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Design as a process tool of collaborative and multidisciplinary learning in society.

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Abstract: Active collaboration allows the development of synergies and tools to maintain a diversified, productive and sustainable system. In the framework of an ongoing research project having a case study (L3 Project) and the results of their activities, it was possible to retain the following data: the increase of knowledge by the exchange of skills and the improvement of the competences in a personal, civic and social perspective. The objective is to outline a strategic plan by mapping the network of interactions among all social agents that fosters the construction and rehabilitation of social cohesion. The methodology is distributed in three phases. In an initial phase with an ethnographic research, literary review and case studies; on a second phase, the characterization of the system, the strategic actions and the design of a sustainable ecosystem inserted in the urban context. In the third phase, methodologies presented through surveys and statistics validated by the local community and specialists of social and human sciences. The aim is to give continuity to the research project that already has its methodological expression, including case studies that can reinforce or not the main conclusions, improve the data collection tools for a successive iteration process to reach the best results.

Keywords: Co-design, Collaborative learning, Social network, Sustainability

1. New values for socialization

Urban societies are subject to social and economic impacts that have evolved and are becoming particularly more aggressive. This phenomenon has been repeated over the centuries, and man, in turn, keeps adapting and modifying, generating socio-economic solutions with varying degrees of effectiveness (Ferreira, 2003), but facing the reduction of life time in each cycle and its possible

acceleration or not like its presented by Ferreira (2008), there is a common feeling of growing precaution before an unknown future and, above all, the forthcoming change.

As Innerarity (2006) refers, the arrival of any innovation is always accompanied by the shadow of fear and we, instinctively, place the new within the boundaries of the monstrous; technical advances cause, almost automatically, their negative reversal. Future is not so secure and technology and science and innovation are associated with to danger, instability, destruction, and control. Prevention triumphed over the risk in the laws and science and in war abound the forms of cultural pessimism which intersect in technophobia (right-wing or left-wing), in naturalist ecologist and elementary anti-capitalism (Idem, 2009).

Prejudice seizes the judgements of this future and possible connection or disconnection with new visions and predictions. The presence of this feeling of mistrust and a dominant speech of discredit over the underprivileged (Piketty, 2014) for the changes impending removes the possibility of envisioning new horizons and consistent opportunities in a community movement. The growing sense of interest focused on uniqueness does not create a firm basis for the future. The cooperative value is reflected already in the very genetics of living beings, as some authors question or debate, as the author Richard Dawkins (1976) advocates in his book "The Selfish Gene", members of different species often have much to offer each other because they can bring different "skills" to society as also asymmetry can lead to evolutionarily stable strategies of mutual cooperation. (idem, 1976) Complex interaction and collaboration with each other and with the environment is an important way for construction and implementation. There is an urgent need to motivate and blossom a collective and aggregator sentiment of citizenship in way to promote a common future (Innerarity, 2009).

The vertical society does not arise to the heights of his fellow man. The proposal of the philosopher Daniel Innerarity is based on a horizontal intervention where interaction with social, economic and cultural agents in each context with a medium/long term vision is imperative to witness cohesive and sustainable results. The detachment shown by the citizens towards their habitat is also due to their awareness of the little influence of their rulers and the multiplication of successive alternatives. Exception cases of motivation and community transformation, formed by ordinary citizens, emerge in consequence of the lack of visionary and consistent governance alternatives.

As is common in dynamic realities in time, the social movements that we have been witnessing can relate to some of the philosophical currents of the past. This analysis aims to relate the times we live in with concepts explored by the German philosopher Friedrich Nietzsche, cultural critic and analyst of the human condition. Defender of the self, he challenges the theological legacy extolling the capacities of self-fulfilment and overcoming. According to Wilkerson (2016), the concepts have common points with the current situation that we experience on a daily basis can be identified are: "Nihilism and the revaluation of values", "The human specimen", "The last man" and "Eternal return".

Nietzsche's relationship with religion is narrow, in the sense that it rejects human evolution in the benefit a deity and highlights the significance of the values created by Man as a tool developed for his survival. Nihilism is present in the construction and renovation of values which, replacing those already outdated and inadequate to the human condition, reaffirm and enhance their creative capacity in each moment in time. This breach of values is always in constant evaluation by future generations that suit them to their time and needs. In the weakening and meaninglessness of values, Nietzsche identifies two positions that contrast in the way they respond and react to phenomena.

This stance of conformism and passivity, identified in the figure of "The last man", makes for a day-to-day living without taking a risk, in a routine model with no action or reaction. This figure is neutralized to the point of being considered a threat to evolution. In contrast to "The last man", the philosopher presents the disruptive and transformative figure of the *"Übermensch",* the exemplar human being. In this man, he has placed the hope of overcoming the inherited pessimism. He puts him in the position of modernity's benefactor due to his futuristic vision of a reformer model, passionate and emotional, affecting the lives of others who will follow his values to overcome the stadiums of insignificance and apathy. This figure is entirely related to the next concept in which Nietzsche relates values and time cycles in "The Eternal Return". The association is direct to facts that happen, have happened and will happen again. In this concept, it's possible to distinguish two characteristics that stand out and confront one another. The first characteristic can be measured by betterment capacity through repetition until perfection is achieved, a doctrine or teaching. However, it does not move away from possible consequences such as monotony and apathy which could jeopardize the creative ability and the will to search for new challenges. Another emerging feature of the concept of "The Eternal Return", occurs through rupture where the cycle of successive and ordained phenomena suffers a shock that promotes the sense of novelty and through which the system is restored, according to reformulation methods or improvisation. This perspective of resilience, in response to the stagnation of the existing scenario arguing with others and learning from them about human flourishing (MacIntyre, 1998, p.67), is crucial to the creation of new values and solutions in the search of a cooperative and supportive common good (Wilkerson, 2016).

2. Citizen Emancipation

The social sense of rupture means, in the opinion of Jacques Rancière, philosopher and social researcher, the act of emancipation. In a related language in terms of scenic art, Rancière questions the relation between the performative stage and the spectator, conveying this interaction to the public space.

In a first analysis, the author defines what it is to be a spectator and gathers a series of values that characterize him.

The spectator-citizen is placed in a condition of passivity, since he only observes what is happening around him, without being given the opportunity to relate or intervene in this space. The show in itself is thought, staged, produced and performed without the contribution of the spectators and can generate distancing by its eventual inability to understand the message. The spectator should thus lose the distance to the stage and become a participant in the performance of a collective work in an interdependent society to regain the welfare of each individual using the power of all to support their own path track (Rancière, 2010).

The common good is not about specific goods, but about all features that contribute to the preservation of human values. It is this movement of solidarity and reciprocity that creates emancipation and awareness in a group with common goals, giving back the subject's and his community's identity as a social entity (Fig.1).

Fig.1 –City Fixer Table. Retrieved from http://www.citylab.com/cityfixer/

The meaning of emancipation is thus and according to Rancière, the breaking of boundaries between those who act and those who see, of individuals and members of a collective body. The exchange of roles and occupations generates a new attitude towards society. The will to think, act and overcome became something inextricably linked to all classes, in general, and to all its members, in particular.

3. Activities for resilience

The term "communities" is understood as, groups of people spatially or virtually connected that share common interests. "Empowerment" refers to the process by which people achieve control over the factors and decisions that shape their lives, increasing their influence in building these capabilities and growing dominance over external factors. People may not be "empowered" by others; only they, themselves, can promote the willingness and the acquisition of skills. However, the referral process should be played by an outside agent, which will facilitate the process. (Laverack, 2008). The designer has the profile to be assumed as the enabler of this will.

The strengthening of community action skills is therefore more than the involvement or participation of communities. It implies the property of action that explicitly aims at social and political change. It's a process that aims to renegotiate in order to gain more control in sharing the existing power (Baum, 2008).

The Academies, because of their analytical skills and scientific knowledge are involved in this revival. A new territory is being formed by reciprocal respect between designer and other sciences (Fig.2) and this phenomenon asks new tools for action (Sanders, 2013).

Fig.2 – Multidisciplinary and collaborative processes (L3 project, IADE, FCSH, IST and stakeholders).

These interdisciplinary innovation centres, when integrated in the communities, generate, through the combination of science and the "layman's" knowledge, opportunities and new economic and social skills, promoting collaborative learning and transdisciplinary knowledge between the students and the local community and their interlocutors (fig.3).

Fig. 3 – Multidisciplinary and collaborative processes (L3 project, IADE, FCSH, IST and Misericordia council (Lisbon city) represented by Dra. Mafalda Machado).

By getting involved in the complexity of this constantly changing world of flux, knowing, making and playing, emerge as critical mechanisms of becoming and coalition (Brown, J. S. and Thomas, D., 2009).

The process of transversal learning by experimenting (BIGGS R(Oonsie) et al, 2015) with the intervention in the community through a multidisciplinary model is transformative in the critical individual learning process (fig.4).

Fig.4 – Multidisciplinary and collaborative brainstorming processes (L3 project).

"People learn by doing. Telling people what to do is not nearly as effective as coaching them as they do it" (Norman, 2011, p.244)

4. The "designabler"

At the time of Mesopotamia, by observing there were people able to predict river's floods and droughts and indicate which channels to dig in the future, drawing lines on clay plates, these people were called prophets, today we call them project designers instead (Flusser, 2010). The participatory approaches of designers as "enablers" and interlocutors together in communities, articulating active methodologies, encouraging discussion and debate, results in a growing knowledge and awareness for common good, combining convergent and divergent factors of the parties involved and of the power of influence of each party but also a higher level of critical and mutually constructive thinking (Bernarda et all, 2016).

Fig.5 – Multidisciplinary and collaborative brainstorming processes (L3 project).

In this context, the "enablers" develop internal tools of resilience from collaborative approaches, in a diversity of responses, that is, a system with polycentric competences able to create distinguishing tools (fig.5). The involvement of all intervening actors in a broad and open way with the creation of discussion models and interacting platforms is needed. The social responsibility inculcated by the Academies in the intervening actors is reflected in the awareness of the changing patterns of behaviour and mentality in order to expand their knowledge bases. Different types and sources of knowledge must, together, achieve solutions through experimentation and commitment to a behavioural change for the sake of the "satisfaction of human needs" (Margolin, Victor and Sylvia, 2002) in the smart cities that will intensity the need for designers. (Margolin, 2014).

The synchronization of the entities involved is the key to the success of each project. It is up to the designer the conceptualization of continuous co-creation infrastructures of a multidisciplinary partnership with responsible interdependence. In that way designers, must provide the structure, an effective communication between the partners with the communities and a learnable social interaction (Norman, 2011) being the moderators and creators of a future vision of probable solutions for fulfilment (Vellozi and Manzini,2010).

The designed organization is based on a social responsibility commitment to people, understanding and experiencing their daily life, culture, vulnerabilities and potential, responding to the diverse network of activities that fuels and generates dynamism in the territories.

The street becomes an educational laboratory seeking to transform and promote new forms of knowledge by merging all agent's expertise in an ongoing process (Sanders, 2002) into places and communities that bring variety to the ecosystem, helping to instruct a resilient attitude where it will be possible for us and for future generations to live well (Manzini, 2015). Design universities should sensitize students to their role in sthe political society of men and how important are the tools achieved to give a fairly and quickly a satisfactory solution (Cross, 2006) to a responsible action for human and planet wellbeing (Margolin, 2014).

Fig.6 – Ethnographic research process. (L3 project, IADE)

The knowledge acquired during the academic stage by the use of joint working methodologies with and for the communities with the local stakeholders makes design students better perceive the impact of the social and economic adversities on society and by understanding the constraints of the other agents involved in the process be able to manage and coordinate the complex creation exercises more effectively (fig.6). The proposed procedures put designers in the centre of action, structuring collaborative and sustainable methodologies in order to awaken a broad view of replicable and sustainable entrepreneurship (Santos et al, 2013).

Reference tools and methods are being developed to achieve a closer approach to each single case by improving their abilities in solving real-world problems of people daily habitat, needs, solutions (Cross, 2006) and the satisfaction in their perceptive or operative plane of human enrichment experience, will inevitably have repercussions in the microeconomics environment (Ferreira, 2008).

5. Methodological approach

The practice of Co-Design of different scientific areas with local communities can be the answer to social needs by increasing their capabilities. This (re)discovery gives rise to new forms of collaborative organizations allowing a faster achievement of the desired results (Manzini, 2015). The construction of a network should be structured in a way that maintains the constant interaction and collection of information and feedback, through the intervention of the designer who is able to produce skills as a social agent of the future, for the construction of interaction systems that contribute to a better society in a multidisciplinary context with the collaboration of the stakeholders.

The participatory approach tends to trigger a set of intentions formulated from the internalization of daily experiences and skills (Brown, 2009) with scientific knowledge.

Through experimentation and connection, contact points will be established within increasingly broad networks, generating an exchange of dialogues at the local, regional or global level where the intervention complements and surpasses itself (Manzini, 2015).

The need for cooperation does not reduce the level of demand, it exposes our valences and the weaknesses of our scientific area, which makes the process something personal and complex, the great challenge is complementarity and the capacity for synchronization and transversal learning. (Norman, 2011) (Biggs (Oonsie) et al, 2015).

The participatory approaches of designers as "facilitators" (Flusser, 2010) and interlocutors with communities, as well as the articulation of active methodologies, link the discussion and debate resulting in a growing knowledge and awareness of common good, by the convergences and

divergences of the parties involved, the power of influence of each party, but also a higher level of critical and mutually constructive thinking. The methodologies are designed to teach potential participants the means to stop being spectators and become agents of a collective practice (Rancière, 2010). Different types and sources of knowledge must, together, reach solutions through experimentation and commitment to a change of behaviour because of the "satisfaction of human needs" (Margolin, Victor and Sylvia, 2002).

In this context, "facilitators" develop internal resilience tools for collaborative approaches, in a variety of responses, i.e. a system with polycentric capabilities able to create advantageous and distinctive tools.

The synchronization of the entities involved is the key to the success of each project. It is up to the designer to conceptualize the continuous infrastructure of co-creation of a multidisciplinary partnership with responsible interdependence (Norman, 2011).
The process is based on a commitment to social responsibility for people, understanding and experiencing their daily lives, culture, vulnerabilities and potentialities, responding to the diverse network of activities that foster and generate the dynamism of the territories with a positive impact on health and education, allowing and promoting public debate about services objectives and community resilience.

How can design generate new behaviours in society that results in their transformation for integration and cohesion? New social forms of narrative, education, development of patterns of behaviour to reinvent new habits that generate new values by doing. The designer is the trigger, developer and moderator of co-design networks (Manzini, 2015), planning adapted methodologies of intervention. Each context has its own characteristics, as well as its own approach, a deep analysis takes the designer beyond appearances to inner roots. The ability to anticipate change trends, risks and to enable their recovery through adaptation, evolution and growth, are actions that define a crisis-resistant approach while maintaining its functional dimension. This is only possible with a collaborative approach that allows the development of synergies and exchange of information during the optimization process, to allow agents to respond to failures or other dynamic disturbances (Silva, 2009) maintaining a diversified, productive and sustainable system, which will result in increased knowledge and improved skills from a personal, civic and social perspective. (MacIntyre, 1998) The city must be seen as a living system and a stage of pedagogical spectacularity. (Caeiro, 2015) Having understood the needs, aspirations and beliefs it's possible to plan a change. Through his capacity to adapt to different contexts, the designer develops the ability to be an alternative-tracker and a generator of scaling out effect. Cross-cutting collaboration between social agents (Biggs et al., 2015) with distinct but complementary scientific knowledge results in accelerated access to innovation processes and stimulation of the transfer of knowledge (Queiroz, 2013) and rehabilitation of social, economic and environmental resources of the communities and consequently , a more sustainable existence through methodologies of design, new perceptions of speed, efficiency and broadening of access to the media, awareness and training, with the designer being the mediator (Vellozi e Manzini, 2010) of this methodological and theoretical transformation dynamics (Koskinen et al, 2011). The impact of interventions, attracting the interest of potential individuals and supporting the transformation of their mind-set, potentiates the empowerment of the rest of the community (Dorst, 2015).

The designer is responsible for defining a collaborative model based on a set of new solutions considering an interdisciplinary approach to react to the evolution of collaborative methodologies as a response to the needs of society. His contribution is to plan a collaboration methodology where the project construction system is the result of dependent operations and responsibilities distributed by

all stakeholders, thus increasing the cross-fertilization of knowledge and the construction of an organizational system through the distribution of activity sectors and the redistribution of interaction flows.

6. L3 project - case study

The promotion of the relation between communities, stakeholders and university students through the application of a collaborative and transdisciplinary learning methodology was one of the objectives of a project created by an association of three Universities, ensuring a diverse range of intervention in Lisbon (Portugal), with an emphasis in the areas of engineering, design, social sciences and humanities – the L3 Lisbon Common Learning Laboratory, a project financed by Calouste Gulbenkian foundation.

The case study intended to define a collaborative model based on a set of solutions with the purpose to make communities more sustainable and resilient when confronted with socio-economic impacts that affect the basic needs of the human being. By encouraging students to learn in extra-academic environments they will acquire awareness of the society in which they operate, acting with responsibly in a context of uncertainty, giving answers to real problems that are affecting the communities, enhancing and developing student's intrinsic cognitive processes and abilities (Cross, 2006) (Fig.7).

The "city", became an educational partner in this collaborative project. Through this project, the learning spaces merge with the city itself, which takes the informal agent function of education, source of training and socialization process.

Fig.7 – Presentation and debate of solutions with stakeholder "LIMIAR" (Rego neighbourhood). (L3 project, IADE)

Fig.8 – Presentation and debate of solutions with stakeholder "O nosso Km2" association (Rego neighbourhood). (L3 project, IADE)

The main purpose is not only to generate solutions but understand why this happens in order to develop their tracking-problem-solving skills with the local stakeholders (Fig.8) by building of alliances between researchers and participants in the planning, implementation, and dissemination of the research process (McIntyre, 2008). They are a fundamental bridge to facilitate the interaction process and to accurately understand the social challenges.

While the project was ongoing, historical, sociological, economic data was collected from questionnaires, direct observation and literature was acquired during the experimentation stage using cooperative methodologies of Applied Research.

The students where called upon to carry out collaborative projects with each other and together with the communities to understand and answer closely to immediate practical issues (Stoecker, 2005) and real problems.

7. Conclusion

According to each course programme they elaborated projects that included different areas, Urban & Interior design, Branding, Contemporary History, Experimental Methods of Energy and Environment, Photography and Events. Each project followed complementary stages of reflexion about the social problem to solve, the awareness of the existent needs, the strategy for design, a solution for the purpose, the elaboration of a project, the implementation and further improvement by the inputs and feedbacks (Serrano, 2008). All the projects suggested different types of vulnerabilities that have impact on their internal socioeconomic activities.

Fig.9 –Project Presentation. (L3 project, FCSH)

The most relevant negative inputs were, the loss of historic roots (Fig. 9), the "mythic" negative image of social neighbourhoods, the loss of personal interrelation between the residents, the elderly population, the lack of mobility and accessibility, degradation/pollution and finally uncontrolled monthly household expenditures like energy and water (fig.10).

Fig.10 – Green Cape Project Implementation. (L3 project, IST)

The students had an intergenerational and intercultural experience, connecting and exchanging experiences and knowledges with people, a powerful experience of facing and listening to personal feelings.

Their role was to awake awareness in individuals, expecting the promotion of their experience, amplifying new ways of behaviour in their closer circle generating or restoring relations and bridges of proximity by the development of tools to maintain the system diverse, productive and sustainable. Considering an interdisciplinary approach by building collaborative methodologies where an architectural design building system is the result of dependent operations in the distribution of responsibilities. The planning of an organizational system by distributing industries, and redistributing interactions flows, increases the intersection of knowledge supporting the framework for building a more sustainable society.

Fig.11 – Project with LIMIAR at Rego neighbourhood. (L3 project, IADE)

Fig.12 – Project with LIMIAR at Rego neighbourhood. (L3 project, IADE)

Fig.13 – Project for abandoned building (Misericordia council) with collaboration of Lisbon City Hall (L3 project, IADE)

Regarding the energy issue, the results after the intervention was the identification of some tasks that should be integrated on their daily behaviour on energy consumption control. In most cases the individuals where completely unaware of the importance and impact in their monthly expenses. The results of this experience and the dissemination of positive results in the neighbourhood gave rise to internal new behaviour patterns of sustainability and awakening of (social-economic) capacities due to adversity (Horacio, 65 a.C. - 8 d. C.). For the students, the interaction and their contribution to the community by the implementation of their projects was the most relevant part of this experience. The communication with the people was the greatest obstacle and it was only possible with the intervention of stakeholders to relate constructively to others (Frascara, 2002).

As Stoecker (2005) refers on his book about the methodologies for community change, an early awakening for a network construction can provide the formula for the construction of more assertive professionals in their projects and the communities will gain effective tools and training for their sustainability.

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