WICKED PROBLEMS AND DESIGN IN EMERGING ECONOMIES: REFLECTIONS ABOUT THE DESIGN OF SYSTEMIC APPROACHES FOCUSED ON FOOD AND TERRITORY

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ABSTRACT

The aim of this paper is to bring a reflection about the design of systemic approaches focused on food and territory. This broad and complex field of study can be categorized as a wicked problem (WP): a problem that is difficult or impossible to solve because its deep and broad roots result in interdependent, inter-related and emergent socioeconomic and environmental impacts, for which there is no single set of objective response or approaches from a Design point of view (Rittel & Webber, 1973; Buchanan, 1992). The reflection is based on the discussion of WP theory and its relation with sustainability, followed by a brief review of the concepts of Systemic Design (SD), and its convergence towards a fresh understanding of wicked problems in the context of sustainability. With this aim, three Brazilian initiatives related to food and territory were selected to reflect on possible design contributions.

Key Words: Design, Wicked Problems, Emerging Economies, Food, Territory

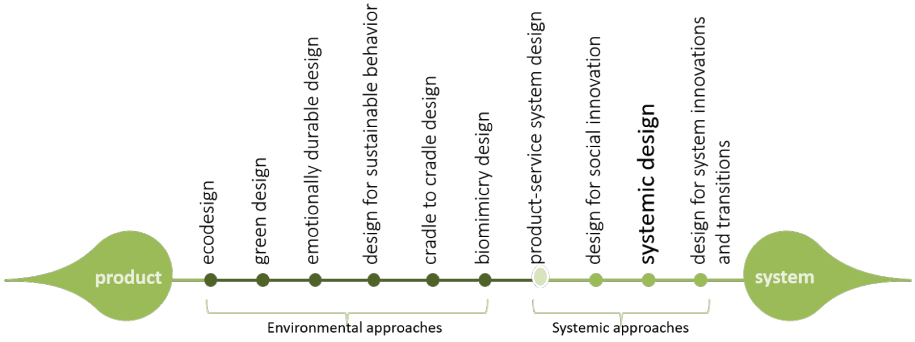
1. INTRODUCTION

The crises experienced today, especially those related to the agro-food chain, go beyond geographic boundaries and make our time of greater complexity of human existence. Hunger, food waste, food security associated to socio-economic, environmental and cultural impacts demand an imperative resolution in order to attain sustainable development. Solutions require drastic changes in perceptions, thoughts and human values, so that actions, local and global, are guided by environmental, social, cultural and economic Ethics (Capra, 1997, p. 15), so that they contemplate effective, long lasting solutions, both at the local and global levels.

This paper brings a reflection about the design of systemic approaches focused on food and territory. This broad and complex field of study can be categorized as a wicked problem (WP): a problem that is difficult or impossible to solve because its deep and broad roots result in interdependent, inter-related and emergent socioeconomic and environmental impacts, for which there is no single set of objective response or approaches from a Design point of view. The reflection is based on the discussion of Systemic Design (SD) and Distributed Economics (DE) and its convergence towards a better understanding of Wicked Problems in the context of sustainability. In order to reflect on possible design contributions to the WP scenario, three Brazilian initiatives related to food and territory were selected as case study. The main contribution is to reflect on the application of theoretical and practical approaches in emerging, complex and biodiverse contexts, currently found in emerging economies such as Brazil, identifying possible positive impacts of design intervention related to environmental, social, economic and cultural sustainability. This paper is based on the ideas developed for the on-going research thesis Design and Gastronomy: the systemic approach of Design in the context of local sustainable development of small Brazilian communities, developed in the Postgraduate Program in Design of the Federal University of Pernambuco, Brazil.

2. SYSTEMIC DESIGN AND THE WICKED PROBLEMS OF SUSTAINABLE DEVELOPMENT

Faced with complexity and assuming its strategic role in the transition to sustainable ways of life, the design discipline has developed systemic approaches with new theoretical and multidisciplinary contributions in the last 3 decades. Ceschin and Gaziulusoy (2016) elicit some of these design approaches to sustainability, (Figure 1):



[Figure 1]: Evolution of systemic approaches on design for sustainability scopus. Based on Ceschin; Gaziulusoy, 2016.

Figure 1 shows a transition to sustainability where, instead of focussing on environmental approaches for product development, there is a shift towards complex systemic approaches in which the use of environmentally friendly materials and processes, clean technologies and sustainable methodologies only make sense for sustainability if designers "pay full attention to the essential relationships and critical connections between systems" (Nelson and Stolerman, (2012, p. 57). According to the authors, designers should be able identify and protect the essential connections found in life, so that systemic thinking can be applied to design projects and the macro systems in which such projects are incorporated.

Systemic Design (SD) emerged in the first decade of the 21st century, to give support to the development and understanding of complex and systemic issues, such as those involving the discontinuity of the anthropic lifestyles. This methodological approach has the ability to operate beyond the boundaries imposed by other Design initiatives, promoting systemic change in thought patterns, organizational cultures and societies (Ryan, 2016). Systemic design, different from graphic or product design, is not a ' discipline ' but a guideline that emerged from the need to elaborate and evolve design practices to work with complex problems, with the ultimate goal of creating best policies, programs and service systems, involving all stakeholders in the process (Jones, 2013, p.3). According to Ryan, (2014, p. 4), there are several approaches or 'schools' to Systemic Design operating in various contexts, promoting a broad discussion about the construction of this theory and its methods, as well as encouraging its Practice (Ryan, 2014, p. 4). Such approaches have in common, at different levels of appropriation, the theoretical framework of Systems Science (Hieronimy, 2013) and complex Thinking (Morin, 2005). They also share interest in the so-called Wicked Problems, problems that are difficult or impossible to solve because its deep and broad roots resulting in interdependent, inter-related and emergent socioeconomic and environmental impacts, for which there is no single set of objective response or approaches from a Design perspective (Rittel & Webber,1973). Given its transversal and transdisciplinary nature, wicked problems are resistant to traditional problem-solving approaches (Mota, 2014 p. 53). In-

stead of adopting a right-wrong approach, which is highly susceptible to the rebound effects and tend to create new problems (Ackoff, 1974; Ritchey, 2011; Rittel & Webber, 1973), the understanding wicked problems need to adopt a better or worse logic, in the search for solutions to face a given situation at a given time (Conklin, 2008).

According to Ryan (2014, p. 4), Systemic Design "is designed for situations characterized by complexity, uniqueness, conflict of values and ambiguity about objectives", i.e., a category in which many of the contemporary problems fit in, such as the ones associated with sustainability. Sustainability related challenges have deep roots that result in tangles of social, economic and environmental impacts interdependent and interrelated, for which there is not a single set of solutions and not even a set of definite rules so that design can tackle them (Buchanan, 1992).

As a transformation strategy towards sustainable development, SD presents the following characteristics: [1] The organization of systems is centred on the activation and/or development of harmonic relationships between stakeholders, structured in an organized network, aiming at high efficacy and efficiency in all dimensions of sustainability (Bistagnino, 2009). [2] The appreciation of situations by multiple scales and perspectives and through deep empathy with stakeholders in a collective learning process (Ryan, 2014, p. 3). [3] Support for groups to construct shared reference structures, visualize alternatives to current paradigms, and align actions to improve confusing situations. Systemic Design is, therefore, an approach to work, act, reflect and learn during the process, in an intrinsically collaborative way.

For Ryan (2016) Systemic Design "is not a process, but a new space to take advantage of the complexity of reality as generator of innovation and creator of new [sustainable] values ". According to Bistagnino (2009, p. 68) and Ryan (2016), the systemic Design favors the complexity of relationships as an inexhaustible source of solutions to current problems and events, inviting stakeholders to form a shared reference framework for collective action. Peruccio (2017, p. 72) agrees and adds that "designing complexity is achieving a precise goal, through concrete structuring in a way capable of organizing a multiplicity of factors, processes and interactions at multiple levels originated from a context generated by three strictly connected spheres: Biosphere, Sociosphere and Tecnosfera ". This interdependent connectivity is easily verified in the agro-food value chain, in which the impacts of human practices on the environment and on society itself are taken to the extreme (Borja et al., 2010). Its complexity, as well as its potency, exceeds the nutrition, in the basic sense proposed by Maslow (2016), to achieve the status of cultural language shared by societies, which reflects profound relations between human beings and territories by them inhabited.

3. DESIGN, GASTRONOMY AND LOCAL SUSTAINABLE DEVELOPMENT

Papers The connection between design, gastronomy and sustainable development has not only reflected in the food industry, but also promoted new forms of interaction with communities and localities. The valorization of both agricultural products and their origins has contributed to the development of many small, local communities, especially in countries that recognize and honor their gastronomic heritage, such as France and Italy.

The Design activity also understands that food is a language that forms the interactions between the environment, the territory, the culture and society. Food manifests itself in a physical and abstract way, in products, habits and traditions, thus being able to communicate the identities of the site and the community that produced it (Montanari, 2013, P. 165). The metaphor of language is very prolific when applied to gastronomy, because it assists in the visualization that, even being part of a larger system, each site produces its own dialect, its corruptions, its expressions, which are determined from those same interactions.

Thus, for the design of systems related to gastronomy, the design discipline creates a bridge between the many actors and the various realities, through which this language can flow. However, for this communication to occur within the parameters and values considered sustainable, it is necessary to adequate the system considering its environmental, economic, social and cultural impacts. As Bistagnino highlights, "Only designing food systems as a product, without coordinating and integrating all the functional, symbolic, cultural, technical and manufacturing factors related to it, is an approach to be overcome (...)"(Bistagnino, 2011).

A differential that highlights Systemic Design from other approaches of design for sustainability, consists of promoting and/or activating internal processes of self-organization, which directly influence the resilience and autonomy of the community. To do so, systemic design uses social and biological theories that work within complex systems and assist in the flexibility of the structure facing the excitations of the environment, allowing to maintain the organization and its identity, even in the face of constant structural changes. This quality is essential for the survival and evolution of small communities as it results in the balance between development, innovation and tradition, co-creating a highly adaptable and robust social fabric.

Three case studies related to food and territory are presented to discuss design contributions, focusing wicked problems. The cases are based on the production and commercialization of food within the context of culturally responsible, sustainable local development. The evaluation of these initiatives points out possible strategies for the design field and reinforces the role of food as a promoter of local sustainable development.

4. CASE STUDIES - ALAGOAS - BRAZIL

In the state of Alagoas, the third poorest in the Northeast of Brazil (Agência Brasil, 2017), solutions that help in the development of communities that live in extreme poverty, are levered by mixed initiatives that include a network of stakeholders that include political entities, third sector organizations, private companies, education and research

institutions, funding agencies and the residents themselves (Lepre, 2018). Among a wide array of projects and initiatives, three cases using gastronomy as a platform to design sustainable local development call attention due to their positive results in the search for solutions of wicked problems.

4.1 Tapera's Chilli Project

Since 2006, the community of São José da Tapera, municipality of Brazilian Semi-arid with 32,000 inhabitants and 60% of the population with monthly income of up to half minimum wage (IBGE, 2017c), has been producing, benefiting and commercializing varieties of peppers, an ingredient much appreciated throughout the Brazilian Northeast (Figure 2). The practice has changed the lives of the previously marginalised population, thought the involvement of the members of the community, helping to reduce poverty, generating equal opportunities to its members, and promoting gender equality. According to representatives of an NGO involved in the development of this initiative, it is women who command and maintain the operation of the project. One of the main points related to the productions of the peppers is the use of photovoltaic technology and hydroponics. (IEE, 2018).

[Figure 2]: Pimentas da Tapera Project: planting, processing, packaging, marketing, (Source: https://imagenshumanas.photoshelter.com)

4.2 Pink Peppercorn Project

In the same region, along the banks of the São Francisco River, other small communities of high sub-development index, such as Piaçabuçu (19,000 inhabitants), has benefited from the introduction of the Aroeira Project (Figure 3), developed and Managed by the NGO called Instituto Eco-Engenho and its partners. The project seeks to promote local sustainable development from the collection, beneficiation and commercialization of pink peppercorn. (from the the Aroeira tree) This ingredient is highly valued and appreciated in haute cuisine, both by flavor and aesthetic presentation. The local production has projected [even if timidly] this community from Alagoas in the international scenario and point to the feasible opportunities for sustainable growth of this population from the exploitation of the culinary base.

AROEIRA

[Figure 3]: Aroeira Project - logo, collector, packaging and Eco-Engenho, use. (Source: http://www.ecoengenho.org.br/projetos)

4.3 Purified Oysters Project

Still in Alagoas, gastronomy has been used as a basis for the development of social technologies for local sustainable development that have positively transformed several small municipalities along Alagoas coastal line. These municipalities are part of a systemic and distributed project that aims to generate income and social development as well as promoting community-based tourism in this region (Pimenta & Sette, 2016) from the production, purification and commercialization of oysters. The Purified Oysters Project (Figure 4), aims to establish a differentiated marketing strategy, adding value to the traditional production process of oysters, strengthening the local gastronomic culture and the concepts of fair trade, consumption and sustainable tourism. Since its launch, the project has received the effective support of local trade, through the elaboration of menus having the oyster as its main ingredient and promotion of gastronomic competitions for the dissemination of the product and the region. At the end of 2017, the project was certified among the 21 best social technologies developed in Latin America, by the TS-2017 award, offered by the Banco do Brasil Foundation in partnership with UNESCO.

Ostras depuradas de Alagoas
GARANTIA DE QUALIDADE

[Figure 4]: Systemic Project Ostras Depurated from Alagoas - logo, plate, sale on the beach, walk to farms of creation, meeting between tourists and breeders. (Source: https://www.facebook.com/OstrasDepuradasDeAlagoas/photos)

In all cases mentioned above, the gastronomy has been connected to the local and sustainable social development and addressed as part of the solution to complex problems, such as those listed at the beginning of this text. To this end, the projects have benefited from the vocations of the territory and involved the communities in mixed actions (bottom-up and top-down), through the mobilization and involvement of various sectors and stakeholders,

guaranteeing the success of the initiatives. It is also important to say that these initiatives are part of the redevelopment of the identity of these communities that give birth to new traditions (Hobsbawn & Ranger, 2008), whose impact on the quality of life and the belonging of its components, should result in its subsequent recognition as a local cultural heritage.

DISCUSSION

In the three initiatives presented, we can identify design strategies in a systemic perspective at three levels: tactical, operational and strategic. From the planning of the productive circuit to the final presentation of products, we can observe the protagonism of the local community and the appreciation of the culture and history of the territory.

Considering the various aspects raised, we highlight some challenges for the designer's performance in projects that focus on sustainable use of territorial resources: a) learning about the context and the local imaginary, in a collective way; b) develop participatory processes and integrate stakeholders; c) implement tools to support environmental sustainability and give visibility to initiatives and their achievements; d) promote the training of designers in a systemic perspective of design; among others.

Projects that focus on local communities-based products need ranging from mental and imaginary constructions to the development of "concrete" solutions related to existing or latent demands. One of the most interesting and important aspects of these projects is the idea of belonging, especially in relation to the symbolic dimension, which is so necessary for people to feel part of a society and to develop democratic actions / projects (and also take part of places and recognize rights and duties in relation to the collective space). As part of the methodological approach to the design process, the initial stage "research and contextualization" (which involves understanding the situation) deserves to be highlighted, since it is from that moment that the project begins. In this sense, it is essential to develop strategies that allow the understanding of values and meanings related to the culture of the people involved in the process and the place where designers work. But it is necessary to go beyond, and understand, in fact, the possible forms of interaction with the community and, building the process together, from the demands presented.

FINAL CONSIDERATIONS

The main contribution of this paper is to reflect on the application of theoretical and practical approaches of Systemic Design in emerging, complex and biodiverse scenarios, such as the ones currently found in emerging economies like Brazil, identifying possible impacts of the design intervention related to environmental, social, economic and cultural sustainability. Learning from development initiatives in specific contexts is an important step for us to reflect on strategies that can support other communities that face similar challenges. Therefore, the importance of developing and adapting tools that support the design process, coupled with the peculiarities of the socioeconomic, environmental and cultural conditions of emerging economies, is reinforced.

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