OF SCIENCE, ENGINEERING AND DESIGN

	SCIENCE	TECHNOLOGY	DESIGN
GOALS OF INNOVATION	Cognitive Innovation	Operational Innovation	Socio-cultural Innovation
DOMINANT SPEECH	Affirmations	Instructions	Assessments
STANDARD PRACTICES	Evidence Production	Trial and Error	Coherence Production
SOCIAL CONTEXT	Institute	Company	Market
SUCCESS CRITERIA	Authorities concern	Technical Feasibility	Consumer Satisfaction

Source: adapted from Bonsiepe (1997, p.35).

In this way, for the referred author, in the field of sciences, the main goal of innovation consists of the production of new knowledge (cognitive innovation). In the field of engineering, it is focused on the production of know-how (operational innovation). As to design, unlike the production of knowledge within the field of sciences and the production of know-how in the engineering, the innovation is limited to the interface between the final user and the artifact (socio-cultural innovation). Taking these attributions into consideration, the innovation process goes through the science, technology and design phases. Hence, the importance of establishing the connection between design and technology and scientific research institutes, as the activity is the last element of the ambience through which scientific and technological innovations are implemented in the everyday life [33].

Inside companies, Design plays a crucial role as a triggering agent of innovation. A highly successful innovation relies on the management of risks [34], which can be minimized with the experiences related to the concept¹¹. Design provides companies with an innovative way of looking at the consumer. It generates an interaction between the theme and the object. If a concept is an evident view of the experience of the product, it will, therefore, reorganize the direction of innovation to create a sequence with the information shared between the consumer and the company. Contemplated by this information, design can actually become a stimulating experience [35].

B. The Social Innovation

The discussion involving the social innovation is not recent. Its concept has been built in several ways and by a large number of different stakeholders. It can be considered as one of the strategies developed to overcome the challenges that society faces, which is why, many initiatives have already been implemented and a lot of effort is being put into the construction of knowledge, methodologies and indicators that are reference nowadays for a reflection about this issue.

Within this perspective:

New paradigms and references start to show a potential to support social needs. As a result, the concept of social innovation is brought out as the starting point for the construction of a new model as a way to attend the social demands related to the diversity and human unity, and to contribute to the promotion of equality in the postmodernist society [36].

¹¹ Concept in the design field refers to tests, experimentation, new ideas or any other action which might determine the characteristics of the future product.

The authors cited above take these assumptions as evidence for the social innovation type which must be built in companies and, consequently, transmitted to the society as a means of offering benefits for the individuals. Considering it this way, the social innovation might contribute to the well-being of people, as long as it does not interfere in the common yearnings, with triggering policies of initiatives which seek to the improvement of local communities.

For Fleury [37] “we are able to talk about a social innovation when the changes alter the processes and the social relations, altering the pre-existing power structures.”, therefore, the innovation process has the effect of reconstructing the systems of social relations as well as the structure of rules and resources which reproduce it. It favors the arising of leaderships or enterprises which generate new social perspectives and which forces companies and government to establish a new behavior pattern related to social issues. In the presence of these facts, the society takes a new place to create the perfect and adequate environment to the innovation process.

Besides the levels of novelty and contribution to the construction of knowledge and the commitment of its dissemination towards the market, based on the organizational learning, the social innovation requires the reciprocal commitment with the transformation. This process requires the valorization of the common knowledge and the improvement of methodologies aiming at the emancipation of people. This is a complex process which involves dealing with multiple agents which must have their own features respected [38].

Mulgan [39] establishes the concept of social innovation disseminated by The Young Foundation (YF)¹²:

Innovation is often given complex definitions. We prefer the simple one: ‘new ideas that work’. This differentiates innovation from improvement, which implies only incremental change; and from creativity and invention, which are vital to innovation but miss out the hard work of implementation and diffusion that makes promising ideas useful. Social innovation refers to new ideas that work in meeting social goals [40].

One of the factors which moves innovation is the consciousness generated towards the gap which exists between the “what is there?” and the “what must be done?”, that is, between what people expect and need and what is offered by governments, by private companies and by non-profit organizations (NOP). There is this emptiness which is constantly amplified by the appearance of new technologies and new scientific information. The FY serves several demands of social innovation, granting the development of potentialities or solving the drawbacks of these items. Its vast

¹² The Young Foundation is a center for the social innovation which is based in London, with over 50 years of experience in the creation of new organizations – public, private and non-profit organizations – as well as influencing ideas and policies. It elaborates projects of creation, the development and the launching of new ideas both for organizations and cities. Its working field is focused in the United Kingdom; however, it is also open for projects all over the world. For further information, please check: <http://www.youngfoundation.org/>.

experience in this field qualifies it to promote concepts related to the issue.

C. Design and Social Innovation

A current relation between technology and society, regarding Design, occurs in the following way: designers make use of new technology and put them into action within their projects as a means of offering them to the society. The reverse situation, however, would be more effective for the perspective of social innovation. Designers would be able; consequently, to focus their view to the society and observe it based on solutions created in its core, so that, based on this, they can offer technology which can provide support for the development of these solutions. With their view focused into the community, designers will be able to evidence creative initiatives attempted by the individuals. It is based on these initiatives that the “creative communities” are created, being these communities groups of people who gather in an organized and local way to solve social problems and collaboratively make up solutions for these problems. They make little contributions which are ahead of the great change which is necessary for the society to redirect itself towards sustainability [41].

IV. CONCLUSION

Based on the subjects studied in this article, one is able to realize that Design is passing through the transformation from a directed view, whose results are limited to the creation of products, to a more holistic view, in which the result of the process widens to a greater system which involves the products and all their relation with the society. Designers, therefore, must pay closer attention to the collectiveness, with its several connections, and try to incorporate the solution which it offers in its professional practice.

As a result, the systemic approach of Design can be set as one of the strategies to integrate the practices of social innovation, present in the contemporary everyday life, into Design, with its social responsibilities. Within this kind of approach, Design is not limited only to one acting field; it is used as a process which involves Industrial Design, Graphic Design and its other specifications.

The main conclusion to be drawn is that the purpose of a Design project is not only the creation of the product, but yes the organization of a complex interaction system which can contribute to the integration of Design, in its several application fields, and to the integration of the interested members within the process, the stakeholders. For this reason, the project obtains forces and the possibility of achieving the objectives of every part involved in the context is amplified.

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