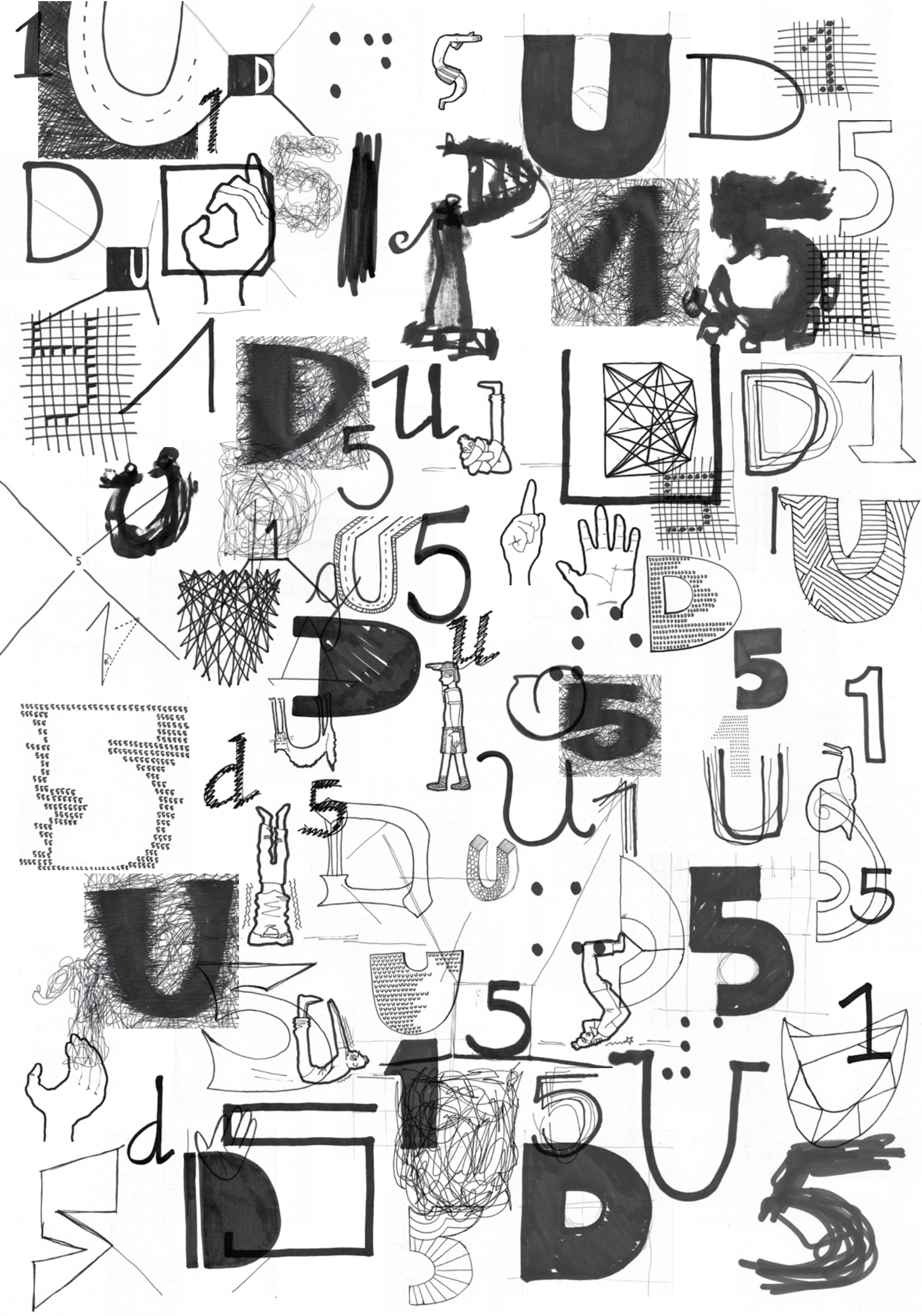PROCEEDINGS OF
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4TH PHD IN DESIGN FORUM
UNIVERSITY OF PORTO 19 + 20 OCT 2015

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EDITORIAL

UD is an annual, peer-reviewed conference series organised by the PhD in Design Programs of University of Porto and University of Aveiro. Beginning in Aveiro, in 2012, as a national meet for doctoral students in design, UD has been hosted alternatively by the two partner universities every year. The scope of the conference has seen constant advancement with each iteration, and in 2014, UD at Aveiro widened its domain to students and researchers from the Iberian Peninsula. UD15, in its latest iteration and returning anew to Porto, has become the first genuinely international edition of the conference series, by opening its doors to participation from around the globe.

In the 2015 edition, UD has stood for *Under Development*, with a view to address doctoral research in design that is currently in progress or recently completed. UD15 has accordingly welcomed participation from PhD students, prospective candidates and scholars from design and related fields, and invited them to share their experience of the chaos, celebrations, failures, dilemmas and epiphanies entailing design research, towards creating a pool of common issues and inquiries which require to be resolved or embraced.

Over the course of two intensive days, UD15 has hosted researchers from all over the world including Portugal, Italy, Denmark, Netherlands, Sweden, United Kingdom, Turkey, Japan, Tunisia, Brazil, South Africa and the United States. The resultant miscellaneity of thoughts and ideas has inspired stimulating discussions and exchange of insights on the topic of design, and more. We are greatly gratified to have had the privilege of organizing this edition of the event, and we believe UD carries great potential to attain further recognition, and contribute more profoundly to the domain of doctoral research in design.

For making this event a possibility, we sincerely thank:

Our esteemed institutional partners and sponsors for their kind consideration and support;

Clara Gonçalves, Executive Director, UPTEC, and Fátima São Simão, Director, UPTEC PINC, for granting us the permission to utilize UPTEC PINC premises and various resources for the event;

Our keynote speakers, who graciously shared their knowledge and expertise, and gave pertinent feedback;

Each scientific committee member for their time and patience in reviewing and counselling the submitted papers;

All authors and participants who found relevance in UD15 as a platform to share their research work, and worked enthusiastically and determinedly during, before and after the forum;

All volunteers for their unwavering dedication and tireless support to the cause.

We hope to meet you next year at UD16 in Aveiro!

On behalf of the UD15 Organising Committee,
Ece Canli & Rita Maldonado Branco

STATEMENT

The relatively recent discipline of Design Research has rapidly established itself as a key catalyst for across-the-board progress, theoretically and practical terms, in the field of design. It invariably promises new possibilities of enhancement for the society, and its influence and impact extends to a wide variety of sectors, ranging from environment to politics, education and technology, health, communication, and daily human activities.

Nowadays it is possible to associate almost every concept related to human action with design, including better interactions, better society, new roles, further landscapes, citizenship, knowledge transmission, systems and services, sustainability, media, culture, heritage, and image production. As design research gradually opens up to new modes of living and new meanings, it spreads over uncharted territories of intervention and interference. UD15's motto – *Periphery and Promise* – is in recognition of this consecution.

Within this framework, we welcomed contributions in five separate and yet related streams, each of which dealt with issues of Periphery and Promise from the different perspectives of:

CONTEXTUALITY

This stream sought design contributions based in contextual research. Case studies can reveal the uniqueness of a given environment, just as much as they can act as templates for broader issues and methodological approaches. Participants were welcomed to present research that added to the field of contextual possibilities for design, introduced innovative methodologies to unfamiliar territories, and applied and adapted prior knowledge to new environments.

COLLECTIVITY

Despite the individual nature of PhD research, no knowledge advances on its own. How to deal with the concept of collective, both in academic environments and in outreach research activities? This stream welcomed submissions that addressed the collective aspects of design research: challenges and templates of intellectual heritage, social involvement, outreach, collaboration, communication, participation.

DISCIPLINARITY

Binding different disciplines together is a strength of design research, but this also brings complexity and entanglement into play. Here we looked for design research contributions that addressed the issue of crossing disciplinary limits: Research problems hitherto unaddressed by design research; Theories or methods inherited from other scientific areas in innovative ways; outcomes that could have significant impacts in other research fields; instances of researches collaborating closely with scientists or professionals from outside the ambit of design.

CREATIVITY

In an era beyond postmodernism and post-aesthetics, design practice is still expected to be creative, authentic and unique; on the other hand, design research as a scientific enquiry relies on successive and cumulative knowledge. This stream welcomed papers that reflected on this dilemma, and addressed the ways in which creative work can be incorporated into research, and can effectively contribute to knowledge.

PERPLEXITY

What is missing on our radar as design researchers? In this stream we pursued contributions of an exploratory nature, which proposed critical constructions, paths of enquiry and methodological approaches that are yet to be considered more broadly. What are our bigger challenges as designer-beings? What does the act of design mean to us and whom does it serves? What are the different views and opinions on the other side of design, counter design, non-design or failure of design? These were some of the questions we sought to answer.

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Fading Legacy of the Macanese: An Investigation into the Symbols, Myths and Traditions

LUÍS FERNANDES
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Luís Fernandes has been a professor at the Faculty of Psychology and Educational Sciences, University of Porto since 1985 and currently serves as the Director of its Centre for Deviant Behaviour Sciences. He has been distinguished with the Fernand Boulan Award from the Association Internationale de Langue Française de Criminologues in 1998, and was selected as a recipient for the Teaching Excellence Award from University of Porto in 2014. His research focuses on the characterisation of issues related to narcotics in the urban context, covering a social ecology of actors and psychotropic territories. He emphasises on ethnography as his primary research method, and endorses the same to his doctoral supervisions.

Problemas sociais complexos: da disciplinaridade à interdisciplinaridade

JAIME MUNARRIZ
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Professor at Universidad Complutense de Madrid where he teaches Media Art and Interactive Environments, pushing digital technology in art and design studies. Deeply involved with Processing, PureData, and LibreGraphics software. Active researcher on digital art practices, he's directed theses on 3D, game art, animation, sound art, audiovisual performance, interface, video-art. Sonic & Visual artist. He explores sonic landscapes and synchronicity with visual processes, artificial lifeforms and generative image. Active in the experimental music scene since 1977.

Research as a symbiotic lifeform. PhD Research in Fine Arts, Media Art & Design

ANNE BODDINGTON
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Professor Anne Boddington is Dean of the College of Arts & Humanities. Her research interests are rooted in the design and development of the urban and cultural landscape and identity and have expanded alongside her experience in leadership and management in Higher Education. She has become increasingly involved in the strategic design and development of learning and research space and its relationships to collaborative pedagogic and research practice and to educational strategies and governance. Her current projects include entrepreneurial institutional behaviours and their impact on governance and infrastructures, the convergence of design, innovation and management as it impacts on SME's in the Creative and Cultural Industries and the nature of learning in the Museum and Higher Education sectors.

The Craft of Collaboration and Design for Uncertainty

ÇİĞDEM KAYA
Istanbul Technical University

Çiğdem Kaya lives and works in Istanbul where she was born and raised. Trained as an industrial designer, she completed graduate program in fine arts in San Francisco Art Institute in the US. After her PhD, Kaya has been a full time assistant and associate professor at Istanbul Technical University (ITU) Department of Industrial Design (ID) since 2011 where she teaches interaction between art and design in the undergraduate ID program as well as product design studio; practice-led research methods and design for social innovation in the graduate ID program. Her experience as an artist enriches her teaching in the design programs. Kaya received BSc in ID from ITU, MFA in New Genres from SFAI and PhD in ID from ITU. Kaya has been a visiting researcher at Sheffield Hallam University and she is a Fulbright alumna.

Poesis and Praxis: Eliciting Knowledge from Collective Practice

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João Paulo Queiroz. Doutor, Belas-Artes, Universidade de Lisboa (UL). Mestre, Communication (ISCTE). Painting degree (ESBAL). Professor at FBAUL and doctoral programs, Universidad de Sevilla. Author of high school syllabus "Drawing," national level. Book " Cativar pela imagem," FBAUL. Coordinator of the CSO International Congress (annual since 2010) and director of academic journals "Estudio," "Gama," and "Croma." Also director of the journal "Matéria-Prima." Coordinator of the International Congress Matéria-Prima, Practice of Visual Arts in Basic and Secondary Education (annual, from 2012). Member of scientific committees, assessment panels, and editorial boards. Awarded National Painting Prize by Academia Nacional de Belas-Artes in 2004.

Criatividade e competitividade "STEM": olhar as crises, desafiar, repensar

CONTEXTUALITY

Awareness

Relation between awareness and Universal Design
Social awareness: case of Japan and Tunisia

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ABSTRACT

 "World Report on Disability" shows how persons with disabilities (PWD) usually face barriers that exclude them. In developing countries, PWD see their rights more likely to be denied. Reasons for this inequalities can be economical, political, demographic etc., social awareness could also have a role in this issue. The context of this work is a study that looks for best ways to raise disability awareness in "Tunisia" which recently started a phase of drastic changes in all levels. To elucidate this thesis, we carried out a statistical work to see if there is a relation between the level of social awareness and inclusion of PWD. To compare the results of the survey conducted in Tunisia with the ones we could get in countries where PWD are much more included, we conducted a survey in Japan which is one of the main pioneers in Inclusive Design, in the world.

Keyword(s): universal design, barrier free, inclusion, democratization, developing countries, social awareness.

1.SURVEY

To explore social awareness of UD among the population in Japan and Tunisia, surveys were conducted in both countries. The main purpose of this survey was to study and to evaluate the following parameters: - The degree of Recognition of terms related to UD concept: considering what we said previously about the difference in the terms related to UD: "Universal design" and "barrier-free". "Inclusive Design" and "Design for All" have been added in the Tunisian survey since they are used in Europe. - Know how accessible respondent's workspaces are. - Reveal the priorities of the respondents who were asked to put in order of priority these elements when they choose a place where to live: Size, Cleanness, Lighting, Wall color, Price, Location, Accessibility for people with disability, View and Layout.

1.1 JAPANESE SURVEY

A total of 353 respondents answered to the questionnaire. 51% of them were male and 49.0% were female. Respondents were aged 18 or above and a large number of them were aged above 36 (65.1%). Most of the respondents had attained secondary or above education. From those who answered the survey, 40 have a physical disability or have someone close to them with a physical disability.

- Recognition of the terms

	I understand what it means.	I don't know much about it.	Have never heard of it.
Universal Design	204(57.7%)	113(32.1%)	36(10.2%)
Barrier-free Design	294(83.2%)	51(14.6%)	8(2.2%)

Table 1. Recognition of UD related terms

Results show that respondents said that they understand the meaning of the term Universal design. We can easily notice that the term "barrier-free" is still

more known by the respondents (83.2%) than "Universal design" (57.7%). People with physical disabilities highly recognize these terms: nearly 70% understand the term Universal design and almost all of them knew the meaning of Barrier-Free Design.

- <u>Accessibility workplaces</u>
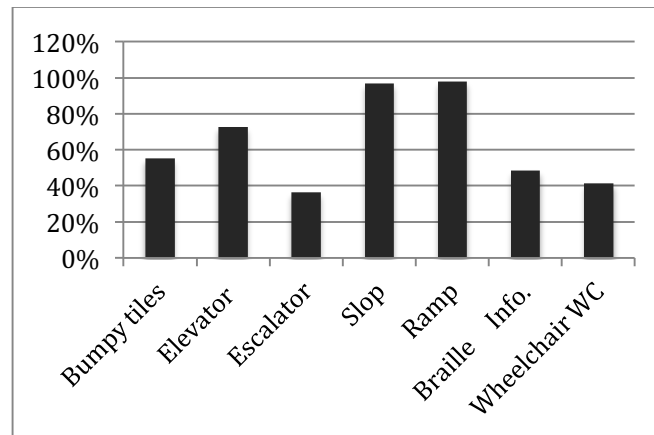
Fig. 1. Accessibility in workplaces.

Asked about the facilities in their workspace, from the given list, respondents had to choose the elements their workspace offers. Fig.1 shows that slops and ramps seem to be omnipresent. 72.6% said that they have elevators. Almost half of the respondents said that their workspace represent bumpy tiles and information in braille (55.2% and 48.6%) while accessible toilets seem less present (41.5%)

- <u>Rank of UD as a priority in choosing a house</u>

For a clearer presentation of the following results we divided respondents in two groups: people who didn't declare having any physical disability (A group) and the respondents with a physical disability (B group).
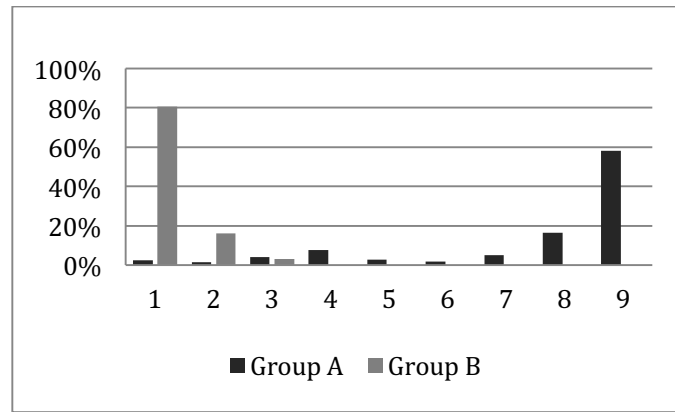
Fig. 2. Ranking of accessibility in living space choices.

The graph shows the importance of accessibility comparing to other factors: Size, Cleanness, Lighting, Wall color, Price, Location, View and Layout. Unsurprisingly, most of the group B respondents (83.3%) placed accessibility as the first priority in choosing a house, some of them put it in the second or third place after the price and location.

Concern about accessibility, reduces when it comes to Group A where 58.1% put it as the last priority, it is important to mention that 18.6% of this Group A placed accessibility as their 3rd, 4th and 5th priority. There was a difference in the responses according to the age of the respondents: the older they are, the more they care about accessibility and put it as a priority.

- <u>Considered life as an aging or physically disabled</u>
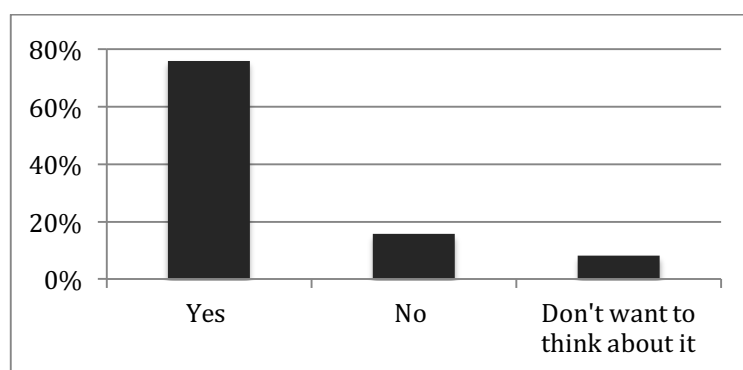
Fig. 3. Considered life as an aging and/or physically disabled person.

75.9% of the respondents have projected them self at least once and imagined how their life would be as an aged or with less physically abilities. Respectively 15.9% and 8.2% avoid or have never thought about it.

1.2 TUNISIAN SURVEY:

The survey has been conducted in collaboration with the UN for Human Rights in Tunis. A total of 310 responses, 51.6% of them were male and 48.4% were female. Respondents were aged 18 or above and a large number of them were aged between 26 and 35 (56.8%). All respondents had attained secondary or above education. 38 persons of those who answered the survey have physical disabilities.

- Recognition of terms related to Universal

	I understand what it means.	don't know much about it.	Have never heard of it.
Universal Design	46 (14.8%)	83 (26.8%)	181 (58.4%)
Barrier-free Design	50 (16.1%)	110 (35.5%)	150 (48.4%)
Design for all	83 (26.8%)	112 (36.1%)	115 (37.1%)
Inclusive Design	52 (16.8%)	78 (25.2%)	180 (58.1%)

Table 2. Recognition of UD related terms

Even though the respondents declared being slightly more familiar with terms "barrier free Design" and "Design for all", we can see in the following table that from the four given terms, none of them seem to be really known by Tunisian respondents.

Where many respondents seem to be uncertain about the real meaning of these terms (between 26.8% and 35.5% said that they don't know much about these terms), more than 50% of the respondents indicate that they have never heard of the terms "Universal Design" or "Inclusive Design".

- Accessibility workplaces
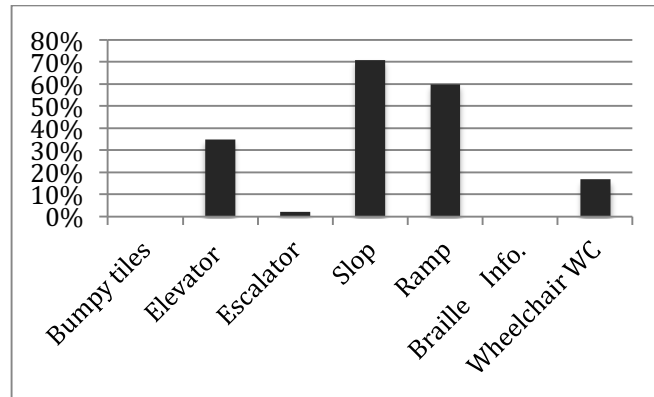
Fig. 4. Accessibility in workplaces.

While slops and ramps seem to be relatively commonly implemented in workspaces (respectively 70.8% and 59.9%), elements helping visual impaired persons to adopt with their environment such as bumpy tiles or any braille written information are not at all considered in Tunisian respondent's workspace. 34.9% said that they have elevators and Only 16.8% said they have a wheelchair accessible restroom.

- Rank of UD as a priority in choosing a house
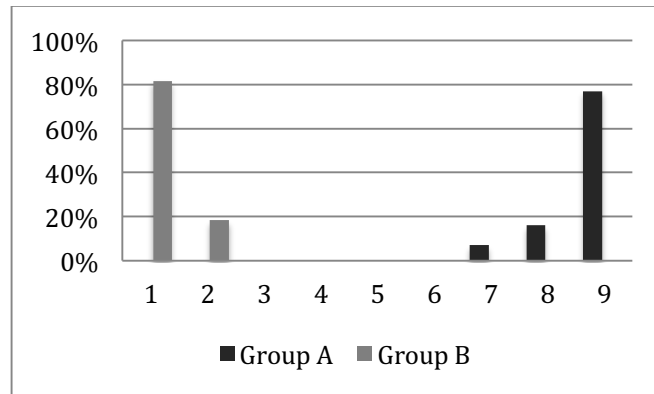
Fig. 5. Rank of UD as a priority in choosing a house.

As for the Japanese survey, results of Group A and Group B will be presented separately.

Similar to the results of Japanese survey, we found that B group respondents put the accessibly as their first priority (81.5%), some of them put it as the second priority after "price" or "location". The concern for accessibility,

drastically reduces when it comes to group A where it was in most of the cases the last priority: respondents cared more about the wall's color and brightness in the house than accessibility for people with limited physical ability, none of the respondents put it in the 1st, 2nd, or 3rd position. In this survey too, the older respondents are, the more they care about accessibility.

- <u>Considered life as an aging or with a disability</u>
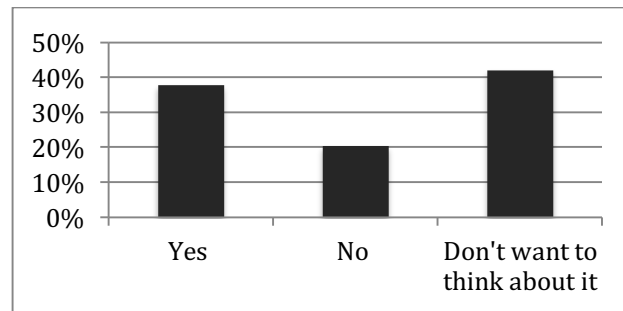
Fig. 6. Considered life as an aging and/or physically disabled person.

We can see from Fig. 6, respondents are manly divided between those who thought about their life with a disability (37.7%) and those who avoid and don't want to think about it (41.9%). 20.3% did not think about it.

2. DISCUSSION

As we know, the two countries are different in many aspects. Also, the survey has been conducted in different environment, times and conditions; so it wouldn't be right to proceed to a comparison without taking this fact into consideration. Nevertheless, the results can reflect some of the main tendencies of respondents in Tunisia and Japan and give us an idea about the situation of UD and disability awareness that can be comparatively analyzed.

2.1 RESPONDENTS

The majority of Tunisian respondents were between 25 and 35 years old. While the Japanese above 35 years old represented the biggest group; this reminds of the demographic characteristics proper to each country. According to the National Institute of Population and Social Security Research, Japan is increasingly becoming an aging society, studies show that Japanese population will decline from 100 million people to reach 92 million by 2050 and nearly

40% of it will be over 65 years old (John W, 2003, p.16). According to United Nations World Population Prospects, Tunisia shows a typical wide-based pyramid, characterizing the age structure as that of a young population nevertheless, by 2010, the percentage of youth in the total population decreased to 18.8 %. It is projected to continue to decline and will reach 10.8 per cent in 2050.

This demographic shift plays a big role in changing dramatically expectations about how products and services should be designed.

> *"With age, people change physically, mentally and psychologically. For most people, this change involve multiple, minor impairments" (Haigh, 1993, p.24)*

2.2 RECOGNITION OF UNIVERSAL DESIGN TERMS

None of the terms related to UD was very familiar or well recognized by Tunisian respondents. Japanese respondents are much more familiar these terms. In fact, Japanese have a longer history when it comes to disability rights, accessibility and regulations. On the top of that, the increasing aging population in Japan created a new tendency in fields related to industry, services, advertising. Both University researches and manufacturers are working on new UD solutions, which contribute not only to improve the daily life of people with disabilities, but also to create business opportunities and boost the economy. Furthermore, the term "barrier-free" is used in many manuscripts, TV-shows and even laws and regulations such as the "The Barrier Free Law".

2.3 ACCESSIBILITY IN WORKPLACES

The results from both surveys are supported by the plan made on March 2011 by the Japanese prime minister cabinet "barrier free target value" that intent to make transportation, building and parks barrier-free designed by 2020. Japanese respondents workplace seem relatively accessible by offering UD elements. The majority of the organizations in Japan has included UD in workplace policies and provided at least the minimum requirements of accessibility regulations in their workplaces. This shows the effectiveness of legislation to promote practices of accessibility and usability for diverse people.

Results confirm Japan Facility Management Promotion Association report showing that some organizations provide accessibility beyond the regulations requirement. On the other hand, there is a lack in applying Tunisian legislative texts provided by the Ministry of Social Affairs: "UPR-Tunisie", Tunisian political party, examined this question and concluded that legislation such as the framework law No. 83-2005 – experiencing very limited application in practice, because the texts are vague include very few sanction measures in case of non-application of the law; in addition, the lack of control over structures involved in these texts. This legislative failure leads to a paradox between the text and the lived reality by Tunisians with disabilities. It indicates that accessibility laws do not guaranty the subscription to its practices.

2.4 RANK OF UD AS A PRIORITY IN CHOOSING A HOUSE

In both surveys, from the given list, the majority of respondents who don't have a physical disability put "accessibility" as the least important factor in choosing a house. Nevertheless, Tunisian respondents were more likely to ignore the importance of having an accessible house. This is supported by the fact that the majority of the survey respondents from Tunisia and some from Japan indicated that they avoid thinking about being physically disabled. This suggests that we need to find ways to stimulate people to think about the effectiveness of UD for the society and how it is going to be needed at a certain point of everyone's life.

3. INCREASING SOCIAL AWARENESS

Survey results show the need for social change in order to improve or implement UD in a country like Tunisia.

Steinem defines the social change process as:

> *"naming the problem; speaking out, consciousness raising, and researching; creating alternate structures to deal with it; and beginning to create or change society's laws and structures to solve the problem for the majority". (Steinem, 1983, p. 352)*

Ways to increase social awareness are diverse; several theoretical and empirically based studies show the relevance of education in developing social awareness. Social awareness about inclusion in general can be integrated in the education path. Some experiences offer the experience of being in a different environment such as *Dialogue In the Dark* exhibition.

It is also important to notice that some researchers doubt about the efficiency that impairment simulations may have in impacting the attitudes: For example, Robinson and Rosher researched about the impact of what aging-related impairment simulation has on participants (Robinson and Rosher, 2001, pp.13-12). Results suggest that participants developed a negative rather than a positive attitude toward aging. Sally French also critiques disability simulation exercises after making studies on attitudinal changes from disability simulations and demonstrating that there is no change in attitudes (French, 2007).

CONCLUSION

Results of the conducted survey show that a correlation can be done between the aging/disability awareness and Universal Design practice. Results suggest working not only to increase social awareness of the need for UD but also, to promote positive attitudes toward people with disability and elderly. Deeper researches need to be done to find ways to increase awareness and to understand if simulation exercises can contribute in reducing stigma against impairing conditions and avoid opposite reactions and if there is a way to avoid it.

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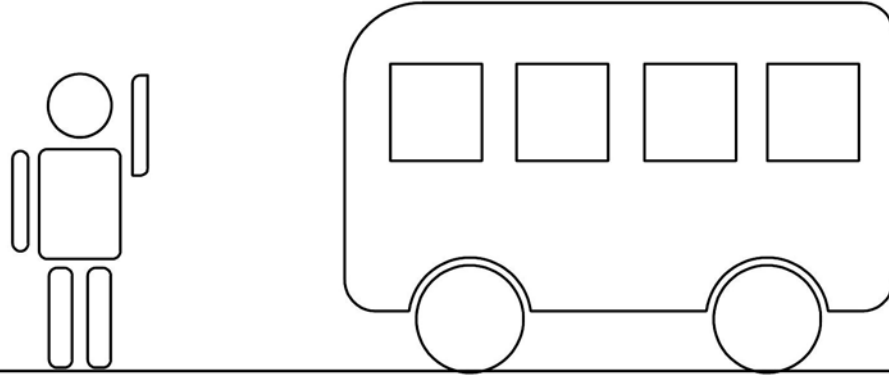
Product Semantic Approach from Product Service System Perspective:

A Case Study of Minibuses in Istanbul Public Transportation System

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ABSTRACT

Product semantic studies basically involve formal qualities of the product features. The main aim of this study forming the subject of my PhD thesis proposal is to assume the product as a part of the service system, have a semantic approach to product from service system perspective and to propose a semantic research method to the product design process. In this context, minibus transportation will be held as a case study in public transportation system in Istanbul. Considering the improvements of transportation vehicles and systems, the research on the field of the minibus transportation must be embeded to the public transportation systems. In this paper, minibuses which are used in this systems will be researched under framework of product semantic aproaches.

Keyword(s): Semantic Methods, User Experience, Human Centered Design, Transportation Systems, Minibus

INTRODUCTION

This study is a result of my thesis on "Product Semantic Approach from Product Service System Perspective: A Case Study of Minibuses in Istanbul Public Transportation System" the subject and context at Mimar Sinan Fine Arts University, Istanbul. In the base of the study is the product semantics method proposal from product service perspective. In this study, the interpretation in the axis of the users will be examined in the frame of the user experience. The minibus use in Istanbul public transport will be examined as a case study. The minibus transportation system is defined as the passengers use of public transportation to travel from point A to point B by paying a cost.

Product experiment occurs as a result of the sensorial and semantic interaction between the user and product features (Özcan and Van Egmond, 2012). We live different experiments with the system and objects we use or take advantage for the different reasons and purposes. The design of these objects/systems is possible with the interpretation of the role and function during their usage (Boes and Kanis, 2008). These roles and functions provide the forming of the experiments that gives meanings to the context of the service that the product provides with the signification of the functions with the user. For example, minibus is cheap, practical, but uncomfortable; on the other hand the journey of the ferry creates the user experiment as spacious, enjoyable and slow.

Minibus transportation for the public transport became as how it is today by the time with the result of some usage needs. Nowadays, the developments in the system of the public transportation entail the development of minibus transportation as integrated with public transportation system (UKOME, 2007). The change of the users' and usage meanings in daily life has a role about the design of the minibus and its service. For the positioning of this service which has an issue in the relations between the system of city transportation and the city today. Interpreting the user experiment and fulfilling the semantic accumulation occurred for the users are required to remedy this issue.

In the study, semantic methods and approach will be discussed by taking the users for the minibuses working in these systems. There are two different user typologies for the minibus making public transportation. The user models can

be divided into two as the user of the vehicle and beneficiary users'. The driver using the vehicle physically and the passenger using the service. As a result, the design process of the minibus is following the buyer of the vehicle, the driver and a semantic research should be done by the designer with the experiments of the user (passenger) who is defined as the buyer of the service.

For the beneficiary user and in the service she/he gets, the minibus is considered as a vehicle. In this situation, the semantic research should be focused on the user experience rather than the product itself. The arguments discussed above are the main scope of this study.

MINIBUS IN PUBLIC TRANSPORTATION SYSTEM

Public transportation by minibus is a paratransit transportation system which has an importance in public transportation system. Especially for our society, it has started to sign a life style from both functional and cultural perspectives in urban life. This life style requires being vigilant, for a bit individuality in our society and also some degeneration (Tekeli and Okyay, 1981).

Figure 1. Example of minibus in public transportation system.

Mastrogiannidou et. al. (2006), defined as a better example which is more flexible than public buses and more affordable than cabs instead of a paratransit transportation system which is door-to-door. In their own system they have advantages. For examples the minibus sytem is fast, they can stop more often on their way with the request of the passenger and they are quite fast like automobiles and cabs by their offensive driving styles (Tekeli and Okyay, 1981).

Figure 2. Example of minibus stop in public transportation system.

The development of the parantransit system in Turkey depends on many factors. The development and changes in city structure, the social and economic relations between the partners, laws, the government matters are the essential inputs of this system (Toker, 2012). Nowadays, the placement of the minibus has started to be examined in the public transportation system which is more cared about. The system which was developed in relation with the size of the city in the past, affected the transportation system in the city, even affected the the form of the city and this system should reach the axis of the urban users from the driver and operation axis.

Figure 3. Minibus and bus uses the same station.

USER DEFINITION, EXPERIENCE AND SEMANTIC APPROACHES

Users create the meanings of products in use (Boess and Kanis, 2008). In this context, we can define two types of users for minibuses in public transportation; the user of the minibus (driver) and the beneficiary user of the public transportation system (passenger). If we consider public transport as a service with minibus, the beneficiary user explains the meaning of the service and the product used in this service.

Krippendorff and Butter (1989), defined product sematic as 'a study of the symbolic qualities of man-made forms in cognitive and social contexts of their use and the application of the knowledge gained to objects of industrial design' (Boess and Kanis, 2008). The user input in design process and whom it is designed for have always been the main discussion subjects in industrial design process (Boess and Kanis, 2008). The semantic input of the product designed with the user definition began to become an issue. With these input, the anthropological, sociological and physiological input got from the user helps to improve methodical perception over the user and their behaviors (Scott et. al., 2012). But, these researches focus on the ethnographic examination over the buying process and ease of use instead of focusing on the user needs (Scott et. al., 2012).

To examine the user experiment as semantics the four conceptual pillars of human focused design approach of Krippendorf (2008) can be used as main approach principle.

SECOND ORDER UNDERSTANDING

Krippendorff (2008) proposed that, commitments to objectivity; belief in universalist theories of functionalism, economy and aesthetics; the conviction that particular forms are responsible for particular uses, experiences and feelings; and the privileges of one's own ideas over those of less qualified people make design relatively easy. Understanding others' understanding is an understanding of understanding and this recursion is of a qualitatively different kind (Krippendorff, 2008). This understanding defined as second order understanding.

MEANINGS IN PRODUCT USE

Objects add meanings to our lives (Norman, 2003). In this sense we use meaningful objects and systems in our environments. We live in the view that meanings of product and services are organized around sociocultural regimes (Baha et. al, 2013). This layout described as an action which has been accepted under social or cultural structure. Paratransit systems are a typical example for this situation. There are distinct paratransit systems for different cultures. In this context, we can examine the user experience in two main framework. These are the meanings for user and context of usage.

OPEN AND LATENT MEANINGS

The word "function" is at the heart of Merton's analysis, and thus supports use- and user-oriented research, besides the distinction between manifest and latent meanings (Almquist and Lupton, 2010). The purpose of Merton's adaptation was to differentiate "conscious motivations" from "objective consequences" and to address the obvious or manifest social consequences of a human action or process with its unintended or latent social consequences (Almquist and Lupton, 2010).

Designed objects/services can have many potential latent functions. These latent functions, moreover, can also be conceived as latent meanings and can be understood both subjectively (the personal associations with an object that accrue over time) and intersubjectively (as part of cultural complexes of value

and significance that require communities for their activation) (Almquist and Lupton, 2010).

ARTIFACTS IN CONTEXT OF THEIR USE

A conceptual prerequisite for speaking of meanings is that artifacts must be able to occur in more than one context (Krippendorff, 2008). Meanings can change based on the context under user experiences for different users, social structures and situations. Krippendorff (2008) proposed that, meanings are due to a variety of contextual requirements according to various constraints presented by the object. Meanings provide the establishment of a harmonious relationship between object and context (Krippendorff, 2008). For the interaction between human and object; an original perspective should be built between user, product and context (Pucillo and Cascini, 2013). For the minibus public transportation system, the service line which the benefit user receive and this line's context are important to make semantic research.

NETWORKS OF STAKEHOLDERS

In general the design process of theoretical discourse proposes an interactive exhibit focused action to support design stakeholders meaning creation process (Xenakis and Arnellos, 2013). Interaction between the user and the designer should be formed through certain methods. Therefore, the essential cognitive structure of the design should be considered as a process. Design content in dynamics and meaning creation process must be prospective (considering possible actions) and interactive. Also a special interaction with the environment created for the function must be set up (Xenakis and Arnellos, 2013). In other words, meaning creation process configure the process of creating ways to interact with the environment. We can mention again the stakeholders in public transport by minibus from two different users. These users while exhibiting different roles within their contexts interact with each other in the system. There are different types of interactions concerning both the driver and the passenger. These interaction pathways, involved in the process should be built as "functions" for all systems (designer, user, beneficiary user).

INTERFACES

We experience artifacts by interacting with them (Krippendorff, 2008). Interfaces are the first elements that interact with the user in product and services. Designing objects for human use is required to discuss the responsibility of the object through human actions and create experience that is observable by the senses, understandable, routable and desirable rather than what the form needs (Krippendorff, 2008). In this context, minibus is an interface for the transportation system. Accepting the product itself as an interface helps how to define benefit user of the product and give meaning to the scope of the service and the circumstances under which the beneficiaries decide to interact with the minibus.

DISCUSSION

Conducting research on "meaning" to make the service system perspective is necessary to make a product semantic approach. In the previous section, the discussion was held about the relationship between the user and the meaning. The current state of public transportation by minibus is unsystematic and it can not be integrated with other public transport systems. However, we can conduct research in terms of meanings created as a result of user experience. These meanings will be useful information in the process of developing a new product in the system and as a system itself.

From a system perspective, meanings are connected with the usage context of the product. Exploring user experience from a semantic perspective, in regards to the leading frame that has the experience. This system of services will help to read the user experience through semantic methods.

Baha et. al. (2013), proposed that, understanding how the meanings are carried by a product/service has been constructed over a wider and historical set of predecessors and the insights from such a study, can be beneficial and be used to design radical new meanings. These arguments can be useful to create the framework for the proposed. If experiences are described as social actions, meanings can develop from our transportation culture and perception. The research will attempt to explore how meanings can be described from a service system perspective.

FUTURE STUDIES

According to this study the future studies will be embodiment to make meaningful readings for content via the service received in user experience and they will be required to use the services/products of semantic suggestions on the beneficiary users. Examining the user experience in the service system perspective according to semantic approaches and developing research methodology on this analysis will be included in future studies.

Also a further study that has to be carried out is to determine the boundaries of utilization context. In this framework, the user experience of the service system will allow a more specific interpretation. In this case, the future usage scenarios, and the use context are necessary to determine their meanings. As the result of this approach, the determination can be made on semantic discourse over the user experience in the framework of service system.

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Contributions to evaluate design investment in Portuguese agro-food industry

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ABSTRACT

Portugal due to the combination of soil, climate and sea vicinity, has conditions to grow a genuine quality of agricultural products, which include wine, olive oil, milk, fruits, vegetables and forest products. These can be seen and tasted through the vegetables and fruit shape, colour, texture and flavour, unique features that distinguish its genuine character anywhere in the world (Projectar Portugal[1], 2013).

The purpose of this research is to draw the SMEs attention for the importance of management design, by evaluating the return on investment in design in the Portuguese agro-food industry. We Intend to do so by evaluating the return on investment design in a sample of this sector in Portugal. And with these results create a model so that SMEs can evaluate the investment in design.

Keyword(s): Agro-food, Design value, Investment, Return.

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[1] Amândio Santos, Presidente Pólo de Competitividade Agro-alimentar in Seminário Diplomático - Projectar Portugal, 2013.

INTRODUCTION

Due to its geographic localization Portugal benefits from a happy meeting among the Atlantic Ocean, the wind and the Sun, which allows to grow agricultural goods of great quality, namely fresh and fruit (Dieta Mediterrânica, 2014, p. 27 and p. 35).

The Mediterranean diet global economic value is esteemed to represent 1.9% of the GDP and the endogenous assets are esteemed to account for about 8% of national exports and above 12% of employment (Dieta Mediterrânica, May 2014, p. 53). The Portuguese usable agricultural area makes it difficult to reach production levels that allow competing on price, but in return provides access to niche markets, mainly driven by quality, distinction and social product liability (Dieta Mediterrânica, 2014, p.63). Thus, add value to agricultural products, particularly at *Beira* regions, where the offer is diverse, with great quality and PDO[2] certified, was one of the themes approached in one of the conferences "*Empreendedorismo Agrícola - Cultivar o Futuro*" (*Beiras descobrem o poder da maçã e das marcas* DOP, Maio, 2014). According to Henrique Herculano one of the strategies that have been adopted by olive oil producers to promote and give visibility to the products is the participation in competitions (2012, p.13), because though olive oil is part of our daily lives the lack of knowledge that the consumers have about it influences their choice (*idem*, 2015, p.5). Design, due to its skills, can realize which are the company's systemic features in order to identify value, add value and communicate value (Viladas, 2010, p.24) and from there develop partnerships, complement the offering, disclose the nutritional properties, the good they do to one's health and the importance of seasonal crops to the environment. It can also identify who they are and how they produce, creating a narrative that shows the agricultural products route before reaching the final consumer. This creates closeness, trust and an offer that will not be easily replaced by money. Because nowadays a sustainable company, even an agricultural one, means less and less a product's offering and increasingly an immaterial offering that associates experiences, quality and wellness. Manuel Castells defends that in the current context companies should

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[2] 40 products with PDO certification. PDO, Protected Designation of Origin.

choose to invest in intangible assets such as intellectual property, rather than tangible assets, because they will have greater flexibility to adapt to the current context regarded as a permanent connectivity move he calls *Space of flows* (Thackara, 2006, p.212).

This study was started with a "Design value" literature review, with special focus on Brigitte Borja de Mozota and Xenia Viladas work. Design Council, that begun this study, has been conducting different studies about design value, namely the report prepared in cooperation with the University of Cambridge - *Company spending on design: exploratory survey of UK firms 2008,* by Finbarr Livesey and James Moultrie It has also been implementing SMEs supporting programs, such as the *Designing Demand* and *Design Leadership Programme*. We would also like to highlight DME report - *Design Management Europe* by Gert L. Kootstra, the work developed by DBA Design Business Association and the recent project coordinated by Antti Pitkänen: *Design Roi - measurable design*. And also the different studies and programs elaborated or supported by the European Union in order to encourage the companies to invest in design, specifically the publications: *Design as a driver of user-centred innovation; Design for Growth & Prosperity* and the *European Design Innovation Initiative* program - *Measuring Design Value* and *Design-driven innovation* by Robert Verganti and *The Design of Business* by Roger Martin books. All these show the design as a working process that draws solutions with and for people, integrating wherever possible all contributions in terms of the inherent economic, environmental and social limitations. Based on the needs, it may also create a vision, an ideal of what people would like to enjoy.

METHODOLOGY

To work on this case study we propose to apply the Direct Observation method with mechanical support and Survey for data collection. With the former we want the data collection to take place on the company's premises, because we believe that personal knowledge is essential to involve SMEs in the research. The visit will include a brief presentation of the research and the answer of a short survey, which aims to obtain information about the company's strategy, financial data – to apply to the financial indicators: ROI, ROA, payback and

RODI – and to characterize the company's use of design we apply *The Design Ladder*, that consists in 4 steps: *Non-design*, *Design as form-giving*, *Design as process* and *Design as strategy*. And to characterize the vehicles used by companies to communicate their identity to the market we use the Visibility Vectors develop by Xenia Viladas: *Products, Communication* and *The Spaces* (Viladas, 2010, p.39).

Up to now about 19 SMEs were visited, the vast majority located in *Beira* regions and in the regions of *Oeste*, *Ribatejo*, *Alentejo* and *Porto*. These companies produce olive oil, fruit, wine, rice, cheese and chocolate.

ANALYSIS

The data collected so far indicate that most of these companies do not have Balance Sheet and Income Statement – nor financial data which would allow to use certain financial ratios to evaluate the return on investment in design. Nevertheless, they invest usually in design as a technical skill, because though they are interested on design skills, they are completely unaware about how it can add value to the business. Therefore, most of the SMEs visited are at step 1 and 2 of *The Design Ladder* this means that usually these companies do not use or just use from time to time design (*Non-design*), or use regularly design but in a perspective of a project conclusion (*Design as form-giving*).

The *Balanced Scorecard* is an assessment tool for a given project. Commonly used by managers resembles a dashboard composed of a set of measuring instruments which allow to check the evolution of a given project for a given period of time. Usually it consists of *Financial Perspective, Customers Perspective* to measure customer satisfaction and loyalty. *Internal Perspective* to measure the value associated to the product by the customer through innovation variables, quality and after-sales service. And *Learning Perspective* to verify the level of training, motivation, information sharing and skills acquired by employees.

These indicators are not binding, Brigitte Borja de Mozota, for example, suggested in her study other indicators (2006, p.45) to evaluate the design of the activity: 1. *Design as differentiator* (consumer value perspective) 2. *Design*

as integrator (performance value perspective), 3. *Design as transformer* (the learning perspective) and 4. *Design as good business* (the financial value perspective).

From the information obtained and based on the Balanced Scorecard and the work of Brigitte Borja de Mozota (2006) in *The Four Powers of Design: The Value Model in Design Management* we built a prototype for investment evaluation in design, whose indicators depend on the objectives and targets to be achieved, and on the means available to evaluate them, so that they actually represent the purposes and the company's ability to accomplish and evaluate them. For as Deborah Mrazek ([sd], p.7) or Xenia Viladas (2010, p.141) stated when describing that even the most innovative companies, which usually are those that invest in design, have not accurate systems but define indicators according to the objectives and their capabilities.

All in all six indicators were defined, the first indicator *Project* implies a strategic reflection, that is the determination of the main guidelines supporting the company's activity.

The second indicator Objectives, include what you want to achieve with the project, which can be of social, environmental and economic context.

Targets is the third indicator, it determines the results to be obtained for a given period of time.

Initiatives are the indicator that follows describes the steps that will have to be taken to achieve the proposed objectives. The design shows through the Visibility Vectors that are usually used to communicate the company's strategy: *Products*, *Communication* and *The Spaces* (Viladas, 2010, p.39).

Finally the Qualitative and Quantitative Measures for measuring results.

Based on the prototype we have created projects, objectives, targets and actions to reach the objectives and the most appropriate metrics to measure them. In general all companies have shown interest in applying the prototype, in particular *Orivárzea* and *Cooperfrutas* where the indicators adjustment phase has already been started for monitoring and evaluation of design.

The prototype will be the planning of the company's guidelines for a certain period of time. This will not only contextualize the intervention of the design, which can be of social, environmental and economic context, but also establish the visibility of that intervention: products, communication and the space. We believe that it will help the companies to realize the design added value contribution and increase their skills to turn it profitable.

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Sobre o universo das experiências do novo:
como as pessoas se relacionam com os artefactos

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RESUMO

Esta comunicação apresenta o tema da investigação de doutoramento em design cuja problemática aborda o universo do novo e dos variados tipos de experiências que o novo implica. O objetivo principal deste estudo é a produção de conhecimento teórico. Os métodos adotados são o de observação participante, inquéritos e entrevistas, analisados à luz do modelo teórico da domesticação. Pretende-se provar que as percepções do design correspondem a diferentes percepções do novo, suscitando expectativas de experiências holísticas significantes que integram forma e uso. Como corolário, avança-se igualmente com a hipótese de que essas percepções são categorizáveis, podendo organizar-se taxonomicamente, constituindo-se como uma base heurística relevante para a aplicação em disciplinas de projeto de design.

Palavra(s)-chave: Design Emocional, Design da Experiência,
Experiência do novo, Experiências memoráveis e Inovação em Design.

INTRODUÇÃO

> *"O aparecimento do novo é uma luz que revela qualquer coisa que anteriormente não existia e que aparece como que por encanto. (...) o novo produto do homem tem algo em comum com o novo produzido pela Natureza. (...) Design significa, hoje em dia, dar início a novas sequências formais; design e invenção podem finalmente entrelaçar-se" (Manzini, 1993, p. 52).*

O tema deste artigo aborda as relações estabelecidas entre as pessoas e os artefactos e mediadas pela experiência do novo. A referida temática surgiu do terceiro capítulo[1] da dissertação de mestrado intitulada *"Design & Emoção: sobre a relação afetiva das pessoas com os objetos usados pela primeira vez"*, defendida em julho de 2007, na Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Brasil.

Os relatos iniciais dos colaboradores da investigação referida, naquela altura, trouxeram diferentes percepções sobre a experiência de uso de algo novo. Além do novo como o objeto retirado de uma caixa, ou aquele cujo lacre foi rompido pelo dono, ou ainda, aquele objeto que sai direto da loja para a casa de seu proprietário, há o objeto novo que a pessoa não possui, deseja e pode vir a ter, como há o objeto novo que a pessoa não possui, deseja e não pode ter. Há, também, o novo *que nem sequer* foi retirado da embalagem, e o novo *que recém* saiu da embalagem.

O estudo preliminar que gerou as primeiras categorias do novo permitiu a observação dos sentimentos e sensações que emergem da relação das pessoas nestas experiências de uso do novo. Estas categorias são apenas algumas das que podem existir e que, na investigação de doutoramento, propõem-se desenvolver no quadro de uma taxonomia do novo. Essa classificação inicial compreendia quatro categorias:

O novo em folha pode revelar diferentes sensações: *expectativa* de usar o novo pela primeira vez, de inaugurar o objeto; *zelo* ao se ter mais cuidado com o

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[1] Capítulo intitulado "*Tateando o campo pela primeira vez*", no qual aborda a primeira ida a campo, onde as questões iniciais da investigação eram perceber como se dava 'a experiência de uso de algo novo' e a 'experiência de uso de algo pela primeira vez', a partir de entrevista exploratória feita através de inquéritos.

que não se usou ainda; *ansiedade* por não saber usar mesmo que se tenha ideia de como se usa. Como exemplo, podemos citar o carro zero quilômetro — o que pode ser mais novo?

O ***novo que parece novo*** esta categoria traz o sentimento de se ter *realizado um bom negócio*, de que *valeu a pena*, no sentido de que o objeto parece novo, está bem conservado e funciona bem. Podemos incluir aqui os objetos que chamamos de *seminovos* ou *quase novos,* como exemplo as roupas e os calçados - que muitas vezes são herdados de familiares ou adquiridos em lojas de roupas usadas. Estes últimos, especialmente, transportam marcas de uso de outras pessoas, que não nos importamos de carregar em nossos corpos.

O ***novo atual/contemporâneo*** traz o sentimento de *desejo*, de *posse* do novo recém-projetado. Cabe exemplificar aqui que esta categoria congrega os objetos que ainda não existem para comercialização, que estão na fase de *concept* ou na prancheta do designer — os lançamentos, os produtos de última geração e aqueles que sofreram alterações tecnológicas, de forma/visual, de aumento de potência ou capacidade, diminuição ou aumento de tamanho, enfim, alguma alteração que lhes tenha sido feita para melhorá-los.

O ***novo para mim*** é a categoria mais abrangente, pois nela podem pertencer todas as anteriores. E os sentimentos igualmente diversos e dependentes da percepção das pessoas em relação as suas experiências e ao seu repertório prévios.

Quando as pessoas narravam sobre suas experiências de ter usado algo novo, este *novo* era adjetivado e, muitas vezes, explicado (Menezes, 2007). Estes resultados apontaram para a importância do *novo* sob outros pontos de vista e da necessidade de entendê-los numa dimensão mais ampla.

PROPOSTA E OBJETIVOS DE DESENVOLVIMENTO DE UMA TAXONOMIA DO NOVO

As questões iniciais de investigação deste estudo são: qual o diferencial semântico entre novo e inovação no campo dos artefatos? Como as pessoas percebem o novo? O novo é entendido pelas pessoas, através da tecnologia, da forma ou da interação?

A palavra "novo" é muito presente na vida das pessoas e repetida várias vezes e em diferentes contextos. Pode-se afirmar que *todos* os objetos com os quais nos relacionamos, um dia foram novos ou foram considerados novos. É importante perceber o novo enquanto conceito, de uma forma clara entender bem o que é o novo e suas relações, seus sinônimos e antônimos.

Pretende-se com este estudo examinar a relação do novo em contraponto com o familiar, com o antigo, com o velho, com o habitual, e obter uma precisão semântica sobre os diferentes conceitos de novo, sobre a sua relação com diferenciação e inovação (termos profusamente usados no discurso da gestão) e ainda sobre como estes e outros conceitos associados são percebidos, para entender como usá-los de forma apropriada no âmbito dos projetos de design (Verganti, 2012).

Os artefactos novos podem influenciar comportamentos e provocar efeitos reais e variados; evocar sentimentos positivos ou negativos (Damásio, 1996) e podem, ainda, participar de experiências igualmente positivas ou negativas.

Tendo em vista o papel central que as emoções ocupam em nossas vidas, Paul Hekkert e Deana McDonagh (2003) ponderam que produtos, de variadas naturezas, constantemente aproximam-se de nós e nos envolvem, evocando respostas emocionais geradas pelos produtos que resultam da interação entre usuários, produtos e contexto em que estão inseridos. Isto é, a experiência que deriva da interação é composta por todos esses elementos, simultaneamente: o momento, o lugar, o indivíduo e o produto.

Com o foco sobre as experiências de uso do novo, pretende-se observar não só a relação de uso efetivo, mas também os sentimentos e as sensações que, o fato do objeto ser percebido como novo, contribuem para a vida das pessoas e seu bem-estar.

Edward T. Hall (1986, p.9) sustenta o conceito de que os indivíduos que pertencem a culturas diferentes habitam mundos sensoriais diferentes, logo é importante

> *"desenvolver o sentido da identidade pessoal contra a alienação e para uma valorização da experiência".*

O que o autor afirma aqui nos faz ponderar sobre as possíveis diferenças nas percepções sobre o novo, já que aspectos culturais influenciam nas sensações e impressões que temos sobre os objetos com os quais interagimos. Deyan Sudjic (2010, p. 54) completa que

> *"os objetos não existem no vácuo: são parte de uma complexa coreografia de interações".*

Para tanto será desenvolvida uma proposta de taxonomia sobre a percepção do novo no âmbito do design e um quadro teórico que permita originar um contributo para a criação de um conjunto de orientações que possam ser úteis para o projeto de design, nomeadamente no seu núcleo central de mediação cultural traduzido no desenho de novos artefactos.

As categorias do novo apresentadas no início deste artigo provêm de uma classificação primeira, originada na dissertação de mestrado já referida anteriormente, mas numa reflexão e debate recentes sobre o tema proposto neste projeto parecem ter surgido outras categorias que fazem sentido sob o ponto de vista do design: *o novo original, o novo virtual, o novo interpretado, o novo radical, o novo relativo, o novo clássico, o novo absoluto, o novo em contraponto ao antigo, o novo em relação ao anterior*. A partir das análises que nos propusemos fazer, em relação ao novo, esperamos aprimorar mais estes significados e entendê-los sob o ponto de vista do campo do design.

Como objetivo geral, pretende-se provar que as percepções do design correspondem a diferentes percepções do novo, suscitando expectativas de experiências holísticas significantes que integram forma e uso. Como corolário, avança-se igualmente com a hipótese de que essas percepções são categorizáveis, podendo organizar-se taxonomicamente, constituindo-se como uma base heurística relevante para o projeto de design.

Assim, os objetivos específicos desta investigação são (i) identificar com precisão semântica os variados significados do novo, da diferenciação e da inovação; (ii) investigar as relações das pessoas com o novo como pressuposto para a construção de uma proposta taxonômica do novo no contexto do design; (iii) aplicar os conceitos elaborados no âmbito dos projetos de design, definição

de um conjunto de orientações baseadas nos conceitos identificados; (iv) testar a sua aplicabilidade no âmbito dos projetos em design.

METODOLOGIA E DESCRIÇÃO DO PROCESSO

Este estudo alargará a sua análise a três instâncias que nos parecem fundamentais para a arquitetura conceptual que se procura: a construção do novo, a comunicação do novo e, finalmente, o consumo do novo.

A *construção do novo* refere-se aos conceitos e respectiva declinação na análise de artefactos elaborados pelos Designers. É suposto que o Design seja um dos agentes da produção do novo, que essa vocação esteja inscrita no ADN da disciplina e, neste sentido, é expectável que os seus protagonistas demonstrem um discurso e uma percepção do novo com maiores índices de elaboração e abstração.

Assim, serão realizadas entrevistas semiestruturadas dirigidas a designers e especialistas em design com vista a estabelecer modelos típicos sobre como estes entendem e percebem o novo que projetam ou criticam e o que entendem como diferença entre novo e inovação. Os relatos dos designers e especialistas serão posteriormente comparados com os do público em geral, determinando as semelhanças e diferenças entre as falas.

Para as duas últimas instâncias e com o objectivo de focar o estudo, permitindo instrumentos analíticos que denunciem os diferenciais semânticos procurados decidiu-se eleger o telemóvel como objeto de análise, por ser um artefacto digital de excelência, que as pessoas conhecem e se relacionam diariamente para comunicação, sociabilidade, para as mais diversas funções para as quais os mesmos se propõem.

Ao nível da *comunicação do novo* será feita uma apreciação de anúncios publicitários das marcas mais influentes de telemóveis e das três maiores operadoras de telefonia móvel de Portugal e também das três maiores do Brasil. Analisar-se-ão os discursos e as peças gráficas que atribuam o design como um argumento de venda a fim de perceber nas características anunciadas a presença ou não do novo.

Será, igualmente, feita uma análise de blogs que articulam sobre tecnologia e design, onde se fará uma avaliação das expressões utilizadas para discorrer sobre artefactos domésticos interativos e seus atributos que podem estar relacionados com o novo.

Finalmente, para a análise do *consumo do novo* o estudo terá como base uma abordagem fenomenológica, ou seja, que se baseia numa observação da experiência do que é, de alguma forma, *ser novo* para alguém (para um *eu*), para então chegar ao conceito do novo no contexto dos usos efetivos, e nesse sentido, do âmbito do design – da experiência.

Para tal, utilizar-se-á o método da observação participante: da compra ao uso, numa análise baseada nas quatro dimensões – apropriação, objetivação, incorporação e conversão – do modelo teórico da domesticação de Silverstone (1996). Serão utilizados equipamentos de apoio mecânico como câmara audiovisual para captar os relatos e as manifestações corporais para análise posterior - dos compradores de telemóveis, no momento da compra, e depois de um tempo – um ou dois meses – será realizado um inquérito guiado para obter novamente as suas impressões, percepções e sensações relacionadas ao uso do artefacto e à experiência do novo. Verificar-se-á *como* a experiência de uso altera os significados (Csikszentmihaly & Rochberg-Halton, 1991) durante um determinado período de tempo, refletindo sobre os motivos que as pessoas escolhem o modelo em questão, se pela marca, pela forma, pelo uso ou pela tecnologia, e em que medida.

Num segundo momento, a organização taxionómica dos resultados e o consequente desenvolvimento de um modelo teórico, permitirão a sua avaliação em sede de ensino de projeto em design (Krippendorff, 2000). Tratar-se-á de verificar o impacto que as orientações dedutíveis desse modelo teórico poderão ter nas soluções projetuais dos estudantes. A realização destes testes quer em Portugal, quer no Brasil, permitirá aferir da expectável variabilidade cultural das respostas. Caso os resultados conduzam a uma avaliação efetiva do modelo tentar-se-á realizar teste semelhante com alunos de design de outros países e culturas.

CONSIDERAÇÕES FINAIS

Acreditamos que a, partir deste estudo, será mais fácil consolidar o processo para uma taxonomia do novo que facilite compreender as suas diferentes nuances, polissemias e antonímias, e abordar com mais segurança teórica, a concepção do que realmente significa e importa, no contexto do design, o que é *ser novo* em todos os seus possíveis desdobramentos.

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Design de Montras para as lojas de Comércio Tradicional da Baixa do Porto?
O caso Rua das Flores

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RESUMO

O comércio tradicional da Baixa do Porto sofre, desde os anos 1980, uma decadência acentuada, em parte pela desadequação aos modelos de consumo vigorantes. Reconhecendo a sua importância histórica e identitária para a cidade, a urgente necessidade de melhorar a sua comunicabilidade fez-nos procurar uma solução pelo Design, disciplina com potencial impacto sócioeconómico e cultural. A montra, instrumento de visual merchandising para atração do consumidor em potência, é um espaço subaproveitado na maioria dessas lojas tradicionais. Tendo como estudo a Rua das Flores, após pesquisa de terreno, constituimos um Painel de Lojistas dispostos a participar na nossa Investigação-Ação em progresso, e procuramos pela metodologia do design, conhecer melhor essa realidade desenvolvendo, num processo iterativo, protótipos ou modelos possíveis para um design de montras atraente, por forma a contribuir para a revitalização do comércio tradicional da Baixa do Porto. Este artigo diz respeito às duas implementações de protótipos realizadas.

Palavra(s)-chave: design de montras, vitrinismo, comércio tradicional do Porto, visual merchandising, investigação-ação.

INTRODUÇÃO

A orientar o nosso estudo e actividades colocamos como questão de investigação se *O Design de Montras, enquanto Visual Merchandising, poderá contribuir para a revitalização do Comércio Tradicional da Baixa do Porto*. Para aprofundarmos a mesma, e de acordo com o âmbito da investigação, foi escolhida como caso de estudo a Rua das Flores, uma das mais antigas (séc.XVI) e tradicionais, no que diz respeito à atividade comercial da cidade do Porto. De acordo com o estado da arte, alguns princípios subjacentes ao tema e em consequência do trabalho de campo, definimos as seguintes linhas orientadoras de Investigação:

• As montras do comércio tradicional na Baixa portuense são espaços atualmente subaproveitados, quanto à potencial influência na atração do transeunte;

• O designer de montras, através do processo criativo de visual merchandising design, pode contribuir para a promoção do comércio tradicional na Baixa portuense;

Segundo Branco (2009), e o seu levantamento exaustivo, uma grande parte das lojas de comércio tradicional da Baixa do Porto está inserida em edifícios de valor arquitetónico, acrescidas de valor histórico e cultural, em termos identitários da «Cidade do Comércio». O número dessas lojas que não resiste às actuais condições económicas e de mercado tem vindo a aumentar rapidamente e, portanto, urgem medidas que possam evitar o seu desaparecimento.

A área de conhecimento do Visual Merchandising e Design de Montras, vulgo Vitrinismo, está normalmente afeta apenas às marcas possuidoras de cadeias de lojas, de produtos massificados e/ou de luxo. Esta dedicação compreende-se, entre outros fatores, pela diferença de orçamento disponível para operações de promoção da marca e produtos, se comparadas com lojas de pequenas empresas, frequentemente de gestão do tipo familiar. Contudo, para as primeiras, a importância de uma promoção estratégica[1], de acordo com princípios de gestão ligados ao Marketing e ao Design, é fato adquirido e

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[1] «(...) mais de 70% das decisões de compra são feitas na loja», de acordo com VOLPE, Massimo (Director Europeu de Desenvolvimento da POPAI: The Global Association for Marketing at Retail) em LILJENWALL; Robert (2013), O Poder do Marketing no Ponto de Venda, p.15

comprovado e, por isso mesmo, área de investimento cada vez maior, com recurso a profissionais, para além dos de Marketing, das áreas da Arquitectura, Design e Belas Artes.[2] Nesse sentido, e focando-nos especificamente neste comércio tradicional, com diferenças relevantes, e determinantes, em relação a essas marcas e lojas, procuramos com esta investigação:

• Uma diminuição da lacuna de conhecimento na área temática, específica deste comércio;

• Revelar o Design como motor para inovação social;

• Estímular à expansão da iniciativa em outras lojas de comércio tradicional;

• Consequente contribuição para a preservação de lojas de valor arquitectónico e histórico-social;

A abordagem desta investigação é de base qualitativa e intervencionista. Seguindo os princípios da Investigação-Ação, pressupõe a atuação no problema em contexto real, consequente reflexão e novo desenvolvimento em função dos resultados. Não é realizada apenas uma intervenção, mas as consideradas necessárias (dentro dos recursos disponíveis na investigação, de tempo, humanos e financeiros) até conseguir definir melhor o problema e criar uma alternativa para este contexto específico.

OBJETIVOS

Partindo do fato do design de montras ser um fator reconhecido de competitividade em marcas globalizadas, temos como objetivo principal verificar se o design de montras pode ser fator estratégico de promoção também neste tipo de comércio (tradicional), nesse contexto urbano, arquitectónico, económico e social específico. Num comércio que, embora com um orçamento muito mais reduzido, tem uma forte vertente identitária e partilha algumas das características vantajosas dessas marcas, tais como o contexto físico (pela localização privilegiada e inserção em edifícios de valor arquitetónico) e um

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[2] Amâncio Ortega, proprietário da INDITEX (Zara, Zara Home, Massimo Dutti, Üterque, Pull&Bear, Bershka, Stradivarius, Oysho), convidou o primeiro "decorador de montras" para as suas lojas em 1979 e ainda hoje acredita que 90% das vendas são da montra. "Com que linhas se cose na Zara" in Marketeer, n.º 203, Junho 2013, p.41.

projeto de design, que vá de encontro á linguagem semântica e ao *visual merchandising*, para atração do consumidor em potência.

É prioritário consciencializar o lojista deste comércio tradicional da importância do design da montra para o sucesso do seu negócio, pois para alcançarmos o consumidor em potência é necessário previamente convencer o lojista a fazer esse investimento. Por esse motivo, nos focamos principalmente, na recolha de resultados, na percepção do lojista em relação à nossa intervenção na montra.

Desta forma, é também objetivo que a disciplina do Design contribua para a valorização da paisagem urbana ao nível estético e simbólico na cidade do Porto, pretensa cidade criativa.

Esperamos, com esta investigação-ação, estimular a continuação da atividade do design de montras neste tipo de comércio tradicional, com expansão a outras ruas para além da Rua das Flores.

METODOLOGIA E MÉTODOS

Nesta Investigação, sendo intervencionista, para o projeto de tese temos vindo a desenhar desde o início uma metodologia de carácter predominantemente qualitativo, de acordo com o processo iterativo do designer, seguindo também os traços da Investigação-Ação, uma metodologia em espiral cíclica e que, tal como originalmente idealizada por Kurt Lewin, em 1946, segue uma série de passos, que se repetem, e que incluem o planeamento, a ação [implementação de protótipos de montras], a observação dos efeitos da ação, e a reflexão, tal como argumentam os mais conceituados autores do tema, segundo Gray (2014, pp. 328-343).[3] Assim, após selecção de um Painel (amostra) constituído por seis lojas de diferentes sectores (duas ourivesarias, uma mercearia, uma retrosaria, um alfarrabista e uma pronto-a-vestir) distribuídas ao longo da Rua das Flores, foram implementados nas mesmas, em simultâneo, protótipos de montras, resultantes do processo criativo de design, em duas épocas distintas: no Natal 2012, a 1ª implementação (Fig.1 e 2), e na Páscoa 2013, a 2ª implementação (Fig.3 e 4)

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[3] GRAY, David E. (2014) *Doing Research in the Real World*, pp.328-343

Fig. 1, Ourivesaria Eduardo Carneiro

Fig. 2, *Retrosaria das Flores*

Fig. 3, Ensaio da Montra da *Mercearia das Flores*

Fig. 4, *Ourivesaria Neves & Filha*

Segundo Bradley (2010, p. 242), o tipo de abordagem da Investigação-Ação tem sido muito utilizada no desenvolvimento de produto em pesquisa de mercado, o que pressupõe avaliar e apoiar esse desenvolvimento em função da reacção do utilizador[4]. Considerando que o nosso tema integra princípios de Marketing, através do Design, parece-nos natural essa associação, pois pretende-se avaliar o efeito de uma mudança de ação, junto com o nosso utilizador, o Lojista, com vista à atração do consumidor em potência.

Esta investigação-ação revela iteratividade ao longo do seu percurso, numa evolução cíclica (ver *Fig.5: Organograma da Investigação-Ação*), de ação reflexiva, assumindo o trabalho de campo uma grande influência nas escolhas.

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[4] BRADLEY, Nigel (2010) *Marketing Research: Tools & techniques*, p.242
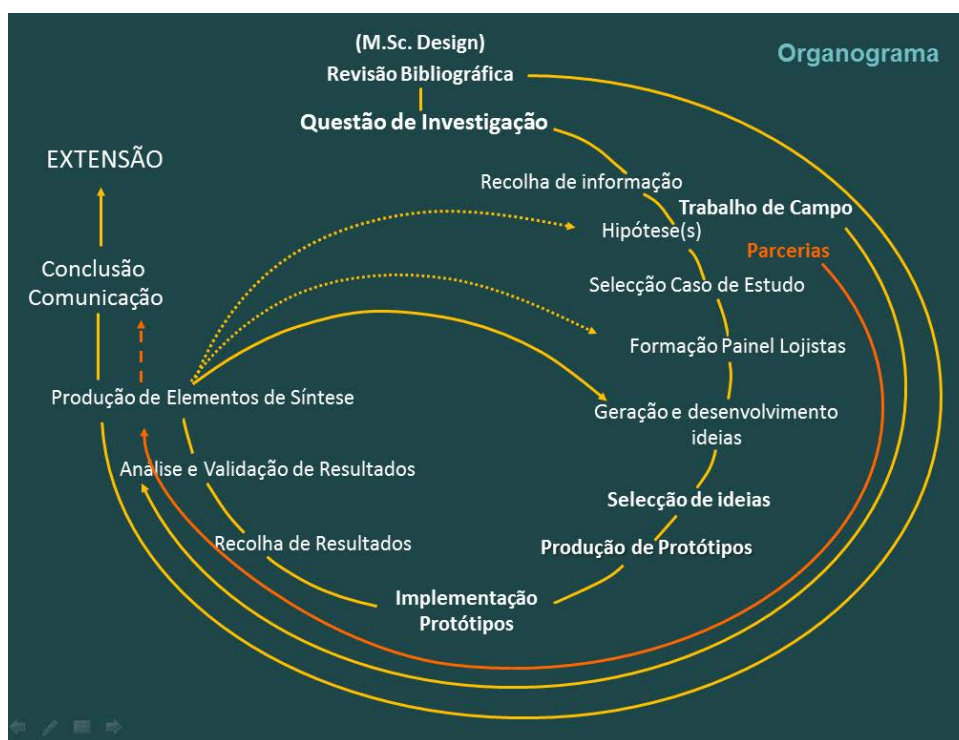
Fig, 5. Organograma da Investigação-Ação.

RESULTADOS

Os inquéritos realizados ao Painel de Lojistas bem como as publicações conseguidas nos Media, permitem-nos perceber qual a percepção geral do efeito das duas implementações, levando-nos às considerações resumidas nas tabelas (tabs. 1,2,3 e 4).

RESULTADOS DOS INQUÉRITOS AO PAINEL,
RELATIVOS À 1ª E 2ª IMPLEMENTAÇÕES (TABELAS 1,2,3 E 4)

Aspetos com Parecer POSITIVO do Painel	1ª Impl.	2ª Impl.
Avaliação geral da Intervenção / Implementação de Protótipos	√	√
Atração da atenção do transeunte	√	√
Montra de Intervenção em comparação com a montra habitual	√	√
Cenografia da Montra	√	√
Tema / Narrativa da Montra	√	√

Existência de um fio condutor (no Painel) no conceito da montra		√
Interesse em participar na próxima Intervenção	√	√
Design de Montra: contributo para promoção do Com.Tradicional	√	√
Recomendação de participação a outras lojas		√
Conveniência da atividade de Design de Montras		√

Tabela 1. Aspetos das duas implementações realizadas com Parecer Positivo do Painel.

Aspetos a alterar, por indicação do Painel, na 2ª Implementação	
Utilizar maior quantidade de produtos na montra	√
Utilizar maior variedade de produtos na montra	√

Tabela 2. Aspetos alterados na 2ª implementação em resposta à indicação dada pelo Painel após a 1ª implementação.

Características Vantajosas do Comércio Tradicional	
Localização em Percurso Turístico	√
Tipo de Produto	√
Atendimento e Serviço	√
Ambiente da Loja	√

Tabela 3. Caraterísticas vantajosas do Comércio Tradicional, segundo o Painel.

Outros Aspetos Relevantes
Perfil do Consumidor do Painel:
Heterogéneo, porém com predominância do Turista, Adulto, Cliente Ocasional

Tabela 4. Outros Aspetos relevantes obtidos através do Inquérito ao Painel

OUTROS RESULTADOS E INDICADORES

• Publicação de Entrevista à Investigadora no *Jornal de Noticias*, sobre a intervenção nessas montras;

- Publicação na revista *Time Out Porto,* acerca da inauguração do *Museu das Marionetas do Porto* com sugestão de visita à parceria nessas montras de comércio tradicional, à data.

- Publicação online, no blog *OportoCool,* blog que sugere locais e acontecimentos social e culturalmente interessantes no Porto.

- Publicação na revista *Time Out Porto*, acerca da 2ª intervenção.

- Após 2ª Implementação mais lojas além do Painel mostraram interesse em participar numa próxima Implementação.

- Durante o período desta investigação outras iniciativas relativas às montras têm surgido no âmbito do Comércio Tradicional, incluindo na Rua das Flores, ilustrações de S.João nas montras de várias lojas, uma iniciativa da *Porto Lazer,* que revelou um interesse crescente de participação por parte dos Lojistas; O "*Projeto Vitrina*" do curso de Mestrado de Comunicação da ESAD, também tem ganho consolidação noutras ruas da Baixa do Porto, vai já na 4ª Edição.

- A investigadora foi contactada por várias entidades para expôr perante outros comerciantes a importância do design da montra e os aspetos importantes a considerar nessa atividade.

DISCUSSÃO DE RESULTADOS

Segundo o Painel de Lojistas, as intervenções realizadas nas suas montras terão favorecido a atenção do transeunte, sendo positiva ("boa"/"muito boa") a avaliação feita às montras de estudo, opinião que é sustentada pela vontade do Painel de voltar a participar em futuras implementações.

A cenografia, tema e narrativa da montra, aspetos fulcrais pensados pela investigadora-designer na composição de uma montra, e normalmente novidade neste tipo de loja, foram os aspetos mais apreciados pelo Painel, manifestando a sua pertinência também neste tipo específico de comércio. Também na 2ª implementação foi valorizada pelo Painel a existência de um fio condutor, enquanto *storytelling*, no conceito das montras.

Nesta fase, parece sustentada a percepção de que a atividade do Design de Montras, e seus princípios implícitos, enquanto instrumento de *visual merchandising*, poderá contribuir para promover o negócio deste comércio tradicional, enquanto fator estratégico. O Painel, com uma nova consciência da atividade do design de montras, demonstra interesse e valorização da mesma e vontade de a continuar. A divulgação das implementações pelos media e outras iniciativas na mesma área que têm vindo a crescer parecem o despertar da atenção de um público mais alargado para o design de montras, neste contexto.

Considerando também como indicador positivo a solicitação da exposição dos conhecimentos adquiridos, perante outros lojistas de comércio tradicional, parece pertinente a expansão desta investigação-ação.

PRÓXIMOS PASSOS

Com base no estado da arte, na análise dos resultados obtidos nas duas implementações e restantes indicadores referidos, tem-se vindo a desenvolver um protótipo que, pretende ser um dispositivo de formação e consultoria, para o design de montras, aos lojistas de comércio tradicional da Baixa do Porto.

Serão, nesse âmbito, estabelecidos contatos visando parcerias com entidades como a Associação Comercial do Porto, Associação dos Comerciantes do Porto, Porto Lazer e outras que demonstrem ser boas aliadas na boa promoção da ação.

Pretendemos na devida altura fazer publicação da totalidade e resultado desta investigação-ação e do respetivo dispositivo já finalizado, enquanto proposta de expansão da atividade do design de montras para as lojas de comércio tradicional da Baixa do Porto.

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HEALTHCARE FACILITIES - IMPACT OF PHYSICAL ENVIRONMENT

SIGNAGE SYSTEM

LAYOUT PLANNING

LIGHT COLOUR ODOUR ACCESSIBILITY .../...
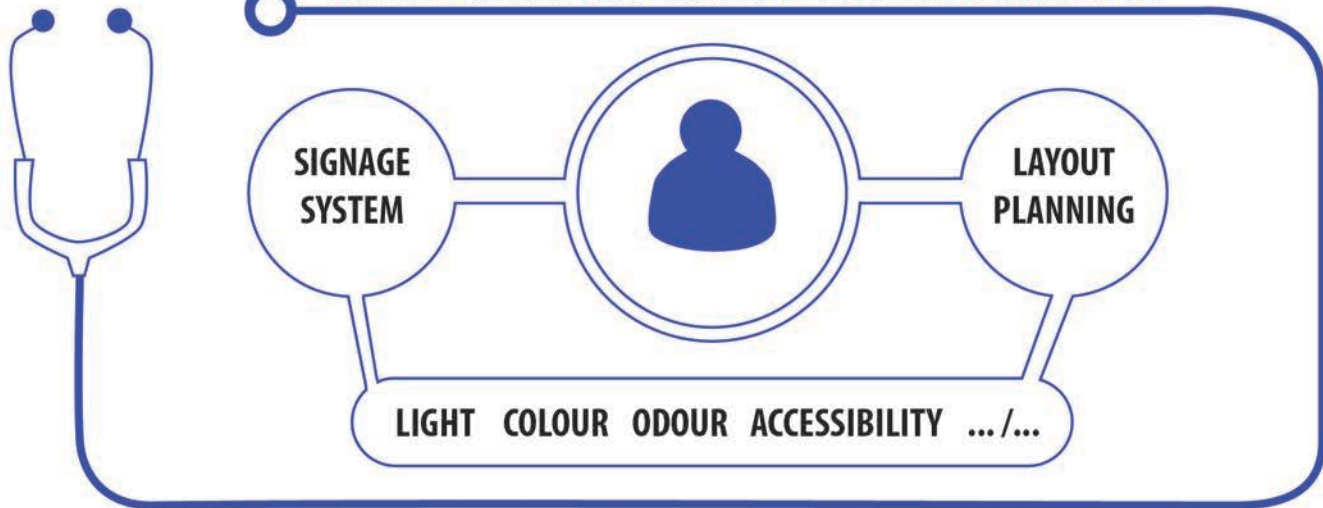
Users' emotions and experience in healthcare services

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ABSTRACT

The traditional approach of Healthcare facilities is focused on efficiency and functionality. However, latest developments on the service design discipline can bring contributions for designing the facilities of such institutions in an innovative way. The involvement of the users in the service design process is becoming a concern for Healthcare Institutions. Also, users' experience is no longer seen only as result of the way the service is provided, but also a result of the environment (i.e. layout, signage and other elements). This is the key challenge of this PhD project.

In partnership with three Healthcare institutions, our aim is to identify problems existing in their physical environments in order to define guidelines that can be used for development of new healthcare institutions centred on the users' experience and emotions. How can the physical environment of Healthcare facilities be improved to provide a better experience to the user?

Keyword(s): Users' Experience, Users' Emotions, Physical Environment, Signage Planning and Service Design.

PROJECT FRAMEWORK

Healthcare facilities were traditionally designed as services that should be functional to deliver the best care possible. However, when designing just for the functionality of the services provided, the human and social factors of a service are many times forgotten. This traditional approach leads to *"facilities that are functionally effective but psychologically hard"* (Ulrich, 1991) in which the user is not taken in consideration as important intervenient. This is particularly evident in many of the Hospitals in Portugal that were built many years ago. How can we create facilities that lead to better users' experiences and emotions?

The mentalities are changing and the focus is turning to the appliance of new technologies and also to the manipulation of the environment elements in order to provide therapeutic landscapes to the users. As mentioned by Curtis et al. (2007), it is important to see in which ways the environment of the hospital respects the users' preferences, demands and needs since these can sometimes be influenced by their illness (Curtis et al., 2007). Further the innovations that are being used in these institutions, the healthcare process in our days is focused more on the prevention rather than on the recovery, and one example of that is the efforts that are being made for example in technologies for Ambient Assisted Living. Given the fact that the world population is getting older (Hong et al., 2009), the focus of Healthcare is turning now to the prevention of potential risks that the elderly face in their daily lives, like for example by living alone (Hristova et al., 2008), by providing them with a safer environment and help them maintain their independence (Hong et al., 2009). Although these types of implementations are extremely important to enhance peoples' health, this current solutions overemphasize the role of current smart devices and technologies, leaving the social and human interaction aside (Hong et al., 2009).

In this project, the investigators decided to focus on the social slope of Healthcare Services and the human interaction inherently connected to it. The central part was the physical environment of the institution and the impact that the physical elements have on the users' experience and emotions, and not on the technologies that can be involved to help this experience. Through the manipulation of elements like the layout, the signage system, the lightness, the colours used and other aspects, it could be possible to influence in a positive

way the mood of the users inside these services (Dalke et al., 2006). Although the focus of the project is not on the technologies, Ambient Assisted Living projects can be basis to support new ideas for our project.

Regarding the subject of the project, during its development, in an interview with a nurse of Clinic Haematology, she described a case of a successful design of a Paediatric area of an Hospital. The case occurred in a paediatric service were the children needed to perform one exam, and because they were afraid of the procedure, the process of anaesthesia was most of the times necessary. To solve the difficulties of the nurses in dealing with the kids, the Hospital administration together with workers, psychologists and designers, performed a reshuffle on the room and transformed it in what looked like a jungle. The machines were camouflaged as animals and trees and all the surroundings of the room were transformed into elements of a jungle. The results were extremely positive: the kids were no longer afraid of the procedure, the anaesthesia process was simplified to the nurses, and even some kids did not need to be anaesthetized because they were relaxed as a result of the environment.

Despite some successful cases, the contextual complexity of the healthcare facilities and the implications it has on users, makes the manipulation of the physical elements very difficult. As such, a field research, in which the needs and demands of the users are considered and analysed, was undertaken.

The subject of the Healthcare environment is a stimulating challenge. Managers of Healthcare institutions have concerns growing bigger regarding the design of the environments. They want the facilities to transmit care and friendliness to the users. Consequently, the main challenge of Healthcare facilities is on how to communicate the quality of care to the physical environment; and how to reduce the negative feelings that are an outcome of being in an hospital (Ullán et al., 2011), (see Figure 1).
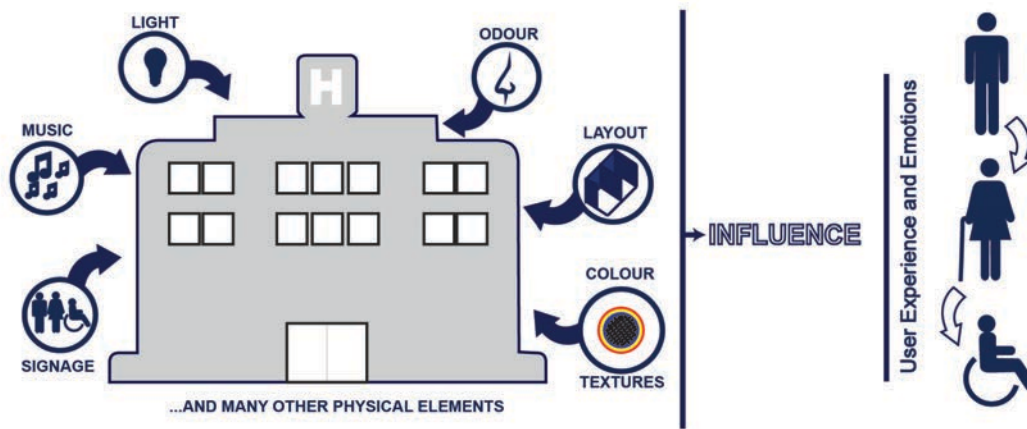
Figure 1. Physical Environment impact on users' emotions and experience

Given this challenge, the PhD project, currently under development, intends to find new ways in which the design of healthcare facilities can create a good service experience to the users through the manipulation of the physical environment.

CASE STUDIES AND RESEARCH METHODOLOGY

This project analyses three healthcare institutions in Portugal, with the aim of identifying the problems they have in their physical environment, and define guidelines to support the design of these institutions. It will benefit either new institutions, under development institutions or current institutions since the expected results of the study will identify the problems (as such as possible causes) in the institutions, as well as propose solutions to overcoming them.

The project embraces three different case studies of healthcare institutions in Portugal. One is located in Porto (urban area), the other one in Viana do Castelo (more rural area) and a third one located in Aveiro.

Choosing three different scenarios may provide insights regarding if the users' context background and lifestyle influence their preferences consequently affecting the design of healthcare facilities.

In the first institution, the services analyzed were: Clinic Hematology, Dermatology, Gynecology and Obstetrics. They were chosen based on the annual number of patients, and it was ensured that the patients do not suffer

from physical or psychological conditions that could interfere with their participation.
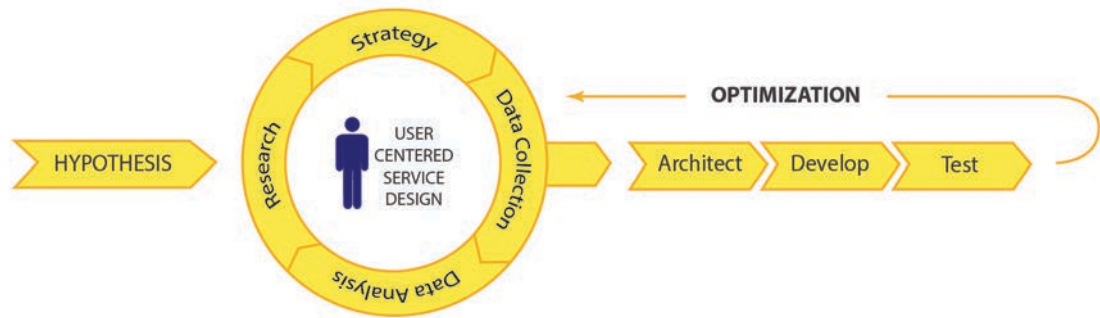
Figure 2. Process of the study

The purpose of the study was to test the hypothesis of the influence that the physical environment has or not in the users' experience and emotions, by collecting the users' opinion and analysing the results in order to optimize the services studied, Figure 2. A questionnaire was applied with three different parts: the first and second parts were dedicated to the users' preferences regarding the signage and physical elements of the facilities; the third part was constituted by an open-ended question in which the users were free to give their opinions and suggestions regarding the improvements they think were important. After the questionnaires refined, the users were approached in the waiting room of the service and asked to fulfil it.

The workers and healthcare professionals were also considered as they could have valuable opinions regarding improvements that would considerably improve the patients' experience and their own working experience. An unstructured interview was conducted with the healthcare professionals, with an average of twenty minutes, and was focused on their perception of the environment and elements they think should be improved. As mentioned by Bate and Robert (2007), the difficulty is in finding the users' point of view and understanding their perceptions of the environment they are in. Is extremely important to analyse the experiences described by the users, and to capture their view of the environment (Bate & Robert, 2007). Direct observations were

also performed to the patients, as the users' attitudes inside the healthcare services could indicate problems they experience but that they are not able to describe. Further in the project, the involvement of other exploratory methods will be considered to enrich the work; for example, it could be interesting to perform a focus group to evaluate possible types of signage based on the data collected. We expect to come across with the users' needs and demands and establish guidelines that may lead to significant improvements and benefits for the users and institutions.

RESEARCH CONTRIBUTIONS, LIMITATIONS AND CONCLUSIONS

This study aims to explore and show the potential of the social component when it comes to designing Healthcare facilities, and may contribute to improve the reputation of the Portuguese public healthcare systems.

The project intends to fulfil a gap in the existing research: most of the research is focused on the users involvement in their treatment process; although, there is a lack of studies addressing the users involvement (patients, families, workers and other intervenient) in the design process of the healthcare facilities.

However, there are some limitations in the study, such as the fact that some data collected can be considered subjective since it is related with emotions. How can emotions, identified by the users, in the questionnaires and resultant from the environment be interpreted? Is it possible that, for example, the feeling of frustration means the same among the users?

Other possible limitation is the fact that it is performed in three institutions, which is not representative of the total of population that uses the services and therefore more institutions should be involved. However, the access to Healthcare facilities is extremely complex and time consuming since the authorizations needed by the Ethical Commissions always take a considerable amount of time. Despite these limitations, the result of this work may constitute a huge advance in the way users are considered and treated in the design of Healthcare services. The results may support users in becoming important players in the development of Healthcare facilities rather than mere spectators.

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BEST PRACTICES OF DESIGN AND SOCIAL INNOVATION IN LATIN AMERICA

Designing for social innovation policies
An exploratory study of best practices in design and social innovation in Latin America

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ABSTRACT

This paper describes the preliminary study of our ongoing doctoral research focused in research best practices of design and social innovation in Latin American countries. During this entire study and reasoned on our philosophical perspective, is chosen a subjective dimension approach. At this moment our research is essentially an exploratory study, characterized by literature review on the main theme. Authors related to German Idealism are activated to explain the social innovation phenomenon also to connect public policies to this subject at the contemporary context. Also a questionnaire survey is driven to design researchers, which aim is to identify successful design initiatives in Latin America that has served as a model for other projects according to their example as the initial proposal, the process and the result. Next task provides direct contact with 4-6 projects leaders and starts following up each project.

Keyword(s): Best practices of design and social innovation; Latin America countries; Subjective dimension.

OUR PHILOSOPHICAL STANCE

In the process of introducing a research theme is relevant start from turning explicit our beliefs, since this choice contains fundamental assumptions about the way the researcher understands the world (Saunders, Lewis, Thornhill 2009, p.108; Love 2005, p. 361).

In this study is undertaken a subjectivist dimension of individuals experience in the social world. Our approach is entirely influenced by non-materialism perspective. As a spiritual being, our belief is that any social conflict has its origin in human relations and cannot be solved only through material means; in this terms yet before any social reform must occur the intimate reform, resulting firstly in the moral progress of the individual and then in the whole collectivity. According to this idea, as set out by Max-Neef (1991) and McIntosh (2008), there are fundamental needs placed besides economic goods. As a designer researcher, our position cannot neglect other philosophical lines necessary to the advancement of various sciences, but we continuously question their limited understanding of particular social phenomena.

In accordance to research philosophy knowledge, among the four paradigms defined in the social theory we are assuming the one derived from German Idealism – the Radical Humanist theory perspective – related to Kant's works, Hegel, Marx and Husserl (Burrel, Morgan 1979, p.120). Overall, the intellectual foundations of this paradigm emphasize the human consciousness and seek to change society by changing modes of cognition and consciousness. In Phenomenology of Spirit (1807), original titled as Phänomenologle des Geistes, Hegel describes the logical process by which the human mind emerged from the simple awareness, through the stages of self-consciousness, reason and spirit, to the absolute knowledge (Strathern 1998).

In the context of this research and in very general terms, the idealism paradigm reasoned in Hegel's theory means to us:
• Through the dialectical process is created a system that takes into account the universality, which itself includes the particular. As develops rationality, the human being becomes more spiritual and therefore more conscious of itself and

its meaning in a broader context. In this process it rises toward the absolute conscious, called by the author as the Absolute Spirit;

• The mind is what forms the world, soon the human being is understood by the dimension of thought;

• The reality is not static but dynamic, and this movement has moments that contradict each other.

Another relevant topic in Hegel's discussion is the notion of the state role. The family and the civil society are units that actually translate the idea of state. Family and civil society are according to Hegel, needs by which the spirit in the process of being becomes aware of himself. The state is the political and social totality, and contains within itself the public and the private world. In The Philosophy of Right (1821), Hegel reflects an order of political institutions that should work in accordance with the universal and particular interests that are secured by delegating public agencies the task of solving social issues through politics.

As a result of the philosophical stances annunciated above, is adopted the following approaches (Burrel, Morgan 1979), that can be summarized in a visual scheme that is presented in figure 1:

• Nominalism from the ontology point of view, because understand that the social world doesn't exist independently of individuals. At this point contrast to the realistic paradigm where the social world pre-exists to individuals and is independent of it;

• Anti-positivism from the epistemological perspective, since it understands that the world is essentially relativistic and can only be understood from the perspective of social actors; while positivism demand explanations by seeking regularities and causal relationships between phenomena;

• Voluntarism from the human nature angle because believes in autonomy and free will of individuals; and not considers that the man and his actions are completely determined by social situations and the environment as in determinism view;

• Ideographic from the methodology viewpoint because it considers only possible to obtain knowledge from the detailed exploration of the subject under investigation, emphasizing the analysis of the subjective aspects. In contrast, the

nomothetic vision values the quantitative techniques, the construction of scientific testing and systematic protocol, emphasizing hypothesis-testing process, checking the regularity, the possibility of generalization, in accordance with the rigorous scientific standards.
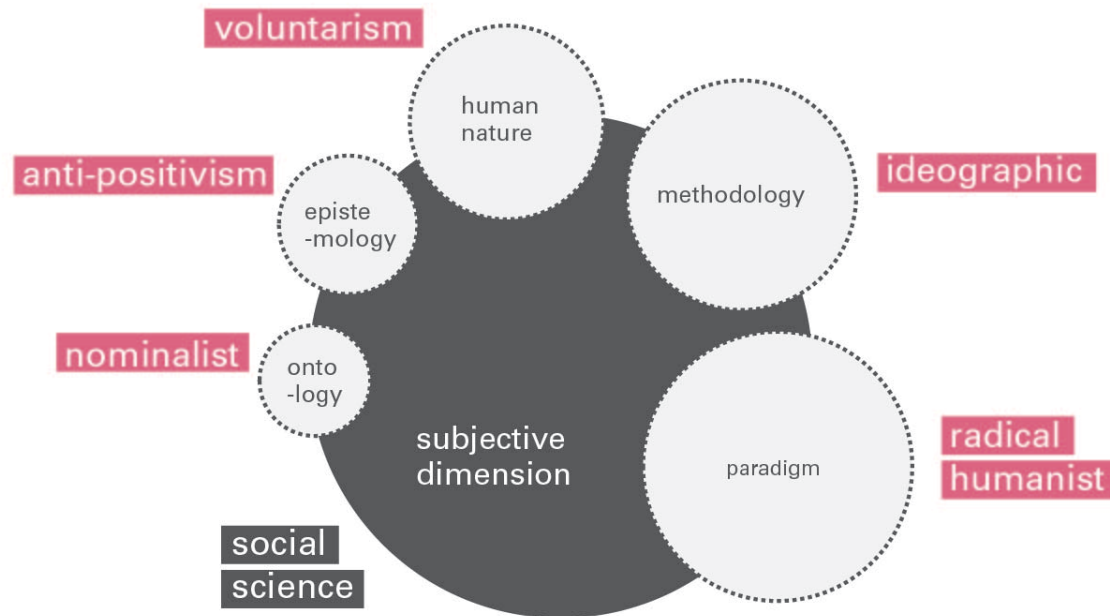
Figure 1. Philosophical framework

RESEARCH CONTEXTUALIZATION INTO EPISTEMOLOGY OF DESIGN

The next effort becomes annunciating our epistemological positions according to the design discipline. So at this moment our question concerns to discover what is the nature of design reality according to our values? From the epistemological perspective in design knowledge, the actual research proposal it is embedded in theories of:

• Frayling (1993) and Archer (1995), when describing the nature of research in design field;

• Love (2005), when defining the two main epistemological approaches in design discipline;

• Cross (2007), when determining the three pillars of design knowledge;

• Liem and Sanders (2011), when framing the design research and practice.

For now is deduced that this study is based more on a interpretative approach than strictly scientific phenomenon; is about the praxeology of design, in other words, is the study of design processes and not the phenomenology or epistemology of design. It is a study that seeks to understand a contemporary social phenomenon from the perspective of design, that means is committed in getting direct results to the practice of the design field.

From the point of view of the professional domains, it can be standing in the theories of Buchanan (2001) and Jones and VanPatter (Jones 2014), when both authors are showing professional fields in design and their different levels of understanding and skills.

Buchanan's definition of design of complex systems is related to one of four broad areas in which design affects contemporary life. For the author, this area includes concerns of systems engineering, architecture, urban planning or the functional analysis of the parts of complex wholes. Design of complex systems is becoming concerned with exploring the role of design in integrating human beings into broader ecological and cultural environments (Buchanan 2001, p.10).

Jones and VanPatter (Jones 2014, p.9) developed Buchanan's theory in their own design domains. The four domains described advance from simple to complex, with different skills and methods applied in each domain. The last one is our focus, design field towards solving complex societal situations, social systems, policy-making, and community design.

THE PROCESS OF THE EXPLORATORY STUDY

To relate actual status research with design process – outlined in double diamond model –, after the discover phase, where steps of enlargement and divergence of information supplied mainly by literature review occur, this phase may be identified as a define phase (fig.2).
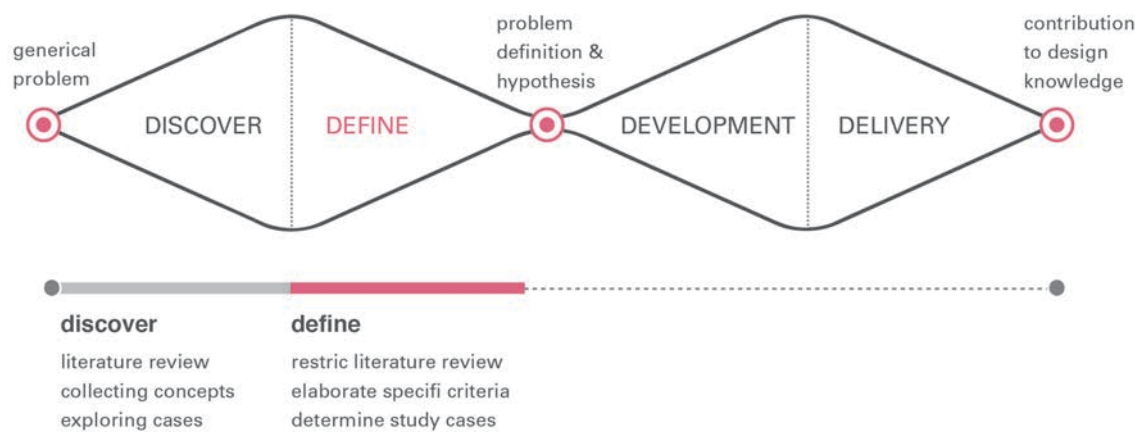
Figure 2. Status of research process

In the first phase the study was positioned according to the current philosophies of scientific research in order to support our values that transcend the knowledge established in the design field. Were reviewed some of the social science philosophies, as so the differences between the Radical Structuralist, Functionalist and Interpretive paradigms. During this process turns possible to identify the relationship with the Radical Humanist philosophical paradigm.

The next step was dedicated to identify the state of the art of public innovation and design policies theme. A comprehensive literature review in order to identify what has been developed in several places was carried out. This search occurs essentially through qualitative data collected from academic, organizational and governmental sources. The process of searching documents has largely been through the Internet, collecting journal articles, reports, thesis, digital books, conference proceedings, magazine articles, webpages, and updating news from online platforms.

It were observed that in the context of South America, the Latin American countries that have been developing design programmes in public field are Cuba, in 1980 by Oficina Nacional de Diseño Industrial (ONDI); Brazil, in 1995 by Programa Design Excellence Brazil and Portal Design Brazil; Colombia, in 1996 by Sistema Nacional de Diseño and Red Nacional de Diseño para la Industria; Argentina, in 2003 by Plan Nacional de Diseño (PND); Chile, in 2007 by Consejo Nacional de Diseño; and Uruguay, in 2010 by Conglomerado y Cámara de Diseño (Téllez 2013).

To the questionnaire survey is defined as a starting point to contact the institutions and organizations that are all articulated towards the Latin American Network of Public Policy and the academic institutions related to research activities in design and social innovation. They are the following:

• Cuba: Oficina Nacional de Diseño Cuba; Instituto Superior de Diseño Industrial

• Brazil: Centro Brasileiro de Design; UFRJ DESIS Group; UNISINOS DESIS Lab; NDS DESIS Lab; NAS DESIGN; CEDTec – Design and Technology Study Center

• Chile: Consejo Nacional de Diseño; DuocUC DESIS Lab

• Colombia: DESIS Lab Caribe; UPB DESIS Lab; Tejido Multicolor; Observatorio de Diseño Aplicado; Plan Nacional de Diseño; Sistema Nacional de Diseño

• Dominican Republic: Asociación Dominicana Profesionales del Diseño

• Uruguay: Cámara de Diseño de Uruguay

• Argentina: Creatividad Ética A.C.; Plan Nacional del Diseño; FADU UBA

• Equator: Facultad de Arquitectura Diseño y Artes Carrera de Diseño

The survey questionnaire is designed as a tool to complement the exploratory study from literature review and select the design initiatives and successful social innovation that will compose the research case studies framework.

From this instrument our intend is to: 1) identify the key areas in which the design is structured to meet the social needs of the Latin American populations; 2) recognize the extent of design practice in social innovation projects, it acts in the grounds of the project or to support the realization of the initiative; 3) analyze the consequences of a successful project and the potential to cause a public policy of social innovation.

The following requirements for the instrument construction should be considered:
• Only design researchers are inquired because of they ability to distinguish a common initiative from a good practice;

• The questionnaire should be easy to fill out, requiring limited time and asking the respondent sufficient information for investigation and subsequent screening;

• Due to the international nature of research, the tool is on-line system available, in Portuguese, Spanish and English languages.

The survey is a comprehensive approach since it is seeking sweeping view of the Latin American scene for the occurrence of design projects and social innovation. Due to the multiplicity of languages and to facilitate the data analysis process is adopted closed questions structure with multiple-choice answers. The sampling technique used is random; once the characteristic of the study is the geographical dispersion of the data. In this case, this peculiarity is useful because our focus is investigating experiences in the Latin American territory. The primary sampling unit is essentially one, teachers and researchers of design knowledge field (fig. 3).

Figure 3. Questionnaire survey

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Design da Experiência na Informação para a Alergia Alimentar

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RESUMO

As alergias alimentares constituem um problema de saúde que afeta uma percentagem progressivamente maior da população europeia. A profilaxia desta doença é na sua maior parte dependente de comportamentos de compra e consumo de produtos alimentares que envolvem a procura, leitura e compreensão da informação existente na rotulagem desses produtos. Apesar da atual legislação comunitária obrigar à identificação dos alérgenos mais comuns, fatores tais como a disparidade entre formatos de rótulos, má legibilidade ou informação confusa contribuem para que esta informação seja de difícil uso para a população em geral, e inacessível para setores da população tradicionalmente mais excluídos, tais como os seniores, analfabetos ou invisuais. Nesta investigação pretende-se abordar o problema através do desenvolvimento um código universal visual e tátil de identificação dos mesmos. Este código deverá ser adequado ao uso por pessoas com diferentes contextos físicos e sociais e legível tanto através de meios analógicos como digitais.

Palavra(s)-chave: design da experiência, interação incorporada, alergia alimentar, graphical tag, comunicação aumentativa e alternativa.

ACERCA DA INFORMAÇÃO NA ALERGIA ALIMENTAR

As alergias alimentares constituem contextos nos quais ocorre uma profunda perturbação da qualidade de vida e da experiência associada ao ato de comer das pessoas afetadas (Burks et al., 2012; Turner, Kemp, & Campbell, 2011). As reações alérgicas alimentares, provocadas por proteínas geralmente inofensivas, podem manifestar-se tanto em termos de sintomas meramente incómodos (desde erupções cutâneas) até a choques anafiláticos potencialmente fatais. Num adulto a taxa de prevalência desta condição situa-se na ordem dos 1 a 2%, atingindo nas crianças valores de 5,8% (Burks et al., 2012). Se para além das alergias forem consideradas as hipersensibilidades e intolerâncias alimentares, os valores de incidência para a população em geral sobem para os 25% (EFA, 2014).

Não existe cura para a alergia alimentar. A única forma de profilaxia adequada para a gestão desta condição de saúde consiste na remoção dos alérgenos suscetíveis da dieta da pessoa afetada, ato com implicações na vivência e rotina da pessoa, mas também da sua família e grupo social de apoio, com reflexos nos sistemas de saúde nacionais e setores associados à indústria alimentar.

A rotulagem desempenha um papel central na gestão das alergias alimentares, sendo a identificação explícita da presença de alérgenos regulamentada através de legislação comunitária. Apesar disso, continuam a existir barreiras à transmissão clara aos consumidores da informação que lhes é mais relevante. A variedade existente de formatos de rótulos, a diversidade na linguagem com que as mensagens de alertas são escritas e o caráter vago da informação que vulgarmente é utilizada faz com que a procura por parte do paciente dos dados necessários para o consumo seguros dos alimentos constitua, inevitavelmente, um processo gerador de grande ansiedade (Turner et al., 2011). Adicionalmente, outros públicos, tais como pessoas com capacidades perceptuais reduzidas (ex. invisuais ou amblíopes), deparam-se frequentemente com contextos de compra nos quais as suas necessidades, problemas e experiências não são consideradas (Kaufman-Scarborough, 2000).

A proliferação recente de dispositivos móveis dotados de cada vez maior capacidade de processamento, acesso permanente à internet e múltiplos sensores, incluindo câmara fotográfica, abre um universo de novas oportunidades de acesso à informação por parte do consumidor em relação à

saúde. O termo *mHealth* refere o uso da computação móvel e tecnologias da comunicação para a prestação de cuidados de saúde e apoio à saúde pública, sendo neste momento uma área de investigação em rápido crescimento (Free et al., 2010). No caso das alergias alimentares, Cornelisse-Vermaat et al. (2008) referem que o uso de dispositivos digitais constitui um auxílio no momento de compra, aumentando a confiança com que a seleção dos produtos é feita. Considerando pessoas invisuais ou amblíopes, a leitura digital de um código de barras ou *QR code* pode efetivamente tornar-lhes acessível informação antes impossível de obter. Todavia, por si só, uma solução de comunicação que implique a obrigatoriedade do uso de dispositivos digitais não se aplicará a utilizadores info-excluídos, como por exemplo cidadãos analfabetos ou seniores; para estes, uma solução deste tipo contribuiria apenas para o reforço da sua exclusão (Basdekis, Klironomos, Antona, & Stephanidis, 2006).

CRIAÇÃO DE UM CÓDIGO VISUAL PARA A IDENTIFICAÇÃO DE ALÉRGENOS ALIMENTARES

Este projeto tem como objetivo contextualizar, compreender e direcionar a problemática da criação de uma solução para a obtenção de informação relativa à presença de alérgenos em alimentos, inclusiva na forma como a informação é prestada e fomentadora de uma experiência de uso mais rica, através da materialização de um artefacto de comunicação inovador que: a) facilite, agilize e proporcione uma maior qualidade da experiência de compra e consumo de produtos alimentares por parte da generalidade da população portadora desta doença; b) torne a informação acessível a grupos da população normalmente excluídos da possibilidade de obter a informação necessária autonomamente; c) facilite as atividades de natureza social e cultural que enquadram a relação do utilizador com a escolha dos produtos alimentares.

A proposta centra-se na criação de um código universal para partilha de dados com o utilizador por via digital através de uma *graphical tag* (Figura 1).

Figura 1. Exemplos de *graphical tags* (O'Callaghan, 2009).

Uma *graphical tag* é um artefacto visual facilitador da conexão de objetos físicos com representações virtuais de funcionalidade computacional e que aumenta o objeto físico onde se encontra inserido de forma a suportar interações casuais através de manipulações naturais e associações (Want, Fishkin, Gujar, & Harrison, 1999). Como hipótese exploratória de *graphical tag* para identificação de alérgenos será inicialmente tomado o *QR Code*, um código matriz cuja estrutura de dados bidimensional permite a leitura rápida dos dados através de uma câmara e uma densidade alta de informação, reduzindo a área necessária para a sua impressão sobre uma superfície (Soon, 2008).

Simultaneamente, o mesmo código deverá ser lido por meios unicamente analógicos (visualmente, através do tato ou dispositivo analógico auxiliar, por exemplo um stencil personalizado), que permitam a partilha da mesma informação (ou das partes fundamentais dessa informação) por cidadãos info-excluídos, economicamente impossibilitados de aceder a dispositivos digitais adequados ou com determinadas dificuldades perceptuais; nesse sentido tratar-se-à de um artefacto de Comunicação Aumentativa e Alternativa, ao possibilitar a comunicação com uma pessoa com as capacidades que lhe estão disponíveis, ultrapassando ou compensando as áreas nas quais a sua comunicação esteja limitada (Millar & Scott, 1998) (Figura 2).
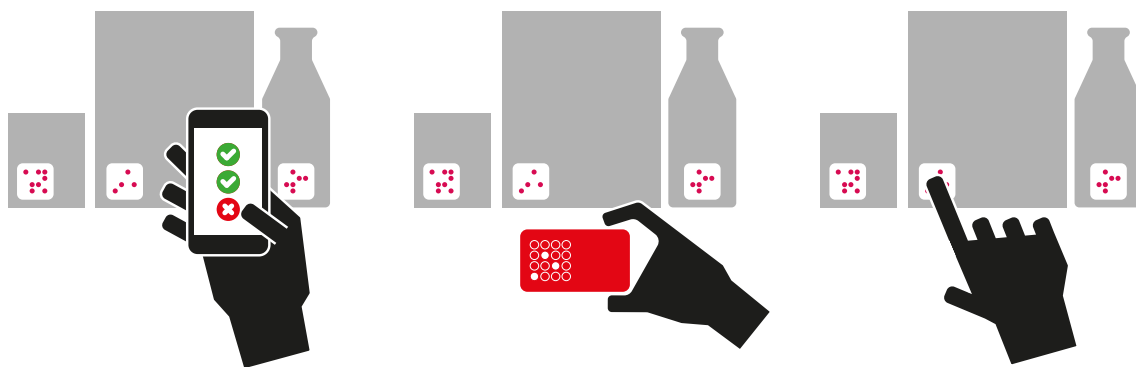
Figura 2. Representação esquemática da proposta inicial do funcionamento do código a desenvolver para leitura da informação relativa à presença de alérgenos num alimento: 1) através de leitura digital do código; 2) através de uso de stencil personalizado; 3) através de leitura tátil do relevo do código.

Constrangimentos comuns em diferentes contextos de comunicação, como a necessidade de aumentar a densidade da informação ou de reduzir o número de referentes abstratos utilizados, faz com que estratégias de representação gráficas semelhantes sejam utilizadas, como o uso de uma matriz bidimensional para a representação do código (figura 3).

Figura 3. Exemplos de códigos baseados numa matriz bidimensional (da direita para a esquerda): 1) quadrado de Políbio, criado na Grécia antiga para redução do número de referentes em comunicação à distância através de sinais de fogo (Thayer, s.d.); 2) *QR code*; 3) painel para auxílio à comunicação por pessoas com doenças motoras. O paciente pisca o olho o nº de vezes correspondente ao número da primeira coluna e indica com novo piscar de olho a letra pretendida (Scott, 1998).

Tomando em conta as semelhanças formais e perceptuais existentes nestes dois paradigmas distintos de comunicação visualmente codificada, pretende-se obter um meio de comunicação que seja usável e qualificável num âmbito alargado de contextos de uso.

UMA METODOLOGIA PARA UMA SOLUÇÃO SIGNIFICANTE

Esta investigação terá como estrutura teórica de base a disciplina do design da experiência: com o estudo, prática e avaliação do artefacto segundo uma abordagem orientada para a experiência de uso, pretende-se tomar como ponto de partida os princípios fundamentais do design centrado no utilizador (Preece, Rogers, & Sharp, 2005), largamente focados na procura de uma interação eficiente, eficaz e satisfatória, e incorporar fatores que descrevam de uma forma mais holística a relação da pessoa com um sistema, tais como afeto, interpretação e significado, bem como fatores habitualmente afastados das preocupações tradicionais na interação como os aspetos estéticos e sociais (Hassenzahl, 2013).

A consideração do utilizador e do contexto, mais do que um mero alargar das variáveis de estudo da abordagem cognitivista que caracterizou o HCI nas últimas décadas, representa aspetos de uma mudança estrutural na concepção da interação. Do entendimento da interação como uma forma de processamento de informação, passou-se para o da interação como criação de significado, no qual os artefactos e os seus contextos definem e são alvos de múltiplas interpretações, e o sentido surge tanto no processo de design como pelos utilizadores e envolventes em situações de uso. Este terceiro paradigma do HCI, tal como é caraterizado por Harrison, Sengers & Tell (2007), sugere novos métodos e abordagens de design e avaliação tais como o design participativo, etnometodologia, interação incorporada, ou *critical design*, representando na área do design de interação a mudança radical na prática do design que Krippendorf chamou de *semantic turn*: a conceptualização de artefactos que

> *"signifiquem algo aos seus utilizadores, ajudem comunidades e que deem suporte a uma sociedade em processo de reconstrução a uma velocidade sem precedentes"*
> *(Krippendorf, 2006, p. xvii).*

Assim, para o modelo de análise desta investigação será dado destaque ao modelo da interação incorporada inicialmente proposto por Paul Dourish. Partindo de tendências atuais do HCI tais como a computação tangível, onde se procura novas metáforas, ou formas de tirar partido das nossas capacidades físicas na resposta às atividades no mundo, e a computação social, na qual se reconhece que os sistemas que usamos se encontram incorporados em sistemas

com significado social, fluídos e em negociação entre pessoas, e que a incorporação da compreensão da prática social permite a construção de sistemas mais adaptados às necessidades das pessoas (Dourish, s. d.), a interação incorporada corresponderá à

> *"presença e participação no mundo, em tempo real e espaço real, no aqui e no agora. Um estado participativo, a presença e ocorrência de um fenómeno no mundo"* (Dourish, 2001, p. 8).

Ou seja, a forma como é feita a compreensão do mundo, de nós próprios e da forma como se realiza a interação advém necessariamente da nossa localização num mundo físico e social como atores corpóreos. Considerando o princípio fenomenológico de que o significado no mundo é descoberto a partir da nossa participação ativa nele, a interação incorporada baseia-se na compreensão de que utilizadores criam e comunicam sentido através da sua interação com o sistema, e entre o utilizador e outras pessoas através desse sistema. Como abordagem, a interação incorporada direciona a aplicação de modelos físicos e sociais a sistemas interativos, indo além das questões físicas ou contextuais na abordagem projetual mas considerando como as mesmas contribuem para o significado das ações (Dourish, 2001).

 A operacionalização deste modelo numa investigação empírica implica a adoção de uma metodologia que tenha como ponto de partida o entendimento do mundo como fenómeno socialmente construído e subjetivo, orientado para a compreensão da realidade baseada nas experiências das pessoas dessa realidade social, e focado na compreensão dos fenómenos. Nesse sentido a investigação fenomenológica representa uma abordagem viável, ao colocar a ênfase na recolha relativamente pouco estruturada de dados, para de forma indutiva dar a perceber as perspetivas e experiências de um número relativamente pequeno de pessoas no seu ambiente natural (Gray, 2013, p. 28). Alargando-se a problemática da experiência de uso às populações com necessidades especiais, o User Sensitive Inclusive Design (Newell, Gregor, Morgan, Pullin, & Macaulay, 2011) constitui um modelo a explorar de práticas do HCI, que direciona o foco de estudo para as características sociais, culturais e motivacionais das pessoas com necessidades especiais além da mera caraterização das suas limitações físicas ou cognitivas. Através deste modelo, pretende-se subverter o caráter de "necessidade" ou "inevitabilidade" associado ao uso de um artefacto acessível

através da valorização das suas qualidades estéticas e simbólicas, num processo de criação que seja sensível ao contexto social do indivíduo.

Em complemento à investigação fenomenológica, a investigação-ação apresenta-se como uma abordagem de investigação viável para o tema desta tese: considerando o caráter de responsabilidade social que orienta esta investigação, pretende-se que o investigador se envolva diretamente no processo de investigação, não apenas para a realização do estudo, mas também como agente de mudança. Tal como é característico neste tipo de abordagem, e pretendido para este projeto, a interação com a realidade a ser investigada será feita no ambiente natural do grupo de estudo, sendo que a investigação-ação afigura-se também adequada no favorecimento de uma abordagem que pretere o estudo de variáveis singulares em favor de uma visão que aborda os problemas de forma holística, inseridos dentro de um sistema social complexo (Gray, 2013).

De acordo com a estrutura de trabalho associado à investigação-ação, a tese contará com fases de planeamento, atuação, observação e reflexão. Os instrumentos de recolha de dados a usar serão na sua essência qualitativos e associados à investigação para o design (atividade prática e intervenções na produção dos artefactos) (Saikaly, 2005) investigação etnográfica (entrevistas), e investigação-ação (diário de campo, observação, entrevistas e questionários) (Gray, 2013, p. 385). Para maior clareza, a estrutura é apresentada em tabela (Tabela 1), onde são associadas a cada fase da investigação as respetivas ações e instrumentos de recolha de dados. Esta estrutura não é cronologicamente linear, mas sim cíclica e dependente das descobertas e interpretações surgidas no próprio desenrolar do processo.

Tabela 1. Estrutura de trabalho da investigação.

	Planeamento	Atuação	Observação	Reflexão
Ações	Levantar os requisit os de informação relativos à presença de alérgenos. Contactar potenciais parceiros: instituições de saúde, produtores e retalhistas de produtos alimentares, associações de pessoas com alergias alimentares. Estabelecer parceria de investigação com departamento de engenharia informática para desenvolvimento de protótipo digital. Identificar requisitos e constrangimentos técnicos e funcionais para o design do sistema.	Investigar e produzir soluções para a veiculação das mensagens escolhidas para os suportes e contextos adequados. Definir participantes para o estudo. Caraterizar o contexto de escolha, compra e consumo dos participantes. Validar as caraterísticas do sistema com os *stackeholders*. relevantes. Familiarizar os participantes com o sistema.	Observar os atuais comportamentos e processos de decisão dos participantes e familiares/grupo social. Realizar um *sanity-check* da validade do sistema. Recolher informação da adaptação dos participantes ao sistema. Avaliar a versão analógica do sistema em contexto real. Avaliar a versão digital do sistema em contexto real. Avaliar a viabilidade estratégica do sistema junto dos *stackeholders*.	Analisar e in de dados. Enquadrar os dados recolhidos com as questões de investigação. Discutir a validade do modelo para os contextos relevantes. Apresentação dos resultados obtidos.
Instrumentos	Análise documental. Entrevistas.	Investigação através do desenho. Prototipagem Entrevistas. Questionários. *Focus groups*. Sessões de formação.	Observação participante. Entrevistas. Questionários. Manipulação de maquetes/protótipos Avaliação de usabilidade e experiência de uso.	

CONCLUSÕES

A comunicação da presença de alérgenos nos alimentos constitui um problema em aberto com impacto na qualidade de vida de uma percentagem cada vez maior da população. Se para a maioria das pessoas afetadas, o ato de escolha e consumo seguro de alimentos constitui um elemento de perturbação da rotina diária, a tarefa afigura-se de concretização impossível por parte de grupos sociais alvo de determinados tipos de limitações ou exclusões. Nesta investigação é proposta uma solução de comunicação usável tanto através de meios analógicos como digitais, com o objetivo de ser mais inclusiva e proporcionar uma melhor experiência do ato de escolha e compra de produtos alimentares. Ao aplicar-se uma abordagem de investigação baseada nos princípios, métodos e temas relacionados com a área do design da experiência, pretende-se aproximar o modelo mental do design ao do utilizador do ambiente de interação em causa, procurando na riqueza e complexidade que caracteriza o ambiente de interação compreender os processos de natureza social e cultural que intervêm na experiência de uso dos utilizadores.

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COLLECTIVITY

The Intersection of Art and Technology in Hackerspaces
An Essay on Open and Collaborative Practices

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ABSTRACT

Although open community spaces such as hackerspaces, makerspaces and fabLabs advocate a special focus and dedication to encouraging and promoting projects within the intersection of art and technology, it has not been clear how this intersection works.

This essay approaches this intersection through a brief report on the fieldwork developed within two different hackerspaces: AltLab - Lisbon's hackerspace and ATX hackerspace in Austin, Texas. Two different contexts within two different countries, bearing both similarities and divergences. The essay reflects part of my experience as an artist working at these spaces, having developed specific projects for each one.

Keyword(s): Hackerspaces, Collaboration, Open Art

INTRODUCTION

As a visual art practitioner, I have mainly worked by myself and developed projects both conceptually and technically, using digital media mainly as a tool, rather than as a medium. Whenever further technical knowledge was required to develop a specific project, I would seek workshops and classes that taught me what I needed to learn, often being hard to know what I was looking for.

This research - developed both in AltLab and ATXHS (ATX hackerspace in Austin, Texas)– represents a shift on my work environment, moving it into hackerspaces as a way not only to have the technical support needed to develop my projects, but also to take advantage of these environments by developing works collaboratively, while exchanging knowledge and ideas.

ART AND TECHNOLOGY

Studies on the collaboration between artists and technologists have been elaborated (e.g. Candy & Edmonds, 2002; Turner, G. et al., 2005; Zhang & Candy, 2006, 2007), and on projects developed in specific environments created for both to meet, like the residencies at Xerox PARC (Harris, 1999), the Creativity & Cognition Research Studios (C&CRS), among others (Wilson, 2002, p.42-46). These initial studies focused on the innovative potential thought to be brought by two distinguished ways of working, when combined. On the one hand, there was the creative potential thought to be brought by artists, on the other hand, there was the executional potential of technologists. Mainly, these studies were looking towards finding new uses of emerging technologies.

Gradually however, these collaborations - which were initially improbable and mainly sponsored by corporations or supported by research groups - started giving way for more organic collaborations between artists and technologists, as digital technology became more democratized and accessible (among other factors) and encounters between the two became less "fabricated" and more spontaneous.

Hackerspaces, emerge from some of these circumstances, mainly as experimental spaces where some of the working processes of artists have already been embedded within the technologists' working methods, and vice-

versa. At this point, the idea of "tinkering with technology" as a starting point to building something, or as a learning process, is common ground for both technologists and artists. Describing themselves as "community-operated physical places, where people share their interest in tinkering with technology, meet and work on their projects, and learn from each other"[1], these spaces gather several conditions that can be seen as ideal for artists who work with technology, and technologists working more experimentally. Being a member (anyone can be a member) within these communities is usually cheap, and the advantages amount from being able to use its space, to using tools, and from collaborating on projects, to proposing ideas for workshops and other initiatives.

For these communities, digital fabrication plays usually an important part, as 3D printers and different CNC millers are becoming more affordable and are assembled here within a D.I.Y/makers movement logic. Finally, open-source principles are highly regarded since transparency and sharing are embedded as core philosophies for these spaces, just like collaboration.

Given these conditions, questions about the intersection of art and technology within these spaces, arise: how are artists using hackerspaces and how is their artwork affected? What results from the application of the core principles of these spaces (like transparency, sharing and collaboration) to an art practice that has been developed mainly individually and contradicting these principles (like my own)? What can I learn from the perspective of an art-practitioner, working in these spaces? How is my artwork affected?

METHODOLOGY

The separation and categorization of "artists" and "technologists" is made across this paper, initially to mention studies that also tackle and make this differentiation and later to reflect the professional background of most members in both hackerspaces: the majority has an engineering degree (electrotechnical, software, mechanical) or is a technician (mechanic, computer

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[1] In hackerspaces.org

technician, audio/video). I therefore use the word technologist as a way to evidence their professional and academic backgrounds and do the same to my own categorization as an artist. Both terminologies are nevertheless broad and the intersection between the two is a main driver of this investigation.

The novelty of such spaces and lack of quantitative and qualitative data about them, made it necessary to place this research's methodology in close proximity to the phenomenological models of social sciences (cultural anthropology) while simultaneously standing on the grounds of practice-led research (Haseman, 2006), which can be expressed in "material forms of practice, of still and moving images, of music and sound, of live action and digital code" (Haseman, 2006, p.103). Participant-observation research methods (Bernard, 2006) were used: fieldwork was developed in two different hackerspaces and mainly qualitative data was collected through notes, interviews, questionnaires and emails.

Induced by personal practice and integrating collaboration as a main concern, two different projects - one for each place - were developed with the purpose of unveiling what the intersection of art and technology entails within these communities.

The first project, *Open Mobile*, was developed at AltLab - Lisbon's hackerspace, in the course of 6 months and invited members to collaboratively build a kinetic sculpture inspired by Alexander Calder's mobiles. Members could participate by building individual pieces (that integrated some electronic or digital component) that were later assembled into the final mobile. The final structure of the mobile was therefore dependent on the participation of the members.

The second project, *Action Figures Stop Motion*, was developed at ATXHS during 3 months, and invited members to develop either a stop motion animation or part of its material alongside me, by having open access to my artistic process, providing a kit with instructions and files and giving them the chance to add and modify the kit. There was at least one animation being developed (by myself) and the development of other animations was dependent on member's participation.

OPEN MOBILE

Right at the start of the *Open Mobile* project, I became aware that the network of AltLab's members was extended to a virtual community. Many "deactivated members" who were no longer physically in Lisbon (mainly because they moved out of the city), had kept contact through the mailing list. As the project was announced through an open call both locally and through this list, my first reply came surprisingly from Barcelona.

The replies were balanced between enthusiasm for the initiative by giving ideas for the pieces and technical help: "if you need help in 'less artistic' parts, we can always find the time". Also, "deactivated members" abroad needed people to develop their ideas locally, at AltLab.

The conceptualization of pieces to be integrated in the *Open Mobile* was not an issue for many members, as different and original ideas emerged. Proposed ideas included a remote peephole to a modular construction system.

A list was made so that collaborators could join and help developing the proposed ideas since many of them were presented by distant "deactivated members". It was posted both online, through a shared document and *in loco*, through a sheet that people could sign.

PERSONAL OBSERVATION AND PARTICIPATION

As a participant, I had some difficulties coming up with an idea of my own, since my work is mainly grounded on painting and animation and not sculpture or physical computing. It was through experimentation within the site and conversations with other members that ideas started to emerge and take shape. These conversations would often revolve around new technologies and techniques applicable to arts. For instances, I learned about conductive paint, wearables, 3D printing and laser cutting, which later influenced the projects I developed.

At AltLab the initial enthusiasm soon started to fade however, as ideas were left without developers and visitors kept coming in with different activity proposals.
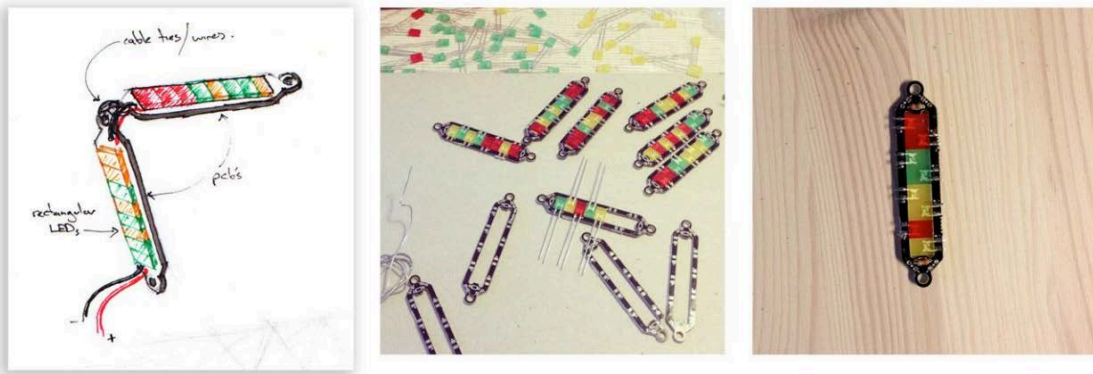
Figure 1. *Modular Construction System,* by Tiago Rorke. From the initial sketch to local development at AltLab.

I, however, was enthusiastic about the ideas that were proposed and decided to collaborate with one "deactivated" member who had replied from New Zealand with the idea of having strips of LEDs (which he designed) as modules to construct a piece (figure 1 and 2).

Figure 2. *Wake Up Call*. My integration of the *Modular Construction System*.

Figure 3. *Semaphore Wo/Man*. Different phases of an unfinished piece for *Open Mobile* Project due to technical problems.

This collaboration was successful until it reached a point where I no longer had the technical expertise to troubleshoot electric problems that were arising. The same happened with the other piece I was working on.

Its development stopped when I no longer had technical control over it and although some members offered to help and could have solved these issues, they never fulfilled their offer (figure 3).

LACK OF PARTICIPATING MEMBERS

While inquired about their lack of participation on the project, one member confessed that these projects are burdensome and he's usually too tired when he gets to AltLab, being unable to dedicate such a great amount of time to projects like this. Another member said that he felt intimidated to proceed with his

proposal after reading everybody else's. He thought the other proposals were ambitious and sophisticated compared to his. Other members kept postponing their participation due to lack of time, while others were just not interested in the project (from the start).

PRACTICAL OUTCOME

Out of nine proposals, there were two pieces completed by the end of the project. One of these pieces was a spontaneous collaboration from a German visitor, who came to AltLab on a Tuesday night and felt that he wanted to participate. This spontaneous collaboration resulted in the *Open Octopus*, a piece made out of electronic waste and assembled in one night. It was also the only complete piece to be documented. Yet, one member started laughing and thought that I was joking when I said that the *Open Octopus* was a valid piece to be included at the mobile. According to him, it had "no 'wow factor'" (fig. 4).

The second piece was entitled *Electronic Sunflower*, and was entirely developed by a member who was an artist himself. This member however, failed to bring the piece to AltLab, as he had developed it in his own studio and showed me only pictures.

The *Open Mobile* was not a successful project in its completion, but its development had clear influences on my art practice, by the interchanged communication with the different members along the way and by the different skills learned (like soldering, laser cutting and going back to programming). At the time I felt frustrated that the project ended with no actual mobile, but observed that the collaborative dynamics within the space were specially geared towards organizing events such as workshops or technology displays. AltLab can be seen as part of a local informal peer network, made out of FabLabs, technology-related small industries and creative industries.

Figure 4. *Open Octopus*

During the development phase of *Open Mobile*, there were eight different external project proposals made through this network, inviting AltLab members to participate with their own creative ideas or technological workshops. Out of these, four were proposals that specifically looked for artistic ideas and interventions.

ACTION FIGURES STOP MOTION

Having in mind that my lack of technological control at the *Open Mobile* had left me without a final object to present, I decided to develop a new project in which I bared full technical knowledge, being simultaneously open, modular and evolving. *Action Figures Stop Motion* (*AFSM*) was mainly built out of knowledge and ideas gained at AltLab and its peer network: a laser cut modular construction system to make outdoor stop motion animation.

The release of the open call for this project was similar to the previous one. ATX – Hackerspace is however, much bigger (both in space and members) than AltLab. ATXHS had (at the time of this research) around 150 active members

whereas AltLab had around 40 members. The space was also considerably bigger and was divided into different areas, while AltLab was a single open space.

Thinking about the dispersion and lack of commitment of the previous project, the development of *AFSM* was divided into different phases, which members could join without having to participate during the whole project.

Figure 5. *Action Figures Stop Motion*. Image of a laser cut board, part of the modular kit to make stop motion animations.

EXPERIMENTAL PROJECT DEVELOPMENT

Rather than enthusiastic, the first replies to the open call were mainly inquisitive: "you got a remote shutter for that?" or "how are you going to control the lighting change as you S-L-O-W-L-Y move the figures?" The experimental drive of the project and its technical approach were severely questioned, as most of the people couldn't envision the outcome, since they didn't quite understand the development process. Yet, questioning the process was legitimate: it was based on my own artistic experience and I was not providing clear guidelines, like a script. Instead, I provided guidelines to build an animation out of audio and out of building characters and settings from a modular construction system that I had developed to be used outside the regular studio environment. There

were 5 different development phases: 1- Laser cutting and constructing the kit (the kit was made out of modular figures taken from drawings that I made available for download and members were free to add whatever they wanted to the kit); phase 2 – audio recording; phase 3 – animating; phase 4 – editing; phase 5 – presentation.

PARTICIPATING MEMBERS

Three people signed in at different phases of the project with a total of 6 collaborators. Don, the first member to join, later confessed:

> *"...frankly, one of the reasons I joined is because it seemed like no one else was showing interest in it"*

Don joined phase 1 of the project and spontaneously decided to design different sets of turntables to be placed in the tracks that held the figures, so that the figures would smoothly turn around instead of doing an abrupt horizontal flip (figure 5 and 6).

Phase 2 – the audio development - was the one that had more people signing in, but only one member, managed to fulfill it. No one joined phase 3 and 4.

Figure 6. Top view of a turntable developed for the *Action Figures Stop Motion Project*.

Figure 7. Stop motion animation figure held by turntable.

INDIVIDUALLY COLLABORATIVE

Individually Collaborative was the title of the short animation that resulted from this fieldwork, and it included contributions from all the members that signed in, along with contributions from "occasional collaborators" who gave advice on technical matters such as using lock nuts instead of regular ones, or who borrowed equipment when there was none.

The lack of participation of the members was especially due to lack of interest on the project or lack of time. I observed that the project's experimental approach drove their interest away, as I was often inquired on what the outcome would be. I couldn't quite answer this question as my work process was developed along the way with the outcome of each phase. The animation I was developing was grounded on the idea of a collaborative versus individual work and I was following the guidelines and instructions that I made available to everyone. I therefore used phase 2 of the project to interview members about their work, whether they worked mainly individually or collaboratively on a

daily basis. These indirect contributions are the main core of the final animation.

CONCLUSIONS

The *Open Mobile* managed to demonstrate that many of the members at AltLab had the ability to come up with conceptual approaches to the artistic project that was proposed. The developmental phase was however procrastinated by most of them and different parallel projects and activities contributed to the loss of focus and interest on the project. Members here were often focused on the problematic of operating such a community and it was observed that their main driving force came from joint decisions to these problems and also, altruistic projects such as educational workshops in communities in need.

 Although the *Open Mobile* failed to produce a specific object out of a collaborative effort, my role as a member at AltLab made me pursue other artistic endeavors, made possible through their networking power, through parallel activities that went on during the *Open Mobile* project.

The *AFSM* project, on the other hand, managed to produce an artwork that was largely influenced by the collaboration of some of the members it managed to captivate. Nevertheless, the community at ATXHS was not inclined towards participating on an experimental project, in which the outcome was not entirely clear. In other words, the familiarity with a traditional concept of "animation", made it hard for most members to engage on an experimental process of animating. The project development, however, seemed to manage to incite some surprises, as to member's own abilities, as one referred about his collaboration on phase 2 of the project.

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The Creativity Emancipation Atlas
Participatory machine design for the development of degraded urban neighbourhoods

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ABSTRACT

The current paper is based on three social engaged art and design projects, which were developed in two degraded neighbourhoods located in the Portuguese city of Amadora.

The first part addresses the idea of an immaterial *machine* designed to improve the education levels of the resident participants, as well as the fundamental concepts that inform it, such as the theories of *machine*, *creativity* and *emancipation*.

The following section is a precise description of the processes and methodologies used within every project.

Then the focus goes to the definition of an archive of audiovisual elements, which is being conceived to represent the activities done within each project. In this context, it is explored the notion of *atlas*, which is the media used to reproduce and communicate the artistic projects.

The last part is a reflection on the type of design practice that is implicit in the projects in focus.

Keywords: Atlas, Machine, Creativity, Emancipation and Participation.

THE CREATIVITY EMANCIPATION ATLAS

The purpose of *The Creativity Emancipation Atlas* is the representation of social engaged art and design projects developed in specific neighbourhoods. Up to the present moment the actions occurred in two Amadora neighbourhoods, which is a Portuguese city inside the Lisbon district. The first intervention occurred in the Bairro da Estrada Militar do Alto da Damaia and the second one in the Bairro do Alto da Cova da Moura. The latter project is currently under development also in the Bairro do Alto da Cova da Moura.

The idea is that each social project, which are based on some learning activities, such as computer literacy and visual communication, can stimulate the creativity of the participants. The main goal is to support and promote the cultural development of the resident participants and, consequently, leverage the qualification of the place.

The achievement of the expected results is made possible through the design of a *participatory machine* (Figure 1), whose functioning is informed by a specific program concerning a philosophy of education around the concept of *emancipation* and an aesthetics thinking sensitive to the development of society's social awareness.

It is also important to emphasize that *The Creativity Emancipation Atlas* dissemination intends to promote a reflection about socially more sustainable ways to decrease the problematic situations that occur in this kind of urban areas with greatest needs.
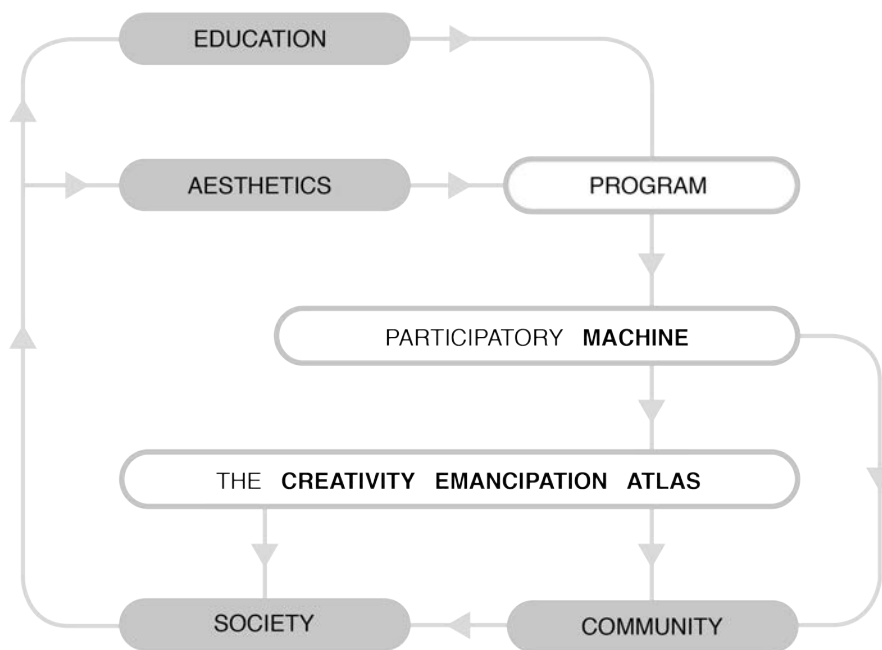
Figure 1. Participatory machine's operational scheme (Gorgel Pinto 2015).

MACHINE

So far the technology skills implied in the objects invented by the human being were capable of creating and transforming several functionalities, as well as generating various intellectual developments that contributed to the intelligence evolution. This notion of technique, which considers the transformation of something tangible, as well as how it influences the human thinking, is fundamental to the immaterial *machine* in question. In this sense, the design of the *participatory machine* is based on a set of "artificial automatisms" to develop the education levels of the resident participants, to qualify the places where they live and, above all, to boost the human thought in order to reflect on his social actions (Vengeon 2009).

CREATIVITY

The creativity's universality is a fundamental principle to the concerned social engaged art and design concept. This powerful feature common to all human beings with creative sensitivity is a more logical value of exchange than capital and profit, which are both responsible for the development of the recent culture.

Thus, in accordance with the logic that creativity is an essential good in society, and not a privilege of artists, the *participatory machine* aims at engaging the

local people in particular activities to stimulate them for their own benefit, namely the learning of skills that can enable their social inclusion.

It is expected that the *machine* has the effect of, somehow, emancipate the participants and, consequently, that they can actively contribute for the evolution of their own urban community, in a resonance effect, throughout a freer society (Beuys *apud* Gomes 2010).

EMANCIPATION

The idea of emancipation is particularly important to the learning process implemented on the *participatory machine*, which is based on guessing and experimenting after some orientation given by the author. The latter has the role of a teacher advising every participant whenever required. It is important to emphasize that this type of interaction between the author and the locals in the participatory activities is not the resignation of one intelligence to another, but a form of relation that reinforces the contact of wills. The collaboration of participants with one another, in which are suggested other sources of knowledge and shared their own cultural backgrounds, are also crucial to give confidence on learning new skills.

In this sense, this social engaged art and design project enhances the equality among participants "according to the principle that all men have equal intelligence", contrary to the objective of eliminating the pre-existent social disadvantages. In contrast, it is essential to focus the equality among participants since the beginning of the participatory activities and not as the main goal (Rancière 2002).

THREE ART PROJECTS IN TWO AMADORA NEIGHBOURHOODS

Two of the social art projects already occurred in two neighbourhoods from the city of Amadora - the Bairro da Estrada Militar do Alto da Damaia and the Bairro do Alto da Cova da Moura. A third one is currently being developed in the Bairro do Alto da Cova da Moura. The city of Amadora is part of the Lisbon metropolitan area and the neighbourhoods in question have several known problems, such as illegal construction and the lack of adequate support from the

Government and the City Hall to resolve potential problems, like poverty, low education levels, crime, among others. The local population are mostly immigrants and their descendants from Portuguese-speaking African countries.

The first two interventions were important to delineate the methodology to be repeated in the third and future projects. The process starts with an approach to a local association that has some routines implemented in the neighbourhood. From this first step, the author in collaboration with each association, begins planning the works to do, such as the skills to teach, the required space and materials, the activities' diffusion, between other details. In the course of the first talks it is crucial to find out the cultural needs of the locals as well as to think on some learning activities that could stimulate their creative energy - the core of the interventions. The first two actions, that already occurred, were from the author's initiative, and the on-going project is part of a proposal that came from a local association.

The first project, at the Bairro da Estrada Militar do Alto da Damaia, had two parts, a first phase dedicated to computer literacy with adults (Figure 2), and a second phase about visual communication for youngsters (Figure 3). The following project, at the Bairro do Alto da Cova da Moura, was only about computer literacy. The current intervention, also at the Bairro do Alto da Cova da Moura (Figure 4), is being developed in a different association with the collaboration of other design researchers. As mentioned above, in the latter project the local association asked for the FAUL[1] collaboration that, by its turn, constituted a group of researchers, to which the author belongs.

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[1] Faculty of Architecture, University of Lisbon.

Figure 2. Computer literacy workshop. Edited video frame (Gorgel Pinto 2015).

In every case the methodology is the same, being completed by two different stages. The first one is composed by a participatory learning system that is developed with the purpose of later forming a symbolic piece that encourages the thought about the place and the community where the projects occurred.

Figure 3. Visual communication workshop. Edited video frame (Gorgel Pinto 2015).

Over the course of every participatory work, some video footage, photographs and audio recordings, as well as other kind of elements, were collected to later incorporate the projects' archive.

Figure 4. Kowork design training. Edited video frame (Gorgel Pinto 2015).

MAPPING THE FIELDWORK

The second stage is concerned with the archive examination and selection of audiovisual elements to represent the socially engaged art project. Each neighbourhood, and its respective set of participatory activities, will have an *atlas* titled *The Creativity Emancipation Atlas*.

This form of reproducing the social interventions will be exhibited in a place nearby the neighborhoods. The objectives are (1) to commend the culture of the locals who inhabit these problematic neighbourhoods, (2) to inform the remaining urban community about the mutual concern to develop these type of locations and the government entities about their responsibility in the social and cultural inclusion of every citizens, and (3) to question the disciplines of design, visual arts, as well as other art forms, about their vocation to the consciousness surrounding this and other social weaknesses.

The difference between the archive of all the collected elements, from the three projects, and each neighbourhood's *atlas* is the fact of the first being a dense set of all the audiovisual elements representing the art project, while the *atlas* is a selection of the most significant reproductions. This way of mapping the participatory fieldwork is organized by a set of panels, composed by videos, enlarged video frames and sounds, that have the objective of revealing particular realities, as well as unveiling traces to other thoughts. Starting from

an understandable observation of selected audiovisual elements, where it is given particular emphasis to the "interstitial" spaces between the selected items, this way of communicating every social project develops the heterogeneity of thoughts and brings the viewer other alternative perspectives (Didi-Huberman 2010, 2013).

ETHICAL AND AESTHETIC KNOWLEDGE NETWORKS

A relevant issue of this creative practice for "social innovation" is its critical base, whose objective is to stimulate the user/ observer as a conscious actor with respect to the evolution of the world. It is a matter of activism that is made possible through visual art and design forms. In other words, this is a sociopolitical approach to urgent social issues, which is simultaneously useful and symbolic to society.

One of the most important characteristics of the projects in question is the coexistence of designers with scientific knowledge and also empirical designers, in order to both participate in the creation of objects, as well as functions that best contribute to society. This relationship between "diffuse design" and "expert design" is a synergy that will be critical to the social body's future development. An innovation not only focused on concrete problem solving as also in building social values and qualities (Manzini, 2015, pp. 1-3).

The cooperation between empirical and specialist artists and designers is based on crosscutting issues, which are crucial to define the world social and environmental values. Among these problems are the redistribution of water, food and other essential needs due to world population growth; the social and medical assistance to elders due to population ageing; the society's combat and adaptation to climate changes; the sustainable use of natural resources; the transformation of the contemporary unsustainable financial system; the paradigm shift concerning the reduction of the difference between rich and poor people, countries and hemispheres; the increase in productivity based on human labor combined with robotics and high technology to reverse the trend of rising unemployment; and finally, the development of a positive religious intersubjectivity which is one of the major reasons of war and social injustices (Margolin, 2014, p. 92).

In this sense, *The Creativity Emancipation Atlas*, as a whole, is a case of "design as activism", in which are included cultural activists, community organizations and other social actors who develop a participatory practice characterized by the disclosure of problematic social issues, as well as alternatives for their resolution. On the one hand it is a collaboration for the design and implementation of new ideas addressing society's needs, on the other hand it is a demonstration of the vitality and ability to act that exists in this type of synergy (Manzini, 2015, p. 11-12, 46).

CONCLUSION

The two projects already developed and the on-going third one are part of a transdisciplinar practice that is informed by various types of knowledge, which aim being, at the same time, symbolic and useful to society. Thus, through the design of a *participatory machine*, is possible to give social support to a specific community and communicate this kind of altruistic work to the remaining society. The intention of developing some of the participants' skills, such as computer literacy and visual culture, and trough this process promote their creativity, is a way of reducing the difference to other citizens with better education levels.

A key objective of this socially engaged visual art and design research is to underline the potentiality of the disciplines of design, visual arts, as well as other art forms, for the creation of alternative points of view over the various issues that interest the common good, and therefore communicate other thoughts that can effectively contribute to a sustainable evolution of society. This kind of practice, in addition to being an aesthetic form of knowledge, develops an ethical sensitivity, and the interaction between both is a powerful way to reflect and act over the weakest socio-cultural realities.

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On visualizing collective data

Understanding the design processes behind interactive data visualization in the context of collaborative participation

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ABSTRACT

The digital condition brings new dimensions and complex orders to data visualization. The crescent popularization of open data, the ubiquity of the internet, and the growth and democratization of specific software led to a new relationship between the data, the analyst, and the reader. These transformations motivate the rethinking of the role of design in the process of communicating data. For this purpose, we analyze the state of the art of the different contributions that compose these processes. We aim to understand what the role of the designer is and how the whole process is ultimately a process of design. We propose a sequence of the steps to follow when creating data visualization in the context of the digital condition, and intend to find considerations on the visual and interaction decisions that efficiently allow the collaboration of the user in the data set.

1. INTRODUCTION

Data visualization is an area of reference in information design that covers the graphical representation of information in complex communicational contexts. The design processes in data visualization require the articulation between its own language and functionalities and one adequate graphic translation.

In this exploratory paper it is our intent to summarize and limit the field of study where our future research will take place. Our attempt is to understand which graphic and interaction solutions are more efficient when visualizing collective data.

The digital condition brings new dimensions and complex orders to data visualization. Due to current technological developments and the open data trend, the awareness of the power of data increases. Additionally, people's interest in data handling and in its use has grown. Manuel Lima (2011) identifies six main reasons for this event: the exponential capacity of computer storage, the increase of open data sets, the scope of online social networks, the democratization of online tools for data visualization, the role of mainstream media, and the various initiatives of the enthusiasts whom he calls the *numerati*.

To better understand the current popularity of data visualization, Lev Manovich (2010) points out 3 additional factors: (1) the easy availability of Big Data sets via APIs provided by major social network services since 2005, (2) the new high level programming languages specifically designed for graphics (i.e., *Processing*) and (3) the spread of software libraries for visualization, for instance, *D3.js*.

Nowadays people can have an active role in their communities because they can easily contribute to online common databases, providing quantitative and qualitative data for many different purposes. This is the scenario where Nathan Yau (2011) considers Participatory Sensing and Citizen Science to have a significant role supplying evidences that may become essential in analyzing and understanding particular realities. Big Data is expected to become a strong contributor for informed decision-making in both business and political environments.

Computers' and mobile devices' capabilities empower citizens who have proven willing to participate and actively contribute to this form of collective intelligence. Because of its ubiquity and particular properties, the internet has become the optimal medium for non-scientists to contribute to data collection for scientific investigation and social analysis. The internet is naturally the keystone that enables the development of smart cities and e-governance. These new dynamics of participation bring along new considerations in the communication processes.

Unreliable data analysis and visualization can have a profound impact in the political landscape and even carry significant consequences. A general vulnerable data literacy may be responsible for not detecting misleading visualization or hidden truths. It is urgent not only to understand the data but also how its visualization and exploration are influencing the communication and interpretation processes. The awareness of data visualization implications and fragilities should be critically discussed in design educational environments. This is one important asset to understand in which particular ways projects relaying on collaborative participation can take advantage of data visualization. These results may naturally contribute to evidence how social movements can most effectively foment social change by managing Big Data.

2. HISTORICAL BACKGROUND AND THE DIGITAL BREAKTHROUGH

Graphic representation of data is considered to exist since the first known table dated from the 2nd century. Later on, the 18th and early 19th centuries were the scenario for big creations of new charts and approaches on how to visualize quantitative data.

Then, the legacy of Otto Neurath's work on information graphics and many theories from the Gestalt Psychology provided systematic and crucial knowledge to the practice of graphic communication (Few, 2007). Combining these with Jacques Bertin's work on cartography, visual representation of networks, and diagrams, we achieve the point where the subject of data visualization becomes undoubtedly object of continuous theoretical development (Bertin, 2011). Nevertheless, it is considered that most advances have been achieved in the last

40 years where John Tukey's, William Cleveland's (1984, 1994) and Edward Tufte's work (1990, 1995) are well recognized as crucial. They focus mainly on the efficiency of graphic design for statistical data.

The digital condition has profoundly changed the use and purpose of data visualization. Before the proliferation of personal computers and the accessibility to user friendly software, the access to data sets was restricted to governments, some businesses, or the news media. The dynamics in communicating data was fairly flat. An intermediary—the *analyst*—has always been between the data source and the final reader. By *analyst* is here considered the person in charge of handling the data, selecting it, analyzing it, designing it, and even presenting it. For this purpose it is not relevant if it was a statistician or a journalist. Important to note here is that the structure was set, not allowing any different formation or dynamics other than the restricted data set being presented by the *analyst* who induced the conclusion that the reader should come to. Communicating recurring to data as a main input relied on the dynamic relationships between the data set, the *analyst,* and the reader.
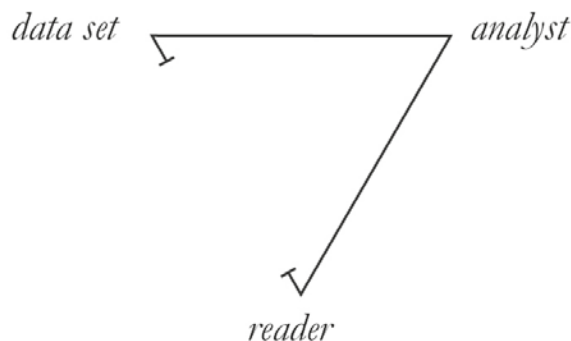
Figure 1—Dynamics for data visualization before the digital condition

This dynamics changed from the moment on that first Excel and then other electronic spreadsheet software began to allow every user to display data graphically, fast, and conveniently (Few, 2007). Here we encounter already some deep changes in the relationship between the reader and the data set. The reader was allowed to manipulate and experiment promptly his information and achieve new forms of translating it visually. This enabled naturally the

achievement of new conclusions by exploring and combining data sets. Nevertheless, some risks arose considering the graphic outcomes. The development of more and more permissive software actually leads to a peak of the democratization of data handling, but it does not guaranty the efficiency of its visualization or interpretation. Anyways, between the amateur user that tinkers with the data set on his own, and the specialized developer, we now find enthusiast, designers and design students who attempt to apply their own experiences. They may even obtain satisfactory graphic results with software such as *Tableau*, programming languages like *R*, or libraries such as *D3.js*.

Microsoft Excel ⊢————————/////////////////————————⊣ *developer*
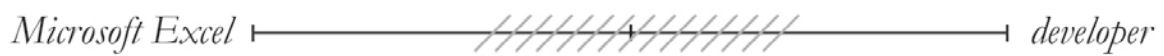
Figure 2—Space between the two edges in the creation of data visualization

Numerous applications and software today allow extensive interaction with the data, combining multiple data sets with different dimensions such as geographic location and time variation. Spreading the interaction possibilities leads to changing the former dynamics since the data is no longer exposed to the reader, but rather explored by him or her. One could consider that the reader has somehow also become the *analyst*. Considering the digital condition, a new sequence for the process of communication with data can be divided in four steps:

1. collection

2. visualization

3. analysis / exploration / interaction
   personalisation / subjectivation

4. conclusion / presentation
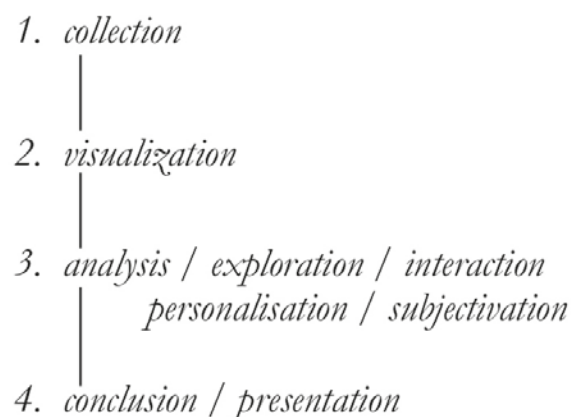
Figure 3—Dynamics for data visualization after the digital condition

3. INTERACTION FOR INFORMATION SEEKING

Interactive data visualization arises as the ideal tool to support and enlarge data analysis' potential. It is being developed by multidisciplinary teams who focus on data collection, visualization, and exploration. Because of its various formats and outcomes, designers, computer scientists and journalists are attempting to classify the different kinds of data and information visualization, aiming to contribute with structured theoretical approaches to the multiple representation forms. Not by coincidence, we are able to identify the crucial role of the internet in each one of these different stages.

General interaction and usability rules have been considered for both online and offline digital interfaces. Steve Krug sums up the importance of, for instance, taking advantage of conventions, creating effective visual hierarchies, eliminating distractions, and formatting content to support scanning (Krug, 2014).

Although explorative data visualization undoubtedly profits from research conclusions on web usability, concrete taxonomies for interaction in this specific context have also been developed. For this purpose research has been done on data exploration as a process aiming to classify its steps and properties.

In his broadly known *Information Seeking Mantra,* Shneiderman introduced the well concrete tasks of *overview first, zoom and filter, and then detail-on-demand.* These are then complemented by the possibilities to *relate* items, to keep a *history* of actions, and to allow *extraction* of sub collections and of the query parameters (Shneiderman, 1996). Among the many taxonomies for interaction techniques the work of Keim (2002) and Wilkinson (Wilkinson & Wills, 2005) stands out. We find various combinations of specific tasks such as *cluster, filter, compare, correlate, zoom, link, rotate,* etc.

In Figueiras' proposed taxonomy (Figueiras, 2015) we find the inclusion of one significant trend that considers the current demand and reality of data collection: *participation and collaboration.* By adding this task the author assumes that the visualization may allow the user to contribute to the data taking in consideration the participatory nature of the internet.

4. VISUAL DESIGN FOR DATA VISUALIZATION

Data visualization consists of a complex process of communication, combining knowledge from various specific areas. Considering the four steps proposed for handling data—collection, visualization, exploration, and presentation—we find three main tasks where design skills assume an important role.

The first task is directly related to graphic design and focuses on the second step: *visualization*. Here we relate mainly to the results of Jaques Bertin (2011) and Edward Tufte (1990, 1995) regarding the graphic optimization for communicating complex ideas with clarity, precision, and efficiency. Their visual rules are useful, not only in static visualization, but also as keystones when designing interactive visualization.

The second moment where data visualization requires design skills is found on the third step—*exploration*—, where interaction techniques and proficiency are included. Here the concerns with the user experience play an essential role and take in consideration research on interaction techniques and the specific taxonomies for data visualization.

One third moment of design is found on the structure that enables the presentation of the results, relating to the last step of the dynamics in Figure 3.

5. CONCLUSIONS AND PROPOSED RESEARCH

The digital condition in data visualization originates complex articulations between statistics, graphic design, computer science, storytelling, interaction tasks and presentation techniques. They interconnect resulting in one explorative experience where a new relationship between the data and the reader—in the digital scenario called *user*—arises, particularly when he or she participates in the collection of data. In one collaborative visualization, if the user actively contributes to the data set, he or she also ends up shaping it.

To achieve better data visualization we consider important to understand why users are willing to participate in collective visualizations, what moves them to collaborate, and what binds them to the data. By wanting to be involved he or she makes a stand as independent and conscious citizen. The user takes part in

one decentralized and transparent communication tool where social trends and phenomena of public interest can be analyzed and interpreted. In this setting, design—or the designer—assumes strongly its social role (Giannella, 2014).

When aiming for producing efficient explorative data visualization, the entire process should be considered as one—from the data collection until the eventual final presentation [Figure 3]. The visual and interaction decisions are definitely related to the success of one visualization. It is in this scenario that we consider that data visualization is as a whole a design problem and definitely profits from the contribution of research on specific visual methods and interaction evaluation, particularly considering processes that include unspecialized participation and collaboration (Isenberg et al., 2011). Because this is a complex articulation, the need for readable, understandable and useful tools is high for the purpose to respond to significant design questions that arise when creating effective mediated collaboration environments (Heer, & Agrawala, 2008).

In our future research we intend to understand what requirements, factors and dimensions compose efficient graphic interfaces and how they interact in the context of data visualization with participation and collaboration tasks. Taking in consideration the previous academic research and classification systems, we intend to create a taxonomy for this specific purpose by exhaustively analyzing case studies. We also seek to propose a conceptual model that covers the particular visual and interactive considerations of collaborative data visualization and test it using focus groups.

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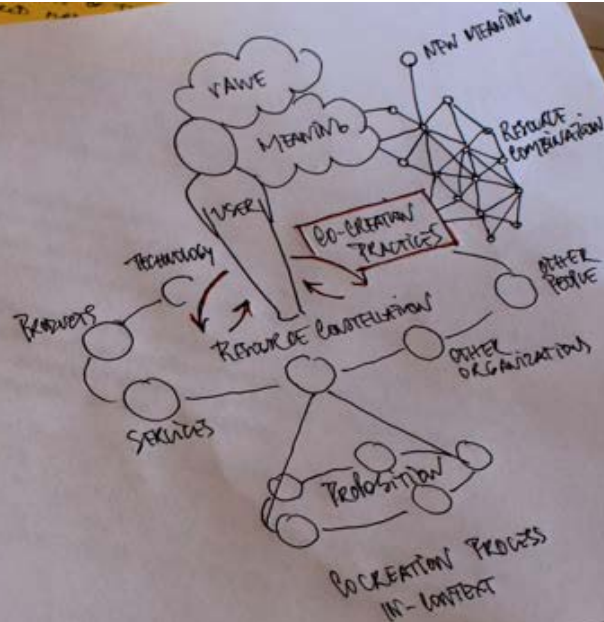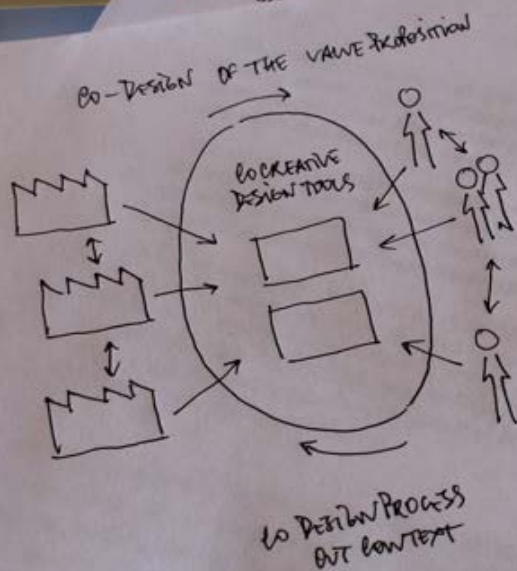
Towards a unifying design approach for value co-creation

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ABSTRACT

This paper aims to develop a new design method that integrates service design, product-service systems design and service logic contributions to design propositions for value co-creation.

Today's systems are no longer focused only on creating single products, but rather in orchestrating interactions and envisioning alternative ways-of-doing. In this context, the role of users/customers is evolving from passive to active co-creators. This creates a new opportunity for designers to make a contribution that supports the co-creation process and enable transformation of manufacturing in new significant ways.

To address such challenge a hands-on service design-thinking approach was undertaken in a traditional manufacturing industry. The design project aimed at developing new relevant product-service propositions such as embedding new competences in the design team to design for service and value co-creation. The work also resulted in new design tools that better leverage physical evidences of service solutions.

Keyword(s): service design, value co-creation, product-service system, service innovation, service logic

Manufacturing industry is facing new challenges (Morelli, 2012). Traditional innovation approaches based on product redesign and lean manufacturing are no longer sufficient to address competition coming from emergent economies. Plus, environmental and social pressure such as the impact of the economic and production-consumption systems and relocation of workforce calls for new multidisciplinary design approaches (Patrício and Fisk, 2013).

Firms and users/customers have mostly had transactional-based interactions, so far. Value was believed to be embedded in products during the production processes; and was sold to customers. After purchasing and using/consuming the product, value was destroyed. Recent development of service literature rejects this view and argues that products per se do not possess any *true value*, but rather presents a *potential value* and that value co-creation can only occur within the user/customer sphere (Grönroos, 2011). This means that products shift from central- to supporting-role in an all-encompassing value co-creation constellation (Norman, 2011).

In this context, traditional manufacturers need to evolve their design process; and make an effort to shift mind-sets from product- to solution-focus design and adapt to stay relevant.

The late 1980's was the start of this transition (Baines et al. 2009). Servitization, is currently well-known in manufacturing (e.g. Xerox, Rolls-Royce, car-sharing systems), and aims at supporting manufacturers to innovate their business processes by integrating services with their product offerings (Baines et al. 2009). Researchers proposed guidelines and methods to evolve business processes from short- to long-term contracts and relationship with customers (Oliva and Kallenberg, 2003); however the services emerging from the approaches proposed often result in add-on services (e.g. maintenance or repair), remaining the product component the central piece of the solutions developed.

Also, recent development of the service-logic brought new light over the importance of users/customers in the value co-creation process; and highlighted the potential of service for innovation (Vargo & Lush, 2004; 2008; 2014). Moreover, service are no longer defined as different from products

(Edvardsson, 2005) but rather as interactions that happen in-context between one or more actors to co-create value (Vargo & Lush, 2008). Service logic posits that products and services are means to an end; and that customers are active value co-creators of solutions.

Service-logic shares many different foundations with design thinking and has recently been compared (Wetter-Edman, 2009) and integrated (Wetter-Edman et al. 2014). Although presenting a conceptual and higher-level nature, the service-logic offers a perspective through which new design approaches could emerge.

Taking this challenge into account, the first step of the overall research focused on undertaking a literature review to further understand the existing design approaches to design for service. Product-service system (PSS) and service design were identified as two relevant and evolving design approaches.

PSS is a firm-centric approach and is commonly used to servitize offerings (Baines et al. 2009). There are different types of PSS: product- (e.g. maintenance and repair), use- (e.g. leasing) and result- (e.g. power per hour by Rolls' Royce) oriented PSSs (Tukker, 2004). PSS is currently well known in the industrial world; however it still doesn't reflect the s-logic perspective since offerings are designed to deliver functions/performances as efficiently as possible; and do not *activate* the customers' potential for value co-creation.

Service Design evolved with a human-centred and multidisciplinary approach to design services (Patrício & Fisk, 2013). It is concerned with customers' activities and behaviours in context; their dreams and aspirations as well (Meroni & Sangiorgi, 2011). Service design works within a continuum with customers to support them in shifting from participants to active co-producers of value (Wetter-Edman et al., 2014). However this approach is not recurrent in manufacturing firms (Maffei et al., 2005).

Although coming from different research communities, both approaches are concerned with the concept of value-in-use, which is thoroughly discussed in the service-logic; nonetheless they perceive it from quite different perspectives. This research analyzes and compares the foundations, methods and

contributions of each approach in the light of the value co-creation concepts discussed in the service-logic. It also represents a first step to integrate those two perspectives into a unifying approach to design more meaningful service propositions for value co-creation in manufacturing industries and support servization transition process.

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Collaborative design in the significance of the bicycle ecosystem in Aveiro

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ABSTRACT

This ongoing research within the PhD programme in Design aims at promoting, through design, processes of co-creation of products-services, of activities related to the bicycle ecosystem, contributing to add value to the region of Aveiro, in accordance with the objectives of Horizon 2020.

The concepts of collaborative design, bicycle ecosystem, sustainability, identity and territory are problematised. We are investigating projects that have already been developed on the theme being studied and a set of reframing actions of the bicycle ecosystem in Aveiro will be considered, and implemented through a system of collaborative design projects.

It aims at understanding the role of design, exploring transdisciplinarity in strategic management and communication of projects in co-creation systems, with the goal of building a facilitator model for these processes in order to optimize and amplify systems of products-services of that ecosystem. It is desired that the model may be replicated in other territories.

Keyword(s): Collaborative and participatory design, bicycle ecosystem, sustainability, territory, Aveiro

THE RELEVANCE OF BICYCLE ECOSYSTEM AT THE PRESENT TIME

The planet's dependence on fossil fuels is currently an environmental concern, but it can certainly be minimized through repaired global policies, which of course will have economic consequences on a macro-scale.

The growing concern, especially in Europe, through its support frameworks – Transport (Smart, green and integrated transport), Innovation , Health, Demographic Change and Wellbeing ("Horizon 2020 - European Commission,") – appealing to decarbonisation through an economy of 'low carbon' and consequently an increase of "green jobs", are key factors for the creation of new policies and innovative, sustainable, and inclusive mobility solutions already made tangible on the guidelines of the European Community for 2020.

Reinforcing Horizon 2020 guidelines, bicycle integrates political agendas in the definition of social, cultural and economic sustainable territories. In this context, the Portuguese government has recently presented the Eco.Mob programme that reflects on three main areas of activity: mobility management, technology and behaviour and it aims at improving economic efficiency and environmental performance in the travels associated to Public Administration[1].

In 2012, in Portugal, a National Plan for the Promotion of Bike and Other Means of Transport (Ciclando, 2012) was originated in Parliament, and supported by the different parliamentary groups, (Ciclando, 2012) It was developed by a ministerial work team and coordinated by IMTT. The diagnosis showed that Portugal has increased from 1 to 1.6% between 2007 and 2010 in cycling travelling, but was still far from the European average (7.4%). Hungary shows 19.1%, Denmark 19%, Sweden 17.1% and Belgium 13,4 % (Ciclando, 2012).

The same diagnosis reinforces that bicycle is the fastest travelling mode, most efficient and adjusted travelling mode to travelling in urban areas, where half of all journeys have distances of less than 3 km. The bicycle gathers several favourable factors, namely. These include reducing the busy public space, the low cost of acquisition and maintenance of infrastructures, the environmental benefits, the reduction of gas emissions, and environmental noise, which leads

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[1] http://www.transportesemrevista.com/Default.aspx?tabid=210&language=pt-PT&id=47473

to an improvement of the air quality. It has a measurable impact on physical, social and mental well-being of citizens, by reducing the costs associated with health expenditures.

Portugal is below the European average levels, with regard to the use of bicycles, being Aveiro, the sub-region of low Vouga with more regular bicycle users (eight times the national average - 3.9 Vs. 0.5 % (INE, 2011). More than half the population has a bicycle at home (535 bicycles per thousand inhabitants) while the average motorisation rate of municipalities is 502 vehicles /1000 inhabitants. Aveiro is the only Portuguese region where the use of bicycles is above the national average (Filipe, 2013) and is often recognized as the bicycle region.

According to the report of the European Bicycle Industry, more bicycles are sold than any other means of transport each year in Europe, and Portugal has been standing out in the bicycle industry "European Bicycle Market" and there is a great concentration of this industry in the region of Aveiro. The Portuguese bicycle industry, currently features in the European top 5 of production of parts and accessories for bicycles and in the European top seven of bicycle production (Mota, 2014).

Paulo Rodrigues, General Secretary of Abimota - National Association of the Two Wheels Industries, of, Hardware, Furniture and Alike – in a recent conference at the University of Aveiro "Portugal Bike Value - A road map for the bike in Portugal" – reforces the potential for Portugal Bike Value brand in relation to a body of evidence, in particular the favorable results for Portugal in the CONEBI (Conebi) the European confederation of the bicycle industry, of the growing presence of the Portuguese industry in international bicycle trade shows and an obvious growing interest from brands and investors interested in the Aveiro region to set up or move their businesses, as well as a growing demand of this territory for touring by bicycle.

TERRITORY AND BICYCLE ECOSYSTEM IN AVEIRO

The Aveiro region has a set of geographical, cultural, industrial and know-how characteristics that allows it to be recognized, nationally and internationally, identified as a bicycle territory. At the same time, there are in this territory

emerging research, industry and local policies projects are emerging in this territory, with positive recognition by European peers (ECF).

Considering the bicycle ecosystem as a set of agents, services and bicycle-related products in a particular territory, we can say that there is a bicycle ecosystem in the region of Aveiro. However, we observed, in the already made analysis about the various ongoing initiatives for the boost of this bicycle ecosystem, that there are difficulties in articulating the set of values and agents involved, in order to amplify the identity of this territory while bicycle and cycling region.
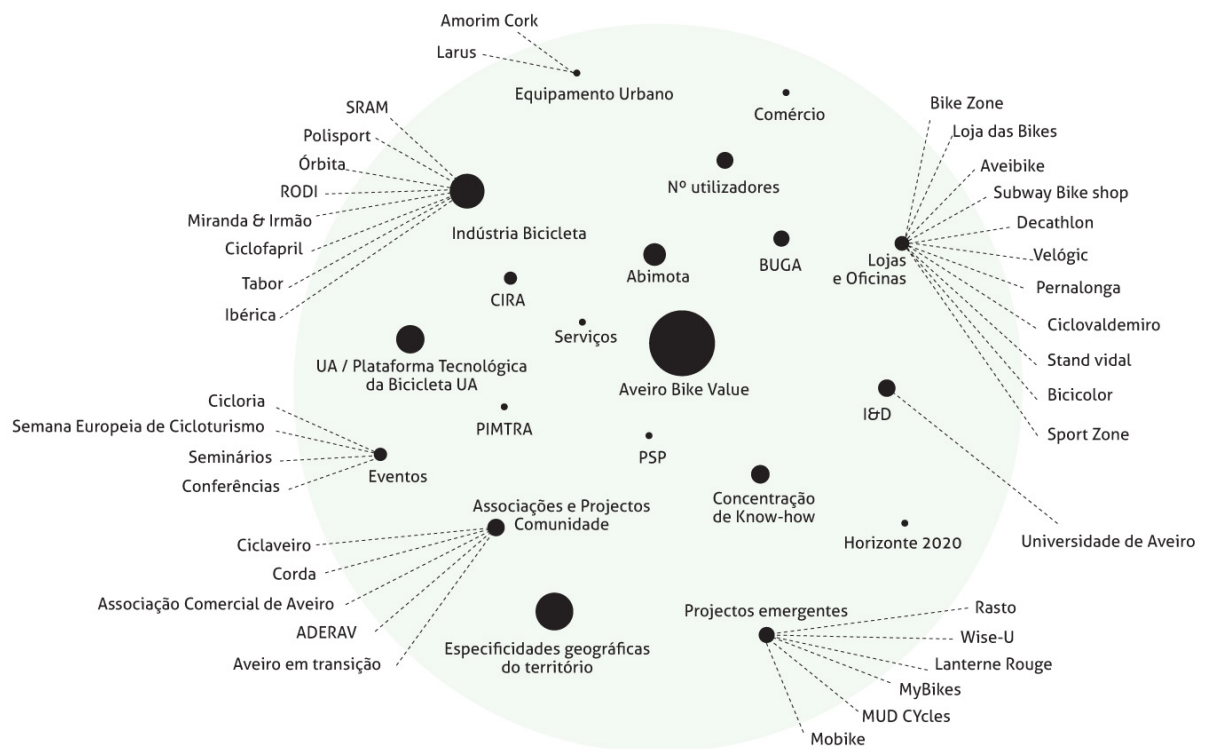
Figure 1. Representation bicycle ecosystem in the region of Aveiro. Work in progress. Developed by the first author.

It is referred here that this territorial identity aims at being a catalyst for community and civic movements related to the existing and emerging bicycle ecosystem. For Castells, "identity is a process of construction of meaning based on a cultural attribute, or a set of inter-related cultural attributes, which prevail(s) over other sources of meaning". The author also says that "any identity is built" (Castells, 2007). By stating that all identity is constructed and

based on historical facts, geographical, and biological facts, memories, and institutions, it allows to think about the strategic development of the city's image, using these references as construct. This construction includes the rescue of tangible and intangible attributes that form the collective memory of the local territory.

With the prospect of being able, through the bicycle ecosystem, to contribute to the identity of the territory of Aveiro, the emergency of the need to amplify the production of knowledge about this ecosystem was identified. Simultaneously, it was also identified the convenience of demonstrating how this knowledge can be potentiated by design, making the territory of Aveiro more cycle-friendly with more bicycle users, increasing the wellbeing levels of its citizens and visitors.

It is recognized, therefore, an opportunity to develop research on this ecosystem In the field of design by questioning: How can collaborative design processes promote and substantiate the bicycle ecosystem, adding value to the territory of the Aveiro region?

COLLABORATIVE DESIGN FOR SOCIAL INNOVATION AND SUSTAINABILITY

> *"The emergence of a participatory culture and people-centered design will affect what companies design and produce in the future, with results more relevant and meaningful to people's lives."* (E. B. Sanders, 2000, p.9)

Since the eighties we have been facing a change of attitude of some businesses towards its clients. Elizabeth Sanders refers the dimension of human participation in the process, vision focused on the consumer, with the end user having gained levels of participation in some businesses over the last years, there is an evident increase of the role played by the "person" as co-creator of products/services, reinforcing the need to create not only "for" but "with"

people, creating better products and better suited to what are the real needs (Fuad-Luke, 2013, E. B.-N. Sanders, 2002).

> *«While design has been traditionally concerned with objects and processes, we have to recognize the impact that those objects have on people. We have to stop thinking of design as the construction of graphics, products, services, systems and environments, and think about those as means for people to act, to realize their wishes and satisfy their needs» (Frascara, 2003).*

We talk of co-design when referring to a design process developed by several people together. Co-design concepts, collaborative design and activist design have the principle of working together, bringing together various skills towards a common goal (Fuad-Luke, Manzini). In these approaches the design plays an important part as a catalyst for innovation in product development and services (Manzini 2008, Moraes 2010, Tschimmel, 2012), stimulating new ways of thinking, feeling and working (E. B.-N. Sanders, 2002), using research methodologies of social sciences, visual aids, models of work sessions and workshops, observation techniques and group dynamics, becoming an important element in facilitating and creating design thinking as a process whose main promoter is the designer (Tschimmel, 2012).

The evolution of design involving the user through collaborative processes, creates new fields of knowledge and, consequently, new ways to perspective the role of designers in society. We can here introduce the emerging concept of Design Activism, in which design wins dimension to seek and act as a catalyst for change, promoting social, political and economic changes, acting as facilitator, author, co-author and co-creator (Fuad- Luke et al., 2015).

Collaborative design and activist design give special relevance to what are the behavioural dynamics of the group and the community. Integrating these dynamics in the design project, using observation, communication of latent or implemented strategies, is a contribution by the designer as the facilitator, and as the creator of future scenarios, increasing the potential for success of initiatives as well as the competitiveness and the reaffirmation of territories

through the self-recognition that the population has of their territorial attributes (Manzini & Milano, 2001) (Fuad-Luke, 2013).

As Castells explains*, "that who builds the collective identity, and for what that identity is built, are largely the determinants of symbolic content of this identity as well as its meaning for those who identify themselves with it or who exclude themselves from it"* (Castells, 2007). In this context, the involvement of the population is critical to the consolidation of a collective image as it strengthens social habits that value the territory[2].

In this perspective, the "SLOC" model (Manzini, 2010) is a reference for the project we propose to explore within the territory of Aveiro. The model assumes participation and community interaction, reinforcing the proximity range

(S- Small, L - Local) opening (O-Open) and adopting global logic by taking advantage of knowledge of the network society and connected (C Connected). Design has an important role in the mediation of these processes, with its intrinsic characteristics, by anticipating scenarios. (Manzini, 2003), in the communication of initiatives using adequate resources and contributing to behaviour change. To the intersection of this technological and social innovation, mediated by design, Manzini calls "design for social innovation and sustainability".

FORMULATION OF A COLLABORATIVE DESIGN PROJECTS SYSTEM

This framework to achieve the thesis goals underlines the need to build a system of collaborative projects of co-creation of products-services for bicycle, involving three groups of actors in Aveiro: the community, the local government and the industry.

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[2] http://convergencias.esart.ipcb.pt/artigo/61
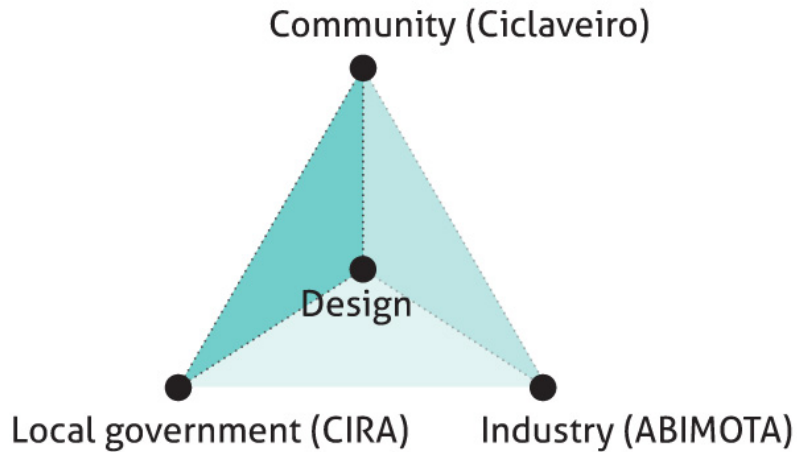
Figure 2. Representation of the actors involved: Community is represented by Ciclaveiro, an informal group that promotes bicycle as a efficiant transportation mode in Aveiro city; Local Government is represented by Cira (comunidade Intermunicial da Região de Aveiro) and Industry represented by ABIMOTA (National Association of the Two Wheels Industries, of, Hardware, Furniture and Alike). Scheme developed by the first author.

The design strategy will necessarily have to understand the involved actors, and aim to, by using design tools and methodologies, including collaborative, reinforcing the trandisciplinary capacity of meta-design, developing a set of workshops involving the agents of the Community - Local Government - Industry triangulation.

The workshops will be mediated by design and supported by the Bicycle and Smooth Mobility Technological Platform of University of Aveiro, in order to find balanced compromises between the focus of interest of each group, which will enable the construction of solutions for the resolution of previously identified problems and opportunities.
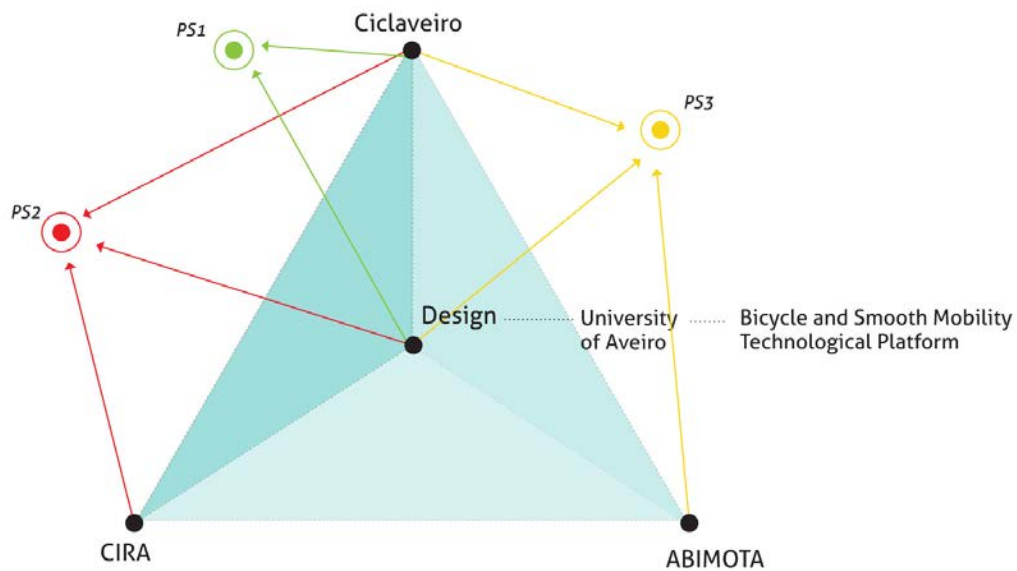
Figure 3. Representation of the proposed workshops and products-services (PS) resulting. Developed by the first author.

The Bicycle and Smooth Mobility Technological Platform is the result of a growing interest that the bicycle theme has gained at the University of Aveiro, recognizing that the bicycle has a strong presence in the Region (Plataforma Tecnológica da Bicicleta e Mobilidade Suave, 2014).
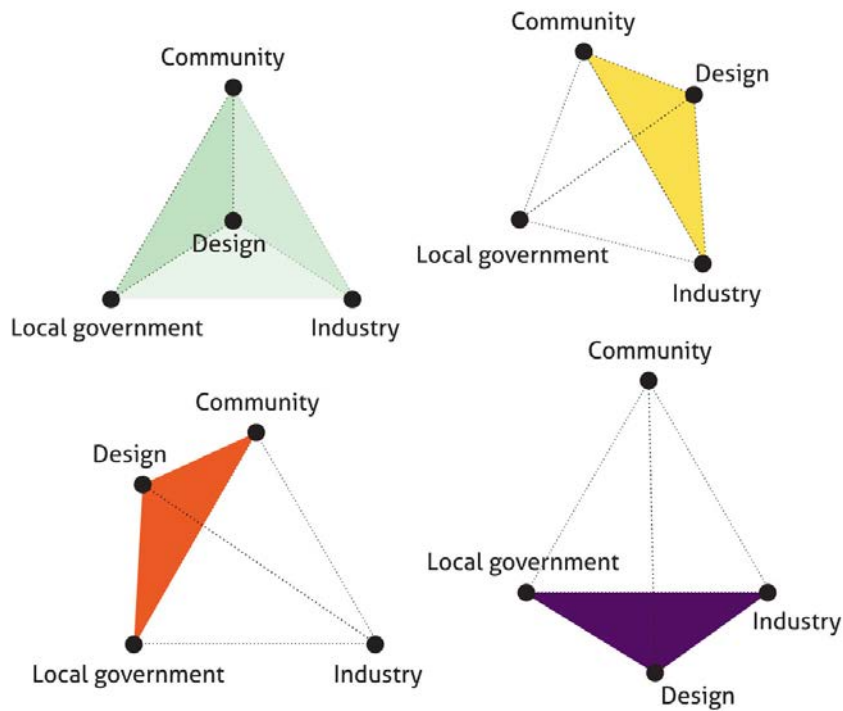
Figure 3. Representation of the proposed workshops and products-services (PS) resulting.

The designer, as a mediator in this process, will contribute with as both as moderator and actor, being an active element, not only facilitator but, inducing the process itself and promoting the creation of future scenarios (Manzini & Milano, 2001).

Through this set of methodologies, of qualitative and exploratory nature, of multiple case study and problem solving, it is expected to bring together scientific knowledge that enables to build the thesis: Design, as a cultural mediator of collaborative processes of reframing the bicycle ecosystem, contributes to add value to the territorial identity, repositioning bicycle as an identity element, promoting a sense of belonging to territories similar to the Aveiro region.

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O Design para a Comunicação do Cancro da Mama
Estratégias de prevenção, tratamento e *empowerment* de doentes e cuidadores

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RESUMO

Os desafios que a Oncologia enfrenta irão marcar profundamente a sociedade. O cancro é uma das doenças do futuro (e do presente) que além duma perspetiva clínica multidisciplinar, reclama uma abordagem política e social concertada, para além dos limites das estruturas de saúde.

O crescente número de casos e agentes envolvidos – médicos, pacientes, familiares, amigos e cuidadores – torna pertinente o estudo, sob a perspetiva do Design, da comunicação da doença oncológica. Assim, propomo-nos com esta investigação, identificar os constrangimentos e as oportunidades no âmbito da literacia da saúde e projetar estratégias e artefactos facilitadores da comunicação e interação entre os vários interlocutores. Este sistema terá como principais objetivos comunicar para a prevenção, tratamento e *empowerment* de doentes e cuidadores. Trabalharemos em particular sobre o cancro da mama, a neoplastia maligna de maior relevância em Portugal, por apresentar maior número de casos, e ser a terceira com maior índice de mortalidade.

Palavra(s)-chave: Comunicação, literacia da saúde, design participativo, cancro da mama e empowerment.

INTRODUÇÃO

Em Portugal, no conjunto das doenças oncológicas, e em termos comparativos, o cancro da mama revela-se como a neoplastia maligna que afeta o maior número de pessoas (em termos absolutos, mesmo tendo em conta que esta patologia é quase exclusiva do universo feminino), e como o terceiro com maior índice de mortalidade. De entre todos os tumores malignos, este será o que representa maior impacto social por incidir sobretudo na mulher, cerne do universo familiar (em especial nos agregados mais tradicionais e acima dos 55 anos), na maior parte dos casos a principal responsável pelo cuidado de crianças e restantes membros da família. O cancro da mama incide sobre o principal símbolo corporal da feminilidade, da sensualidade, da sexualidade e da maternidade, de modo que compromete não somente a condição física da paciente, mas também sua saúde mental. Pela sua relevância, esta investigação dedicar-se-á ao trabalho sobre esta patologia em particular.

A comunicação médico-paciente na área da oncologia, e em concreto na fase de divulgação do diagnóstico, é um fator crucial para a qualidade da relação médico-paciente e o estado psicológico do paciente.

O cancro é uma doença associada ao sofrimento e à morte. A confirmação do diagnóstico oncológico e o confronto com a realidade têm, na grande maioria dos casos, um efeito devastador: a mudança significativa que a doença provoca na vida das pessoas (doentes e familiares) representa uma ameaça à sua integridade tanto física como mental. Como fatores determinantes na comunicação médico-doente estão identificadas as diferentes necessidades informacionais dos doentes e o seu grau de literacia da saúde.

Numa primeira consulta com doentes recém diagnosticados, os oncologistas discutem cinco tópicos principais: diagnóstico, prognóstico (resultado provável), metástase (possibilidade de que a doença se espalhe), opções de tratamento e efeitos secundários. Devido à natureza emocional da discussão, os pacientes têm mais dificuldade em entender e compreender a nova terminologia, as opções de tratamento e os conceitos discutidos durante a consulta, tarefas por si só já difíceis, mais ainda numa situação de stress emocional. Na primeira consulta, depois da palavra "cancro" os pacientes não ouvem mais nada (Gonzales, 2013).

Diversos estudos mostram que enquanto os oncologistas pensam ter respondido às necessidades de informação dos pacientes, estes têm, muitas vezes, diferentes interpretações dos temas abordados, o que origina complicações na compreensão do paciente, e revela ter um impacto sobre a auto-eficácia do paciente, confiança e seleção do tratamento (Eggly et al., 2012; Hack et al., 2005).

Parte significativa da dificuldade em transmitir esta informação está em aferi-la com o estado psicológico do doente. A interação com os pacientes influencia os resultados do tratamento. Iterações positivas traduzem-se em confiança mútua entre médico e doente e produzem efeitos na abordagem e tomada de decisões sobre o tratamento (Zachariae et al., 2003); interações negativas podem afetar a auto-eficácia e confiança do doente e afetar negativamente a abordagem do paciente ao tratamento (Step et al., 2009; Stewart, 1995; Zachariae et al., 2003). É por isso tão importante que o oncologista seja capaz de responder tanto às necessidades informativas como emocionais dos doentes.

A visão holística da doença e do seu tratamento propõe a compreensão geral das suas principais componentes. Deste modo, o aspeto psicológico ganha relevo fundamental tanto na fase de diagnóstico (informação/ compreensão), quanto na de tratamento (adesão/ participação), ou até numa fase posterior, em que os sobreviventes da doença continuam a apresentar sequelas psicológicas (qualidade de vida).

A Psico-oncologia, campo de interface entre a oncologia e a psicologia, estuda a influência de fatores psicológicos sobre o desenvolvimento, o tratamento e a reabilitação de pacientes com cancro através da identificação de variáveis psicossociais e contextos ambientais. Prestando assistência ao paciente, à sua família e profissionais de saúde e sendo a sua intervenção baseada em modelos educacionais, a comunicação está no cerne do seu processo atuação — este é, portanto, o campo ideal para o desenvolvimento desta investigação.

A literacia da saúde é o grau pelo qual os indivíduos têm a capacidade de obter, processar e compreender informação básica sobre saúde e serviços necessária para realizar decisões de saúde adequadas (Selden, 2000). A aptidão necessária à leitura de textos e números vê-se hoje ultrapassada pela exigência de um pensamento crítico, capacidade de resolução de problemas, tomada de decisões,

procura de informação e comunicação, a par de competências sociais, pessoais e cognitivas, imperativas para operar no sistema de saúde, expandindo-se ainda para o reino da cultura, contexto e linguagem (Mancuso, 2008). A literacia da saúde assume especial importância pela sua abrangência e necessário pragmatismo, tratando-se da compreensão e utilização da informação. As seis dimensões de competência que implica - operacional, interativa, autonomia, informativa, contextual e cultural (Mancuso, 2008; Speros, 2005) - ilustram a sua complexidade e relevância social e cultural.

Levantam-se questões de significação: como tornar a compreensão e utilização da informação efetivas e acessíveis a todos, promovendo a sustentabilidade do sistema de saúde? Como comunicar num universo de múltiplos indíviduos, com diferentes graus de literacia? Como tornar a literacia da saúde num fator de inclusão e equidade social?

METODOLOGIA

O tratamento do cancro atravessa uma importante mudança de paradigma, passando de uma gestão focada na doença para uma abordagem centrada no paciente, em que cada vez mais atenção é dada aos aspectos psicossociais, à qualidade de vida, aos direitos, *empowerment* e sobrevivência dos doentes. Projeta-se para as pessoas e não, simplesmente, para os pacientes. Procura-se a compreensão das experiências vividas pelas as pessoas, não apenas como usuários de serviços, mas como seres humanos com sentimentos e objetivos mais vastos. (Borras et al., 2014). Neste contexto, defende-se a existência de equipas multidisciplinares para óptima coordenação entre os profissionais de saúde e comunicação clara com os pacientes, propondo-se uma abordagem centrada no paciente, com informação disponível e compreensível sobre os aspetos clínicos e psicossociais do processo de tratamento, com canais claros de comunicação entre a equipa de tratamento e o doente, e a promoção da participação e possibilidade de escolha. Esta é, portanto, uma excelente oportunidade para a integração de designers em programas de investigação multissectoriais e disciplinares, que abordem os desafios globais, potenciando a inovação a partir de novos conhecimentos (Koskinen & Thomson, 2012).

O Design Participativo, através do qual os diversos agentes envolvidos desempenham um papel ativo no processo de design, revela-se um processo importante no design para a saúde permitindo ao designer identificar e responder de forma adequada a diferentes necessidades, de modo a criar entendimento entre os modelos concetuais quer dos utilizadores, quer dos designers (Gonzales, 2013).

Projetar para múltiplos utilizadores deverá envolver um processo em que os vários agentes são tidos em consideração; deste modo, ferramentas realizadas através de design participativo para variados utilizadores terão em conta os interesses de cada agente de forma a que as suas necessidades sejam satisfeitas. Ao longo dos últimos anos, foram desenvolvidos diversos projetos na área da saúde cuja intervenção se foca na comunicação em grupos específicos e com diferentes objetivos. É comum a utilização deste método em projetos de design para a saúde, como é exemplo o SISOM, sistema de comunicação para crianças com cancro, em que as crianças foram envolvidas no processo de desenvolvimento (Ruland et al., 2008).

Este projeto será baseado na prática ("practice-based", Candy, 2006). Pelas suas características será uma investigação através do design ("research through design", Frayling, 1983); e, no seu propósito, será fundamentalmente uma investigação orientada para uma mudança de comportamentos (investigação--ação). Propomo-nos desenvolver um trabalho de natureza empírica, segundo uma abordagem etnográfica.

Este estudo será desenvolvido em contexto real, no seio de uma instituição de saúde, na área de oncologia, de forma a imergir no universo do seu objeto e contactar com todos os agentes envolvidos (principais beneficiários: oncologistas, psico-oncologistas, doentes, familiares/ amigos, cuidadores), de forma a conseguir o envolvimento e contributo de todos eles e, ao mesmo tempo, trabalhando em conjunto, poder testar sucessivamente as diversas soluções propostas, partilhando diferentes backgrounds, pontos de vista e experiências, na tentativa de alcançar propostas inovadoras.

Assim, esta investigação terá diferentes momentos: a observação preliminar, trabalho de campo para reunir informação e a sua consequente análise; o

desenvolvimento do sistema de comunicação para facilitar a comunicação entre médicos e doentes, através de sessões de design participativo; finalmente, o desenvolvimento da proposta final.

Na fase de observação preliminar, procurar-se-á compreender o contexto, necessidades e objetivos de cada agente envolvido, questionando e observando. Dois dos métodos mais representativos em estudos de campos são o Inquérito Contextual e a Observação Participante (Beyer & Holtzblatt , 1998). Este último abarca diversos aspectos da investigação contextual: entrevistas, observação ou revisão de documentação específica. O Inquérito Contextual é um método de pesquisa em campo utilizado no design centrado no utilizador, e por vezes associado aos métodos de design participativo (Spinuzzi, 2005). O Inquérito Contextual pode ser definido como "aprendizagem condensada no tempo" (Beyer & Holtzblatt ,1998), através do qual o investigador se coloca no lugar do utilizador, na tentativa de compreender as suas tarefas e sentimentos. Como designer, a observação será exploratória na pesquisa de uma visão da natureza do desafio e de formas generativas e estratégicas de o enquadrar, através da interpretação, um processo social e pessoal, individual — a "observação poética", que informa e inspira o design na procura de novas dimensões (Fulton Suri, 2010).

Na segunda fase, o desenvolvimento do sistema de comunicação nascerá da análise da informação recolhida na fase anterior e do trabalho desenvolvido em workshops/ sessões de design participativo organizados com os principais agentes envolvidos, com diferentes capacidades e graus de envolvimento, que permitirão criar protótipos rápidos para testes, avaliação e melhoria. A partir daqui, realizar-se-ão maquetes finais que serão testadas em ambiente real. A informação recolhida nesta fase, permitirá desenhar a proposta final: um sistema funcional que será, por sua vez, também testado e avaliado.

RESULTADOS

Este programa de trabalhos pretende desenvolver um sistema que favoreça a comunicação entre interlocutores, identificando limites de comunicação, adequando a mensagem ao contexto em que se insere e tornando efetiva a compreensão e transmissão da informação. Pretendemos com esta investigação,

desenhar a informação tornando-a mais clara, acessível e compreensível e, com isto, facilitar o processo de comunicação e acompanhamento psicológico de doentes, família e amigos, numa ação inclusiva que visa fomentar o equilíbrio, o bem estar e o contributo deste valioso círculo de acompanhamento e suporte positivo. Pretendemos desenvolver estratégias de comunicação e artefactos capazes de atuar: na prevenção, promovendo a literacia da saúde; no tratamento e pós-tratamento, com impacto na qualidade de vida e *empowerment* de doentes de cancro da mama e cuidadores; na interação entre os vários agentes. Julgamos que o Design poderá, assim, contribuir para uma cidadania mais informada e consciente tendo como consequência a sustentabilidade do sistema de saúde.

CONCLUSÃO

O Design está ideologicamente comprometido em transformar o mundo para benefício dos seres humanos e em ajudar a encontrar soluções inteligentes para os seus problemas (Schneider, 2007).

A presente investigação pretende contribuir para o conhecimento e desenvolvimento da comunicação na doença oncológica através da disciplina do Design. Definidas as áreas de interesse para o desenvolvimento deste trabalho, grande parte do trabalho realizado até ao momento centrou-se quer no seu estudo teórico aprofundado, quer na pesquisa bibliográfica académica e não académica, com o objetivo principal de definir as questões de investigação preliminares. Pela sua fundamental importância no posterior desenvolvimento da investigação, resolvemos dedicar a esta fase o tempo necessário até à formalização de questões sólidas, capazes de dotar o trabalho de um verdadeiro sentido social e pragmático.

Deste modo, as conclusões desta fase serão o verdadeiro ponto de partida da investigação. De facto, é através das questões preliminares de investigação que nos é possível definir metodologias e iniciar a fase seguinte, na qual serão dados os primeiros passos no seio da comunidade em estudo—em concreto, através da observação preliminar que permitirá a recolha de informação em contexto real.

A complexidade do tema, a composição heterogénea do universo de estudo, e os diferentes sistemas de comunicação próprios de cada grupo, levantam inúmeras questões em torno da codificação/ descodificação de mensagens (literacia da saúde), bem como da adequação da informação a transmitir face aos objetivos pretendidos (prevenção, compreensão, tratamento).

Como poderá a compreensão das diferentes dificuldades e necessidades de comunicação dos diversos agentes envolvidos à luz do design, contribuir para o desenvolvimento de um sistema de comunicação capaz de atuar na prevenção, tratamento e pós-tratamento oncológico?

Como pode o design contribuir para a promoção da literacia da saúde?

A experiência de doença não é apenas sobre as sensações físicas e psicológicas: é também sobre toda a gama de conhecimentos pessoais, incluindo interações sociais e experimentações em particular. Sendo cada indivíduo um universo diferente fruto das suas capacidades, vivências e conjunto de limites, quais são as possibilidades de criar sistemas capazes de responder às necessidades próprias de cada um?

Como pode o desenvolvimento contextual de estratégias de comunicação e artefactos através do design ter real impacto no *empowerment* de doentes e cuidadores?

Como poderá o design, através do designer enquanto agente integrante de uma equipa multidisciplinar, contribuir para a construção de uma cidadania mais informada e consciente, e consequente sustentabilidade do sistema de saúde?

Que outras disciplinas poderão ser trazidas para o contexto da investigação, contribuindo positivamente para o seu desenvolvimento através da sua capacidade complementar, desafiante ou mesmo provocatória?

Esta pretende ser uma proposta inovadora no âmbito de um tema que o não é (há já largos anos que outros projetos interligam Design e Doença Oncológica, sobretudo em países como Reino Unido, Estados Unidos ou Canadá). Partilhamos assim a visão de Koskinen e Thomson, encarando esta investigação como uma excelente oportunidade para potenciar a integração de designers em programas de investigação multissectoriais e disciplinares que abordam os

desafios globais, potenciando a inovação a partir de novos conhecimentos (Koskinen & Thomson, 2012).

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Biossistema
Desenvolvimento de um vermicompostor doméstico

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RESUMO

Em Portugal mais de 50% dos resíduos urbanos biodegradáveis (RUB) acabam em aterros (face aos valores de 1995, relatório anual de resíduos urbanos 2013), misturados com outros contaminantes químicos tornando-se inúteis para utilização posterior. Apesar das melhorias significativas em 2013, este continua a ser um problema atual que merece a nossa atenção e cuja solução passa pela redução para 35% em 2020, segundo proposta da comunidade europeia (PERSU II - Plano Estratégico para os Resíduos Urbanos). É neste contexto que se apresenta a investigação e desenvolvimento de um equipamento de vermicompostagem para ambiente doméstico. A pesquisa incide sobre a técnica de vermicompostagem e na utilização de materiais sustentáveis (económica, ambiental e tecnológica) aproveitando as suas propriedades físicas para criar um equipamento que recicla até 11,4% / ano de RUB (produzidos em Portugal continental em 2012) sem comprometer a saúde e conforto dos utilizadores.

Palavra(s)-chave: Design, vermicompostagem, cerâmica, sustentabilidade, doméstico.

CONCEITO

De acordo com os dados mais recentes de 2013, cada português produziu cerca de 1 kg de Resíduos Urbanos (RU) por habitante, 43% dos quais depositados em aterros (Silva, et al., 2014) provenientes de contentores de lixo indiferenciado, misturando-se com potenciais contaminantes tóxicos, difícil de separar contribuindo para um problema que diariamente lesa o equilíbrio ambiental. Este hábito urbano que tende a aumentar anualmente, com o crescente consumo e desperdício de alimentos (Baptista, et al., 2012) tem também gerado soluções de controlo de resíduos em diferentes campos de atuação (para além dos avanços tecnológicos relativos ao processamento de RU em estações de tratamento municipais), estimuladas por várias diretivas europeias nomeadamente as referidas no PERSU II (Plano Estratégico para os Resíduos Urbanos) para 2020 (Agência Portuguêsa do ambiente, 2014). Por exemplo no Município de Guimarães foi proposto em 2013 um programa "pay-as-you-throw" introduzindo tarifários em função dos resíduos produzidos numa perspetiva "Poluidor-pagador", apelando à responsabilidade partilhada na gestão de RU (Freitas, 2013).

Numa perspetiva menos conservadora, é possível encontrar soluções de reciclagem de RU "in situ"[1] por exemplo através da compostagem que é um processo biológico que origina a fragmentação e transformação de compostos orgânicos (por exemplo frutas e legumes) resultando numa substância semelhante a húmus por intervenção de micro-organismos, fungos ou minhocas na presença de oxigénio (Ijagbemi & Adepo, 2014). A utilização desta técnica, prevenindo problemas ambientais ao mesmo tempo produz um fertilizante e condicionador de solos barato e de alta qualidade (Rynk, 1992), é, no entanto, considerada desadequada para interiores pois pode criar problemas de saúde e desconforto para o utilizador.

O recurso a minhocas é uma possibilidade catalisadora que por um lado acelera o processo e por outro lado exige menos espaço para o desencadeamento das reações inerentes ao processo de vermicompostagem (Appelhof, 1997). Assim a

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[1] Processo de reciclagem praticado no local.

integração deste processo no ambiente doméstico apresenta-se como uma alternativa viável mas necessita de condições que não comprometam a saúde e conforto dos utilizadores evitando a proliferação de vermes indesejados e odores desagradáveis. Existem equipamentos que permitem a prática da vermicompostagem como por exemplo o *Worm café* (Tumbleweed, 2015). No entanto este tipo de equipamentos é aconselhado para exterior[2] devido ao risco de criar desconforto quando utilizados dentro de casa. A investigação que se apresenta, pelo contrário, propõe um vermicompostor para utilização em ambiente doméstico, sugerindo inicialmente um contributo adicional e futuramente uma alternativa viável ao descarte de RUB, desviando-os de aterros e aproveitando-os como matéria-prima utilizável no próprio local, introduzindo o princípio de valorização de resíduos.

Durante o desenvolvimento deste trabalho foram estudados diferentes protótipos no sentido de entender o processo de vermicompostagem e utilizando-o em contexto doméstica de forma simples e intuitiva para o utilizador. Também foi tido em consideração o material final empregue nos protótipos, numa perspetiva de consciência ambiental e viabilidade económica. O desenvolvimento de pastas cerâmicas melhoradas/aditivadas em contexto laboratorial permite potenciar a matéria, servindo ao mesmo tempo de base estrutural do equipamento e favorecendo positivamente o processo de vermicompostagem dentro de casa. Por fim a realização de modelos físicos permite avaliar a prestação do sistema em contexto real e obter conclusões a respeito do impacto deste produto na diminuição de RUB em aterros.

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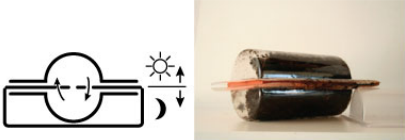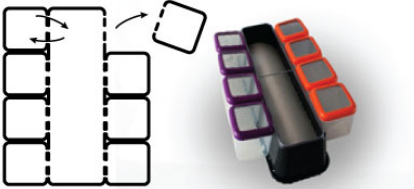
[2] Seja pelas sugestões de imagens com enquadramento em contexto exterior (e nunca em utilização dentro de casa) ou pelo facto do equipamento não se integrar no contexto habitacional. Por exemplo as peças produzidas com materiais idênticos aos habituais caixotes do lixo indiferenciados domésticos, torna o equipamento mais difícil de integrar / conjugar com os diferentes equipamentos domésticos.

ESTUDO EXPERIMENTAL

Iniciou-se o estudo do processo de vermicompostagem recorrendo a protótipos (sistemas) em plástico criando possíveis cenários de utilização da técnica (Tab. 1). Os sistemas tiveram em conta o seu volume, translucidez, estanquidade, arejamento e drenagem de forma a facilitar a experiência de utilização. A título de exemplo, no decorrer da experimentação, o volume suportado pelos sistemas foi ajustado à quantidade diária de resíduos que uma família de três elementos produz. O controlo da posição das minhocas foi testado recorrendo às suas características fotofóbicas e atração por resíduos frescos.

A excessiva produção de humidade criou problemas de drenagem e proliferação de mosquitos da fruta, cuja solução passou por secar a zona superior dos resíduos e limitar a sua exposição ao ar. A perfuração da base, a deposição de gravilha e pedras, e a conformação de uma base curva foram algumas das hipóteses experimentadas.

A1		Contentores em Polipropileno (PP) encaixáveis com base perfurada para drenagem de líquidos e circulação de minhocas.
		Sistema com problemas de drenagem e proliferação de mosquitos.
A2		Idêntico ao sistema A1 mas com base coberta com 10 mm de gravilha. Contentores de menores dimensões em PP para testar a movimentação e controlo da posição de minhocas.
		Resolvido o problema de drenagem mas com pouca capacidade de RUB.
B1		Contentor em PP com maior capacidade e coberto com filme preto (bloqueando a luz).
		A quantidade de humidade exposta ao ar cria condições para o desenvolvimento de mosquitos da

		fruta posteriormente controlado quando coberto com filme preto. Tamanho pouco apropriado para apartamentos.
C1		Duas peças em Polietileno translucido conformadas e separadas por uma laje de 10 mm de barro vermelho cozido e perfurado. Metade da peça fica exposta à luz e a outra metade dentro de uma caixa protegida da luz.
		Verificou-se a passagem de minhocas entre compartimentos, através da laje de barro mas a falta de canais de drenagem reteve a humidade de forma excessiva e prejudicial.
D1		Contentor principal em Policloreto de vinila com base curva em PET e canais de saída de líquidos. Contentores individuais em PET com paredes e base perfurada para drenagem de líquidos e passagem de minhocas.
		Contentor principal com drenagem eficiente mas os compartimentos individuais não obtiveram bons resultados convertendo o processo numa digestão anaeróbica.
E1		Contentor cilíndrico em barro vermelho com peça encaixável no topo que serve de vaso.
		A humidade no interior é mais estável devido à evaporação através do barro. Peça do topo move-se durante a degradação de resíduos e permite que a zona superior permaneça seca.

Tab. 1 - Resultados do estudo da técnica de vermicompostagem.

Entre os diversos materiais testados o barro vermelho foi o que melhor respondeu aos diversos problemas apresentados acima, destacando-se a absorção e evaporação da humidade por via do próprio material. A sua permeabilidade e características de estabilização de temperatura foram testadas num protótipo muito aproximado ao equipamento final. A evaporação através das paredes não vidradas mantém o interior do sistema com humidade mais equilibrada, e oxigenado. De resto verificou-se que ao aumentar a porosidade do material, aumenta a absorção da humidade no interior. Com base neste raciocínio e partindo de 3 pastas de barro vermelho foram experimentadas 135 combinações com 5 aditivos e 3 temperaturas de cozedura como demonstra a Fig. 1.

Pasta	Aditivo	Quantidade	Temperatura
Loja do Ceramista	Pó de serrim	→ 5% 10% 15%	
	Cortiça	→ 5% 10% 15%	850º
	Argila expandida	→ 10% 20% 30%	950º
ValdoSol	Diatomite	→ 10% 20% 30%	1050º
	Calcite	→ 10% 20% 30%	
PreCeram			

Fig. 1 - Mapa de combinações das pastas, aditivos, percentagens de aditivos e temperaturas.

As origens dos barros vermelhos utilizados neste trabalho foram: loja do ceramista, Caldas da Rainha; Preceram S.A. (cerâmica estrutural); Val do Sol, Cerâmicas S.A. (louça terracota).

Os aditivos utilizados nas pastas cerâmicas foram selecionados com base em bibliografia específica sobre o seu efeito na estrutura e comportamento de corpos cerâmicos (Lyckfeldt, et al., 1998), (Prevenção e controlo integrados da poluição, 2006), (Dutra & Pontes, 2002).

O compromisso que melhor responde aos requisitos fixados para este projeto - elevada resistência mecânica e elevada porosidade - verifica-se preferencialmente nas condições de aditivação da pasta Val do Sol com 10% ou 20% de calcite, cozidos a 950º C.

Foram produzidos protótipos, à escala 1:2, e testada a passagem de humidade no sentido ascendente. Os resultados revelaram uma escassez de humidade inibindo o saudável crescimento da planta no seu topo que constitui uma das ideias conceptuais do projeto. Pelo contrário, o protótipo foi eficaz na passagem da humidade no sentido descendente.

DESENVOLVIMENTO DE PROJECTO

O resultado da fase de experimentação levou ao desenho de um sistema modular vertical em barro vermelho (Fig. 2). A peça telescópica (peça A), que se move ao ritmo da degradação dos resíduos, serve de interface através de iconografia incorporada por via de decalque sob vidrado, fazendo o utilizador aperceber-se da evolução processo sem necessitar de ter contacto visual com as minhocas e respetivo composto. A cor natural do barro reforça o conceito telúrico do projeto.

Fig. 2 - Protótipo final 3D

A base da peça A não vidrada, permite a migração de humidade nos dois sentidos (ascendente e descendente) entre a sua cavidade (onde se pode cultivar plantas) e a zona inferior (onde se localiza a pilha de composto e respetivas minhocas). Esta peça serve ao mesmo tempo de barreira aos mosquitos (não expondo a pilha de composto ao ar) e filtra os maus cheiros, que são contrariados, diluídos ou omitidos pelos cheiros agradáveis próprios de várias plantas (por exemplo aromáticas). A presença da planta reforça a comunicação sustentável do projeto e fortalece o carácter estético do produto.
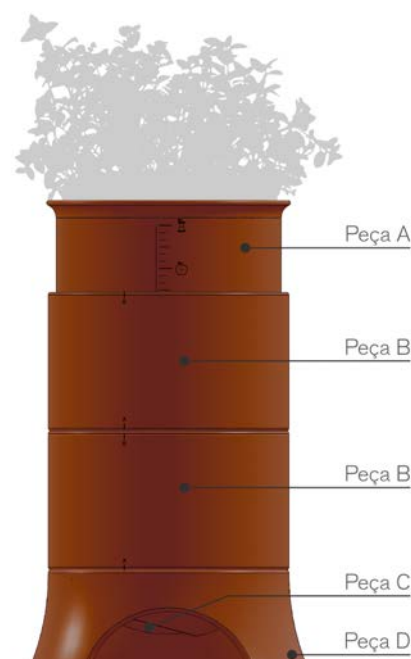
Fig. 3 - Esquema do protótipo final

A peça B, onde se localiza a pilha de composto e as minhocas, pode conter cerca de 7 l e permite quer a multiplicação da capacidade do sistema, quer a partilha com novos utilizadores através da troca de peças novas (adquiridas pelo novo utilizador) com peças já contaminadas de minhocas (proveniente do utilizador que já tem o sistema a funcionar) permitindo abreviar o processo inicial de estabilização das minhocas no sistema. Desta forma é possível criar uma rede de consciência ambiental com potencial de multiplicação da redução de RUB em aterro.

A peça C, um reservatório vidrado apenas na superfície inferior, absorve através do material o excesso de humidade que é vedada por uma rolha de cortiça.

O desenho final do projeto, inspirado nos vasos circulares, evita a acumulação de minhocas em cantos (identificado na fase experimental) e privilegia a vermicompostagem no sentido vertical, evitando pressão excessiva na zona inferior do composto através de quebras de pressão originadas pelo desenho da peça B (Fig. 3). A composição vertical é limitada pelo peso exercido na base e pelo número de peças B, que adiciona altura ao sistema e que o pode tornar mais instável (propõe-se um limite de até 3 peças B por sistema).

A cor e textura original do material ajuda na associação do produto com o meio natural (a terra) e o seu propósito.

Os protótipos foram distribuídos por cinco famílias com diferentes hábitos (vegetarianos, alimentação mediterrânea, com e sem contacto anterior com a técnica de vermicompostagem). O ato da entrega dos respetivos equipamentos foi acompanhado de uma breve explicação e da cedência de um formulário para registar as atividades cuja análise contribuiu para as conclusões finais deste trabalho. Segundo os comentários recebidos das famílias que utilizaram os protótipos nas suas casas, durante 3 meses consecutivos, concluiu-se que os protótipos permitiram processar até 1kg de RUB por semana, embora se tenha detetado variações. Estas variações poderão estar relacionadas com a qualidade dos resíduos depositados bem como a quantidade de minhocas e humidade existentes no sistema. De mencionar também que as primeiras semanas dos testes constituíram a fase de adaptação das minhocas ao sistema e que, como tal, a eficiência do processo de vermicompostagem foi aumentando progressivamente, estimulada também pela atividade microbiana no interior.

CONCLUSÕES

O protótipo final sugerido reúne um conjunto de conceitos experimentados, tirando partido tanto do material: funcionando como mediador de odores e humidade; como do próprio desenho: sugerindo desenhos que melhoram a performance da vermicompostagem no sentido vertical, evitando pressão que iniba a circulação de minhocas na zona inferior do sistema e privilegiando a experiência do utilizador integrando-o de forma harmoniosa no espaço doméstico. O estudo efetuado às matérias-primas focado na sua permeabilidade e resistência, permitem considerar a adequação do produto a diferentes contextos de utilização, por exemplo para interior e/ou exterior.

Segundo os resultados dos testes em contexto real, conclui-se que cada sistema pode processar até 52kg de RU por ano. Considerando o referencial de produção anual de RU em Portugal continental (454kg) "per capita" referente a 2012 (Dias, et al., 2013) conclui-se que o sistema permite a redução em 11,4% por ano de resíduos gerados em ambiente doméstico. Neste sentido a distribuição de um sistema idêntico para cada cidadão/utilizador urbano permitirá uma expressão ecológica significativa, dependente do número de utilizadores, podendo-se assim considerar uma alternativa ao desvio de RUB em aterros. A partilha de componentes do sistema (peça B) pretende reforçar a consciência ecológica e de sustentabilidade dos cidadãos e o potencial deste produto na valorização de resíduos.

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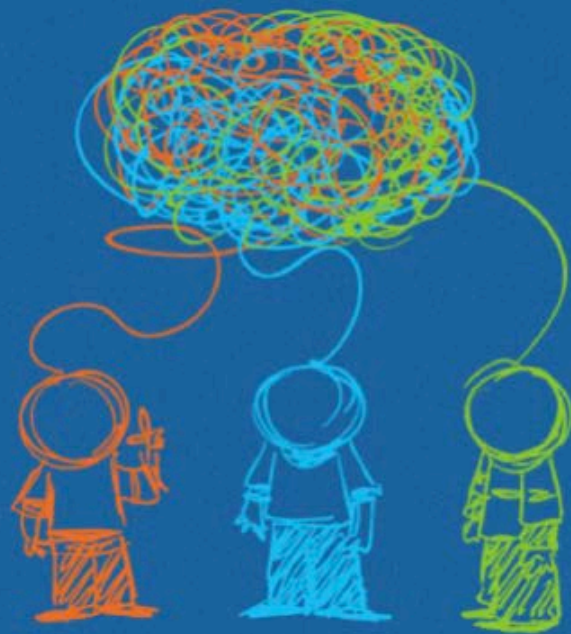
DISCIPLINARITY

Transdisciplinary knowledge for innovation
Blurring the design disciplines boundaries'

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ABSTRACT

Knowledge assumes now an increased importance in the context of New Product Development (NPD). Accordingly, the sources of knowledge that are behind the creation of useful and desirable new products are calling the design research attention.

Based in a generic literature review, we advocate that only leading organisations have already reshaped their structure in order to increase their knowledge integration and creation skills. Therefore, a transdisciplinarity approach early in the design process is argued, in which industrial design and mechanical engineering play a decisive role in integrating different knowledge domains. Besides, this interdisciplinary intersection is considered as decisive for the creation of conceptual breakthroughs.

Keyword(s): Transdisciplinarity, Knowledge, New Product Development, Early design

CONTEXT

Design is presently understood as a total phenomenon, operating in relation to a wide range of other disciplines and external conditions, such as culture, society and technology (Best, 2010; Maldonado, 2012). Therefore, a massive collaborative effort composes design in its broadest sense, with many people from different disciplines taking design decisions (Marcus, 2002). Yet, this need for design collaboration only recently acquired the current significance, and it is now firmly established in more disciplines beyond the design itself.

The roots of the design collaboration are in the increased specialisation, formalisation and professionalization of the diverse branches of knowledge (Collin, 2009). Nevertheless, the last two decades of designing large-scale and complex systems have demonstrated the inefficiency of either the inter- or the multidisciplinary approaches. These two referred approaches were thus considered as insufficient to promote the necessary collaboration and synthesis, that allows exiting the disciplinary boundaries. Also, they failed in the production of truly creative and innovative solutions that respond to the current social and technological complex problems (Ertas, 2012). Therefore, transdisciplinarity gained importance and it is presently understood as a process or activity that produces, integrates, and manages knowledge in the scientific, social and technological areas. Also, it has evolved from special types of problems, which ask for the integration of different sources of knowledge (Scholz, Lang, Wiek, Walter, & Stauffacher, 2006). Knowledge is precisely one of the most cited terms when dealing with transdisciplinarity, whether in its creation or in its integration and management.

Design hasn't been the main focus of the transdisciplinarity research, mainly centred in the cultural studies, the social sciences and the health sciences. Accordingly, and by means of a general literature review, present study aims to give additional insights to this area of research. Regardless the importance of other relevant disciplines for the NPD process, such as economics, sociology or marketing, this study is focused in the design disciplines. Therefore, we aim to analyse the conceptual and transdisciplinary effort between mechanical engineering and industrial design disciplines.

DIFFERENT SOURCES OF KNOWLEDGE

Currently, literature considers that the boundaries of the disciplines involved in the design process are blurring. The general impression is that this blurring is a consequence of many more wanting to be involved as early as possible in the process. Also, there is a global discontent at multiple borders in-between the different design disciplines (Sanders, 2006, 2010). Nevertheless, traditional NPD companies have been combining the technological or science-based knowledge (technology-push), with the knowledge about user situations and desires (market-pull) over the last few decades (Alting, Clausen, Jørgensen, & Yoshinaka, 2007). This is the conventional approach to innovation, based in specific sets of data from either technology or market.

Literature then generically identified a double source of knowledge for the NPD process, with the first dealing with the availability of new technologies and the latter dealing with the understanding of user needs (Dell'Era, Marchesi, & Verganti, 2010; Dosi, 1982; Verganti & Öberg, 2013). Historically, the first has been clearly related with the engineering disciplines and the latter more related with industrial design. However, this twofold approach to innovation has been showing signs of weakness inside innovative and global organisations, and non-measurable data is thus gaining importance.

TACIT AND EXPLICIT KNOWLEDGE

The different knowledge bases differ in various aspects, such as the degree of formalisation, the context-specificity of knowledge and the dominance of the tacit or the explicit content (Martin & Moodysson, 2011). Michael Polanyi (1966) was the first author to emphasise that the majority of the existing knowledge cannot be crystallised into words, and he firstly posited the existence of a tacit dimension (Polanyi, 1966). The basic notion is that tacit knowledge is by definition difficult to materialise and strongly context specific (Martin & Moodysson, 2011). Instead, the explicit knowledge refers primarily to facts or discrete quantities of information (Casanueva, Castro, & Galán, 2013).

Nevertheless, literature considers that a company needs to reconcile these two knowledge bases in order to create entirely new knowledge. These two categories should be then perceived as complementary rather than substitute of

each other (Casanueva et al., 2013; Martin & Moodysson, 2011; Polanyi, 1966). Therefore, companies with NPD teams should be capable of integrate these two different knowledge bases in order to deliver real innovative outcomes.

ENGINEERING AND DESIGN KNOWLEDGE BASES

Currently, one of the design challenges lies in how to integrate and manage tacit and explicit knowledge, and how to create new competencies for multi-discipline collaborations. Therefore, the management of the knowledge processes have evolved from technology-push to market pull, and from an interactive model to a transdisciplinary one (Bergman, Jantunen, & Saksa, 2004). Accordingly, we feel that both mechanical engineering and industrial design are now called to the creation of new and transdisciplinary knowledge. Besides, literature considers general design knowledge as multifaceted, combining the formal scientific knowledge (explicit), with tacit human knowledge (Friedman, 2008). Therefore, to create new knowledge and new design theory these two knowledge bases should be combined, and the associated professional activities should be merged as well.

Charles Owen (2007) drew a map to use both content (symbolic/real) and process factors (analytic/synthetic) that may explain the different knowledge bases of a variety of disciplines (Owen, 2007). According to Simon (1996), analysis refers to understanding and explaining the natural, and synthesis refers to designing something to attain functional objectives. When we move from the natural to the artificial, we are then moving from analysis to synthesis (Simon, 1996). Despite their clear differences, as both industrial design and mechanical engineering are traditionally applied to the industrial products they are synthetic in nature (Asheim & Hansen, 2009). Accordingly, they are placed in the right half of Figure 1.
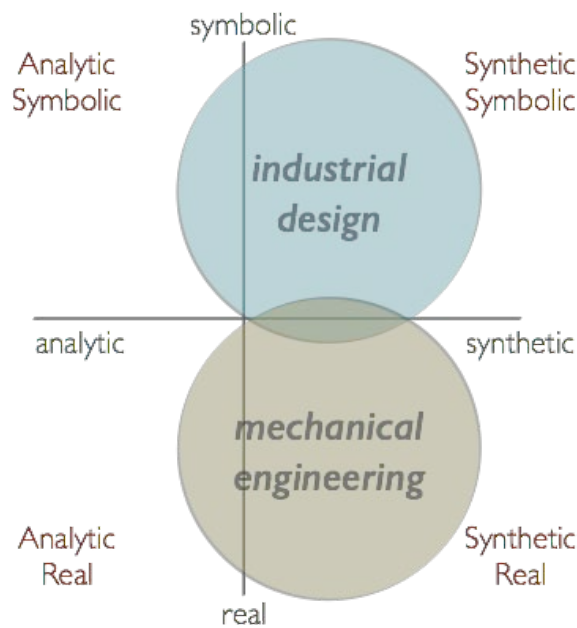
Figure 1. process base and realm of activity for industrial design and mechanical engineering

Despite their shared synthetic process, mechanical engineering and industrial design vary in the realm of activity. Industrial design gains in symbolism and in the application of traditional semiotics, when compared to mechanical engineering. Besides, the industrial designer is traditionally concerned with the understanding of users perspectives and desires, the tacit dimension. Conversely, the engineer should be more engaged with the objective characteristics of the technology resulting of the application of explicit scientific knowledge (Utterback et al., 2006). Therefore, the intersection of these two approaches grounds the creation of real breakthrough knowledge.

DESIGN-DRIVEN INNOVATION

By means of a detailed analysis conducted to several global and innovative companies, such as Apple, Philips or Nintendo, researchers apprehended that these companies normally reject the referred traditional dichotomy. Instead, they follow a third strategy, widely known as design-driven innovation (Battistella, Biotto, & Toni, 2012; Dell'Era et al., 2010; Verganti, 2008, 2009). In this new paradigm, beyond the availability of new technologies and the explicit user needs, a third source of knowledge is added. This third source of knowledge combines knowledge about user needs, wills and new trends, with

knowledge on the new technological opportunities (Verganti, 2008). The traditional strategies and the referred design-driven approach are represented in Figure 2.
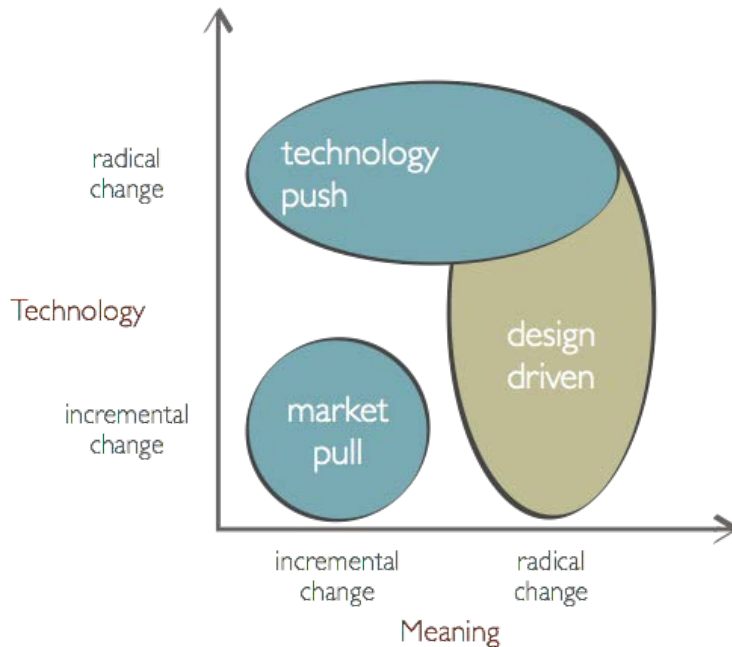
Figure 2. design-driven approach as the radical change of meanings [source: adapted from (Verganti, 2009)]

In the design-driven approach, innovation starts from the comprehension of subtle and unspoken dynamics in sociocultural models. Then, a new and radical proposal is performed, combining radically new meanings and languages that often imply a sociocultural paradigm change (Verganti, 2011b). As proposed by Polanyi (1966), the referred subtle and unspoken dynamics might be difficult to crystallise into words and numbers, contrary to the market-pull data and the technology push insights. Therefore, this third new vector presents a holistic combination of explicit and tacit knowledge. Also, this third and combined vector of innovation is still an unexplored area, and it aims at introducing new meaningful experiences to the user. It represents a change in the purpose for which the products are used, instead of starting with the "what" or "how" questions; it all starts with "why". The "why" question brings products a wider perspective, beyond the visible and tangible functions (Verganti & Öberg, 2013). Therefore, it goes beyond the abovementioned explicit dimension.

Conversely, this new and combined approach doesn't start with users' insights. Instead, it is pushed by a vision about possible breakthrough meanings that exploit new technologies, which might emerge in the future. Surprisingly, design-driven approach is thus closer to the technology-push approach, rather than market-pull strategies (Verganti, 2011b). Accordingly, a detailed analysis to overlap between the design-driven and the technology-push might be beneficial for the understanding of this trend.

TECHNOLOGY EPIPHANIES

Thereby, one are that admits a particular interest for detailed research is precisely the overlap between the technology-push and the design-driven approaches (Verganti, 2011b). This referred overlap is at the heart of some of the most successful products in many product development companies, such as the abovementioned Apple, Philips or Nintendo (Verganti, 2009, 2011a), and it is represented in Figure 3.
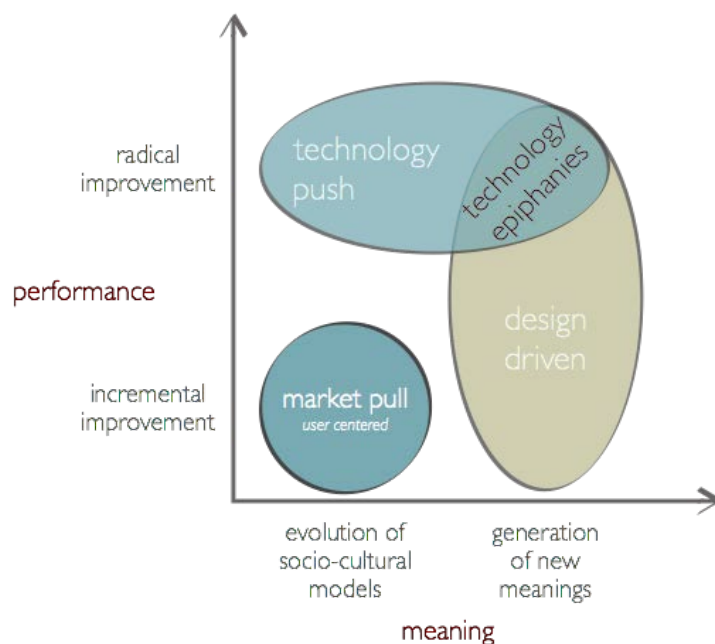
Figure 3. the overlap between the technology-push and the design-driven approaches [adapted from (Verganti, 2009)]

Notwithstanding its designation, these epiphanies do not have to be the outcome of eureka moments; instead, either the new technologies' suppliers, or the companies that incorporate them in their portfolio can systematically

produce them. An example of this methodical approach is the Philips Electronics, which started to produce technology epiphanies in the early 1990s and have been investing systematically in this strategy since 2001. This company is currently focused in delivering new visions that technology could make possible and that could become more meaningful to users than existing products (Verganti, 2011a).

Regardless the design management focus to be placed in how design can act as a differentiator in mature industries, this emergent trend signifies that there is a relevant and unmapped field of how design can act early in the design process, when a breakthrough technology is emerging (Verganti, 2011b). Therein, a transdisciplinary commitment gains an increased importance, as it generally asks for the integration of both the scientific and the sociocultural knowledge bases (Scholz et al., 2006). Besides, research from different disciplines should work together to develop and use a shared conceptual framework to solve common problems (Ertas, 2012). Accordingly, we feel that the technology epiphanies are a special case of transdisciplinarity. Therein, the more powerful and successful meanings in products (tacit knowledge) are overlapped with new and emergent technologies (explicit knowledge), early in the design process. Also, it is precisely in the conceptual stage of any design process that the perceived value, in both the social and technological landscapes, is created. Nevertheless, the high degree of uncertainty and ambiguities over this early stage has inhibited its detailed study.

CONCLUDING REMARKS

As design is a total phenomenon, disciplinary collaboration and the integration of diversified knowledge is essential. Accordingly, the current and increased complexity, in both the social and the technological landscapes, led to a paradigm change in the knowledge management processes. From the traditional and collaborative interdisciplinary approach, a progress occurred to a further integrated and transdisciplinary philosophy. Correspondingly, the early stages of the design process benefited from this positive blur of the design disciplines.

Notwithstanding the different knowledge bases, or the individual specificities, a conceptual overlap between industrial design (symbolic) and mechanical

engineering (real) helped the creation of entirely new meanings. Therefore, a holistic overlap between the symbolic and the real domains of activity may result in a transdisciplinary epiphany, as represented in Figure 4.
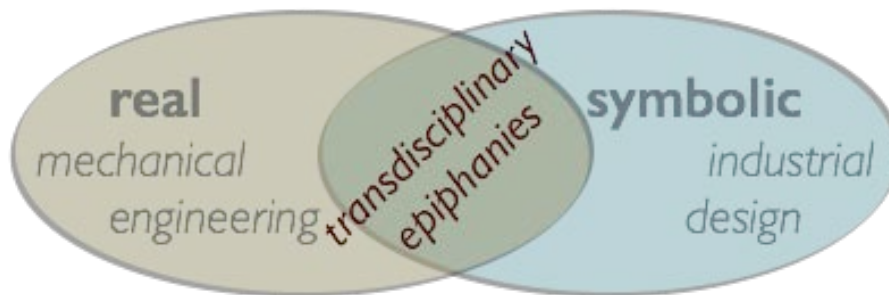
Figure 4. transdisciplinary epiphany between engineering and industrial design knowledge bases

As abovementioned, this study was aimed to understand the sensitive relationship between industrial design and engineering. Therefore, the real and the symbolic taxonomies for the domain of activity, proposed by Owen (2007), were used to classify these disciplines. Besides, and using taxonomies similar the analysed literature, the above outline (Figure 4) is proposed. Accordingly, a transdisciplinary epiphany occurs when a shared and new knowledge, resulting from the synthesis of the symbolic and the real knowledge bases, is generated in a NPD context.

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estratégia
KEY INFORMERS, PARCERIAS, ESCOLA PILOTO

campanha
STAND-ALONE MASS MEDIA

implementação
EM ESCOLAS
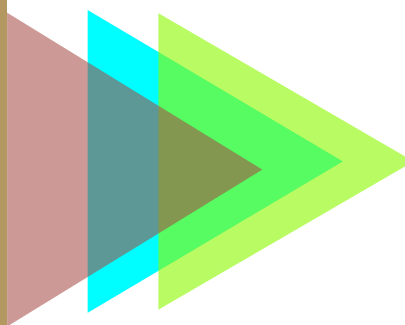
comunicação
TRANSMEDIÁTICA

programa
EXERGAME

gamification

Estratégia de Design
Contributo na alteração do comportamento sedentário e combate à obesidade dos jovens

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RESUMO

O sedentarismo e a obesidade desafiam mundialmente a saúde pública no século XXI. O seu aumento na população infanto-juvenil está relacionado com a crescente expressão das tecnologias na ocupação dos tempos livres. Foi objetivo avaliar os níveis de sobrepeso/ obesidade, antes e depois da aplicação de uma nova Estratégia de Design para promover um estilo de vida ativo e combater a obesidade dos jovens. Participaram 142 jovens de ambos os sexos, dos 12-18 anos, tendo sido constituídos dois grupos experimentais — com sobrepeso e obesos (GE1) e normoponderais (GE2) — e dois grupos de controlo (GC). Verificamos que o GE1 reduziu significativamente o IMC em 1,02 kg/m2, ou 3,85% (z=3,921 e p=0,000). No GE2 os resultados foram positivos, mas menos expressivos. No GC não se verificaram alterações dignas de realce. A Estratégia foi eficaz, comprovando o contributo do Design na alteração dos níveis de obesidade, particularmente quando associado a outras áreas do conhecimento e atuação em mais do que uma dimensão.

Palavra(s)-chave: Sedentarismo, Obesidade, Estratégia de Design, Atividade Física, Campanha e Programa de Intervenção.

1. INTRODUÇÃO

A Organização Mundial de Saúde (OMS) classificou a Obesidade como "a Epidemia do séc. XXI", referindo que uma das suas principais causas é o Sedentarismo (WHO, 2000), uma vez que a nível mundial existem 2,1 bilhões de pessoas com sobrepeso ou obesidade (IASO, 2010).

Um período crítico para um elevado aumento de peso é a adolescência, devido a importantes mudanças na composição corporal – mais do que noutros períodos de desenvolvimento (CDC, 2010). Apesar das crianças e jovens formarem os segmentos mais ativos da população, nas últimas décadas verificou-se uma tendência global para o declínio da frequência de Atividade Física (AF) (IDP, 2011).

Tal parece dever-se à crescente expressão das tecnologias informáticas na ocupação dos tempos livres, mediante o acesso diário à *web* e a prática de videojogos. Os jovens passam diariamente mais de 25% do seu tempo a usar os *media* digitais, o que representa a atividade em que passam mais tempo, a seguir a dormir (Rideout et al., 2010). Esta revolução digital, nascida na década de noventa deu origem à proliferação dos ecrãs (Lipovetsky & Serroy, 2010) que estão a moldar uma nova geração, premiando uma crescente alienação tecnológica por parte das crianças e dos jovens cujas características geracionais conduziu a serem denominados *N-[net]-gen* ou *D-[digital]-gen* (Tapscott, 2008), enquadrando-os na nomenclatura geracional de *digital natives* (Prensky, 2001).

A promoção de um estilo de vida ativo é cada vez mais uma necessidade pois, pela primeira vez na história recente da humanidade, as novas gerações parecem estar com uma perspetiva de longevidade inferior aos seus pais (HSHS, 2012). A AF constitui uma estratégia primordial à escala mundial de promoção da Saúde (WHO, 2004), tendo sido considerada ainda na década de noventa como "today's best buy in public health" (Morris, 1994).

Revela-se por isso de importância primordial a identificação de abordagens que se tornem eficazes no incremento e sustentabilidade dos níveis de AF em crianças e Jovens.

Na revisão de literatura efetuada, os programas baseados em campanhas revelaram um caráter pontual ou isolado e muitos dos resultados não apresentam fundamentação científica. A sua eficácia é também questionável, pelo aumento crescente do sedentarismo e da obesidade.

A escola tem sido identificada como um lugar privilegiado de intervenção através de programas (Seghers et al., 2009) que aliem a promoção da AF ao Design, identificado pela OMS como elemento chave, enquanto área integrante de estratégias de promoção da Saúde. Por outro lado, são escassos os estudos de intervenções aplicados na escola, e quando existem apenas um número reduzido apresenta resultados significativos (Stice et al., 2006). Acresce-se que alcançaram resultados superiores os programas de intervenção que tiveram por objetivo aumentar os níveis de AF, quando comparados com os que apenas o recomendaram.

Está descrito por Snyder que as campanhas de Marketing Social podem influenciar cerca de 5% o comportamento de uma população (Snyder, 2007). Cugelman refere que as intervenções digitais podem alterar cerca de 10% (Cugelman et al., 2011). Refere ainda que as campanhas de comunicação capazes de alterar estilos de vida devem ser constituídas por modelos híbridos, isto é, canais da *media* e tecnologias digitais interativas. Estas campanhas parecem ter a possibilidade de alterar cerca de 15% o comportamento (Cugelman, 2012). Para além disso, tem sido defendido por vários autores a integração da *gamification*, como parte constituinte de estratégias de alteração de comportamento (Hamari et al., 2014).

Consideramos por isso que uma campanha *stand-alone mass media* com características híbridas e de *gamification*, pode alterar ainda mais o comportamento de uma população.

A OMS propõe ainda o estabelecimento de parcerias e protocolos intersectoriais de modo a garantir o desenvolvimento, a implementação, a monitorização e constante otimização de estratégias de promoção da saúde. O Design é identificado pela OMS como elemento chave, enquanto área integrante de projetos e estratégias do bem-estar e da sustentabilidade social.

Tendo em consideração este enquadramento, o presente estudo teve como objetivo principal a promoção de um estilo de vida ativo e de combate à obesidade dos jovens.

2. METODOLOGIA

2.1 PARTICIPANTES

Participaram 142 jovens (82 do sexo feminino e 60 do sexo masculino) com idades compreendidas entre os 12-18 anos, do Ensino Básico – 3º Ciclo de Escolaridade Obrigatória (7.º ano ao 9.º ano) e do Ensino Secundário (10.º ano ao 12.º ano), tendo sido constituídos dois Grupos Experimentais: normoponderais (GE2) e com sobrepeso e obesos (GE1) e dois Grupos de Controlo: normoponderais (GC2) e com sobrepeso e obesos (GC1). Os grupos foram previamente homogeneizados para que não houvesse diferenças significativas entre eles.

2.2 PROCEDIMENTOS E INSTRUMENTOS

2.2.1 ESTRATÉGIA

Foi desenvolvida e implementada uma estratégia para promover um estilo de vida ativo e combater a obesidade dos jovens baseada numa campanha *stand-alone mass media*, de sete semanas, que recorre à comunicação transmediática, e integra um programa de intervenção em associação às tecnologias digitais interativas e *gamification*, materializado por um *exergame*. Para concretizar a proposta — o desenvolvimento da Estratégia e implementação da campanha foram considerados três elementos-chave: key informers para a definição das características da campanha e do programa de intervenção nas áreas chave: Design, Desporto, Engenharia Informática e Saúde; parcerias estratégicas com profissionais especializados, empresas e instituições: o Gabinete de Psicologia do Desporto e o Laboratório de Cineantropometria da Faculdade de Desporto da Universidade do Porto, o Hospital de S. João e a Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, as empresas Waydip, Inklusion Entertainement e Artpixel; uma escola piloto para a validação da Estratégia, implementação e avaliação do impacto da Campanha e do Programa: o Instituto Nun'Álvres do Colégio das Caldinhas em Santo Tirso.

Foi desenvolvido o projeto multimédia *Funnactive* (Figura 1). Considera um conjunto de artefactos, quer físicos quer virtuais, com unidade gráfica que deram suporte à comunicação da campanha.

Figura 1. Marca do projeto *Funnactive* (Sílvia Soares & Filipe Losna) — cor, versão positivo.

Para o seu desenvolvimento implementamos um método misto que combina o criativo (Csikszentmihalyi, 1997) com o iterativo (Zimmerman, 2003). Duas das valências utilizadas no processo de Design foram a cocriação e o co-design (Sanders & Stappers, 2008) com a participação da equipa multidisciplinar de projeto. O design assumiu o papel de gestor e editor do processo.

A Campanha teve como conceito chave uma competição entre os alunos de uma escola piloto, aos quais foi atribuída a missão de transformar a energia associada ao movimento destes em energia elétrica, e assim apurar os campeões da geração de energia. A comunicação transmediática foi estabelecida através de medias tradicionais, digitais e interativos. O programa de intervenção teve como mote uma história e um desafio, e foi materializado pelo *exergame AxleCole®*.

Programa diferenciado por constituir um modelo de treino de alta intensidade com temporização "Tabata" (Tabata et al., 1996; 1997) e utilizar uma plataforma *Waynergy®*, que deteta o movimento do jogador sobre a superfície, controla o seu Avatar e transforma a energia cinética em eletricidade, com uma elevada eficiência de conversão (Duarte et al., 2013). A atividade diária e o desempenho do jogador foram monitorizados ao longo de toda a competição e representam a sua pontuação no jogo. Para além disso, a energia gerada e acumulada permitiu iluminar a plataforma e pôde ser usada em tempo real para carregar telemóveis

ou outros dispositivos elétricos dos próprios jogadores. A *performance* individual e o respetivo *ranking* de energia foram publicados no *website* do *exergame* (Figuras 2 e 3).
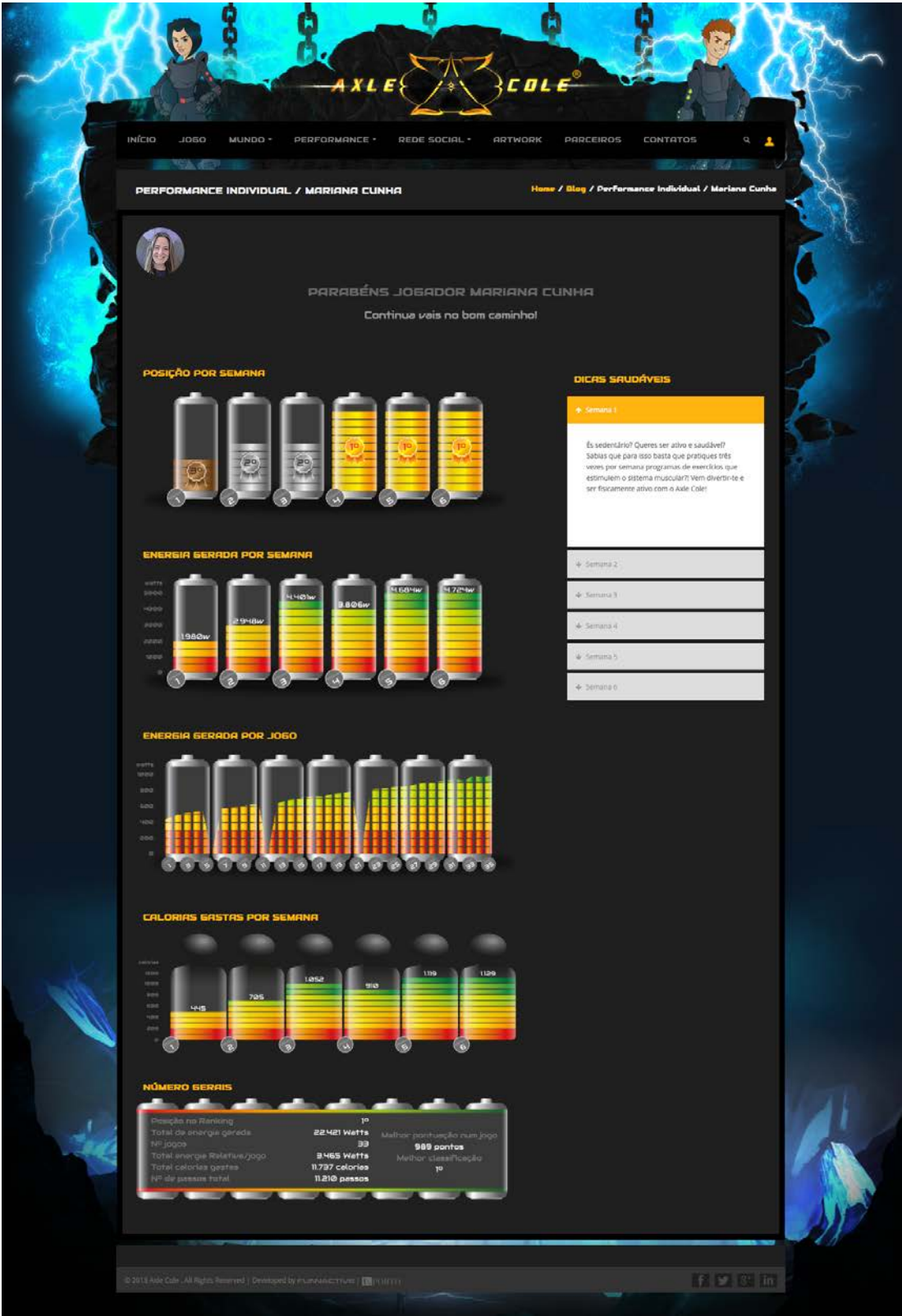
Figura 2. *Website AxleCole*®, *Performance* individual.
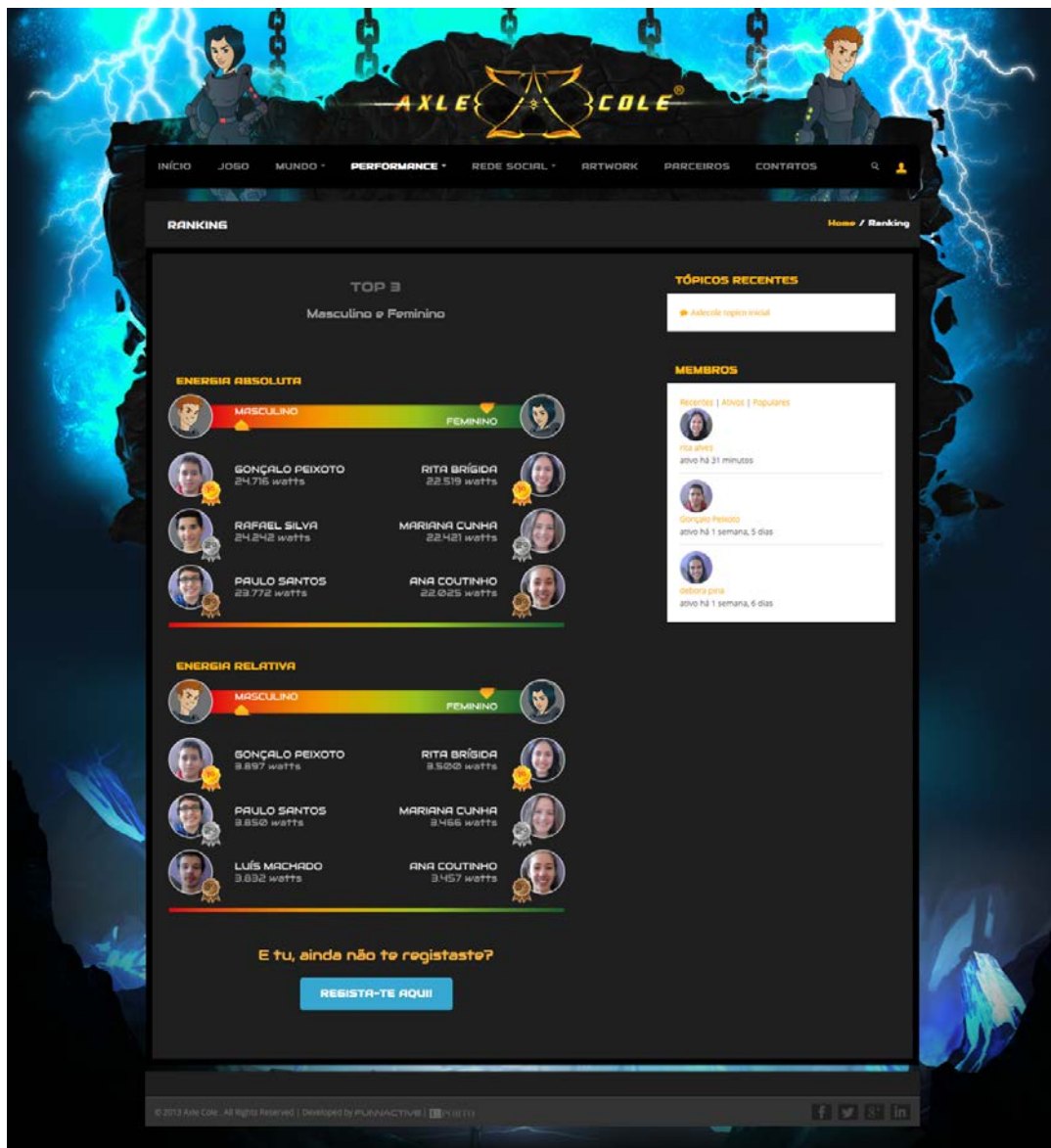
Figura 3. *Website AxleCole*®, *Ranking*.

A existência de uma "Rede Social" própria e fechada aos jogadores em competição proporcionou ainda uma interação *online*, a partilha de opiniões acerca do *exergame* e da *performance*, bem como a publicação de fotos/ vídeos em ação. Ainda como forma de motivação visando o incentivo ao continuado empenho no alcance de melhores resultados, foi realizada semanalmente a promoção mediática dos jogadores e efetuada a premiação dos mesmos, através da publicação de cartazes nas plataformas digitais e redes sociais afetas à campanha (Figura 4).
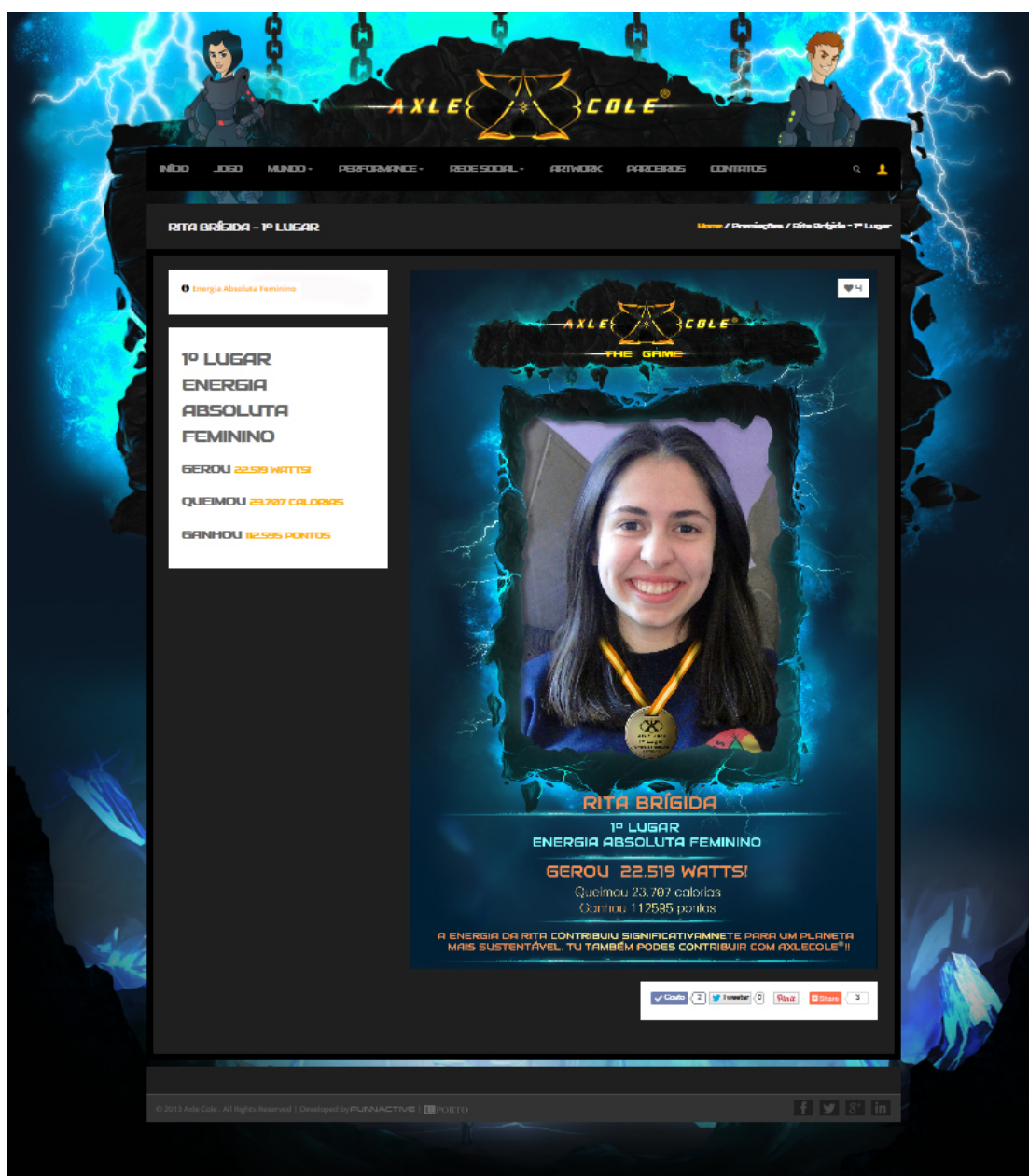
Figura 4. *Website AxleCole*®, Premiações — Top 3 Feminino.

Como forma de motivação extra, foram enviadas SMS, via dispositivos móveis e website. As aulas de Educação Física foram utilizadas como suporte de treino à competição. O programa considerou ainda um evento onde se realizou uma "competição concentrada" e a respetiva entrega de prémios (Figuras 5 e 6).

Figura 5. Jogador em competição.

Figura 6. Pódio "Grande Final Masculino".

2.2.3 ANTROPOMETRIA

A altura e o peso foram medidos de acordo com os protocolos habituais descritos por Lohman, Roche, & Martorell (1988). A partir desta informação foi possível calcular o IMC de Quetelet [IMC=peso (kg)/estatura (m2)]. Os valores de corte utilizados para definir normoponderabilidade, sobrepeso e obesidade foram sugeridos por Cole et al. (2000), que oferecem vantagem pela associação estreita à idade dos sujeitos bem como ao seu género.

2.2.4 ANÁLISE DE DADOS

Em termos descritivos utilizou-se a média e o desvio padrão. Na inferência estatística, para averiguar alterações no IMC entre os dois momentos de aplicação do Programa e tendo em conta que se tratava de uma Amostra reduzida, utilizou-se o teste não paramétrico de Wilcoxon. O nível de significância foi mantido em 5%. Os dados foram tratados nos *softwares* Excel2013 e SPSS versão19.0.

3. RESULTADOS

3.1 ÍNDICE DE MASSA CORPORAL

Nas Tabelas seguintes são apresentados os valores da estatística descritiva e inferencial dos quatro grupos estudados.

No GE1 houve uma redução significativa do IMC de 1,02 kg/m² ou 3,9%.

	MÉDIA	DP	Z	P
IMC inicial	26,62	±3,08	3,921	0,000
IMC final	25,60	±3,27		

Tabela 1. Estatística descritiva e inferencial dos valores do IMC do **GE1** (N=20).

Por sua vez, no GC1 o IMC não sofreu alteração digna de realce (0,01 kg/m² ou 0,03%).

	MÉDIA	DP	Z	P
IMC inicial	26,87	±2,89	0,119	0,906
IMC final	26,88	±3,02		

Tabela 2. Estatística descritiva e inferencial dos valores do IMC do **GC1** (N=18).

No GE2 houve uma redução significativa de 0,37 kg/m² ou 1,88% embora, em média, continuaram no patamar de normoponderais.

	MÉDIA	DP	Z	P
IMC inicial	19,67	±2,43	-5,139	0,000
IMC final	19,30	±2,35		

Tabela 3. Estatística descritiva e inferencial dos valores do IMC do **GE2** (N=54).

No GC2 o IMC não sofreu alteração digna de realce (0,18 kg/m² ou 0,92%).

	MÉDIA	DP	Z	P
IMC inicial	19,47	±2,19	-2,836	0,005
IMC final	19,65	±2,18		

Tabela 4. Estatística descritiva e inferencial dos valores do IMC do **GC2** (N=50).

Dos resultados obtidos, realçamos os do "GE principal" (Pré-Obesos e Obesos), com uma redução dos níveis de IMC de 3,9 %. Embora, em média, continuem no patamar da Pré-obesidade, 7 dos 20 sujeitos (36%) reduziram pelo menos 2 kg/m². Tendo em conta que se trata de um programa com uma duração reduzida, estes resultados são substancialmente relevantes e mostram que é possível alterar o estado atual de obesidade dos jovens.

4. CONCLUSÕES E SUGESTÕES

Constatamos que os grupos experimentais reduziram significativamente os seus IMC. De referir que o GE1 como seria de esperar, experimentou uma redução mais substancial do que o GE2. A estratégia definida para promover um Estilo de Vida Ativo e combater a Obesidade dos Jovens foi eficaz, comprovando o contributo do Design, particularmente quando associado a outras áreas do conhecimento, e atuação em mais do que uma dimensão. Quanto a futuros estudos pensamos que este tipo de programas precisariam de ter um caráter regular e estruturado. Pensamos que seria importante aplicar a estratégia a outras escolas e aferir dos seus resultados e se fossem tão motivadores como estes, poderia pensar-se em constituir um quadro competitivo inter-escolas.

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A proto-história de um projeto de design com a comunidade do Lagarteiro

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RESUMO

No Bairro do Lagarteiro, está a decorrer um projeto de investigação-ação em design que visa o desenvolvimento comunitário com recurso à metodologia etnográfica. O objetivo principal deste projeto consiste na exploração dos contributos do design através de processos de participação das pessoas da comunidade, na procura de alternativas a problemas associados à alimentação e fragilidades económicas vividas no bairro.

Este artigo relata uma etapa preliminar mas determinante para o projeto, que corresponde à formação do grupo primário de participantes do Lagarteiro, e que constituiu fundamentalmente um desafio de comunicação. Deste processo resultou um livro que se converteu numa narrativa de identidade desta investigação, onde são aplicados conceitos de "seams and scars", dos quais derivam interfaces para a apropriação dos processos e meios pelas pessoas da comunidade, considerados críticos para a concretização dos verdadeiros desígnios da participação.

Palavra(s)-chave: Participação através do design, manufatura, livro, "seams and scars", etnografia

INTRODUÇÃO

No âmbito do desenvolvimento comunitário, são cada vez mais os projetos de design fundamentados nos princípios da participação e da ação situada (Sabiescu, David, van Zyl, & Cantoni 2014). Todavia, as diferentes aceções existentes de comunidade (DiSalvo Clement and Pipek 2013) e de participação influenciam a forma como as intervenções são planeadas e, consequentemente, o impacto destas na comunidade. DiSalvo et al. (2013) apresentam as noções de "política", "públicos" (segundo Dewey) e "infraestrutura" como suporte analítico e metodológico para futuros projetos participativos com comunidades.

"Quem participa?" nos projetos comunitários, é uma questão geralmente discutida na bibliografia do design participativo (Cornwall 2008; Blomberg e Karasti 2013; Vines, Clarke, Wright, McCarthy, & Olivier 2013), articulada com frequência com "quem beneficia?" dos resultados. Sanders (2002) refere que todos podemos contribuir para o processo de design, desde que disponibilizadas as ferramentas adequadas. O pressuposto que qualquer pessoa da comunidade pode contribuir para o desenvolvimento de processos de participação comunitária, desde que o princípio da adequação esteja salvaguardado, seria um paralelo aparentemente válido e que pretende ser abordado nesta investigação (afastando-se de processos de elegibilidade em função da representatividade ou liderança).

A população do Lagarteiro, o bairro de habitação social situado na zona oriental da freguesia de Campanhã, no Porto, apresenta, em simultâneo, dificuldades estruturais nas áreas da educação, emprego, habitação e saúde (Pinto 2007). Segundo José António Pinto (2007), assistente social no Lagarteiro há quase 20 anos, os problemas de saúde são agravados pelas debilidades económicas e alimentares.

Um projeto de investigação-ação com recurso à metodologia etnográfica está a ser desenvolvido sob o tema "alimentação equilibrada e gestão de orçamento familiar", o qual pretende explorar contributos do design na comunicação e na mobilização da comunidade para a procura de alternativas, fomentando a participação comunitária.

A configuração desse processo de participação (Vines et al. 2013), e respetiva adequação dos métodos e ferramentas (Sanders 2002), constituem os dois principais objetivos desta investigação, onde a escassez de recursos económicos e tecnológicos, e os níveis baixos de literacia aparentam ser componentes importantes neste desafio.

Convergindo com as noções de "política", "públicos" e "infraestrutura" (DiSalvo et al. 2013), a estratégia definida para a participação da comunidade é desenvolvida a partir da teoria de empoderamento do trabalho social (Lee 2001). A estrutura desdobra-se nos três níveis de empoderamento: individual ou intrapessoal, coletivo ou interpessoal e comunitário ou político(Lee 2001). Assim, o plano de ação inicia com o envolvimento (individual) de um pequeno número de pessoas da comunidade, posteriormente formando um grupo e através deste grupo estimulando a mobilização comunitária, numa lógica holística de intervenção (Ferro et al, 2014).

O presente artigo reporta o desenvolvimento e aplicação de uma estratégia de comunicação, que se converteu num artefacto, para facilitar um pacto de colaboração com pessoas do Bairro do Lagarteiro enquanto participantes neste projeto.

TRABALHO PRÉVIO E DEFINIÇÃO DE OBJETIVOS

Este projeto de investigação-ação foi iniciado catorze meses antes deste convite ao envolvimento da comunidade, com dois momentos de imersão em campo. O primeiro momento (12 meses) desenrolou-se na freguesia de Campanhã, permitindo uma aproximação à população e respetivas estruturas de apoio. O segundo momento (2 meses) incidiu especificamente sobre a comunidade do Lagarteiro e alguns dos agentes externos que atuam neste bairro.

A definição dos critérios para a elegibilidade dos primeiros participantes da comunidade basearam-se no conhecimento das dinâmicas comunitárias previamente adquirido em campo e nos limites temporais da investigação. Para esta fase inicial, os critérios de elegibilidade estabelecidos foram os seguintes: ser do sexo feminino, morar no bairro do Lagarteiro ou com família direta a residir no bairro ou imediações. Para operacionalizar a estratégia de

participação desenhada, definiu-se inicialmente que o grupo de participantes deveria ter um máximo de 10 pessoas.

Após a definição destes critérios, seguiu-se a etapa que consistia essencialmente num desafio de comunicação - como propor a participação?

Os objetivos críticos desta etapa dependiam do sucesso da comunicação em três planos distintos:

- Afetivo: estabelecer uma relação de empatia entre a investigadora-designer (ID) e as pessoas da comunidade.

- Cognitivo: dar a compreender os aspetos fundamentais do projeto e obter a validação dos respetivos objetivos.

- Comportamental: motivar e captar participantes para o projeto.

A interligação entre estes planos diferenciados suscitou a necessidade de um elemento facilitador no processo de comunicação como ferramenta útil para o processo de investigação-ação

DESENVOLVIMENTO DA ESTRATÉGIA DE COMUNICAÇÃO

Partindo da premissa que a proposta para a participação neste projeto partiria de uma conversa com cada uma das potenciais participantes, e enquanto se definia o guião para esta entrevista informal, considerou-se importante reforçar o discurso com a apresentação de imagens recolhidas no trabalho de campo mencionado. Seguindo os preceitos e vantagens da comunicação multimodal (Kress 2009) e recorrendo ao potencial imagético, foi incluída nesse guião uma seleção de fotografias que atestam algumas das atividades desenvolvidas em Campanhã, durante os 14 meses de trabalho de campo[1].

Uma técnica desenvolvida e aplicada durante essas atividades que é importante referir é a "ppt analógica". Numa sessão de desenvolvimento comunitário, para explicar uma iniciativa a um pequeno grupo de pessoas, algumas com pouca escolaridade e uma analfabeta, foi elaborada uma apresentação seguindo os princípios formais do *PowerPoint,* recorrendo à colagem, ao desenho e à escrita

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[1] Voluntariado na Quinta Pedagógica da Mitra, participação e colaboração no 4º e 5º ciclos do T(r)ocas e Transformas, iniciativas do Projeto Grão a Grão.

manual. A simplicidade técnica permitiu uma aproximação do meio de comunicação ao grupo e ainda, entre os próprios elementos do grupo, através da interação e a entreajuda. As folhas A4 numeradas e espalhadas sobre uma mesa eram voltadas para cima por ordem, para revelar o seu conteúdo, permitindo aos presentes um papel ativo nesta atividade. Por iniciativa própria (não planeada), alguns elementos do grupo começaram a ler em voz alta o conteúdo do 'diapositivo' que tinham diante de si, permitindo até à pessoa analfabeta ultrapassar com subtileza as dificuldades de leitura.

As circunstâncias em que as conversas iriam possivelmente ser estabelecidas[2] e a experiência positiva da "ppt analógica", foram determinantes no processo de materialização do livro enquanto complemento ideal à entrevista individual.

As fotografias selecionadas, os pequenos textos escritos à mão, apoiados por alguns esquemas, constituíram apenas uma parte dos elementos de composição que determinaram o desempenho deste livro. A linguagem utilizada nas explicações textuais foi revista e simplificada, recorrendo a frases curtas e substituindo termos complexos por vocabulário mais simples (e.g. "gestão de orçamento familiar" por "poupança familiar").

O recurso a materiais baratos e correntes (Fig. 1), também contribuiu para a construção de uma coerência entre o design deste artefacto de comunicação, sob a forma de livro, e os objetivos apresentados na proposta para a participação.

Figura 1. Materiais utilizados para a construção do livro.

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[2] E.g. na rua, num café, em casa da pessoa, no gabinete de atendimento do assistente social.

O ARTEFACTO

No desenvolvimento do livro, o princípio de adequação dos meios que Sanders (2002) considera indispensável para a participação, foi explorado numa perspetiva multidimensional, i.e. afetiva, cognitiva, cultural, económica e tecnológica, como será exposto neste artigo.

FORMA E INTERFACE

Confrontando o artefacto de design enquanto "caixa negra" que omite os sinais do processo do qual resulta, com o potencial desses sinais enquanto pistas deixadas ao utilizador, Storni (2014) analisa processos de empoderamento no uso e de "design depois do design". Os sinais que o autor refere como "seams and scars"[3], constituem marcas infraestruturais na perspetiva do processo de design, que se podem converter em interfaces (de apropriação) na perspetiva dos utilizadores (Chalmers 2003).

A conceção deste livro também se baseou neste conceito de "seams and scars", onde a opção pela manufatura representa um desses indícios. Outros detalhes, mais subtis, foram incorporados com a mesma intenção: a recusa do uso da régua e a preferência pelo uso da tesoura sobre o x-ato, os desalinhamentos das linhas de texto e das imagens, as marcas da fita corretora, os cortes enviesados e remendados das fitas-colas, as folhas de papel cavalinho com diferentes tonalidades e grãos[4] (Fig. 2).

A visibilidade e inteligibilidade destes sinais processuais neste livro pretendiam expor a dimensão do "fazível" para um espectro mais alargado de competências e recursos.

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[3] A tradução para português, sugerida pelo autor, é "costuras e cicatrizes", mas considerou-se mais apropriado manter a referência em inglês.

[4] Resultado do uso do material disponível.

Figura 2. Exemplos de 'sinais' incorporados no livro.

A HISTÓRIA DENTRO DO ARTEFACTO

Após a decisão de que o convite à participação contemplaria a apresentação do projeto e dos seus intervenientes sob a forma de uma história estruturada em cinco partes:

(A) Introdução

Começando pela apresentação da própria ID, as duas primeiras páginas foram dedicadas a algumas informações biográficas, acompanhadas de fotografias. Ao revelar-se que a ID nasceu e cresceu num bairro social da mesma cidade, pretendeu-se introduzir uma afinidade natural com o contexto de investigação, apresentando de seguida a informação profissional, os interesses e os valores de investigação:

> *"Sou investigadora e interesso-me pelas necessidades de comunidades com grandes desafios sociais e económicos. Acredito que as soluções para essas necessidades começam quando se dá ouvidos à comunidade e se usam os meios da comunidade: as suas pessoas." (excerto do livro)*

(B) Trabalho de campo

Parte dedicada às atividades desenvolvidas durante os 14 meses de trabalho de campo, composta apenas por fotografias e algumas legendas. O conjunto selecionado de imagens tinha três finalidades: atestar o tempo prolongado de dedicação ao terreno, listar as participações e organizações de diferentes atividades realizadas em Campanhã e possibilitar a identificação de rostos familiares entre os presentes nessas atividades.

(C) Proposta de participação

Parte de especificação dos trâmites da contratação, onde se esclarecem as questões principais da proposta de participação (Fig. 3), precedidas por uma formalização pessoal do convite (Fig. 4)[5].

(D) Exemplo

Para consolidar algumas ideias do projeto, o Processo SAAL (1974-76) foi brevemente apresentado como exemplo no livro. Este exemplo pretendia evocar uma referência no âmbito da participação em Portugal (Veloso e Ferro, 2015), que envolvia a problemática da habitação (um assunto crítico no Lagarteiro) e onde se voltou a referir o bairro de origem da ID, como um dos bairros envolvidos neste processo (reforçado com uma fotografia de um plenário de moradores onde se podiam ler os nomes de vários dos bairros envolvidos).

No final da proposta, foi colocada uma página apenas com um ponto de interrogação em marca de água, para indicar um momento para manifestação de dúvidas, seguida de uma renovação do convite: "aceita?!".

(E) Fim

Por fim, o agradecimento (Fig. 5), os contactos da ID e, uma "secretária portátil" onde *post-its* e folhetos estavam dispostos (Fig. 6).

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[5] Esta informação também foi reunida num folheto que no final da conversa foi entregue a cada uma das pessoas. Contudo este material não recebeu, por falta de tempo, o mesmo cuidado que o livro, tendo sido elaborado em computador e posteriormente impresso.
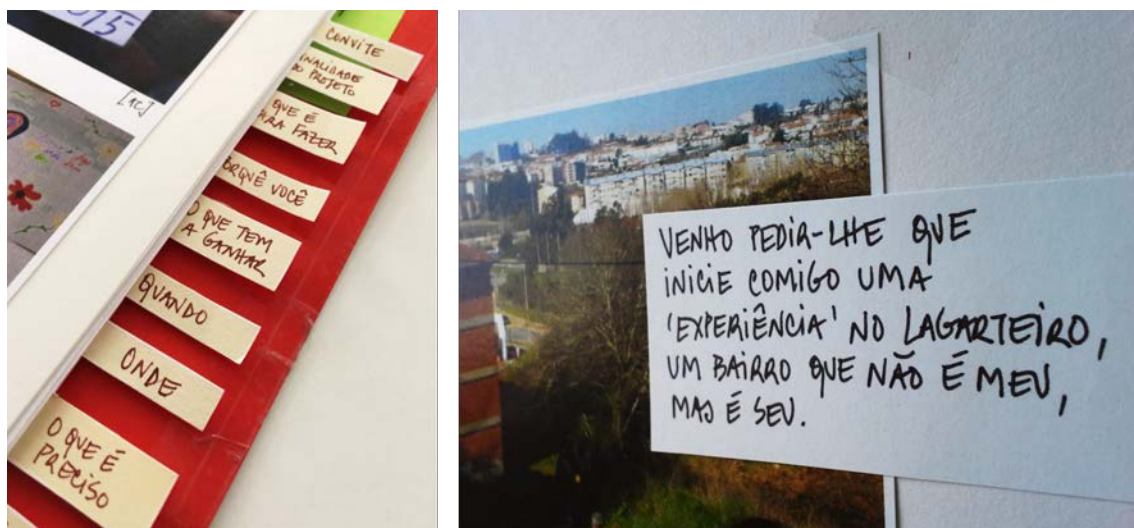
Figura 3 e 4. Itens da Proposta de Participação (esquerda) e Convite à Participação (direita).
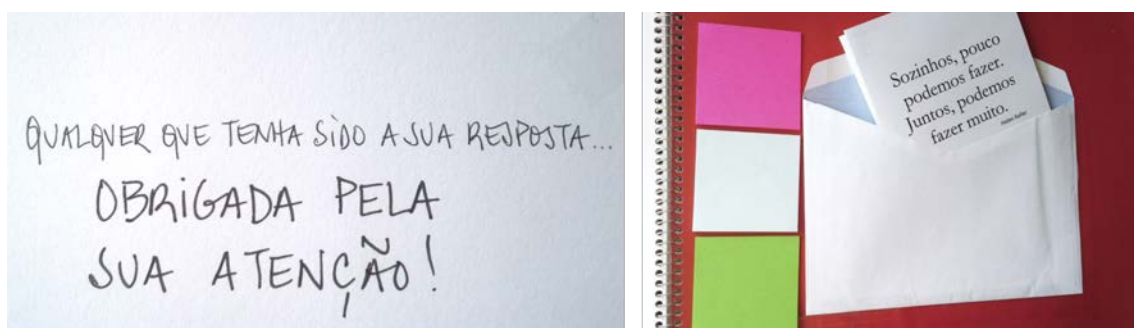
Figura 5 e 6. Agradecimentos finais e "secretária portátil".

A CONTRATAÇÃO

No total, foram realizadas onze entrevistas informais. Duas sem recurso ao livro, que resultaram em recusas, cujas razões evocadas[6] não se modificariam com a apresentação do artefacto. Duas outras mulheres demonstraram-se receptivas à participação, apesar de no momento não estarem disponíveis. As restantes sete respostas positivas permitiram a composição do grupo inicial de trabalho.

A maioria das entrevistas aconteceu no local onde se estabeleceram os primeiros contactos, no gabinete de atendimento do assistente social no bairro. Apenas três das conversas, coincidentemente com contactos estabelecidos na primeira

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[6] Fatiga e frustração de participar em projetos que não dão em nada, e sentimentos de repulsa pelo contexto do bairro.

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fase de imersão no terreno foram realizadas noutros locais, como o lar, o café e à porta da mercearia.

Em geral, a conversa sucedia-se à medida que se desfolhava o livro, no qual as imagens pareceram receber mais atenção do que as linhas de texto. O conteúdo textual, por sua vez, serviu principalmente de orientação para o discurso da ID.

Apesar do recurso ao livro, as entrevistas informais, ainda que sérias e particulares, ocorreram de forma bastante descontraída e quase nunca foram marcadas com antecedência.

CONCLUSÕES

O que começou por ser um problema de comunicação da proposta de participação resultou num exercício metodológico de alinhamento com os valores participativos e situados deste projeto de investigação. Facilitando o "reconhecimento da escala natural [humana] " que Ivan Illich refere (1973: xii), o livro cumpre uma parte fundamental dos objetivos deste trabalho na comunicação dos princípios do projeto de investigação, que vão além das palavras ou imagens, através das marcas do processo produtivo do artefacto que vai expondo possibilidades para a apropriação.

As reações das mulheres durante as conversas e o número de adesões à participação serviu ainda propósitos de validação do projeto e do meio facilitador utilizado (livro).

Contudo, não se pode afirmar que estes tenham sido os únicos fatores em causa. Não é possível descurar as diversas estratégias de empatia que foram sendo descritas ao longo do artigo[7], demonstrando que a investigação e prática do design, implicam também o uso de competências que não são específicas da disciplina, mas que constituem uma mais-valia nos desempenhos tanto do investigador como do designer.

O desafio que constitui a participação está longe de ser ultrapassado neste projeto. Uma "cultura de resistência" (Neves e Fernandes 1999) com múltiplas

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[7] Como as afinidades das origens da ID, o tempo de dedicação em campo e as relações estabelecidas.

origens dificulta a mudança, mas torna ainda mais estimulante a procura de um papel para o design no âmbito da participação comunitária neste contexto específico.

Este artigo tornou-se o marco deste projeto de investigação, no qual a sua história começa a ser "escrita" pelos seus próprios princípios, i.e. numa narrativa de identidade, constituindo-se assim na proto-história de um projeto de design com a participação da comunidade do Lagarteiro.

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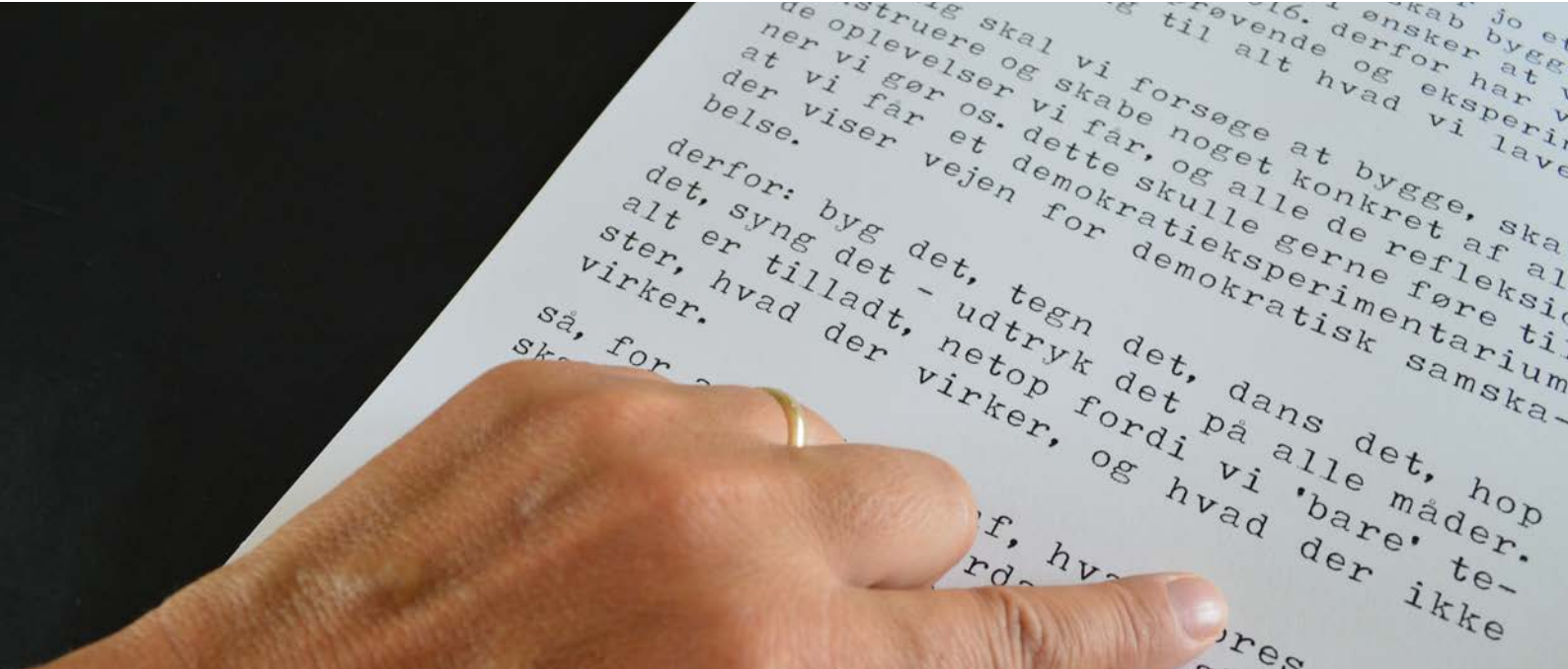
Sentiments in the written text

Autoethnography as a means of discovering the influence of the researcher

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ABSTRACT

This paper is an attempt to open up a discussion about the position(s) of and the powerful influence the researcher enjoys in research areas as participatory design and co-design. To fuel the discussion I will introduce the theory of autoethnography as a means of working closely and transparently as a co-constructive design researcher, in the process of change and in the written text. In a research world where the co-constructive attempts of researchers are gaining influence, it is important be transparent, reflexive about our own conduct and feelings and not leas be honest about it in the final text – if we are to distinguish our self from the work done by consultants who has also conquered the same filed and the same co-constructive methods.

Keyword(s): constructive design research, methodology, feelings, transparency and co-design.

INTRODUCTION

In this paper it is discussed how constructive design researchers can expediently write themselves into the research text in such a way that readers get a transparent insight into the researcher's position, intentions and influence on the possible future being practiced and which plays out through the design research process. The discussion will concentrate on aspects of auto-ethnographic method, with a view to examining, partly how an auto-ethnographic approach can be used to clarify the constructive design researcher's role in the design process and partly to get a grip on writing the constructive design researcher's role into the finished text.

In this text I use the overall concept – *constructive design research* – as a frame for the design practices that aim to change the world in co-construction with a range of stakeholders. Constructive design research as a term is applied by Koskinen et al, who defines it as such:

> *"Constructive design research, which refers to design research in which construction – be it product, system, space, or media – takes center place and becomes the key means in constructing knowledge" (Koskinen et al., 2011, p. 5)*

And further:

> *"[R]esearch programs have to be in dialog with society. This dialog makes research socially robust. Whether it raises debate is more important than facts and knowledge; these are understood as temporary constructs. This is certainly the case in most parts of the constructive design research community. A successful constructive program participates in public discourse and interprets society rather than acts as a legislator." (Koskinen et. al, 2011, p. 48)*

What we see here is a design approach, that construct something, whether it is a material thing or a dialogue. It is the engagement with society, that is here the key element. And therefore, to underline this approach, I will connect a co to the constructive design research, so it becomes to co-constructive design research. Doing this the collaboration with the surrounding society, with communities and other stakeholders is emphasized. Under this label belong participatory design, design anthropology and co-design.

Constructive design researchers using co-design methods to envisage other futures (Koskinen et al. 2011; Kankainen et al. 2012), at the same time as they practice them (Halse et al., 2010). The designer's agenda is often to assist people not trained in design with processes and tools to release the participants' creativity, create better co-determination, improve the democratic dialogue, engender reflection, get all the ideas on the table and create possible futures, while participants are practicing them. The whole idea of codesign[1] is to engender change in the world through the play with potential futures crucial (Halse et al., 2010) in co-construction with stakeholders. Co-constructive design research as such is a social process, in which possibilities and possible new worlds are negotiated through a rehearsing of the future (Halse, 2008).

But in this the negotiation and change making process the design researcher plays a crucial role. We WANT to initiate a - normatively - better world, or as Fuad-Luke put it:

> *"Design is the act of deliberately moving from an existing situation to a <u>preferred</u> one by professional designers or others" (my underscore) (Fuad-Luke 2009, p. 5).*

The precondition working as a co-constructive researcher within the field of design is that to strive to change the world in a normative better way, through materials, processes and through the way the researcher uses himself or herself in the practices and enactments. In such a process, it can be difficult to maintain and document how change is engendered in a design process and to identify what personal influence the researcher has on the intervention and change.

However, in science, one of the main criteria's has always been, that to be scientific, it is crucial to be able to reflect upon your own involvement in order to live up to the transparency criterion, which is evident in the scientific production of knowledge (Dahler-Larsen, 2008). This criterion of transparency presuppose that the method procedures be explicitly laid out in order for other

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[1] When talking of co-design I am referring to Sanders and Stappers use of the term: "We use co-design in a broader sense to refer to the creativity of designers and people not trained in design working together in the design development process." (Sanders and Stappers 2008, p. 6)

researcher to follow what is going on in this particular design research (Dahler-Larsen 2002 in Lotz 2003, p. 77).

In co-constructive design research the transparency of the researchers own position and engagement has always been very profound, especially in design-anthropology which is a branch of anthropology. This stems from that to be a part of the field of research, is a condition in anthropology. It is a requirement that the researcher live into his/hers field and participate in it, in order to understand it. However, parallel to this it is evident that the researcher continuously keeps her/himself reflexive and curious to the field of investigation (Hastrup, 2010).

When, as is explicit to co-constructive design research, you are part of the phenomenon in which you are doing research it therefore seems essential both to present the methods you're using and to explicate which roles, thoughts, feelings, mood, ideas and notions you take with you into the co-creative space and how these unfold in co-constructive processes. A few researchers in design research have other ideas as to how the designer's own position should be described. Mäkelä (2011) ascertains that the artists and designers who do research through their own practice make use of an approach in which

> *"reflection-on-action includes an analytical process in which practitioners reflect [on] their thinking, actions, and feelings in connection to particular events in their professional practice" (Mäkelä 2011, p. 2)*

But it is difficult to see how this reflection is reflected in the final text and the situation is an ambivalent one, in the sense that the process is not as free of values as it might immediately seem. As Culic puts it in the following quote, you make a gash or a cut in the whole, by giving an illusion of objectivity:

> *"Practicing objectivism qua detachment in writing hides the substantiality of both the anthropologist and her interlocutors, and effaces the untidy space collectively authored to achieve understanding. Anonymity, omission, and disguise through various stylistic genres, hardly protect anyone or respect the privacy of the community. They slit the wholeness of field's lived experience and obscure the epistemic and self-making journey the anthropologist and her subjects have*

accomplished, enacting yet another illusion of objectivity by
distance and neutrality" (Culic, 2010, p. 204).

As co-constructive design researchers we have an agenda and a vision of where we want to go, and in this process of co-construction of the particular phenomenon we are also examining, we put ourselves in a position of power, in which we have far more influence on the outcome the scenarios, prototypes and other processes we initiate that you might immediately get the impression of when reading about co-design. Taken this into account, it raises the question how the researcher is practicing this in the best possible way.

AUTOETHNOGRAPHY

Autoethnography is a qualitative writing and research genre in which the researcher's personal experience and sentiments are integrated and interpreting in a cultural context. The focus, therefore, is on the subjective experience of interaction with the informant and context concerned. Carolyn Ellis sees autoethnography as:

> *"Research, writing, story, and method that connect the*
> *autobiographical and personal to the cultural, social, and*
> *political. Autoethnographic forms feature concrete action,*
> *emotion, embodiment, self-consciousness, and introspection*
> *portrayed in dialogue, scenes, characterization, and plot.*
> *Thus, autoethnography claims the conventions of literary*
> *writing." (Ellis, 2004, p. xix).*

Already in the 1920s, we see elements of autoethnography in qualitative sociology known as the first wave of Chicago School studies. Here, the focus is primarily on doing research in a field or into a specific group of which one is already a part. However, as in more classical research, the researcher is also written out of the material in the final text, which means that we hear nothing about what it is like to be implicated in your own field of research or what significance it had for the results at which the researcher arrives by means of

analysis[2]. In the early 1960s and 1970s, research becomes more self-observing in character and in 1979, the culture anthropologist David Hayano publishes *autoethnography: paradigms, problems and prospects* (Anderson 2006). Today, autoethnography is permeated primarily by Carolyn Ellis, Laurel Richardson, Carole Rambo Ronai and Arthur Bochner, all of whom work in evocative autoethnography (Anderson, 2006). They predominantly occupy themselves with auto-ethnographic descriptions of their own experiences (Anderson, 2006), but they also use the method in their research into other people and their challenges, by means of interviews, co-creation and stories and by focusing on the researcher's own experiences and sentiments significant for the research itself (Ellis, 2004). The auto-ethnographic approach thus acknowledges that the researcher's mood, conduct, presence in the space and their experience are of significance to the research (Ellis, 2004, p. 49).

As a guiding principle for auto-ethnographic text, Ellis (2004) points to several elements which should be present, of which I have chosen to focus on the following: a) As a rule, the researchers write in the first person. B) The text is presented as a story, with an introduction, plot and conclusion. C) Details from the researcher's private life and emotional life are made part of the text. D) Relationships between the researcher and the participants are described (Ellis 2004: 31). And I also want to include my own experience as a constructive design researcher that one ought to reflect in the text on E) how one influence the overall process and thus once informants to achieving the change one wishes to initiate.

EXAMPLES OF AUTO-ETHNOGRAPHIC REFLEXIVITY IN THE TEXT

I have now given a brief introduction to auto-ethnographic method and will conclude by presenting an example of how I make use of the method in my own text with a view to clarifying how autoethnography can be used to create transparency regarding the design researcher's position, but also as a tool to getting oneself written into the final text. The following examples concern my own implicity as a researcher in the field of co-constructive design research.

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[2] One exception, however, are the so-called confession tales that accompany the actual text (Anderson, 2006)

The field in which I intervene is the area where I live, while some of the participant stakeholders are friends, acquaintances, colleagues and neighbors. The examples I will show here, is taken from co-constructive design research I made during 2014.

Example 1

"Good Morning Thure." Good morning Paya". Well, how was your trip to your parents? Are they happy about their new house?" Yeah, it was fine. And yes, they are quite happy with it. By the way, have you heard that Malene is pregnant?" And so we continue for a while, until we say good bye to each other and I say goodbye to my daughter, and Thure to his daughter. We break up with: "See you in a while. Its 9:15 am we have a meeting, isn't?" One hour later we sit at my table in my office and have a meeting about my research. This happens once a month as Thure is a kind of company supervisor in relation to my research. We talk about theoretical issues, and about an interview I conducted recently with a citizen – I know this person as a friend, and Thure knows the same person through an association where he is the head. The atmosphere is good, and we agree upon the direction of my research. Standing in the door about to close it after the meeting, my tillidsrepræsentant Søren calls. He is in a dialog with Thure, who is also my boss, about a higher salary for me. And Søren just wants to be sure how to play his cards before he continue this process. The conversation is done. And I rush to the next meeting. This time Thure chairs the meeting, now as a one of the non-convivial leading managers in the company. When work is over and I have picked up the children (and once more said hello to Thure in preschool) I remember that the car's trunk is stuffed with my children's used clothe which Thure's children will inherit. Passing by his house on my way home, I knock his door. His wife Jessie is at home and we are having a small chat before I leave and drive home.

The description above is an assemblage of examples on the interaction between Thure and I, taken from everyday life. The examples illustrate how complex it is to do research in your own hood (in my example in the company where I have been employed for nine years) and how many different roles you have to fill out during the day. But it also illustrates that my relation to Thure as my boss, as a acquaintances, as my daughters friend father and not least as a kind of supervisor for me in the company, is a mixed affair. The influence he has at my research and the influence I let him have at my research is shaped by various kinds of interaction. If he doesn't give me a higher salary, if my daughter doesn't behave nicely towards his daughter, if he has a bad day, if I think he conduct strange in another meeting- it will all influence my research in some way or

another, and it is important to be aware of it as a researcher and be able to put it forward as transparent as possible in the written text.

Example 2

Together with a group of artist, we are trying to create a prototype of a place for doing art exhibitions, culture shows etc. The artists' finds it very difficult to work together and especially one of the artists is very dominating and is not paying any respect to any of the others. We are seated to do a process together. I am quite nervous, because the dominating artist has been very mean towards me, and the atmosphere is charged with bad energy. The eagerness to do this process is low amongst the participants, and they rather preferred, that I just took a decision without involving them. But I insist that we are doing the process, even through I'm also tempted just to make the decisions. I try to smile and be positive, even though I would rather be together with my family this sunny Saturday morning.

The dominating artist irritates me and I feel like kicking her out of the process. But I behave and act professionally, and continue with the process. Through the process, I slowly get the participants to work and talk together. Or rather, I drag them through. And finally, after half a day, we are through the process. And the result is a prototype of the building, a plan for the place, and a new respect and acceptance among the participants. They hesitated to do the process, but now they realized, that even through it was hard and frustrating, they were able to do something creative and constructive together.

What's going on here? In this example I have much more attention on how I feel towards the participants. In the text I strive to be honest and tell about how especially one of the participants conduct is influencing my mood and my motivation to work. I underline how it important the interaction between the stakeholders and between me and the stakeholders is. Even though one of the aims is to let everybody has a say, it does matter how the atmosphere is. My ambition is always to make a process where we don't have to agree, but where we treat one another in a respectful manner – when this doesn't succeed it has a great impact on every person in the room. The easiest thing would just be to write myself and the feelings and troubles out of the text, and show the process with a focus   at the interaction between subjects and object – stakeholders and materiality. Choosing to let the research be influenced by arbitrary feelings and moods, puts forward that "*There is no such thing as unbiased. The challenge is to become as aware as possible of one's own stances in relation to the position of others – and then take steps to maintain or change positions*" (Schechner, 2013, p. 2). Using Autoetnography allow me, as a researcher to be transparent

about non tactile and highly subjective impacts on the co-constructive design research.

Example 3

The sun shines on Mette and me. We're sitting on a bench in front of the house. The microphone is on. It isn't an interview as such, although we both realize that what she says will be used in my publication. Mette and I are also friends. Now we are sitting here talking about a subject related to the research. I meet Mette in this instance as a researcher - illustrated by the fact that I switched on the microphone. But at the same time I assume a relaxed, humorous attitude intended to show that were also friends and that she can speak freely despite the presence of the microphone. As we speak I observe our conversation. I make a mental note when she does not speak freely. She mentions no names, for instance. I do, though, and I also note that I involve myself in the conversation more as a friend than as a researcher, primarily by means of my speaking so freely. At the same time I reflect on this reflection and observed that my hope is that, through this 'friend strategy' I encourage Mette to be more open, to become more relaxed and therefore to speak more freely. Mette does loosen up and begins to tell me about aspects of the process with which she has difficulty. I listen, and follow up by telling her what I feel is difficult, what resistance I come across and how I attempt to tackle it. Mette tells me she's pleased to hear my thoughts and now opens up fully and tells me about further concerns.

What is happening here? Subsequent reflection on the conversation makes me realize that by telling her about my own difficulties I attempt to 1) create a confidential space, 2) relieve Mette of her concerns, 3) find out where she is in the process and not least, 4) attempt to lead her in a specific direction. By putting various open questions I hope that she will reflect in the same direction as myself and thus initiate specific actions which match the overall vision of my framework of the matter of concern. In co-constructive design research it is easy to get the impression that the designer is working as a neutral facilitator. But as we strive to change the world to the (normative) better, we don't do it randomly or recklessly, we also design the process to be open ended, and we estimate the importance of the *co*. However, as designers we have a vision about how to go – maybe not where to go – or the opposite, we have an idea where to go, but not how to reach our goal. In both cases we ought to be transparent and write about these attempts to lead and affect the process and the possible output of these design processes.

CONCLUSION

In this paper it is discussed how co-constructive design researchers are dealing with their personal influence on their own phenomenon of research. Here there has been a special focus at design anthropology which has a long history of being a part of their own field of research. Following this transparency and reflectivity was discussed as a means to expose how co-constructive research is influenced by the researcher. Next we turned to autoetnography as a method that encourages the researcher to be honest, reflexive and transparent about the positions and roles the researcher inhabit and to write honestly about how feelings, conduct and interpersonal relations interferes with the design process and perform an interwoven unity. Finally three different examples are given from my own research, where it is illustrated how the guidelines of autoetnography writings can be performed in texts. These texts lay forward feelings, reflections, attempts to influence other people and the multi dimensional positions of the researcher. In a research world where the co-constructive attempts of researchers are gaining influence, it is important be transparent, reflexive about our own conduct and feelings and not least be honest about it in the final text – if we are to distinguish our self from the work done by consultants who has also conquered the same filed and the same co-constructive methods.

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ColorTranslation
a supporting tool for graphic designers

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ABSTRACT

Over recent decades the profile and competencies of the graphic designer have undergone many changes. Technological developments, easier access to information, and the way in which the communication sector has adapted to the new reality, has resulted in the graphic designer taking on some of the tasks previously performed by the pre-press activity. This means that the way in which the different actors communicate has changed radically. This article aims to explore how the technical specifications of color should be reported, with regard to the digital workflow between designers and producers. At the same time we present a support tool under development that is intended to help the process of taking technical settings related to color, settings that any graphic designer has to take at the beginning of their working process.

Keyword(s): graphic design, color management, color communication, digital workflow.

APPROACH

The printing industry has many peculiarities, in both processes and equipment that require an exact configuration of the jobs to ensure that the organization is consistent and the workflow is simple and effective. Looking at the printing industry in general, today we can find several kinds of workflows. Depending on the organization's area of operation, the printing technology used, the type of applications that they produce, the supports they print, the technological level of equipment they have, and the level of employee training are just some of the variables.

Today, the production process is much more virtual and the responsibility for the correct color reproduction is still not well clarified (Homann, 2009, p. 113). Previously, responsibility for the image processing and consequent separation was in the hands of a 'color specialist' technician (Casals, 2001), who was integrated into the pre-press team of a print company or of an independent prepress organization. The use of technology as a benefit in the development of graphics products led to the near extinction of the pre-press sector, with its activities divided and often duplicated in sectors of creativity and printing. Graphic designers were gradually abandoning the manual way of working and adopting IT tools to design the 'artwork' or 'the digital original', as Puértolas (2011, p. 94) defines it, which is then delivered directly to the printing industry. These paradigm shifts culminate in a change in the skills arising from the activity of the designer, resulting in the American Institute of Graphic Arts defining the designer of 2015 as a professional as 'knowing how to use tools and technology' and able to 'collaborate productively in large interdisciplinary teams' (AIGA, 2008).

Graphic design is a creative discipline that draws on artistic skill, but that also engages in the production of its projects, whether carried out on paper, cloth, plastic or just virtual. The works of designers interact with other processes and methodologies that require the use of resources and the development of highly diverse knowledge, not only technologically but also socially. The discipline now lives together, and increasingly, with a shared methodology and practice, never before experienced by the communication sector, thus launching new challenges and goals. One of these challenges relates to the predictability and consistency

of color reproduction throughout the workflow, from the moment of capture or time of creation to its final reproduction, even when using different media.

The exponential increase seen in the reproduction of color images, the number of people with access to new technology, and the variety of media has placed increasing importance on the concepts of color management. The increased demand for a simple system of color reproduction will lead in the future to the establishment of a color management that is increasingly affordable, simple, and automated.

But for now, the traditional processes of color reproduction, which require a high level of expertise to achieve predictability and consistency of color, have not been fully replaced. However, professionals such as graphic designers can now significantly improve the predictability and consistency in color reproduction by using the color management tools in the software applications they regularly employ.

DIGITAL WORKFLOWS

Today, color reproduction is still seen as a problem (Martin, O'Neill, Colombino, Roulland, & Willamowski, 2008, p. 10), when in reality, it should be seen only as an available resource to the graphic designer. There are tools that currently, at least technically, make it possible to reduce the color differences between monitors and printed materials. All devices, be they capture, view, or printing, have different capabilities for interpreting and reproducing color and, therefore, the current range of equipment only hinders the problem of lack of correspondence between all these devices. In a way, we can say that color is a sense that is dependent on the devices, that it depends directly on the equipment that reproduces it, and it was to mitigate this situation that the first color management systems were developed.

The challenge of color management is to ensure correct and consistent color reproduction across a workflow from the moment of the capture or creation to the final product, whether printed or virtual. Thus, it is easy to see that to achieve color consistency, it is necessary to understand how each of the devices present in the digital workflow interpret and represent color. Color

management systems exist precisely to identify the range of colors each of these devices can produce, and to convert the color values transmitted so that the final representation is similar on all devices, media, and resources.

COLOR MANAGEMENT SYSTEMS

It is to address the needs generated by the digital workflow that in 1993, the International Color Consortium – ICC was founded. Its aim was to create and promote a management system that could enhance the reproduction of predictable and consistent color between the different available platforms and devices. Initially formed by nine organizations (Adobe, Agfa-Gevaert, Apple, Kodak, Fogra, Microsoft, Silicon Graphics, Sun Microsystems and Taligent), the ICC consortium currently has the active participation of nearly seventy companies that contribute to the development of management color in its several markets.

Color reproduction is dependent on the device that represents the color. This means that the numerical values that identify the color, either RGB or CMYK, are specific for producing the sensation of THAT color on THAT device only. Thus, the same color values represented in different devices will necessarily produce different results. To prevent this from happening we use a device with independent color models such as CIE Lab or CIE XYZ.
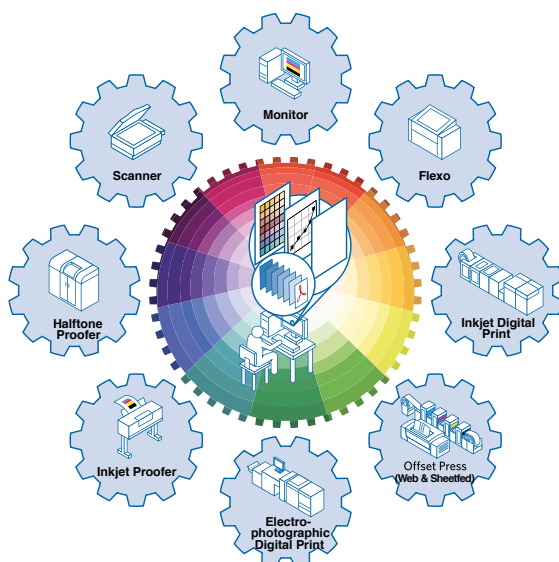
Figure 1. Kodak color management system with a central device independent connection color space (http://graphics.kodak.com/US/en/Product/value_in_print/colorflowSoftware/default.htm).

Color management systems are designed to translate the color data, not between the devices in the workflow, but between the devices and a device with an independent connection color space. In practice, when a file is transferred between multiple devices it must be complemented by a profile indicating how the color information should be interpreted. This profile is then converted to an independent connection space before being translated back into the profile of the new device. Color management systems take into account the different color reproduction capabilities of all devices in the workflow.

ICC PROFILES

In order for a color management system to translate a color between a monitor and a printer, it takes at least two types of profiles: the input and the output. The first is responsible for informing the color management module, which is the color present in the document, and the second should know the adjustments that must be made in the device in order to play that color with the best possible match. The ICC profile is no more than a file that contains information on the reproductive capacity of color in a particular device along with numerical data on how to proceed with the transformation of color values to achieve good print correspondence. ICC profiles do not change the behavior of the devices, and do not increase the range of colors that a device can reproduce; they only describe how the device must represent a particular color.

CMYK (color) in sRGB (gray)   CMYK (color) in Adobe RGB (gray)
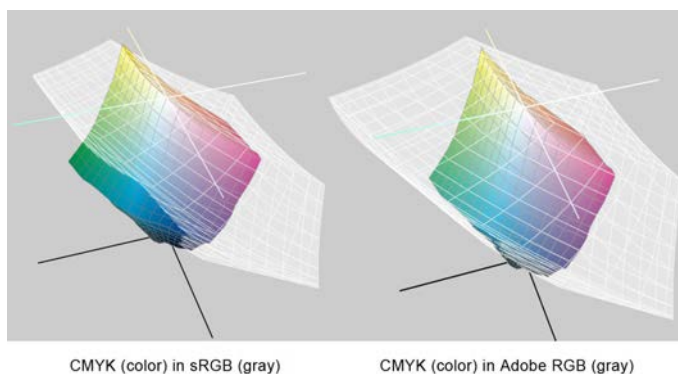
Figure 2. Difference between sRGB and Adobe RGB when compared to CMYK color gamut (Hipsher, 2010).

When a particular color, present in the original image, cannot be represented by a device, the color management system will have to produce a transformation according to four user-selectable rendering intents present in the ICC profiles. These rendering intents are the perceptual, saturation, absolute colorimetric, and relative colorimetric. Each one of them will inform the color management system how it should deal with colors that are outside of the range that the device can reproduce.

RESEARCH

The aim of our current research is to contribute to improving the production workflow, facilitating the achievement of a level of predictability that fits customers, designers, and producers. This objective should be accomplished by developing a tool that can support the activity of graphic designers, particularly with regard to supporting decision-making for color technical parameters, and thus improving the predictability in the reproduction of color in their designs.

In this regard, we isolated three technical parameters that any graphic designer should take into account to ensure that their project can be correctly communicated in terms of the color feature. These are the 'color settings', the 'PDF presets', and 'preflight'. These parameters are available, for example, in Adobe applications that are used by graphic designers, and that allow them to characterize how the technical data for color should be arranged and subsequently described to the production sector. The tool under production aims to act as a platform where graphic designers can download the correct settings for their software, depending on the project that they are developing. Through a small selection of product type options this tool may indicate the most appropriate settings, provide a basic set of instructions, and a file containing the selected settings.

In order to develop this tool we analyzed several case studies and organized multiple data. Organizations such as the European Color Initiative (ECI), the Ghent Workgroup or ViGC (Flemish Innovation Center for Graphic Communication), have already developed some generic parameters for the preflight or suitable ICC profiles for some basic conditions. However, it was

necessary to collect them on the same platform, in order to provide ease of access and to develop some color settings parameters to assist in the correct parameterization of the software applications that graphic designers use on an everyday basis. These parameters have been created based on ISO 12647:2013 concerning the control of the process for the production of color separations, color proof, and print production.

Today, after the conclusion of this prototyping stage, we are beginning the stage of experimentation and testing. The final results should be evaluated by creating a focus group involving a panel of experts with professionals in graphic design, color, printing, workflow, and quality control.

CONCLUSION

The accuracy in color reproduction requires deep knowledge, determination, and some experience in the use of color management tools. Without these systems it is absolutely impossible to ensure correspondence between the various media. However, it is possible to build tools that help graphic designers to make decisions without having to spend a considerable amount of time looking for the best solutions.

Successful color reproduction also depends directly on the cooperation between different process participants and the correct communication between them. The color cannot be regarded as unique; it has to be interchangeable. To do this we have to work in a standard workflow that can ensure the predictability of color and be able to meet the expectations of all. With tools such as the one we are developing, designers can find the best solution for each situation and can simply and quickly configure the graphic applications commonly used by clients, designers, and producers. We believe that this tool, along with fulfillment of the rules and technical requirements, will help to promote a standard workflow where we all can correctly report the color data, regardless of their origin or media used.

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Mapping British pottery
First steps towards a taxonomy of artisanal ceramic tableware

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ABSTRACT

This paper outlines a methodology proposed to build a taxonomy of British artisanal tableware pottery. The overall research aims are presented to provide context within craft and design studies. The proposed methodology addresses the need to elicit tacit craft knowledge through the use of videos, ethnographical case studies and reflection in practice.

The research follows an interdisciplinary approach based on design research methods and lessons from archaeological and anthropological studies of pottery making.

First steps into mapping the British artisanal ceramic field are discussed in more detail, such as the selection of potters for interviews and overcoming personal biases. The need to group potters according to notions of tradition and lineage is introduced to provide an example of the methodology followed in this initial phase of the research.

Keyword(s): Craft research, artisanal pottery, British ceramics, video-ethnography, handmade.

QUALITIES AND VALUES IN ARTISANAL POTTERY

Ceramic tableware can be produced in a large variety of methods. Most pots, plates and cups we use every day are manufactured in factories, but functional handmade pottery continues to be produced in our industrialised society.

The resilience of artisanal potteries in the global ceramic market is indicative of qualities (e.g. throwing marks, rustic glazes) and values (e.g. craft traditions, regionalism) that are generally associated with artisanal objects rather than industrial or mass-manufactured products. My research aims to identify these artisanal qualities and values by engaging in the process of making tableware by hand.

I will engage in video-ethnographical case studies of artisanal potters at work and complement my findings through reflections on my own experience of making ceramics. This will enable me to uncover stories and values that are often lost in the physical appearance of the objects but are traceable through engagement with the processes in which they are made. By applying design research methods to the study of craft making, I aim to rebalance art historical perspectives on the nature of craft activities which dominate current craft and ceramics literature (e.g. Risatti, 2007; Shaw, 2007).

DEVELOPING A TAXONOMY OF BRITISH POTTERY

The research will produce a taxonomy of British and Japanese tableware pottery that embraces materials, processes, physical properties, and the historical, cultural and organizational settings in which ceramics are produced.

The study of Japanese pottery highlights a distinct appreciation of handmade ceramics that can inspire useful comparisons with its British equivalent, and help reconsider accepted boundaries in Western craft theory.

The taxonomy will constitute a tool to identify alternative and parallel terminology to discuss artisanal pottery, identify salience in making processes and promote conservation of key methods and techniques.

In this paper I will discuss the methodology proposed for the initial phase of the research, which focuses on British ceramics.

TACIT KNOWLEDGE AND VIDEO-ETHNOGRAPHY

The non-discursive nature of craft activity requires methods to make the tacit knowledge involved in making pottery more explicit. Initial audio interviews with artisans will be used to identify salience in the discussions. I will then conduct case studies at a small sample of selected potteries over a period of a few months. Video-ethnographical interviews with practitioners will include filming them while at work in their studios or potteries. The videos will complement the conversations with visual material to facilitate the analysis of pottery making processes (Harper, 2013).

Figure 1 Videos are effective tools to record and analyse non-discursive elements involved in the process of making craft objects. (Photo by the author)

PRACTICE-BASED RESEARCH

My research explores the link between making processes and qualities and values embodied in the craft objects, e.g. between exact ways of throwing at the potter's wheel and the resulting marks on the pots. The analysis requires an in-depth understanding of individual potters' methods of making which would be hard to reach purely based on observations and conversations. For these reasons, I propose to receive training in the potters' methods of making

artisanal tableware over extended periods of time, until I can uncover the specificity of the processes followed by each potter. Practicing pottery making at their premises will also enable me to systematically critique emergent research findings in my practice by reproducing tableware and processes 'in the manner of' the practitioner observed and through 'empathic coding' of their techniques (i.e. interpretation through making). The data collected will then be coded (Rubin and Rubin, 2011; Saldaña, 2009) to identify salience and develop high-level categories into concepts and, finally, taxonomical elements. The taxonomy will be grounded in iterations of analysis of interviews and video-ethnography, testing of emerging theories with the practitioners, and reflections on my ceramic practice.

It should be noticed that the practice element in my research will also allow me to conduct ethnographic studies as an active practitioner in the potteries, and access information that would be otherwise hard to obtain (Pink, 2006).

LESSONS FROM OTHER DISCIPLINES

At the core of my research approach there lies the importance of analysing making processes to understand the nature of craft activities.

Craft studies have seen a renewed interests in the last 10-20 years. However literature often follows art historical approaches, focusing on qualities and meanings of craft pieces *after* they are produced. I would argue that only by engaging with the processes involved in the production of craft objects can we understand the skilful making of objects that is at the core of craft activities. By limiting our analysis to a study of the objects' appearance, or to theoretical considerations, we may develop an incomplete appreciation of crafts' meanings and values, which may only be evident during the making process and lost ever after.

This focus on how artisans actually work, their tools and techniques, has been central to developments in archaeology and anthropology for at least two decades. In ceramic studies, Louise Cort and Leedom Lefferts (2010) used the analysis of making techniques to successfully trace migration patterns in Southeast Asia. Similarly, archaeologist Olivier Gosselain (2000) analysed patterns of

distribution of African pottery techniques to define social boundaries. He also provided a categorisation of change and resilience in ceramic practice - i.e. salience, technical malleability and social context - which can constitute a basis for my proposed taxonomy.

Craft research can learn from other disciplines. My study aims to effectively integrate these successful approaches into design research.

MAPPING THE FIELD

A solid understanding of contemporary British pottery is necessary to inform the selection of appropriate interviewees and, later on, the most relevant case studies on which the research should be based.

OVERCOMING RESEARCH BIAS

The study acknowledges the subjectivity of qualitative research but also recognises - and attempts to limit - systematic distortions introduced by bias. My involvement as researcher in the study will be openly discussed throughout. A statement of bias will clarify my position and personal taste, and inform rigorous criteria for selecting interviewees.

The research has already identified potential distortions relating to my personal taste, the scope of the study and its content. In my first year of research I conducted a literature and practice review by reading about potters, visiting kilns, attending events and ceramic fairs. Throughout this phase I realised my taste could influence the selection of potential interviewees and distort the research. For example, whilst appreciating a wide range of pottery styles, my preference often leans towards Modernist potters who use local materials and are likely to be influenced by Asian ceramics. This category is largely identifiable with the Bernard Leach lineage of studio potters which dominated British handmade ceramics in the last century and is still very present today.

The decision to interview a potter should be explicitly based on a set of criteria for inclusion. Developing these criteria has already helped me sharpen the scope and focus of my research, and acquire a more accurate terminology to describe it. I decided to focus on *tableware* that could be defined as *functional*

production pottery, hand-thrown on the potter's wheel and *made for everyday use*. This type of craft aims to perform the same practical function as the industrial ceramics we use every day, but it also embodies the artisanal values and qualities that are the subject of my investigation.

The need to compare British and Japanese pottery could introduce further bias by implying a tendency to select ceramics that offer interesting contrasts or affinities between the two countries, instead of leading to a comprehensive and detached panoramic of contemporary potters.

The cyclic nature of the investigation also poses some concerns and needs to be addressed in the research. The artisanal values and qualities I aim to identify through interviews and video ethnography would depend on the potters selected for the study. Conversely the initial selection of interviewees is conducted with potential artisanal values and qualities in mind. This process forms a hermeneutic circle which should be challenged through iterations and dialogical reflections, until understanding of artisanal values and qualities is achieved.

ANALYSING ARTISANAL TRADITIONS

The notion of 'ceramic tradition' is central to my study. It can be used to illustrate some of the issues arising in my research and justify the methodology I propose to tackle them.

Professional pottery making requires years of training with experienced potters. This learning process is based on direct transmission of ceramic skills and knowledge through conversations, observations and practice. Apprenticeships may last a few years and have a great impact on the potters' ideas and techniques, even later in their career. The choice of materials or tools, the way the clay is prepared before throwing or a certain method to make a handle are examples of the direct influence of potters' training on their resulting making processes.

Mapping the British ceramic field starts by grouping potters into categories based on specific aspects of their work or experience, e.g. their training history. Continuous lineages of ceramic traditions can be traced across generations.

Artisanal qualities and values associated with a potter can be found again in his or her students and apprentices, and so forth[1].

Studying lineages and traditions facilitates the mapping of the British ceramic field but also poses interesting questions about originality and context. For example, whilst similar artisanal qualities in tableware pottery can be traced across potters who worked together, the values attached to certain ways of making are likely to differ, responding to the artistic, political or socio-economic contexts in which they work.

Figure 2 Details in the making process - e.g. the finger configuration while throwing - can reveal a previous connection with a teacher or master potter. (Photo by the author)

Grouping potters by lineage and traditions also helps identify common features (e.g. a certain style of throwing marks) in contrast with those found in other potters. Grouping according to other factors - e.g. geographic location or

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[1] The influence of Bernard Leach on successive generations of potters is probably the most famous example of this phenomenon in the UK. For an example of a pottery lineage tree see http://www.ceramike.com/LeachTree.asp

preferred materials – will offer alternative classifications. The juxtaposition and contrasting of these classifications will eventually lead to a satisfactory understanding of the British artisanal ceramic field.

The iterative nature of grouping and testing will help problematise the list of practitioners selected for interviews, and will eventually result in a reasoned set of criteria for inclusion.

A FINAL SET OF CRITERIA FOR INCLUSION

The mapping exercise will produce a clear list of potential ceramic artisans that can be approached for interviews. The selection will aim to cover the extent of my research scope and the variety of practices that fall within my focus. This will constitute an effective first step towards conducting interviews and case studies.

Finally, the emerging set of criteria will be further validated by the results of the interviews with the potters and their recommendations.

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Design-en-place
Haute cuisine's creative process as design process

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ABSTRACT

Can a design process model describe and explain the creative process in *haute cuisine*? This question guided an exploratory investigation which empirically observes the relationship between the creative processes of design and gastronomy and confirms the adequacy of a design process reference model to *haute cuisine*'s creativity.

A phenomenological methodology was undertaken to map the creative processes of five chefs, all Michelin star holders, which resulted in thirty nine emerging themes. The introduction of an external validation tool made it possible to organize the themes into categories and subsequently group them into four dimensions: knowledge, concept, realization and evaluation.

The dimensions revealed proved substantially coincident with the phases of the design process model — discover, define, develop and deliver — which suggests the accuracy of the initial theoretical assumption. The results of the study show that the creation process performed by chefs is similar to that developed by designers.

HAUTE CUISINE'S CREATIVE PROCESS AS DESIGN PROCESS

Because cooking involves the conception and execution of an idea, the assembling of components into a pleasing whole, this makes it similar to design.
Stephen Bayley (1991, p. 23)

Design and gastronomy have repeatedly crossed paths in different areas like the creation of objects (e.g. cooking utensils), environments (e.g. the kitchen space) or systems (e.g. the food supply chain). The multiple links between individuals and food reinforce the possibility of connections between professionals in a common territory where designers and chefs work independently or in multidisciplinary teams. As project-oriented fields, can design and gastronomy have similar creative processes, specially in areas where the chef's role is dominant and where there is a strong conceptual component, such as *haute cuisine*? While the dynamics of traditional cuisine are constructed by cultural heritage and passed down from generation to generation, *haute cuisine* anticipates future scenarios, dictates trends and is characterized by an experimental approach.

Like *mise en place* became the backbone of cooking (i.e. planning in advance all necessary equipments and ingredients for preparing and assembling a plate), can design methodology help to understand *haute cuisine*'s creative process? Nowadays creativity is a central concept in most relations between design and gastronomy as the food scene becomes more and more a trending subject, with a growing interest for design. The rise of chefs whose culinary speech brings innovation and creates work dynamics that go beyond the kitchen's territory leads to a reflection on the nature of creative thinking in *haute cuisine* and the processes underneath.

CREATIVITY, THE CREATIVE PROCESS AND DESIGN METHODOLOGY

Creativity is the ability to generate new ideas and identify alternative possibilities whilst searching for solutions or answers to a problem or question, in both personal and professional contexts (Sternberg, 2006, p. 95). Historically, creativity's first focus was on the individual (e.g. a person's skills and motivation), then it started to be seen as a technique (i.e. an optimized process for new ideas to emerge), but only recently with the systemic perspective of creativity has it been accepted as a self-contained concept (Csikszentmihalyi, 1999, p. 313). In this perspective, the creative process results from the interaction between the individual, the domain (or cultural system

in which he/she operates) and the specific field where creativity takes place. Creative processes define applied creativity in a particular context as well as the evaluation and validation of the result, not just the idea per se. Creativity is thus operationalized by the interaction of the subject, the socio-cultural context and the outcome of the process itself (Tschimmel, 2011, p. 25).

Considering design and *haute cuisine* are user or customer-oriented activities, the result of their creative process has to follow a function or meet the expectations raised. Design methodology considers articulated steps, principles and practices the designer applies in each project in order to find the best solution for every situation. Over time, the dynamics and specific procedures that compose the design process have been translated into models, used to understand, systematize and explain the design process, seeking to describe or regulate the designer's activity (Cross, 1993, p. 16). The recognition of the unique nature of the design process had an important role in design's definition and allowed for different fields, like food, to be explored from a design perspective (Raymond, 2009, p. 5).

Being a reference model, the Design Council's (2005, p. 6) double-diamond model combines the design process' essential features in different areas (e.g. industrial design, graphic design); its diamond shaped configuration visualizes the type of thought (divergent or convergent) and the dynamics (analysis or synthesis) applied in the process and shows its iterative character. The phases of the model — discover, define, develop and implement — set an established sequence for the design activity (see Figure 1). Applying this model to *haute cuisine* creates a parallel between creative processes in different activities which share a project-oriented nature that leads to a concrete result.
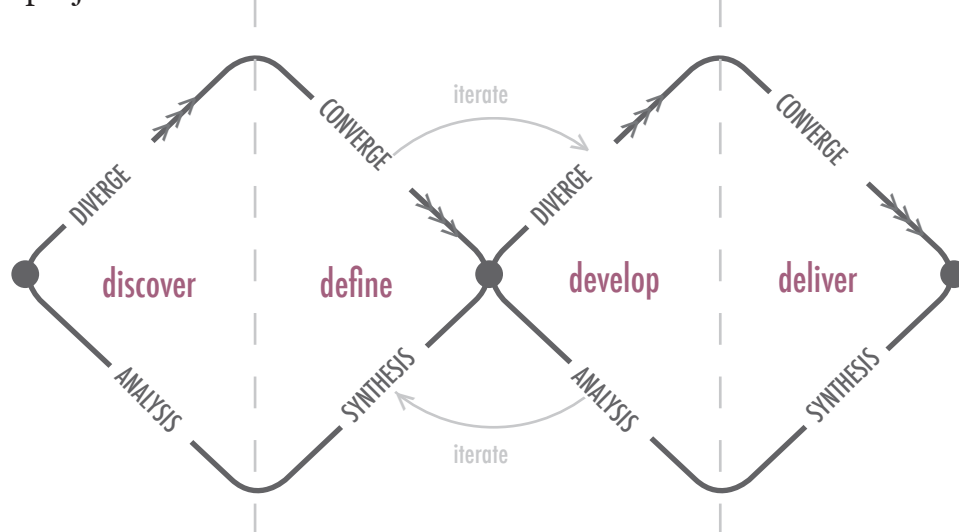

Figure 1 - Double-diamond Design Process Model. Adapted from Design Council (2005)

RESEARCH METHOD AND RESULTS

Several studies about creativity, either as a concept or applied to specific fields such as design, frequently use qualitative research methods because of the dynamic and inaccurate character of the phenomenon in question, which also applies to *haute cuisine* (Stierand et al., 2012, p. 947). Hence the choice for a phenomenological methodology to allow the mapping of *haute cuisine*'s creative process. This method was used to analyze the work of five chefs, all Michelin star holders, either portuguese working abroad or chefs working in Portugal (in 2014). This research method infers meaning from the descriptions of the experience by the participant subjects, translating their descriptions into meaning units and organizing them into themes, reducing the phenomenon to its essence (Finlay, 2009, p. 6). The introduction of an external validation tool made it possible to organize the emerging themes into categories and then group them into four dimensions that can be compared with the phases of the reference model. For this, two judges were asked to organize the emerging themes into categories, name them and place each one in the stage of the creative process they believe it takes place.

In the investigation's initial phase, phenomenology as a research method was used, comprising the analysis of the collected data (i.e. chefs' interviews, presentations and publications) compiled into thirty nine themes emerging from several hundred meaning units (see Table 1), which are representative and determinant in *haute cuisine*'s creative process. These emerging themes cover very different areas which nevertheless can be aggregated into three large groups: chef's personal issues, related to his/her individual characteristics and previous experiences; contextual questions, concerning work's environmental conditions (e.g. the restaurant and its cultural context); and collective matters, as a result of interactions between the various actors in the process, in particular restaurant staff and customers.

MEANING UNITS	EMERGING THEMES	CATEGORIES
(immediate result of data, translated by the researcher in a direct way, without producing any kind of interpretation)	(produced by the researcher identifying recorrent paterns, reducing the number of meaning units by gathering them into themes)	(defined by two judges from the emerging theme groupings)
EX: *cooking is feeling and sharing emotions and sentiments* $\longrightarrow$	the creative process comprises the chef's emotions as well as those he wants to enable in customers $\longrightarrow$	Perception (participants sensorial dimensions)

Table 1 - Relations between meaning units, emerging themes and categories

At this stage, the option to keep a larger number of themes rather than a shorter selection, with fewer items, is justified by the nature of this study and its added value: tracing a multi-dimensional scenario of *haute cuisine*'s creative process. For that reason, themes like "emotions", "memories" and "perception" that present a clear contiguity with each other were kept independent. Also, "identity" and "personality" are presented as different themes even if their connection is evident in the description produced. Other themes with clear proximity are "planning" and "integrated approach", "links between choices and possibilities" and "commitment", "testing" and "evaluation", "collaboration" and "team work". Also in these cases the option was to keep the distinction between them but the possible merging areas were registered.

With the identification of the thirty-nine themes that compose the generation, development and materialization of ideas in *haute cuisine* the phenomenon was reduced to its essence and description of the process was made. This was followed by an external validation stage with two judges taking part in the organization of themes (e.g. by analogy or proximity) into groupings which subsequently have been nominated, creating categories. The judges were also asked to place these categories (and related topics) in the creative process phase they considered more correct for each one (see Figure 2).
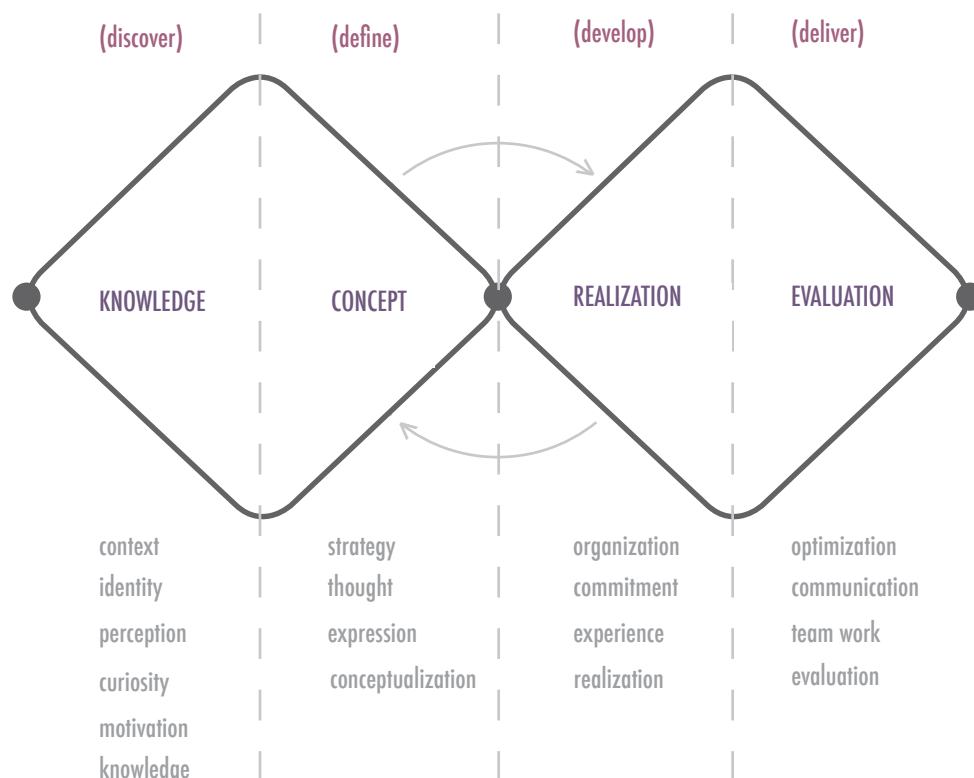

Figure 2 - *Haute cuisine*'s phases and categories

Every phase of the creative process compiled a set of categories into a dimension, on a total of four (i.e. the same number of phases the design process model presented). The two proposals from the judges merged on a final one resulting from a compromise amongst them, with four dimensions identified as: knowledge, concept, realization and evaluation. In summary, the result of *haute cuisine*'s creative process comes from a sequence started with gathering of information and knowledge application, followed by the definition of a concept, realization and selected option's experimentation, its implementation and evaluation.

CONCLUSIONS

When asked about their creative process, chefs' descriptions differ and the awareness of its implications in the final result is expressed in various ways, showing a greater or lesser ability to understand their own creative process or establish the role of creativity in their work. However, descriptions of work elements, sequences, established rules and procedures show a general structure, present in every chef's creative process, that can be useful to understand how ideas are generated and implemented. A plate's creative process, from the initial idea until being part of the menu and served to the customer, as well as the idea's evolution and all the technical steps, fulfill a set of guidelines present in the work of every chef studied in this investigation. In general, each chef explains the process from a personal perspective, starting with his/her own values and assuming a central role in the process, from the beginning (when the initial idea appears) until the end (when the plate arrives at the table and is, or not, validated by the customer). The initial idea triggers the process and is the basis for all procedures involved in creating the plate, including a defined and implemented concept and fully consolidated technical definitions.

In a broader sense, creativity can be seen as a key component in food evolution, conveying techniques and products to meet the ever-changing food habits or in response to the ongoing cultural construction that results from sharing a plate in a specific context (e.g. a family meal versus a restaurant dining experience). Particularly in *haute cuisine* where creating implicates designing a food experience more than just a plate, considering the whole process as a project (which results in a product to be reproduced, served and consumed) generates an intersection between *haute cuisine* and the design process.

Design Council's model offers a simple way to map and operationalize the design process, describing the actions, procedures and components in the

designer's work in different areas of design practice. The model's double-diamond configuration emphasizes the divergent and convergent stages of the design process, in which analysis precedes synthesis (and vice versa), showing the different dynamics of thinking in the course of a project. Applying this model to *haute cuisine* acknowledges the project-oriented nature of the field, and emphasizes the creative process as a way to a concrete result which must respond to certain expectations and fulfill different functions, making it similar to design.

The dimensions revealed in the investigation after mapping *haute cuisine*'s creative process - knowledge, concept, realization and evaluation — show there's a similitude with the phases of the design process model — discover, define, develop and deliver. This study found evidence that the creation process performed by chefs is similar to that developed by designers, as it exhibits the same sequence of iterative creative steps: gathering of information; concept definition; development and materialization; implementation and evaluation. By explaining the creative process in *haute cuisine* from the paradigm of design, the theoretical model that results from this study allows for the conceptualization and analysis of *haute cuisine*'s praxis, opens new possibilities for the understanding of the chef's creative processes and helps support the thesis that creativity processes don't differ significantly amongst design-based practices.

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CREATIVITY

Poética del producto interactivo

See More

El desdoblamiento de la poética en la estética de la conectividad

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RESUMO

Al explorar el contexto estético, lo estamos haciendo desde el lente de la Poética donde sus interacciones, vínculos, encuentros a través del lenguaje "trascienden de la mera detección de la presencia del otro hacia su valoración gracias a procesos de índole estética" (Mandoki, 2006, p. 9). Se presentan como influyentes en todos los espacios/temporales de la sociedad. Así pues, explorar el contexto de la estética es iniciar el camino del entendimiento, en este caso de la conectividad, concepto que articula los vínculos e interacciones de personas y sistemas en redes tecnológicas mediante el intercambio de contenidos textuales y audiovisuales en un campo virtual. Explorar este contexto es iniciar el trazado del encuentro de las transformaciones sociales dadas en espacios digitales, transformaciones que se presentan por medio del entendimiento otorgado por la Experiencia Estética.

Palavra(s)-chave: poética, estética, diseño, arte, medios interactivos .

Se pretende estudiar nuevos campos de la Estética, aquellos que se presentan en la relaciones, en las conexiones dadas entre personas y entre redes informáticas que viven en red. Así la Estética ha trasgredido el mero lugar de las "Bellas artes", para incrustarse en la vida, en las conexiones que permiten crear objetos, cosas, prácticas o encuentros artísticos en lo que se ha denominado la "matrix[1]"; en este sentido el estudio y exploración de la Estética en la Conectividad, es recalcar el valor pertinente de su estudio como campo o disciplina que cada día mas se aleja de las "Bellas Artes", es por lo tanto un estudio relevante en el sentido de la contemporáneidad. En este trazado se pretende desarrollar un experimento de creación colaborativa entre personas que participan en el Medialab de la Universidad Federal Goiás y el MediaLab de la Universidad de Manizales en Colombia, donde se cree un cinema alojado en la web, para de esta forma explorar el proceso de creación y su contexto estético. Este texto hace parte del marco teórico que se construye como soporte a la investigación.

"El arte es siempre reflexivo" (Borgdorff, 2004).

La estética silencia. La Estética abre ese camino al silencio de la reflexión. De manera fantasmagórica la estética se presenta como poder que transforma una sociedad en cortos lapsos de tiempo. Así, la estética, sus estudios, análisis y reflexiones no deben estar circunscritos a las "bellas artes". De esta manera lo entienden y expresan autores contemporáneos como Rancière (2011), Debray (2001), o Derrida (1968) que plantean debates en torno a desarrollos relevantes en otros espacios diferentes e influyentes al tradicional. La estética está en todos los campos del hombre social, y presenta un rol preponderante de acción en desarrollo de "imaginarios, construcción de conocimiento, y legitimación de identidades" (Mandoki, 2006, p. 9). Siendo así, ignorar la pertinencia de estudios estéticos en relación con las interacciones sociales en el campo digital no tiene sentido, al ser una herramienta de su propia transformación, al desdoblarse en campos como la Política, el Estado, la guerra, o la Familia. Por esa razón, "explorar[2]" es encontrar, es trazar el camino a recorrer, es indagar para modelar, para esclarecer; es buscar los encuentros, los vínculos de esas

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[1] La Matrix es Internet.

[2] Explorar es término del objetivo de la investigación de la Estética de la Conectividad.

identidades digitales de personas, que subsisten en cofradías, con formas, rituales, encantos que presentan en sus relaciones colaborativas.

En consecuencia, explorar la estética, su función, su uso es encontrar soluciones a los problemas de la humanidad, problemas que se han amplificado en su fase "moderna", donde el racismo, el alcoholismo, la violencia, la depresión, la anorexia y los desórdenes obsesivos son resultados de la puesta en sociedad de estándares impuestos por una retórica de siglos pasados que ha desdoblado cuestionamientos en la salud física y mental del ser homo/sapiens.

Por lo tanto, explorar esas conexiones, esos vínculos, esas experiencias, basadas en el intercambio social en la realidad y en lo virtual, en lo digital, desde la mirada poética y estética, debido que todos los seres humanos nos vinculamos los unos a los otros desde la condición sensible, nos permite encontrar nuevas maneras de entendernos y respetarnos. Ahora es claro, sin Estética no hay Diseño, el Diseño es Estética, y la Estética es Diseño.

> *"Investigar lo sensible arroja soluciones para el entendimiento propio y del otro"* *(@sacosta809, 2015)*

Por otro lado, las investigaciones en los estudios doctorales buscan presentar avances significativos en una disciplina, en un elemento particular donde puedan aportar un nuevo conocimiento. Principalmente las investigaciones en estudios doctorales en diseño tienen diversas líneas de desarrollo, todas en busca de consolidar el núcleo disciplinario de diseño. Para lograr esta solidificación es necesario que las investigaciones apunten al desarrollo de valores estéticos, donde la forma, la función y el significado solidifican el núcleo disciplinar del diseño (Milano, 2015). En este sentido, investigar en Estética, es indagar en Diseño, es decir buscando su funcionalidad, y la aplicabilidad en el y del Diseño, porque no se puede hablar de Diseño sin un contexto, un constructo Estético. El diseño desde sus inicios ha trabajado con los principios básicos de la funcionalidad Estética, la cual le permite a los productos ser funcionales desde la condición de satisfacción de los productos. Por lo tanto la comprensión Estética es una condición para el Diseño, y el trabajar estos conceptos se posibilita una intervención social muy intensa para cambiar los procedimientos y la comprensión del mundo (Rocha, 2015).

Así pues, investigar sobre las experiencias estéticas que apunten a engrandecer los distintos enfoques disciplinarios en diseño es fundamental para una disciplina que busca solidificarse con otras en las cuales es transversal. Enfoques como el diseño emocional, el diseño para todos, el diseño colaborativo son claves para desarrollar nuevos métodos y esquemas que le den un significado al diseño en su papel de gestor comunitario, de actor de cambio e innovación social. Desarrollos que son alcanzables en la medida en que, como lo menciona Rancière (2011), los "*regímenes de identificación específica del arte[3]*" (p.11), como lo es la estética, se exploren, e investiguen en el marco de los problemas de la actual sociedad.

Bajo estos regímenes de identificación[4] subsiste la poética, que es referida al estado o forma de sabiduría, de entendimiento sobre el proceso creativo y el lenguaje que permiten o brindan las herramientas para fabricar una cosa, pero una cosa que desde su creación orgánica nace o se hace nacer de tal forma que se convierte en una obra perenne. La poética es un concepto que nace con Aristóteles, quien lo presenta como "poïêsis" (ποι´ησις) que significa o da a entender lo referente a la creación, a la fabricación de la cosa. La poïêsis es todo aquello que se refiere a la creación, al proceso de componer, donde el lenguaje es, a la vez, tanto la forma como el fondo (Aristóteles, 2003).

INDAGACIÓN

Ahora, ¿por qué indagar sobre la estética?, porque, sobre todo, el hombre tiene una necesidad espiritual de abastecerse de elementos emocionales; ¿qué sería de la vida del homo/sapiens si no fuera sensible? Así pues, las obras o productos, en el sentido no mercantil, están para suplir esa necesidad de su ser, de su espiritualidad. De tal modo, la estética se presenta para trazar ese camino de encuentro de relación con nuestro yo, con su entendimiento y con el de los otros.

Entonces, indagar sobre estética, y en esta caso sobre la conectividad, entendida como espacio de flujos de conexiones, de intercambios audiovisuales, textuales

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[3] Para profundizar este concepto favor revisar Mapa realizado: Regímenes http://bit.ly/1J2yJnx

[4] Rancière le denomina a la Estética, regímenes de identificación especifica del arte.

de redes de personas y sistemas en redes tecnológicas, es indagar sobre la sociedad actual, sobre su forma de interacción, sobre su estado de necesidades, sobre su futuro, sobre su cultura y sobre sus aspectos sociales (Buber, 1992). Es decir indagar en estos aspectos no desde la recepción, sino desde su proceso de creación, lo poético, es indagar sobre el ser mismo, sobre el mismo ser humano, que es un ser social.

Por otro lado es determinante entender por qué indagar en la investigación en artes y diseño, y la respuesta es el hombre en sí mismo, el arte y el diseño son sus herramientas para entender el mundo y su naturaleza. Y esas herramientas contienen el proceso de creación, que son la fuente de su poder y su núcleo disciplinar. En este enfoque se presentan grandes debates en torno a la "práctica artística como investigación", "investigación en y a través de las artes o del diseño", que son asuntos importantes y que están unidos y vinculados por sus procesos creativos.

Además, en las tendencias contemporáneas se plantean estos debates donde la investigación en artes y en diseño permite potenciar el conocimiento, y a través de sus nuevas exploraciones se abren nuevas técnicas de sus prácticas; por lo tanto, al despertar estas nuevas reflexiones se amplifican las capacidades creativas. Y, ¿no es ese el fin de disciplinas como el diseño y las artes?, el indagar por nuevas formas de creación, de nuevas estructuras creativas para crear.

POÉTICA EN LO INTERACTIVO

"Nada se cría[5]" (Passeron, 1997)

La estética es referida a ese objeto de la conciencia y la reflexión, que se expresa a través del universo de los sentidos. Y la poética se refiere a ese marco general de la conducta del productor, del creador, de su actividad creativa que, según Passeron (1997), se destaca por tres diferencias: se produce un solo objeto, se establece un diálogo con la existencia y relaciones con la obra, y la obra se compromete con su creador, con su autor.

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[5] Nada crea. Importante aclarar que el uso de términos y conceptos en su lengua nativa es determinante para esclarecer su conexión con el contexto en que se usa.

Conviene destacar que la poética no se aplica exclusivamente al arte; la poética se presenta en los diversos sectores donde el ser humano se convierte en constructor, en creador. Así pues, hablar de poética es hablar de los procesos creativos donde se relaciona el objeto, se establece un diálogo con la obra, y ella se compromete con su creador. Al hablar de poética, hablamos de diseño, de arte, de estética, por cuanto todas estas disciplinas tienen procesos de creación.

Ahora, ¿investigar la poética en diseño o arte tiene sentido? Investigar sobre el proceso creativo, sobre su producción tiene todo el sentido. Establecer parámetros, guías del proceso creativo, que se apliquen a disciplinas como el diseño permite realimentar el campo específico del diseño y su aporte a la innovación social. De ahí que nos preguntemos: ¿cuál es la diferencia entre el proceso de creación artística y el proceso creativo?, ninguna. El protocolo establecido es investigación, hipótesis, prueba y verificación, algo planteado por Wagensberg (2003) quien cita a Popper al referirse al carácter científico como cuestión de la afirmación determinista[6]. Así, lo importante es conectar las ideas previas, con modelos o herramientas para presentar ideas nuevas o transformadas.

En este sentido, todo el mundo es creativo. El creador, el artista el diseñador, a través de un proceso de creación genera una obra, que se da por la necesidad de ella misma y de su creador de comunicar, de expresarse. Este proceso tiene diversas fases, desde la angustia[7] y el conflicto, hasta la satisfacción. Asimismo, la poética es la encargada de ese espacio delimitado, denominado la conducta creativa. ¿Hablar de procesos creativos no es importante en disciplinas como diseño? Verbigracia, hablar de campo/objeto de la poética, del comportamiento humano del hombre/creador no solo se aplica al artista; hay que hacer notar que el artista no es más sensible que otros; es solo que el artista postula su sensibilidad en el acto creador, al establecer un juego de creación con su obra.

Así, si bien la poética se ocupa del campo creativo, sus investigaciones tienden a presentar aportes sobre la conducta creativa; entonces su campo se extiende a

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[6] Wagensberg citando a Popper plantea que una proposición es científica sólo si puede ser falseada por la experiencia, así una teoría es tanto más fuerte cuanto más cosas prohibe.

[7] Presentada en todo proceso de creación, al no poder plasmar con uso de herramientas lo que la idea quiere expresar en la expansión creativa del creador.

diversas disciplinas. En el caso del diseño, investigaciones bajo los métodos de la poética permiten amplificar modelos creativos de creación de los objetos o cosas.

Por esta razón, la poética, se limita a las normas dinámicas del desarrollo de la obra, y deja a la estética el aspecto sensible del artista. Así, la poética tiene como propósito la *poesís* (forma de sabiduría) que trae el proyecto ante su creador, y deja de lado el proceso de *aistesis*, que es la experimentación de la acción.

> *"El objeto específico de la poética es la conducta creadora, la naturaleza íntima del creador" (Passeron, 1997).*

En consecuencia, cuando planteamos poética, no nos estamos refiriendo exclusivamente a "un creador"; puede ser de carácter colectivo, donde los participantes colaboran durante la creación continua; una especie de "lengua viva" (Passeron, 1997, p. 109)   que cada generación ajusta a su contexto, para propiciar un encuentro entre la subjetividad del artista, plagado de sus creencias y conocimientos previos, y las necesidades técnicas del material.

Siendo así la poética y el lenguaje contribuyen a la estética a través de las obras creadas, cuyo proceso se comprende mejor si se analiza y reflexiona en torno a la estética de la conectividad, donde la poética contribuye a esclarecer esta gestación teórica de la estética (Acosta, 2015). Acaso observar los procesos de interacción de co-creadores, de obras, generar experimentos artísticos, o crear una obra con el pretexto de analizar su proceso en busca de entender su disciplina, sus interacciones, sus métodos, sus procesos, ¿no es relevante en una investigación que pretende dar y aportar conocimiento?.

> *"La Estética es mucho más que eso" (@sacosta809, 2015)*

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Inovação e design de experiência do usuário para a *web*:
Apontamentos preliminares de uma discussão necessária

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RESUMO

Dois termos em evidência nos dias de hoje são inovação e design de experiência do usuário. Este artigo busca, através da análise de conceitos e classificações presentes na literatura consagrada do design, abordar questões relativas a estes assuntos com o intuito de estabelecer relações entre estes conceitos que suscitem e fomentem discussões relevantes futuras. Definições, percurso histórico e processo criativo, por exemplo, servem de fio condutor para as considerações a respeito de como estes termos se cruzam no cenário contemporâneo do design visual para a web e se tornam, além de indissociáveis, importantes não apenas para a produção propriamente dita, mas também para a teoria e pesquisa na área.

Palavras-chave: inovação, design, user experience, web, interface.

INTRODUÇÃO

Muito tem se falado, nos dias de hoje, em inovação. É bastante comum, inclusive, encontrar a palavra inovação como sinônimo de criatividade, por exemplo. Mas qual, de fato, é o conceito de inovação? E onde a inovação se insere no chamado design centrado no usuário? E afinal, criatividade e inovação são sinônimos?

Essas e algumas outras perguntas são dúvidas recorrentes no dia-a-dia daqueles que trabalham não apenas com design, mas em praticamente todas as áreas de conhecimento. Isto porque inovação é um daqueles conceitos que, mesmo que as pessoas tenham dificuldade em verbaliza-lo, conhecem e sabem que é pré-requisito básico nos projetos do dia-a-dia.

É importante ressaltar, antes de mais nada, que o propósito deste artigo não é, de maneira alguma, elucidar ou dar uma resposta definitiva a estes questionamentos. Seu propósito, na verdade, é apresentar argumentos e referências para enriquecer ainda mais esta saudável e relevante discussão.

Para tanto, esta publicação abordará alguns temas que emolduram a relação entre inovação e design de experiência do usuário para web, começando com a definição de cada uma dessas disciplinas.

DEFINIÇÃO DE INOVAÇÃO

Baxter (2000, p. 1) afirma que "a inovação é um ingrediente vital para o sucesso dos negócios". Possivelmente a maioria das pessoas não discorde desta afirmação. Pelo contrário, afirmará que ela está correta. No entanto, será que a maioria das pessoas sabe o que é efetivamente, inovação?

A relação entre criatividade e inovação é bastante próxima, são processos diferentes que ainda são entendidos como sinônimos. Para distinguir os conceitos, é preciso lembrar que criar é um processo, de gerar e desenvolver ideias, resultado da combinação entre a percepção sensorial – os cinco sentidos humanos - e as sinapses - as conexões produzidas pelo cérebro, os fluxos entre um neurônio e outro (Priberam, 2015). Conforme Amabile (1996), criatividade é a produção de ideias novas e úteis em qualquer domínio. A inovação, ou invenção, está relacionada à criação. Por buscar novas formas e soluções, "a

inovação é até identificada com a própria criação. Mas, se é da natureza do ato criador inovar, a recíproca não é verdadeira; a inovação nem sempre é criação" (Ostrower, 1987, p. 134). Quando as ideias criativas são aplicadas com sucesso, ocorre a inovação. Inovar pode ser o aprimoramento de um produto ou serviço já existente.

> *O invento como inovação ou novidade pode concretizar-se em formas mais independentes e aparentemente até 'mais originais' do que a as formas da criação, mais arbitrariamente livres porque desvinculadas da presença de delimitações interiores e de valorações íntimas. (Ostrower, 1987, p. 135)*

A palavra inovação caiu no que se pode chamar de "senso comum" e tem sido demasiadamente utilizada nos mais diversos âmbitos, mas sempre como uma característica extremamente positiva. Pode-se afirmar inclusive, que inovação virou um adjetivo e é um dos mais utilizados quando se quer elogiar ou promover uma iniciativa ou ação. Anunciar que determinada iniciativa é «*inovadora*», acrescenta ao discurso um aspecto de atualidade e/ou visão de futuro. Há uma certa expectativa de que a inovação é feita por pessoas iluminadas com ideias brilhantes, mas na prática este processo ocorre de maneira gradual em lugar de súbita e coletiva em vez de individual (Burke, 2009).

É importante lembrar que o senso comum muitas vezes induz ao erro aqueles menos atentos. Quando se fala de inovação, a indução ao erro é muito grande, auxiliada, sobretudo, pelo que poderíamos chamar de registro visual do senso comum. Como se já não bastasse o conceito equivocado de que inovar é ter novas ideias, o símbolo muitas vezes atrelado à inovação remete, ou presentifica uma lâmpada. Ao longo de muito tempo, a lâmpada, ou sua presentificação gera efeitos de sentido, ou está associada ao momento em que se tem uma nova ideia. E o pior: uma lâmpada incandescente, com filamentos, dentro do tradicional bulbo transparente – uma tecnologia que, além de ultrapassada, foi banida das linhas de produção e da nossa sociedade.

Além da mensagem passada estar equivocada, pois ter a ideia não implica, necessariamente, em transformá-la em inovação podemos ver que, conceitualmente, esta mensagem é transmitida de forma incompleta. Inovar está longe de ser apenas o ato de 'ter uma ideia'. O Dicionário Eletrônico

Houaiss da Língua Portuguesa (2009) afirma que inovar é "introduzir novidade em; fazer algo como não era feito antes". Importante ressaltar a palavra 'fazer', pois em inovação por melhor que seja uma ideia, se ela não for colocada em prática, se aquilo não sair do campo das ideias para ser posto em prática, não haverá inovação alguma.

Na contínua mudança dos tempos, as empresas deveriam buscar a inovação, sob pena de que sua estagnação se transforme em uma âncora que não permite que ela se movimente e, pior ainda, a puxe para baixo.

DEFINIÇÃO DE *USER EXPERIENCE DESIGN*

Desde a década de 1990, o chamado design de experiência do usuário (em inglês: *user experience design* ou *UX Design*) começou a ganhar importância nas discussões e estudos de metodologia para design e, mais especificamente, na área de design de interfaces computacionais.

Oriundo de disciplinas como ergonomia, fatores humanos e design centrado no usuário, o *UX Design* reforça a preocupação projetual do design no que tange ao sua principal razão de ser, o usuário de determinado produto.

Já em 1998, Jennifer Fleming publicou seu livro *Web navigation: designing the user experience*, onde ela propunha uma abordagem em que a usabilidade na *web* deveria ser qualificada, através de um projeto mais eficaz para a navegação.

Ainda segundo a autora, o projeto deveria ser capaz de responder a perguntas básicas de navegação do usuário, como, por exemplo, "Onde estou?", "Onde posso ir?", "Como eu vou chegar lá?" e "Como eu posso voltar para onde eu estava antes?". Mais de uma década depois, ainda nos deparamos com *websites* e interfaces de controle de produtos eletrônicos que não conseguem, minimamente, responder a esta pergunta.

INOVAÇÃO NO DESIGN

Se o design "é o equacionamento simultâneo de fatores ergonômicos, perceptivos, antropológicos, tecnológicos, econômicos e ecológicos, no projeto dos elementos e estruturas físicas necessárias à vida, ao bem estar e/ou a cultura do homem" (Redig, 2005, p. 32), nada mais óbvio do que imaginar que a

inovação deva ser parte natural não apenas do método de trabalho do designer, mas de tudo o que é englobado por sua atividade enquanto profissional.

Segundo Moraes (2008, p. 12), "hoje, com o cenário cada vez mais complexo (fluido e dinâmico), é necessário (como nunca) estimular e alimentar constantemente o mercado pela via da inovação e diferenciação do design". Ou seja, no contexto profissional do design hoje, inserido em um mercado em constante mudança e evolução, inovação em design não pode sequer ser considerada uma diferenciação, pois pressupõe-se sua incorporação na base do processo produtivo. Até mesmo porque, segundo Baxter (2000, p. 1), "a pressão inovadora cresceu muito".

Gui Bonsiepe, em seu livro Design, Cultura e Sociedade (2011, p. 264) afirma que "inovação – pelo menos o conceito – goza hoje de uma reputação muito alta e indiscutível. Porém, pouco se fala sobre os conteúdos da inovação. Com relação ao design, ela vai das pequenas mudanças formais até a inovação radical". A inovação nas ideias, por exemplo em disciplinas acadêmicas, parece acontecer de maneira semelhante, pela proposição de analogias e adaptação daquilo que já existe a novos propósitos.

INOVAR É CORRER RISCOS, MAS LUCRAR ALTO

O segredo para uma inovação bem sucedida, segundo Baxter (2000, p. 2) "é a gerência de risco. [...] Os métodos de inovação devem considerar todos esses fatores e minimizar os riscos de fracasso do novo produto". É importante notar que o autor fala em "minimizar" e não anulá-los. Isso porque a prática da inovação é indissociável do risco, pois toda vez que se parte para a busca do novo, do desconhecido e do incerto, se aceita uma determinada carga de risco. Faz-se necessário, então, gerenciar esse risco, da melhor forma possível. O próprio Baxter (2000, p. 2) lembra que "de cada 10 idéias sobre novos produtos, 3 serão desenvolvidas, 1,3 serão lançadas no mercado e apenas uma será lucrativa".

O que ocorre, no entanto, é que muitas empresas não sabem fazer tal gerenciamento e acabam, consequentemente, colocando a culpa de todo o seu insucesso, na tentativa de inovar. Nigel Cross, em seu livro *Engineering design methods: strategies for product design* (2000, p. 202) afirma que "a inovação

em produtos é, acima de tudo, um negócio arriscado, e não é nenhuma surpresa que a maioria das empresas prefira seguir pelo caminho seguro da evolução gradual de seus produtos. Entretanto, as recompensas das inovações bem sucedidas podem ser substanciais, o que faz com que muitas empresas sintam-se atraídas, ou achem necessário aventurar-se dessa maneira".

Assim sendo, além da necessária gerência de risco, é preciso que se entenda que a inovação não pode ser vista como uma parte isolada do processo, ou até mesmo um setor da empresa Se analisarmos as empresas mais inovadoras do mercado, constataremos que não há semelhante setor ou área específica. Uma empresa realmente inovadora é aquela que consegue inserir a inovação em seu próprio dia a dia. A inovação precisar perpassar todas as instâncias da empresa, seus processos e sua política.

INOVAÇÃO E DESIGN DE EXPERIÊNCIA DO USUÁRIO PARA A *WEB*

Bonsiepe (2011, p. 258) nos apresenta doze vetores para inovação no design. Segundo ele, uma taxonomia da inovação em design mostra que ela pode ser baseada em: tecnologia, no usuário, na forma, na invenção, no valor simbólico ou status, na tradição, na engenharia mecânica, na ecologia, no branding, nas tendências, na arte e na crítica. No caso específico deste artigo, nos deteremos na inovação baseada no usuário.

Em se tratando de método de projeto para desenvolvimento de produtos para *web*, um dos mais utilizados como referência, entre profissionais e teóricos, atualmente, é o do norte-americano Jesse James Garrett. Em seu livro *The Elements of User Experience: user-centered design for web em beyond*, ele apresenta de forma simples e direta os elementos projetuais relevantes para qualquer projeto.

> *O design de experiência do usuário frequentemente lida com questões do contexto. O design estético assegura-se de que o botão da cafeteira é feito com textura e forma atraentes. O design funcional assegura-se que este botão desencadeará a ação esperada no aparelho. O design de experiência do usuário assegura-se de que os aspectos estético e funcional do botão trabalhem no contexto do resto do produto,*

questionando-se sobre se o botão é pequeno demais para tão importante função. (Garrett, 2011, p. 8)

Ainda conforme Garrett (2011, p. 17), a prática da criação engajada, de eficientes experiências do usuário é chamada de design centrada no usuário. O conceito de design centrado no usuário é muito simples: cada passo do caminho, leva o usuário em conta, a medida que você desenvolve seu produto. As implicações deste conceito simples, no entanto, são surpreendentemente complexas.

CONSIDERAÇÕES

Uma das grandes criticas que se faz ao *UX Design* é de que projetos baseados em uma metodologia minimamente estruturada deveriam, como pressuposto básico, eleger o usuário como foco principal.

Porém, a história do design nos mostra que, ao longo dos anos, embora estivesse subentendido que, por se tratar de uma disciplina que produz artefatos para o homem, este seria seu foco primário. Isso, no entanto, nem sempre é relevante em projetos de design.

Ressalte-se o exemplo de Garrett (2011), mencionando o botão da cafeteira e de que maneira. Exemplos como esse são muitos, no dia-a-dia. Nestas situações, existe um claro indício de que restrições técnicas e financeiras no processo projetivo-produtivo são fator deveras determinante e, por que não dizer, limitantes.

Em se tratando de design para a *web*, isso fica ainda mais claro. A internet comercial, como conhecemos hoje, ainda não tem vinte anos de atividade. Em função disso, o chamado *webdesign* é, dentro do design, uma das suas especialidades mais recentes. A *world wide web* foi estruturada, em seus primórdios, a partir de tecnologias pregressas adaptadas. Ainda hoje, muitas das limitações da web baseiam-se em limitações tecnológicas – como, por exemplo, o fato de não ser possível a utilização de acentos em endereços de páginas na web, problemas de banda ou conexão, entre outros – e necessitariam uma total reformulação da maneira como a web se estrutura. Ainda que existam limitações como as citadas anteriormente, ao longo dessas duas décadas de internet comercial, a evolução das tecnologias da informação e comunicação –

de maneira geral - aconteceu a passos largos, levando o design de interface junto consigo.

Este é o principal motivo para que, somente depois da web como conhecemos hoje estar minimamente estruturada, é que o *user experience* design voltou a chamar a atenção dos pesquisadores, suscitando a reflexão e pesquisa e sobre método de projeto em design para *web*.

Daí a justificativa para o crescimento do design de experiência do usuário ou centrado no usuário como diferencial inovador na teoria de projeto nos dias de hoje, chegando a ser, inclusive, considerado uma inovação. E é justamente ai que este paper se apresenta: convidando à reflexão e pesquisa, principalmente nos assuntos limítrofes entre tais conceitos.

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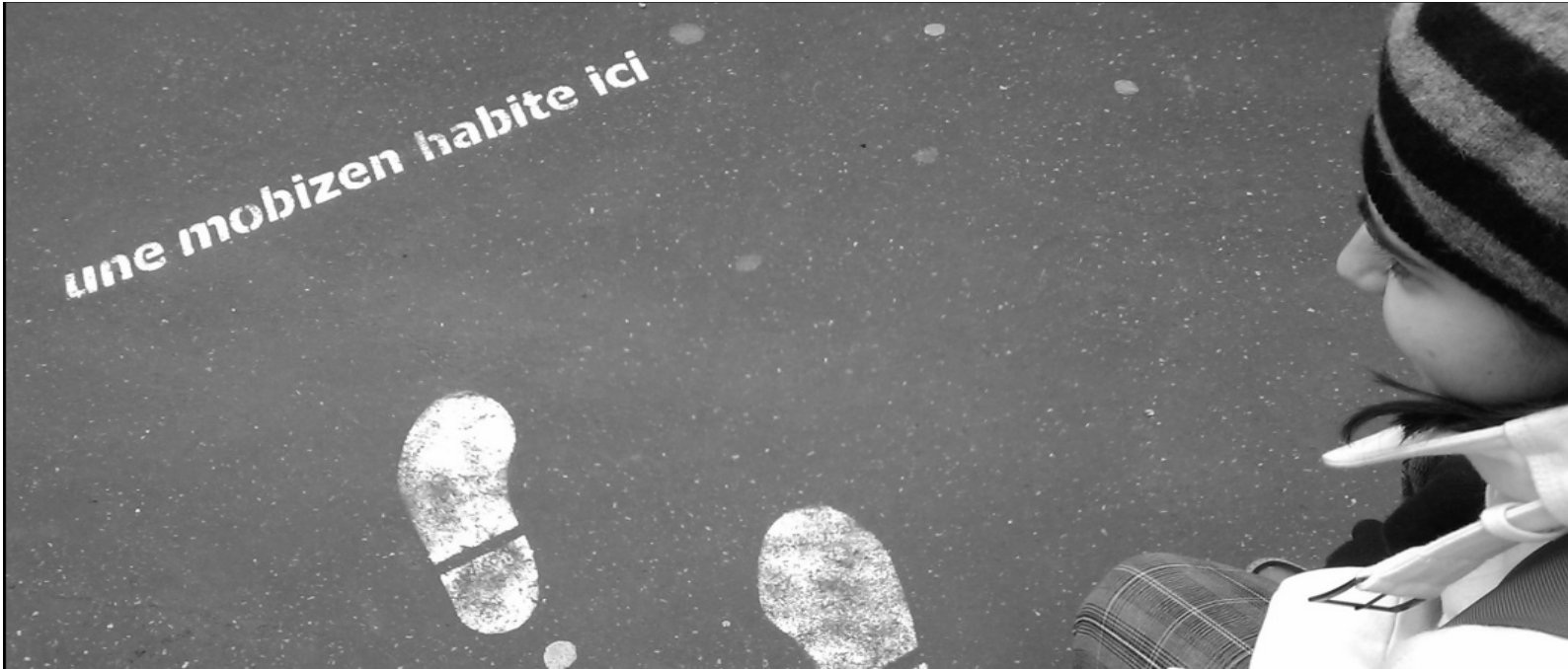
Inclusividade aplicada ao projeto de equipamento urbano

Tabelas de análise inclusivas para uma melhor resposta do projeto ao utilizador e a uma cidade sustentável

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RESUMO

Com um design adequado, os E.U.'s poderão reunir componentes como a inclusividade, e identidade, resolvendo conflitos de espaço e de identidade das cidades. Mas como definir quais os problemas dos actuais E.U.'s aplicados e, como contribuir para a resolução desses mesmos problemas(?). Para responder a esta questão foi usada uma abordagem que incluiu a construção de uma ferramenta de avaliação dos factores de inclusividade e identidade nos E.U.'s aplicados, para requalificação de E.U.'s em respostas futuras. Face aos E.U.'s de descanso analisados, não foram encontrados indicadores de inclusividade (materiais, forma) e de identidade (a excessiva uniformização levou à perca de identidade, não representando a cidade onde se inserem). Estes resultados revelaram a necessidade da criação de uma ferramenta quer de análise quer de indicação de critérios de projeto que permita congregar uma resposta de projeto que atenda e integre os fatores de inclusividade e identidade.

Palavra(s)-chave: Inclusividade, Identidade, Cidade, Ferramenta, Equipamento Urbano.

OBJETIVOS

Desenvolvimento de uma ferramenta que permita a identificação das necessidades dos utentes do equipamento urbano de descanso, definindo quais os problemas encontrados nos equipamentos urbanos de descanso aplicados na cidade de estudo (Lisboa). Com esta ferramenta pretende-se a análise da ligação E.U. – Cidade – Utilizador (Preece, et. al., 2005), bem como a ligação E.U. – Indústria – Cidade (Secca Ruivo, 2009) com base nos elementos da identidade e inclusividade, tendo como objectivo de estabelecer critérios de projecto de desenho de E.U. I com as componentes de inclusividade e identidade (Lynch, 1997) na sua génese.

METODOLOGIA - FERRAMENTA I

Como podemos definir quais os problemas dos atuais E.U de descanso aplicados e como contribuir para a resolução dos mesmos (?). Para percebermos melhor como identificar estas necessidades, para que o E.U. seja um elemento de inclusão e de identidade da cidade, desenhou-se uma Ferramenta I, que nos deu indicações para o desenvolvimento deste tipo de equipamentos de descanso. Para a construção desta ferramenta procedeu-se a uma análise prática na cidade de Lisboa, onde se escolheram três percursos específicos que tivessem pontos em comum em relação aos equipamentos que os constituem, como escolas, habitação, comércio local e transportes públicos. Através dessa análise foi possível criar pontos de conexão dos objetos na cidade e da sua relação com os utentes. Essa avaliação prática culminou na definição da Ferramenta I que é dividida em duas partes – primeira relacionada com a análise dos equipamentos aplicados e a segunda com os requisitos para o projeto prático de equipamento urbano de descanso inclusivo e identitário do local onde se inserem, numa perspetiva de design sustentável (Manzini, 1993).

Para iniciar a análise prática (Brown, 2009) da investigação, procedeu-se numa primeira fase à escolha dos percursos a estudar na cidade de Lisboa. Para a sua definição, foi importante a realização de uma reunião com o Núcleo de Acessibilidade Pedonal da Câmara Municipal de Lisboa (CML) na qual nos foi permitido ver o Mapa de Potencial Pedonal da cidade de Lisboa, o que possibilitou uma escolha mais criteriosa dos percursos, e a sua posterior análise de campo/observação direta, centrada na interação das pessoas com diversos

E.U. desses territórios. Nesse processo, os percursos foram realizados pedonalmente (junho/ agosto de 2013), o que permitiu não só a sua observação direta como o registo fotográfico dos equipamentos ao longo de cada percurso, quer sem a interação de usuários, quer na sua relação com a população.

Os três percursos selecionados para o estudo foram a Zona de elevação: Penha de França – Graça (P1), a Zona plana: Avenidas Novas (P2), e a Zona plana e de elevação: Rato - Campo de Ourique (P3). Apesar de deterem morfologias diferentes, qualquer deles apresenta um grupo de características comuns que foram intencionalmente tidas como critério para a sua escolha: a presença de estabelecimentos escolares, transportes públicos, jardins, zonas de comércio e habitação. Foram analisados quinze tipos de equipamentos diferentes, por forma a identificarmos os problemas na cidade de Lisboa, com incidência no objeto de estudo, neste caso os equipamentos de descanso (bancos de jardim, bancos encontrados no percurso, sítios onde as pessoas se apropriam dos objetos para repousar, como pilaretes).

Para além de serem analisados através de observação direta, efetuaram-se alguns registos em tabelas tipo (figura 3), elaboradas para esta investigação, divididas em três parâmetros:

a)   Tabela 1. **Inclusividade:** avalia-se os E.U.'s no que respeita aos materiais, a sua função adequada ou não e a sua localização.

b)   Tabela 2. **Identidade:** definem-se os E.U.'s nomeadamente na dimensão, se estes criam padrões, memórias, através da sua forma, materiais e colocação/permanência, o valor das funções que os E.U.'s assumem na morfologia da cidade.

c)   Tabela 3. **Sustentabilidade**: avalia-se os E.U.'s em relação à sua função e aplicação no espaço (localização em zona mista, aberta, ou fechada) e as suas características (função), se são de fácil acesso ou não.

As tabelas elaboradas para esta investigação, foram baseadas nas tabelas de avaliação do Livro "Do Projeto ao Objeto manual de boas práticas de mobiliário urbano em centros históricos" editada em 2005 pelo CPD (Centro Português de Design), porém foram adaptadas para esta investigação, por forma a obter mais

resultados acerca do equipamento urbano a analisar, nos percursos da cidade de Lisboa.

Com os dados obtidos na análise de campo da cidade de Lisboa, através da aplicação de tabelas de análise aos E.U.'s dos percursos e aos próprios percursos, de modo a identificar o(s) problema(s) mais relevantes, os quais se elencam: má colocação dos E.U.'s, E.U.'s como obstáculos; os E.U.'s aplicados nos percursos não criam percursos amigáveis; existe falta de manutenção destes equipamentos urbanos; pouca resistência dos E.U.'s ao vandalismo; falta de pontos de descanso durante os percursos; os equipamentos existentes não promovem a cultura e a identidade; os E.U.'s, na sua maioria, não são objetos versáteis (capazes de se adaptar); a textura dos E.U.'s é não inclusiva.

Face a estes resultados considerou-se pertinente a realização de uma proposta de Ferramenta I que pudesse colocar os critérios elaborados anteriormente como premissas como resposta, que explorasse a apropriação dos conceitos tipológicos de lazer e descanso.

Figura 1. Tabela 2 - Inclusividade.

CONCLUSÕES

Na análise funcional dos estudos de caso e na própria interpretação dos resultados, verificou-se ser necessário o entendimento dos conceitos de inclusividade e de identidade como fatores essenciais para a construção de equipamento urbano como parte integrante de uma cidade que se quer cada vez mais sustentável, uma cidade de todos para todos.

O presente estudo permitiu identificar que nos percursos analisados se verifica alguma falta de sistematização na instalação e distribuição do E.U., assim como uma falha na incorporação de soluções que atendam aos fatores inclusividade e identidade da cidade. Assim, e sendo assente que a relação equilibrada entre cidade/objeto/utente/inclusividade é fulcral para o bom funcionamento da cidade enquanto lugar de todos e para todos, os resultados da investigação contribuíram para demonstrar a pertinência do estudo em curso.

No referente particular à cidade de Lisboa, verificou-se que as soluções observadas nos percursos teste, não estimulam a vivência no espaço público nem o seu uso e apropriação. No cruzamento dos dados obtidos nos estudos de caso apercebemo-nos da necessidade da elaboração de uma ferramenta auxiliar (Ferramenta I) que permita numa primeira fase a avaliação dos requisitos de identidade e de inclusividade nos equipamentos urbanos já existentes. Numa segunda fase da elaboração desta ferramenta pretende-se definir os critérios de projeto para a construção de um equipamento urbano com características de inclusividade e de identidade do local onde será aplicado, de um modo sustentável. Para estudos futuros relacionados com esta temática, sugere-se a aplicação do processo metodológico adotado, a outros contextos urbanos. A composição/construção da urbe passa pelo usufruto das cidades enquanto espaço de encontros, de vínculos sociais. Para que tal se proporcione de forma equilibrada, o E.U. deverá funcionar como mediador entre o utente e a cidade, enquanto objeto inclusivo, sustentável e identitário, contribuindo para uma cidade de todos para todos.

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Design, Art & Digital Technology
The Immersive Experience in Artificial and Natural Space

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ABSTRACT

New technologies have produced a different way of experiencing the relationship between everyday reality and our perception of the world. This new vision of the world allows for the emergence of unforeseen glimpses of reality that combine physical reality and virtual reality. Art, understood as experimental art, thanks to the use of new technologies, has made possible the creation of new digital scenarios, better defined as *Immersive Spaces*. This research, using as an initial glossary the definitions of Technology, Digital Culture, and *Immersive Space*, seeks to compare *Immersive Space* experienced in artificial environments with that in natural environments, with a focus on the potentialities of *genesis*, *creation*, and *adaptation* by nature.
It is a transversal and interdisciplinary approach to design in which architecture, design, biology, engineering, and computer science come together and work in collaboration.

Keyword(s): immersive space, embodiment, virtual reality, interaction, technonature.

INTRODUCTION

New technologies have produced a different way of experiencing the relationship between reality and our perception of the world. The impact of new technologies requires other strategies of adaptation to the environment and allows the emergence of unexpected glimpses of reality (Cocuccioni, 2000). These new realities generate different existential equilibriums that manifest in art as a prefiguration before we are ready to accept them.

In the digital age, architectural space is freed from the weight of matter and from the narrow pathways of the feasible, changing the relationship between object and subject, and objects are possessable only as an image.

> *We do not inhabit the world, but always and only the description of the world. (Cocuccioni, 2000)*

In this context, the boundaries between disciplines become blurred and the interdisciplinary approach is essential.

> *The relation of transdisciplinary...[is] not intended as a descriptive list of elements but as a new construction of sense and formal relations...(Cattaneo, 2015, p.84)*

01.THE DIGITAL REVOLUTION

In recent decades, the contents of technology and its definition have changed. The technological object in itself loses its significance and is replaced "*by more comprehensive and at the same time abstract entities such as networks and fields" (Picon, 2012, p. 501).* This change in meaning originated with the Digital Revolution whose start date is considered 1975[1] with the invention of the first home computer (Kenyon, 2014).

Digital technology "*plays a major role in changing the world itself... A broad range of disciplines and hierarchies, culture has been noticeably quick to embrace these technologies" (Kenyon, 2014, p. 7).*

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[1] The start date of the Digital Revolution has been considered as 1975 in reference to the 2014 exhibition at the Barbican Museum in London.

The major features of this new digital era are the ever-increasing importance of virtual reality and fractal geometry, the importance of the perceiving subject, the expansion of sensory abilities, interactivity, and transdisciplinarity (Picon, 2012).

02.THE IMMERSIVE SPACE

Artistic experimentations made the aesthetic possibilities of new technologies visible and enabled the creation of digital scenarios (Costa, 1999), better defined as *Immersive Spaces*, in which reality and imagination are merged together.[2]

Immersive Space, through the involvement of the senses, allows for the creation of new realities in which the viewer becomes part of the art experience itself.

> *Through the use of immersion, interaction, and manipulation of both virtual and physical space, computer artists have created environments that enable audiences to experience alternative realities. (Mitchell, 2010, p.98)*

The characteristics of this space are that it is inconsistent, virtual, interactive, and sensorial.

> *...Data has materiality, bodies are always present with the machine...embodiment and materialization are central to the affection and reflection we move, think, feel with a work of art. (Stern, 2013, p.21)*

Considering *Immersive Spaces* experienced in artificial environments, referring to architecture, exhibition design and performance art, there are several examples where physical reality and digital reality are merged together.

Considering it experienced in natural environments, referring to Landscape, examples are few and under experimentation.

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[2] For an in-depth analysis of the emergence of immersive spaces, see Zielinski, S. (2006). *Deep Time of the Media*. Cambridge: The MIT Press. In this work, the contributions of "dreamers and modellers" of media worlds are described, from Empedocles to the early twentieth century.

03.THE IMMERSIVE EXPERIENCE IN ARTIFICIAL SPACE

03.1 IN ARCHITECTURE

For the first time space becomes a media type...[It] can be instantly transmitted, stored, and retrieved; compressed reformatted, streamed, filtered, computed, programmed, and interacted with. (Manovich, 2002, p. 251)

Referring to architecture, the interaction with digital technology, in this dissertation, is considered only through *video mapping*.[3] The perceptual ambiguity is generated through the superposition of a layer of augmented reality onto the physical reality. The viewer is engaged in multisensory journeys and is immersed in a *new reality* but cannot interact with it.

03.1.1 VIDEO MAPPING: 555 KUBIK,[4] URBAN SCREEN, HAMBURG, 2009.
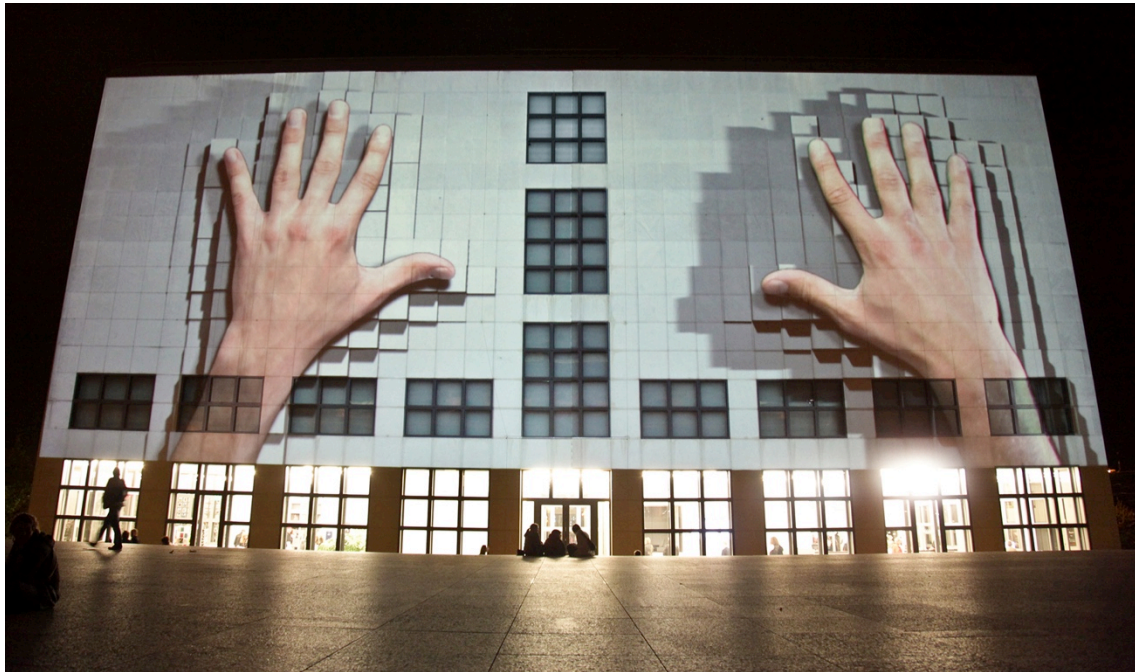
Figure 1. View of 555 Kubik Installation by Urban Screen.

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[3] The relationship between architecture and the digital is considered only in terms of video mapping, omitting digital architecture and kinetic buildings. For digital architecture: Sacchi, L.(2003). *Architettura e cultura digitale,* Milano: Skira. For kinetic buildings: Russell, Linn, (2014). *Kinetic Architecture: Designs for Active Envelopes.* Victoria: Images Publishing;

[4] For the video: https://vimeo.com/5595869.

The idea of narration is to dissolve and break through the strict architecture of Hamburg's *Galerie der Gegenwart*. The rigidity of the façade is broken up, shaped, and manipulated by two hands that move like on a keyboard (Figure 1).

03.1.2 360-DEGREE MULTIMEDIA PROJECTION: VIENNASPHERE,[5] NEONGOLDEN, WIEN, 2014.

Figure 2. Outside view of Viennasphere Installation by NeonGolden.

Viennasphere is an immersive experience in which the boundaries between virtual and physical reality become blurred (Figure 2). It is a sphere inside which real and virtual images of the city of Vienna are projected in 360°. It is a journey through the *Ringstrasse* and consists of ten episodes each made using a different technology technique, from the two-dimensional graphics to the 360-degree video.

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[5] Personal collaboration together with Beautyparlour and Neongolden. For the video
https://www.youtube.com/watch?v=sI8XPq0t87c
http://www.neongolden.net/results/viennasphere/.

03.2 IN DESIGN

Considering exhibition design, there is an ever-increasing involvement of the visitor in the museum experience. Its area of application has shifted from architecture to a more complex system of interactions between different cultural fields. Taking advantage of the potential of new technologies and techniques typical of scenography, the visitor encounters the cultural experience through gestures, interactions, and new and unexpected relationships.

> *The body and its movements...represent a vital exchange between the content and associations established by the visitor. (Dernie, 2006, p. 46)*

03.2.1 THREE-DIMENSIONAL LIGHTING: ASSEMBLANCE,[6] UMBRELLIUM, LONDON, 2014.

You can basically draw and sculpt with light... (Haque, 2014. as cited in Holmes, 2014)

Assemblance is an immersive installation that explores how people relate to each other through the spaces around them. The dark space creates a deep emotional engagement by blurring distinctions between the physical and the virtual. The effect is emphasized by the contrast between the dark atmosphere and the brilliant colors of the light beams. Through the use of *kinect*, visitors can interact with lasers, shape them, push them, and collaborate with strangers.

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[6] For the video: https://www.youtube.com/watch?v=iWmWLbY1pHI.

03.2.2 INTERACTIVE INSTALLATION: SWARM,[7] OLYMPUS PLAYGROUND, NEONGOLDEN, WIEN, 2014.

Figure 3. View of Swarm Installation by NeonGolden.

Swarm is an immersive environment that allows the audience to interact with a swarm of artificial fireflies (Figure 3). They approach and surround the visitors, become frightened and move away. Engineered with a combination of *Arduino*, *Cinema 4D*, *Raspberry Pi*, and *Processing*, the audio-visual installation reacts to the visitors' movements; the LEDs light up and the static structure becomes a lively artificial swarm of fireflies that can be experienced both visually and acoustically.

03.3 IN PERFORMANCE ART

The imaginary and the virtual are blended together to create poetic scenarios. Through the use of sensors that detect movement, temperature, etc., the performer interacts with his body to modify the space. The performer is part of the digital artwork and works in collaboration with it.

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[7] Personal collaboration together with Beautyparlour and Neongolden. For the video: https://vimeo.com/113028262.

03.3.1 DANCE PERFORMANCE AND VIDEO MAPPING: PIXEL,[8] ADRIEN M. /CLAIRE B. COMPANY, LYON, 2014

Figure 4. View of one scene of Pixel Spectacle by Adrien M. /Claire B.

Pixel is an interactive dance performance, *"a work on illusion combining energy and poetry, fiction and technical achievement, hip-hop and circus." (Bardainne, 2014)*

The body is the core of artistic and technological challenges, and technological tools are used in a poetic way to try to evoke the world of the imagination through a visual language based on play and fun (Figure 4).

03.3.2 DANCE PERFORMANCE AND MOTION SENSORS: SWARM,[9] NEONGOLDEN, VIENNA, 2014. PERFORMER: MÁTÉ CZAKÓ

The sensors suspended from the ceiling make the LEDs go on and off following the fluid movement of the body of *Máté Czakó*.

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[8] For the video: https://vimeo.com/114767889;

[9] For the video: https://vimeo.com/119266974.

04.THE IMMERSIVE EXPERIENCE IN NATURAL SPACE [LANDSCAPE]

Considering natural space, the interaction between the digital and nature occurs according to three different levels of interaction.

04.1 NATURE AS BACKGROUND

Nature is used as a projective surface; there is no technological feature in it, and perceptual ambiguity is determined by the overlapping of real and virtual space.

The subject is not involved in modifying the space with his/her body, but is the spectator of the transformation of nature through *video mapping*.

04.1.1 PROJECTION MAPPING: THE ARK,[10] ANTIVJ, ETHNOBOTANICAL GARDEN, OAXACA, 2013.

Figure 5. View of The Ark Installation by Romain Tardy and Squeaky Lobster.

Plants in the garden are the main characters of the installation, being the elements upon which light is broken up in a game of perceptions and sounds (Figure 5). The viewer is transported into a magical and surreal landscape.

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[10] For the video: https://vimeo.com/85212054;

04.2 NATURE AND THE DIGITAL: AN INDIRECT INTERACTION

Nature is used as a pretext for interacting with the interactive installation.

It's not the essence of nature itself to be technological, but nature becomes the object of the interaction. The visitor is part of the artwork, interacts with sensors, and changes his/her relationship with nature each time.

04.2.1 INTERACTION: FLOATING FLOWER GARDEN,[11] TEAMLAB, MUSEUM OF SCIENCE & INNOVATION, TOKYO, 2015.

Figure 6. View of Floating Flower Garden Installation by Team Lab.

Viewers are invited to enter the dense floral forest (Figure 6). Their movements are recognized by sensors, and the flowers slowly rise to allow free passage and descend shortly thereafter. The plants are orchids, which take water and nutrients from the air, and thus the garden grows. Adding to the visual experience is the olfactory experience that changes throughout the day. Viewers are fully immersed in the garden and become part of it.

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[11] For the video: http://www.team-lab.net/all/art/ffgarden.html.

04.3 TECHNONATURE

...The natural has simply become different...artificiality is a way of enjoying naturalness... (Pessoa, 1982, p.278)

The extreme conjunction between digital and natural elements becomes concrete in the definition of *Technonature*. Nature becomes the active element, absorbing and incorporating the digital element and modifying it. It refers to a renewed idea of nature itself; it's proposed as an experimental mode of union (modification/integration) between natural and technological elements. It interprets nature as a

> *...continuous renewal of its specific capacity of genesis, of creation and, above all, of adaptation by absorbing the artificial as its component, eliminating the anaemic categories of membership and ultimately aspiring to that wonderful regenerative fluidity that elides opposites by making them its own. (Cattaneo, 2015, p.119).*

> *...the second concept [the artificial element] is incorporated by the fist [the natural element], in the power of its re-signification, it will absorb new genetic, productive, and projective attitudes... (Cattaneo, 2015, p.120)*

> *What might seem like the result of hybridization between the natural and its opposite, the artificial, is instead, an alternated interpenetration that allows us to read the transformative reality of nature. (Merleau- Ponty, 1996. as cited in Cattaneo, 2015, p. 119)*

04.3.1 HYBRIDIZATION*:* BOTANICUS INTERACTICUS, INTERACTIVE PLANT TECHNOLOGY,[12] DISNEY RESEARCH, USA, 2012.
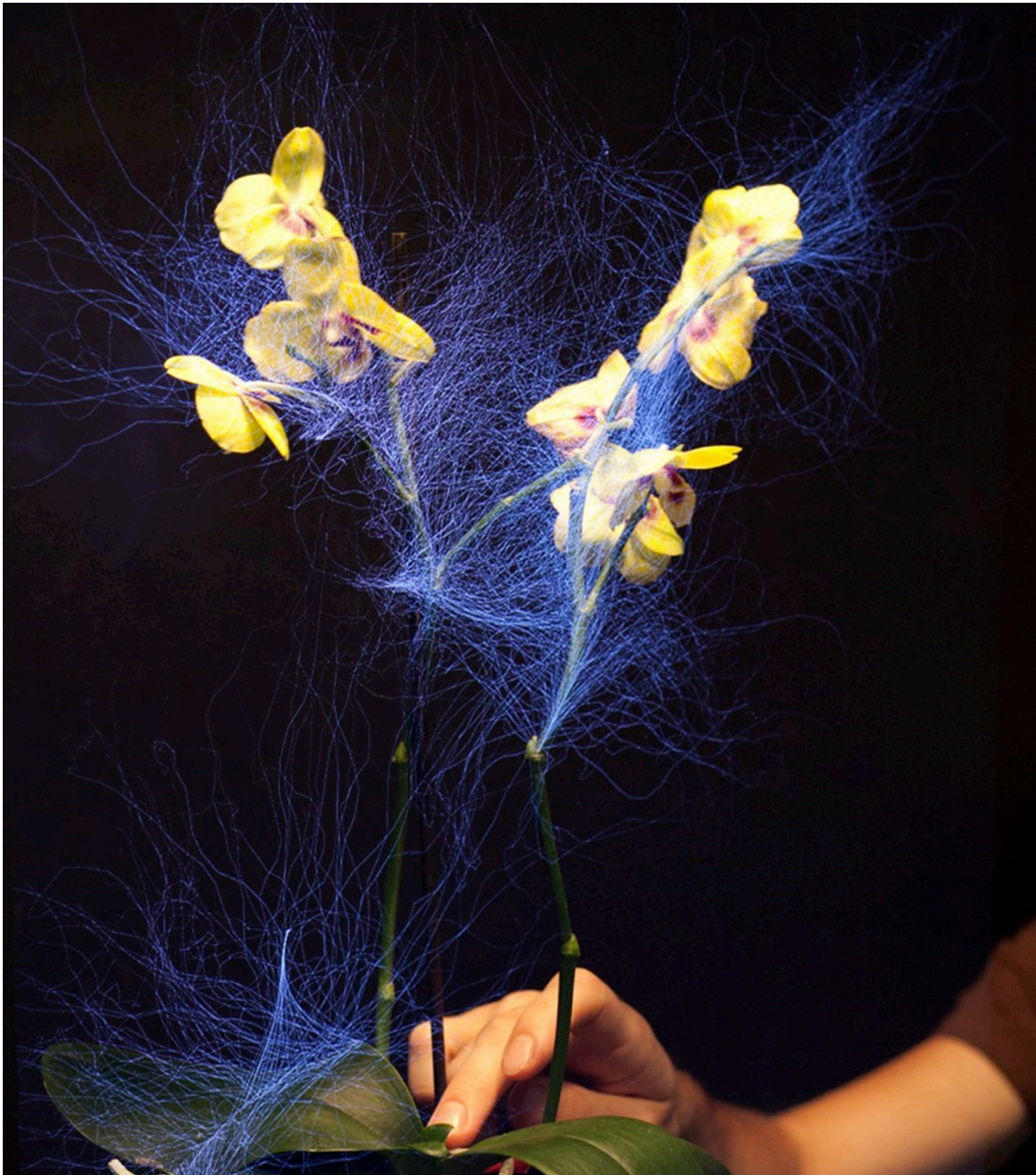

Figure 7. View of Botanicus Interacticus Technology by Disney Research. It explores new modes of interaction between humans and living plants.

Botanicus Interacticus allows for the exploration of new modes of interaction between humans and living plants (Figure 7). Interactive devices are no longer objects, but are living, growing organisms. Any living plant can be turned into a

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[12] For the video: http://www.disneyresearch.com/project/botanicus-interacticus-interactive-plant-technology/.

musical instrument, a game controller, a light switch or a motion detector, through the insertion of an electrode, connected to a computer, in the soil.

CONCLUSIONS

The goal of my research has developed into the study of a possible interaction between natural space and digital technology, taking into account the properties of *creation*, *genesis*, and *adaptation* of nature (Cattaneo, 2015).

The designing of immersive experience takes the form of a project in which knowledge comes about through the complete immersion of the visitor into a new reality.

Through the definition of the concept of *Technonature* and through the study of its relationship with experimental art, my research aims to highlight the differences and the similarities of the relationship between the behaviour of natural space and of artificial space in relation to digital elements. In this research an interdisciplinary approach is critical; the research fuses art, architecture, exhibition design, biology and ecology, contaminating them with new technologies and new media.

Through the definition of the potentials of digital technology and the construction of an archive of *Technonature* experiments, the primary objective of the research is the design and construction of an *Immersive Space* in a natural environment, and it seeks to highlight the perceptual differences between *Artificial Immersive Space* and *Natural Immersive Space*.

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The Concept

The fashion collection from a volutionary point of view.

A Volution - Is a visible solution (path) that represents a sequence of progress, or growth, through successive stages of time and/or a process.

It may as well represent a series of numerous products that all related to each other to each other by a progressing process of development and/or evolution (de-volution).

Although every fashion collection is the out come of a de-volutionary (**Development** + **Evolution**) process, only a few of them (if any at all) have been created to accommodate a de-volutionary process or even presented as one.

Language Based Framing for Conceptual Design

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ABSTRACT

This research is based in experience gathered during a series of workshops in various educational institutions since 2006 in the Netherlands and Portugal. The approach in the workshops revolved around the formation and communication of design concepts and tested practical ways of designing in which a strong focus is placed on language use and its structure.
With this paper this research attempts to anchor the design methodology practiced during the workshops in design thinking by revisiting key aspects from the works of Klaus Krippendorff (2006) and Andy Dong (2009).

Keyword(s): Concept Design, Design Education, Language, Methodology.

DESIGNING THROUGH LANGUAGE WORKSHOP METHODOLOGY:

This research is based on experience gathered during workshops emphasizing the use of language in the process of design. These workshops were conducted as early as 2006, first in Hogeschool voor de Kunsten in Utrecht, then in Design Academy Eindhoven and most recently in Univesidade do Beira Interior in Covilhã. In these workshops second and third year students explored the importance of language use in design. The number of students participating in the workshops ranged between 8 and 36 students.
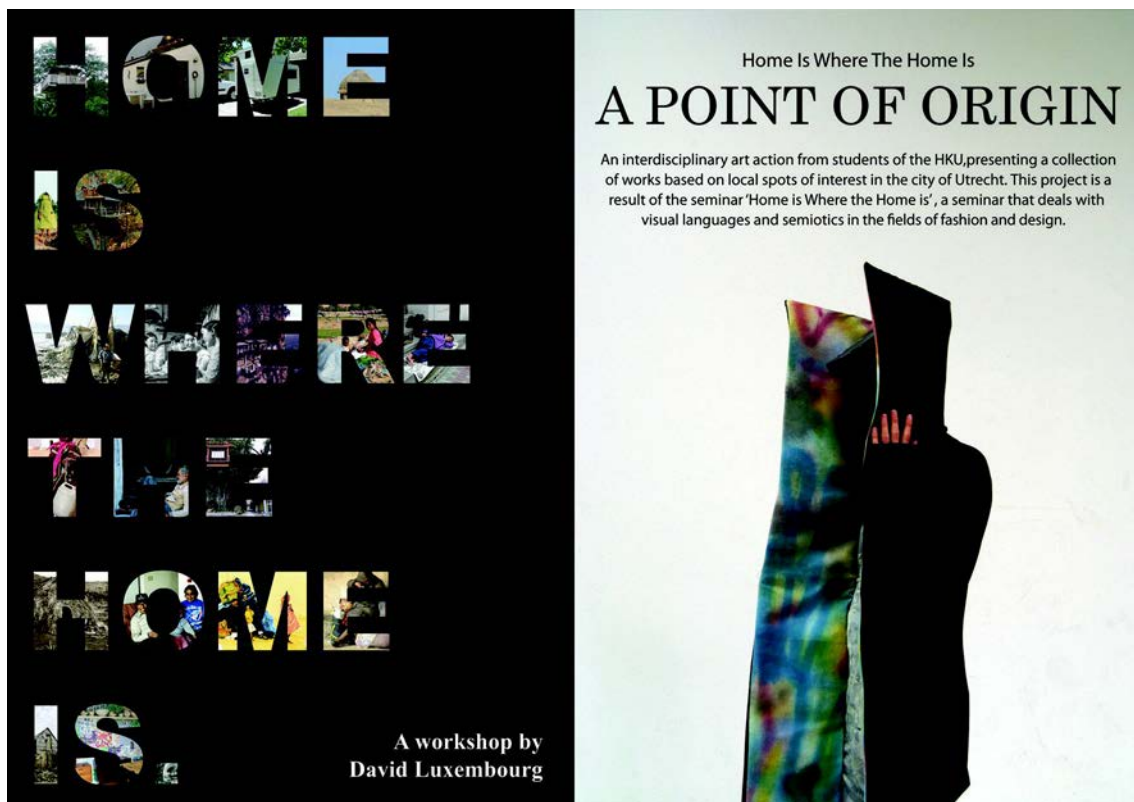
Figure 1. *Home Is Where The Home The Home* Is were two of workshops in which *Designing Through Language* methodology was deployed.

The workshops were structured in three parts. Part one focused on exploring how words are used in language to convey meaning. Part two focused on exploring product semantics. Part three focused on evaluating physical, materiel and visual elements and on how could these be attributed to and represent concepts for design. Workshop methodology included the following activities and exercises:

PART ONE: RESEARCHING LANGUAGE USE FROM WORDS TO CONCEPTS

In the first part of the workshops, participants randomly choose one word from a list of 20-30 key words collected from the participants' own work or from the theme of the workshop.

The participants then researched possible meanings their chosen word can refer to, using online sources such as dictionary.reference.com, or wikipedia.com, and registered the most unexpected uses of their word form the list of meanings they discovered.

For example, dictionary.reference.com notes 7 meanings to the word "Volatile"[1], from which the meaning "able to fly or flying" seems as most unusual reference.

In the second step of this exploration pairs of participants combined their randomly chosen words to form an arbitrary two-word concepts. Then, based on word meanings researched and registered, these participants wrote answers for the following questions "what is it? (as in what does this two-word concept describe or mean; its definition), "how does it work?", and "why do we need it in this world?"

Continuing with the example above, the word "Volatile" was combined with the word "Conscious" to form the concept of Volatile Conscious. The definition of this concept was structured from the combination of two seemingly unusual meanings associated with these two words – "A strict and reverential observance" and "able to fly". In turn, Volatile Conscious was described as relating to airborne sensory surveillance, or sensory system used for monitoring human activity using air as a medium. This was connected with ideas of future means of surveillance, where any human activity is recorded by "drones", or undetectable "cameras", the size of air particles. leading to a situation best described as being aware of this volatile observation – thus "Volatile Conscious".

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[1] Retrieved 17 November 2015 from http://dictionary.reference.com/browse/volatile

In the final step of part one, participant pairs exercised the creation of narrative for the two-word concept developed, describing the concept in a set of five key words, a sentence of 10-20 words in length, and a paragraph or text 50-100 words long.

PART TWO: RESEARCHING THE MEANING ASSOCIATED WITH ARTIFACTS

For part two of the workshop, participants were asked again to work in pairs and bring one hand-sized item, or artifact, from their partner's home.

In a group discussion each participant described the artifact they selected with five key words and motivated their selection of words, as well of the artifact. During this first discussion the participants were provoked to discuss how well the words that have been selected can be attributed to their selected artifact.

A second discussion in the group focused on how well the selected artifacts can be associated with a user or owner in qualitative terms, that is, relating to personality or identity.

PART THREE: CONNECTING WORDS AND VISUAL-MATERIAL ELEMENTS

For the third part of the workshop participants were asked to form a concept narrative (similarly to the activity in part one) from five key words reflecting their goal or ambition in terms of what they intend to design or will create during the semester, or trimester.

Working with material samples, cut-outs from magazines and catalogs, and illustrations participants created a mood-board panel, coordinating the meaning between the language used and visual-material elements selected, in order to create a coherent vision of their design's concept and its materiality, its possible physical properties, and intended perceptual and/or experiential qualities.

ANCHORING WORKSHOP METHODOLOGY IN DESIGN THINKING

"It is a truism that one cannot know what exists without conceptualizing it as such.... Languaging is the primary source of conceptions... Language is spoken, written, and communicated. Entering humans into this conception of reality entails this self reference: Humans are beings who language each other into being." (Krippendorff, 2006, p. 20)

With this paper this research seeks to anchor in design thinking the methodology practiced during the workshops. It does so by building upon the relationship between language and design, the essential role played by language in human cultures, and the link of language to human conception.

This research identifies the workshop methodology as dealing with *concept design* - the creation and communication of design concepts, or concepts with which the properties and qualities of intended work can be framed, conveyed, and described.

In *The Language of Design* (2009) Andy Dong notes ways in which language is used in designing. Three of these are:

- Representational: designers use language when they need to describe design concepts and have no visual or material representation of their thoughts.
- Cognitive: designers use language as a form of mental stimulation during brainstorming, when sketching and writing while developing concepts and ideas.
- Historical: designers use language as passive description in books, magazine, and articles describing design practitioners, methods, artifacts, and history.

Dong further argues that language use by designers does more than the ways described above:

"Language is more than representational, more than standing in for a design concept when no other representation yet exists, more than being a pointer to places in the mind to to assist in constructing memory about a design concept, more then a passive historical account. Otherwise language is impossibly

*estranged from what it is deployed to do – enact design and
realize the designed work. (Dong, 2009, p. 15)*

Dong defines the use of language in design as "Performative", arguing that the
language used by designers during the process of design is creating, and
producing what it names.

This theory seems to echo in the design methodology practiced during the
workshops, which dealt with structuring and communicating concepts; focused
on exploring language use in order to develop concepts rooted in intuition,
imagination and fantasy; and empowered participants to create something from
nothing by using words.

The development of design concepts during the workshops relied not on the
participants' actions, but on their ability to use language in order to
conceptualize an intended design, that is to "language" (as termed by
Krippendorff) an intended work into being.

*"Design, which was a set of (semiotic) acts which were
indeterminate as to whether they would eventuate to a
designed work and which were not yet ordered and
ontologically describable as design, become enacted by
Language." (Andy Dong, 2009, p.15)*

This research therefore suggests to anchor the design methodology practiced in
the workshops in design thinking by linking it with Dong's theory of *The
Language of Design* and its view that language is reality producing, that is, the
discourse on and about the creation of artifacts is performative, creating and
producing what it names.

KEY ASPECTS OF THE LANGUAGE OF DESIGN THEORY

A key part of Dong's theory is his framing of design:

*"Design is enactment of a set of operating principles wherein
the actors emphasize different aspects of these principles."
(Andy Dong, 2009, p.9)*

Dong identifies these principles as the performative lingual operators of
"Aggregation", "Accumulation", and "Appraisal".

AGGREGATION: FROM WORDS TO CONCEPT

Aggregation can be described as what happens when rainwater become a river, raindrops form small streams, which combine to form bigger streams, which join other streams to form rivers.

In design this metaphor corresponds with the formation of concepts by aligning a complex amount of ideas that a designer can draw upon in order to achieve conceptual coherence, in turn framing lexicalized concepts and effectually determining what will qualify as the materiality of the intended artifact in such a way that a coherent conceptual framework about the designed artifact is possible.

ACCUMULATION: BUILDING UP TO THE DESIGNED ARTIFACT

Accumulation can be described as what happens when a glass is filled with water, as the water accumulate at the bottom, the water level rises up in one go.

In design this metaphor corresponds to the stage where designers repeatedly connect together lexicalized concepts, at different levels of abstraction or detail, forming a specific mental construction describing the designed artifact. By doing so, the earlier aggregated conceptual framework develops depth, volume and detail, allowing for the designed artifact as a whole to be understood from different points of view and in various levels of awareness. The language accumulated both produces the artifact and serves as reference of the designed artifact, forming it literally before it's formed in physical properties and materials.

For example, designers begin to design a bike through language by describing it in different levels of what qualifies as a bike - describing each of the parts of the bike, what are they made of, how do they work, what are they made for and how do they relate, or connect, to each other.
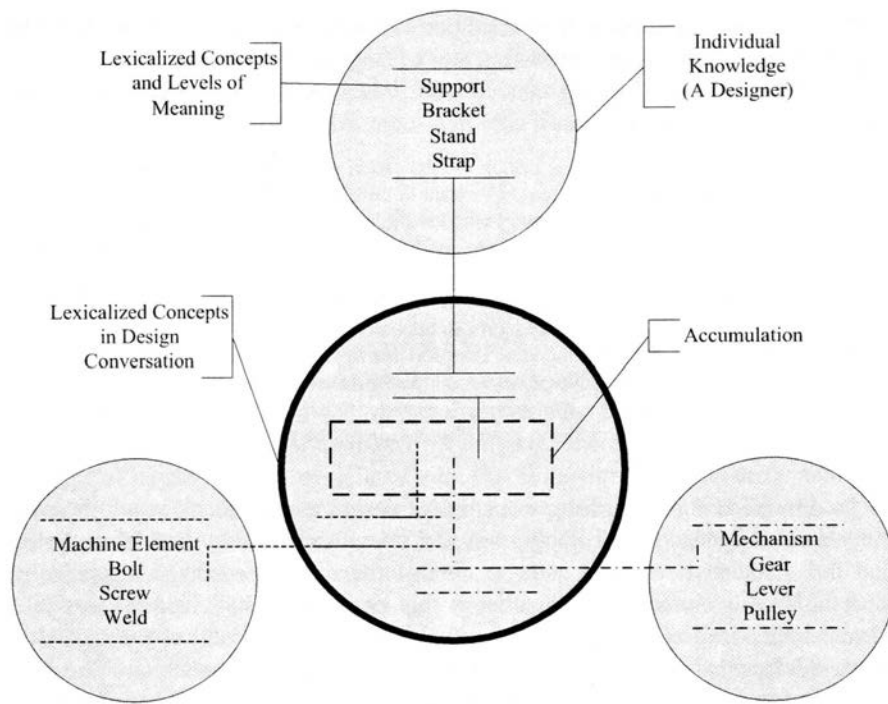
Figure 2. Accumulation of lexicalized concepts with in an aggregated frame (Dong, 2009, p.86)

APPRAISAL: DESIGN AND AFFECT

Appraisal can be described as evaluating (appraising) the taste of water according to a subjective understanding of what drink water should taste like.

In appraisal designers consider their attitudes towards the concepts as means to co-construct and shape subjective understanding of what the designed artifact should look and feel like. Appraised material results and ideas are compared with the accumulated conceptual framework of the designed artifact in a final act by which designers either endorse the result, reject it or re-adjust their ideas.

CONCLUSIONS

Figure 3. Mood-board panel of Erica Pessoa made in part three of Design Through Language workshops in UBI Covilhã.

This research sought to anchor in design thinking a methodology for concept design practiced in a series of workshops focusing on language use in design. It did so by pointing to Krippendorff's idea of languaging and conceptualization and by revisiting Dong's theory of T*he Language of Design* and its key principles of aggregation, accumulation and appraisal.

Looking back to the workshops, it seems that part one dealt with aggregation and accumulation, part two with appraisal, and part three dealt with appraisal as well as with accumulation of visual-material elements.

In part one participants practiced and learned how to use words by aggregating terms and concepts in order to describe ideas and refer to an exact understanding, or meaning shared by community members. The language accumulated allowed for exploration of an intended work and its construction as participants practiced the building up of concept narratives through repetitions and attention to details.

In part two participants practiced appraisal by analyzing how physical properties of artifacts are associated with different meanings by different people in different times, they developed their awareness and their ability to describe

what they feel toward certain artifacts or visual material elements, as well as their ability to understand where these attitudes originate from.

In part three participants worked toward the creation of coherent vision for the concept of their intended work, coordinating the meaning between the descriptions of their conceptual framework in words and the description of it in visual-material elements. This work involved appraising how possible ideas and visual-material elements qualify or fit the aggregated conceptual framework, accepting some while rejecting or modifying others.

This research note that just as in lingual accumulation repetition of specific elements in the selection of material for the mood-board seems to strengthen the coherence of the intended work, adding to it in detail and supporting a rich and clear visual-material narrative (see figure 3 above).

Performative Operator of the Language of design	Challenges experienced by design students in developing design concepts / conceptualizing designed work:
Aggregation	Difficulties in knowing what words mean and how to use them. Finding it difficult to use words to describe what visual material exactly mean.
Accumulation	Can describe concepts in functional terms, but not in adjective attribution (character attribution, Krippendorff ,2006). Can describe in abstract (adjective attribution) but find it difficult to describe situations in detail. Easily lost in the details - entering an endless spiral - constantly swapping sets of conceptual structures.
Appraisal	Difficulty in understanding actual detailed situation Prioritizing a personalized and subjective set of inner values over a goal oriented conceptual framework of evaluation.

Figure 4. Key challenges identified in student's performance of aggregation, accumulation and appraisal.

Finally, based on performance of participants during the workshops, this research further identifies key challenges faced by participants in the practice of concept design and associates them with each of Dong's performative operators.

LOOKING FORWARD:

This research continues this investigation aiming to form a language based framework for thinking about concept design, and to establish a particular code, both in terms of language and design practice, by which design concepts could be expressed, analyzed and described.

In future, this research intends to explore another delicate level of practicing conceptual design – the construction of user conceptual models (Krippendorff, 2006) – by incorporating Roman Jacobson model (1960), as used in semiotics (Thwaites, Davis and mules, 2002), into Dong's framing of design above, moving its emphasis from a set of performative principles to a set of structural principles of communication in human-artifact interaction.

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Seleção de materiais e recursos construtivos para o design de produtos locais

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RESUMO

O trabalho apresenta um estudo exploratório sobre a relação entre qualidades de territórios, seleção fundamentada de recursos materiais e construtivos e o processo de design. O estudo é parte da investigação de Doutoramento, em andamento na Faculdade de Arquitetura da Universidade de Lisboa. Discute-se a relevância da escolha adequada do material e do processo construtivo no design de produtos que visam a valorização de territórios, considerando seu patrimônio material e imaterial e ao explorar os aspectos intangíveis e sensoriais do que dá materialidade aos artefactos.

Palavra(s)-chave: valorização de territórios, seleção de materiais e processos construtivos, design de produto, processo de design

INTRODUÇÃO

Neste trabalho, apresenta-se um estudo exploratório sobre a seleção adequada de materiais e técnicas construtivas para o design de produtos que visam a valorização de territórios. O estudo é parte da investigação de doutoramento em Design em andamento na Faculdade de Arquitetura da Universidade de Lisboa.

Nesta reflexão discute-se o que é preciso para que territórios sejam valorizados, como o design pode contribuir com este processo e qual o papel da seleção adequada e fundamentada dos recursos materiais e construtivos.

É considerado como território, neste trabalho, determinado espaço imaginário, delimitado geograficamente ou não, que compreende redes políticas, sociais, econômicas, históricas e culturais que influenciam a vida de uma determinada comunidade. Assim, contemplam-se os conceitos cunhados por Tizon (1995), Cuche (2001), Albagli (2004), Krucken (2009) e Krucken e Saikaly (2011), nas áreas de antropologia, geografia e design.

A valorização destes espaços é fundamental para a melhora da qualidade de vida de pessoas envolvidas com essas comunidades e o desenvolvimento económico e social de regiões. Portanto, muitas ações e pesquisas visam a busca de estratégias para estimular seu desenvolvimento económico e social. O design é apontado por muitos autores como uma ferramenta importante nessas ações, uma vez que pode promover o produto local, aperfeiçoar as relações de produção e desenvolvimento, além de apoiar políticas de divulgação dos produtos e do próprio território.

Este trabalho é centrado na seleção adequada e fundamentada dos recursos materiais e construtivos deste território. Justifica-se a escolha dos recursos materiais e construtivos do território como uma possível chave de leitura a ser explorada no design de novos produtos, de modo que o patrimônio material e imaterial possam ser adequadamente relacionados com experiências contemporâneas.

TERRITÓRIOS E SUAS QUALIDADES

Dentro da lógica antropológica, discutida por Tizon (1995), um território não só trata da grandeza ou categorização territorial, mas de todo o ambiente de ação, ideologias e experiências de vida de uma comunidade de modo a construir uma identidade.

Para Cuche (2001) é por meio da identidade - construída antes da diferenciação - que grupos se determinam, formando fronteiras simbólicas que têm como base as relações histórico-culturais.

Conforme Krucken e Saikaly (2011) as pessoas notam aspectos próprios das regiões de origem e as informações que estes carregam a partir do reconhecimento da identidade dos territórios comunicadas por objetos.

Para Albagli (2004), um território:

> *É construído historicamente, remetendo a diferentes contextos e escalas: a casa, o escritório, o bairro, a cidade, a região, a nação, o planeta. Daí que o território seja objeto de análise sob diferentes perspectivas – geográfica, antropológico-cultural, sociológica, econômica, jurídico-política, bioecológica –, que o percebem, cada qual, segundo suas abordagens específicas. (Albagli, 2004, p.26)*

A autora sugere ainda que existem estratégias que podem ser aplicadas, a partir de fatores internos e previamente existentes, para fortalecer territorialidades, por meio do estímulo à valorização de suas especificidades culturais, tipicidades, recursos ambientais, patrimônios, práticas produtivas e potencialidades econômicas.

O processo de valorização do patrimônio de um território é de extrema importância para a geração de renda de muitas famílias, para o desenvolvimento económico de regiões, para o desenvolvimento social e, consequentemente, para a melhora considerável da qualidade de vida.

Para Krucken (2009) a valorização dos recursos locais está atrelada às qualidades que o contexto local apresenta e, por esse motivo, a definição de estratégias de valorização de territórios deve seguir à análise e ao entendimento do que gera valor, esse reconhecimento de qualidades pode acontecer por meio dos produtos locais.

SELEÇÃO FUNDAMENTADA DE RECURSOS MATERIAIS E TÉCNICAS CONSTRUTIVAS LOCAIS

Os recursos materiais e construtivos locais utilizados em produtos podem ser considerados elementos relevantes que permitem a reconhecibilidade de identidades de territórios. Muitos territórios têm recursos materiais e técnicas construtivas únicas, desenvolvidos e praticados por seu povo, fazendo parte de seu patrimônio e cultura material e imaterial.

Sales et al (2011) elucidam a contribuição dos materiais na criação e no reconhecimento de identidades dos artefatos por meio das imagens que apresentam. Para os autores (2011, p.110) "a exploração dessas imagens pelo design pode acontecer com uma abordagem afirmativa ou inusitada em relação às imagens histórica e tradicionalmente percebidas dos mesmos".

A figura 1 apresenta um exemplo da aplicação de recursos materiais locais e de técnicas construtivas tradicionais em produtos. Trata-se do artesanato desenvolvido pela comunidade Mumbuca que utiliza o trançado do material Capim Dourado preso por fios de Buriti. Este tipo de produção é único, pois esses materiais são encontrados apenas na região do Jalapão no estado do Tocantins no Brasil. Assim, pode-se dizer que a peça é autentica do Jalapão e que este tipo de produção valoriza este território.

Figura 1. Produto em Capim Dourado do Jalapão exposto no pavilhão do Brasil na Expo Milão 2015

Com o tempo, as técnicas construtivas tradicionais vão se perdendo. No processo de valorização de territórios, é importante que estas sejam apreendidas por designers para que possam ser criadas releituras e produtos inovadores, ao mesmo tempo em que as qualidades do território sejam preservadas.

Conforme Ljungberg e Edwards (2003), as pessoas aceitam um produto em função de uma variedade de razões, algumas técnicas e outras não. Os materiais devem propiciar que as vantagens físicas dos artefatos possam ser entendidas e aquelas metafísicas, apreciadas.

À essas características "metafísicas" dá-se o nome de "intangíveis". Sales et al (2011) definem:

> *As características tangíveis são intrínsecas ao objeto, ou seja, amplamente reconhecíveis e mensuráveis pela percepção humana: a transparência da água, a dureza da pedra, o calor do fogo. As características não-tangíveis são dependentes de certas particularidades do processo de percepção, ou seja, são contextualizadas, contemporalizadas e não-mensuráveis: a beleza, o bem, a ética. (Sales et al, 2011, p.102)*

É possível afirmar que as características intangíveis, uma vez que não-mensuráveis e dotadas de sentidos podem possibilitar o reconhecimento de identidades a partir da experiência proporcionada pelo material.

Karana et al (2014) afirmam que alguns materiais são escolhidos por ditar regras em certas aplicações, enquanto outros passam despercebidos como pano de fundo essencial. E, que, os designers são os responsáveis por empregar os "fatores humanos" na seleção de materiais, já que é ele quem cria experiências particulares para as pessoas nos contextos particulares de uso.

Karana (2009) ainda conduziu um estudo com o objetivo de construir um modelo de seleção de materiais com base no que os materiais podem representar subjetivamente, sua principal descoberta foi que as pessoas atribuem significados aos materiais e que estes podem ser evocados por aspectos sensoriais.

Ashby e Johnson (2003) apontam que é indispensável ao designer o conhecimento necessário para a materialização das ideias, visto que por mais

avanço que a concepção de um objeto apresente, o resultado só será satisfatório se ele funcionar.

Para Kindlein Júnior (2004) a falta de coesão nessas escolhas pode acarretar em projetos mal resolvidos e por esse motivo a escolha criativa dos materiais, é importante para a concretização de bons projetos.

Para Krucken (2009), além da utilização dos recursos para a elucidação das qualidades do território, estes aspectos devem ser também comunicados:

> *A dimensão cultural e o conhecimento embutidos na fabricação de artefatos muitas vezes não são comunicados de forma explícita nos produtos. Informar sobre o 'modo de fazer tradicional', por exemplo, é importante para a recuperação e a perpetuação da tradição e da história dos produtos, distinguindo e exaltando as comunidades que os produzem e as regiões de origem. (Krucken, 2009, p. 101).*

Conforme Doordan (2003) os materiais não são apenas um dado a ser incorporado no processo de design, mas parte do problema de projeto. Sendo assim, a seleção de materiais deve estar inserida ao processo de design que consiste em uma série de procedimentos ordenados que visam buscar soluções que atendam às necessidades dos usuários e às restrições construtivas.

DESIGN DE PRODUTOS COM IDENTIDADE LOCAL

É consenso entre pesquisadores que estudam as relações desenvolvidas em territórios que a comunidade é a figura central das relações que se estabelecem. Não há território sem pessoas e relações sociais. Dessa forma, é pertinente para esta investigação, ponderar a participação e envolvimento de comunidades no processo de design dos produtos e na seleção dos recursos materiais e construtivos locais.

Manzini (2014) aposta num modelo de inovação social. Ele propõe que equipes de projeto sejam formadas por pessoas especializadas ou não e define o papel de cada uma no projeto de forma colaborativa. A justificativa é por conta de um mundo que está a sofrer rápidas e profundas transformações no qual "todas" as pessoas podem contribuir com ideias de projeto, determinando sua própria identidade e sua própria vida nos produtos de uso.

Ehn et al (2014) também versam a participação e envolvimento de comunidades no design, entretanto, sua abordagem é focada no design democrático, no qual há engajamento de organizações diversas e comunidades carentes focadas em ideias que contribuam com a melhora da qualidade de vida das pessoas.

Sanders e Stappers (2008) apresentam os conceitos de co-criação e codesign, sendo que, a principal diferença é que co-design trata-se de uma instância específica da co-criação, aplicada ao processo de design, quando designers e pessoas não-treinadas trabalham juntas ao longo do desenvolvimento do processo de design.

CONSIDERAÇÕES FINAIS

É possível estabelecer, com este estudo exploratório, uma relação entre as áreas de estudo: valorização de território, seleção fundamentada de recursos materiais e construtivos e processo de design colaborativo.

O diagrama na figura 2 demonstra que numa situação ideal (representada pelo marcador), no qual o design do produto foi elaborado a partir da seleção adequada de recursos materiais e construtivos que representam um território, a qualidade de vida das pessoas envolvidas e o desenvolvimento económico da região são satisfatórios, bem como a qualidade dos produtos oferecidos.

Na intersecção 1, não há processo de design, assim: não há inovação dos produtos; não há posicionamento de mercado; o produto não foi pensado para o utilizador.

Na intersecção 2, não há conhecimento sobre as qualidades do território, desse modo: não contribui para fortalecimento da identidade do território; não há envolvimento da comunidade; não aproveita a experiência técnico-construtiva dos nativos; o conhecimento sobre as técnicas tradicionais se dispensam com o tempo; pode utilizar recursos materiais de outros locais.

Na intersecção 3, não há preocupação com a seleção adequada de materiais e processos construtivos: é passível de erro sobre a relevância dos recursos escolhidos para fortalecer a identidade do território; não há planeamento da produção, mesmo que inclua a comunidade; não inova na utilização dos recursos; não aproveita os aspectos sensoriais.
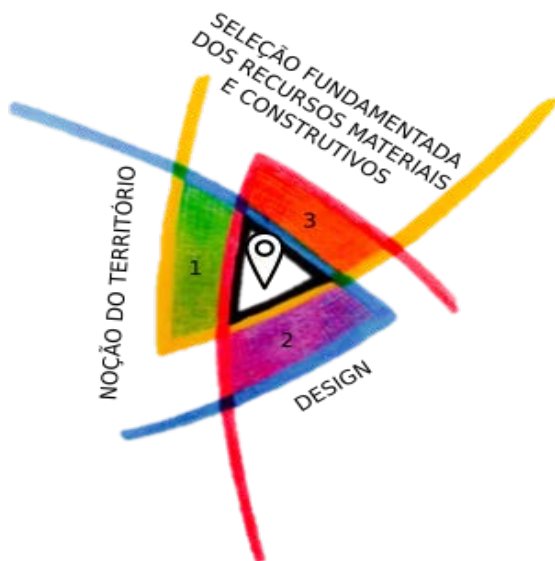
Figura 2. Diagrama de relação das áreas

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Figure 1: Suitcase designed to travel by plane
Louis Vuitton, 1920
(Léonforte, P. & Pujalet-Plaà. 2010, p. 59)

Travel Organiser Design for Hand Baggage on Air Travel
Contribution to Travellers' Comfort

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ABSTRACT

Today the world has more than 7 billion people. In this post-industrial era, its inhabitants, moving between big cities and within them, are called urban nomads. The importance of luggage design has grown over time, but new challenges arose, such as carrying electronics devices used every day.

The main objective of this research is to develop a new product focused in today travellers' comfort and convenience.

The methodology of this project is mainly empirical (active research), supported by a literature review and online survey. It is intended to create a travel kit that simplifies usability, organization and carry-on luggage transport.

The process has involved the development and launch of an online inquiry to air travellers, both in Portuguese and in English (450 respondents). The target groups included: Tourists, Businessmen and Aviation Crews.

The survey's feedback led the project into a turning point, a new concept based on Inclusive Design.

Keywords: Design, Comfort, Travel, Suitcase Organizers.

1. INTRODUCTION

The importance of luggage design grew over time driven by an increasingly demanding air traveller.

The act of "travel" and everything related to it has a significant weight in the world economy. With globalization, the borders have been reduced, almost eliminated in some cases, as in the example of the European Union, where one can change country simply using citizen or ID cards. Travel time decreased, while the use of internet increased communications between people, and access to information.

Traveling involves carrying luggage, i.e. transportation of belongings needed for air traveller's everyday life.

Main Research Question: "Considering that the selection, organization and portability of objects necessary to satisfy air traveller's needs interferes with the actual travel experience, how can luggage be designed to maximize the comfort of the air traveller?"

TOD project (Travel Organiser Design for Hand Baggage on Plane Trips — Contribution to the Travellers' Comfort) main goal is to increase the comfort of today's traveller, as well as the convenience and usefulness of hand luggage during flight time.

2. METHODOLOGY

This paper presents part of the results gathered while developing TOD, focused on users traveling by plane, carrying only hand luggage.

We started by identifying travellers current needs (objects and procedures).

Then, through an inquiry based on a questionnaire, the current traveller's problems were identified, emphasizing the importance of designing a travel kit, containing objects and guidelines to help organizing the act of travel.

During data collection by questionnaire, the analysis was mainly focused on the tendency of answers related to the qualitative questions.

The sample included 450 respondents. Afterwards data processing will be implemented, followed by the analysis and results interpretation.

The project is being developed based on a user-centred design process. So, we used the following design thinking methodology (Figure 2).
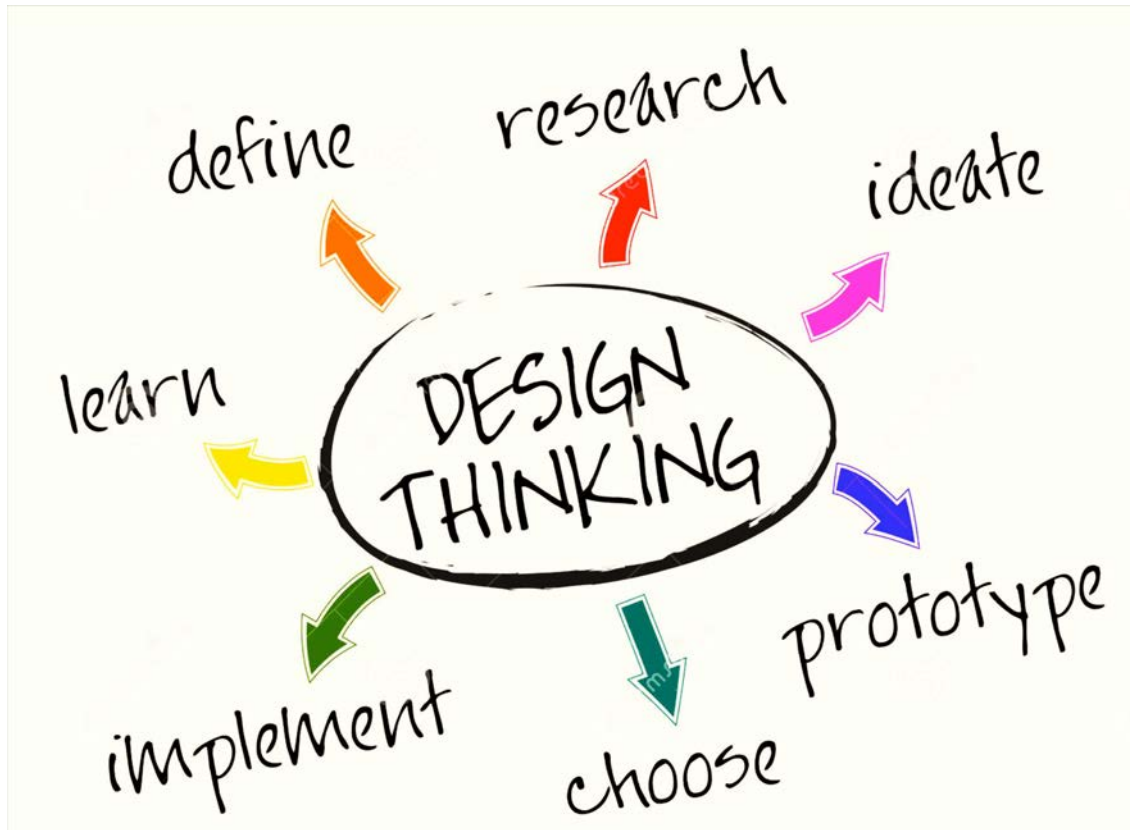

Figure 2: Management Information Institut (2014).

3. URBAN NOMADS

Today capital cities are poles of activity, development and prosperity reached a scale never seen before.

Some of its inhabitants have a real daily migration, taking hours to complete their daily tasks. Many of them leave home with "trolleys". They have a long journey ahead that involves carrying items such as computers and their accessories, books and materials related to their profession. At times they to take extra clothing to adjust for weather variations during the day. This lifestyle created the nomenclature "Urban Nomads".

Some of these people regularly travel by plane. The amount of luggage tends to decrease with the type of travel. For example, the "professional" travellers tend to take carry-on bags only in order to avoid losing time at luggage claim.

3.1. WHAT IS THE IMPORTANCE OF DESIGNING A TRAVEL ORGANIZER (TOD)?

The shape of the suitcase has changed and evolved. Along with that, numerous accessories have emerged to meet the diversity of needs of the traveller. However, new problems have arisen, without achieving a proper solution.

The organization of cabin handbags, despite the solutions that are being developed, is still an area with vast unsolved problems. Currently, the responses of this type of products are focused on particular aspects and it is difficult to find a sufficiently comprehensive answer to the wide range of traveller's needs.

During collection of main evidence to support the theoretical contextualization, we have found the best carry-on luggage (Alistair, 2014), and different methods of organizing a suitcase, e.g., 2013 Site Video Louis Vuitton (figure 3); as well as laundry folding methods. Multiple sites list various travel items such as suitcases with wheels, flexible bags, organizers and travel accessories. Brands like Eagle Creek and Muji are specialized in travel product design.
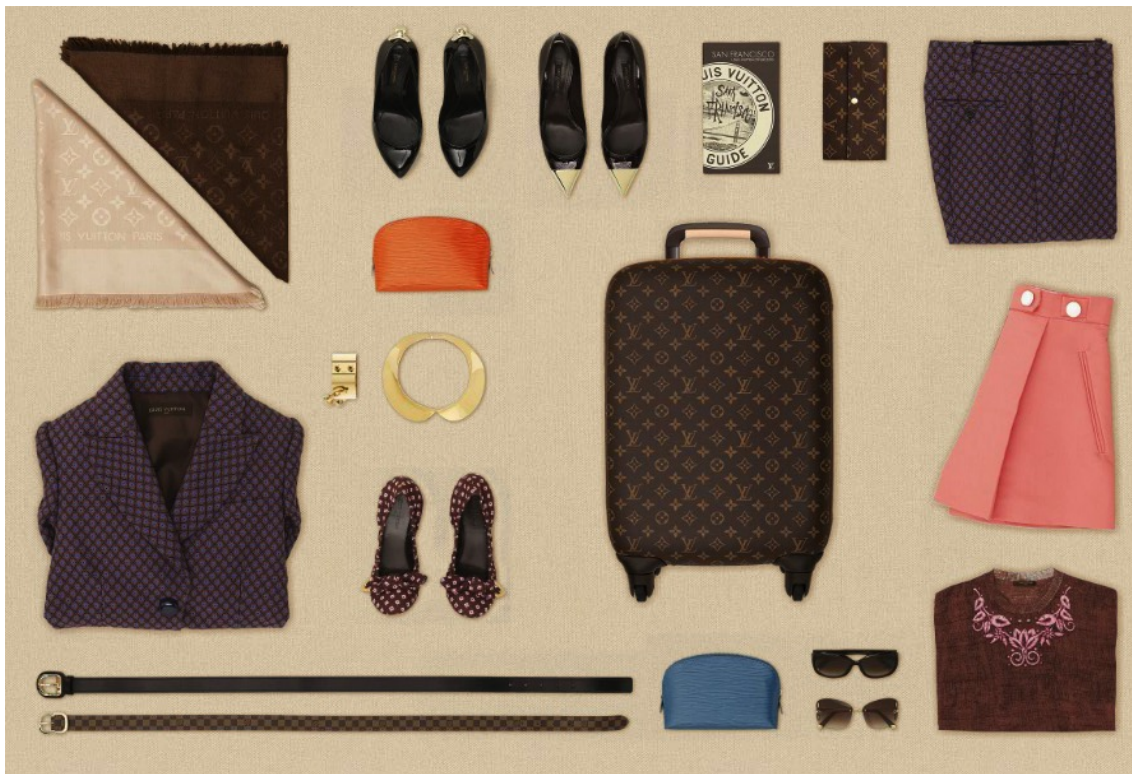
Figure 3: The Art of Packing Vuitton, L. (2013).

A good example of the concern about the user's well-being is the product developed by Medical Kits brand (2012), known as Adventure Medical Kits Smart Travel First-Aid Kit.

Some of the most important factors of the suitcase, improving the well-being of the trip, are the quality, the relationship between price/quality, look, weight, load capacity and size.

Other needs related to luggage are also being felt today. It's inevitable to talk about electronic equipment which is constantly used: sometimes there are no electricity plugs nearby for recharging the mobile phone or laptop, not to mention other gadgets that are great battery consumers, such as game consoles, cameras or digital music players (Voltaic, 2009 s.p.3). To respond to these challenges bags with portable chargers for mobile phones and tablets were developed.

However, one of the basic concepts of this investigation is the interest in the personalization of TOD, meaning that we can group these functional objects in a travel kit, according to each user's needs.

John Urru, speaks of the intricacies and interdependence of increasingly sophisticated mobility systems developed in the late twentieth century (computers, mobile phones, payment cards, etc). The TOD project aims to develop a customized Travel Kit which ensures individual usability of these systems on the road.

But the amount of weight we carry on is one of the problems that generates more discomfort and tiredness during luggage transportation.

After the terrorist attacks of September 11, 2001 in New York, the world has undergone irreversible changes. In the case of air travel, there is an increased vigilance at airports regarding the passenger's baggage restrictions and transportation, especially at the hand luggage level.

However weight management remains important, with implications on the organization and usability of cabin objects.

As such, the design of a travel kit is justified, consisting on a travel bag organizer, in order to maintain the contents together by groups, optimize the luggage storage, the time spent in the process and the total weight carried.

3.2. INCLUSIVE DESIGN

According to the concepts of Inclusive Design, as Julia Cassim explains (2012), one can conceive a design project starting from the extreme situations and going to the average situations; it is not possible the other way around.

This carry-on organizer can be customized, based on principles of inclusive design.

Filipa Nogueira Pires' project, "feelipa color code", is part of her MSc in Product Design. Including this color code in TOD will help identify and locate contents by color and touch, bringing benefits to all users (Figure 4).
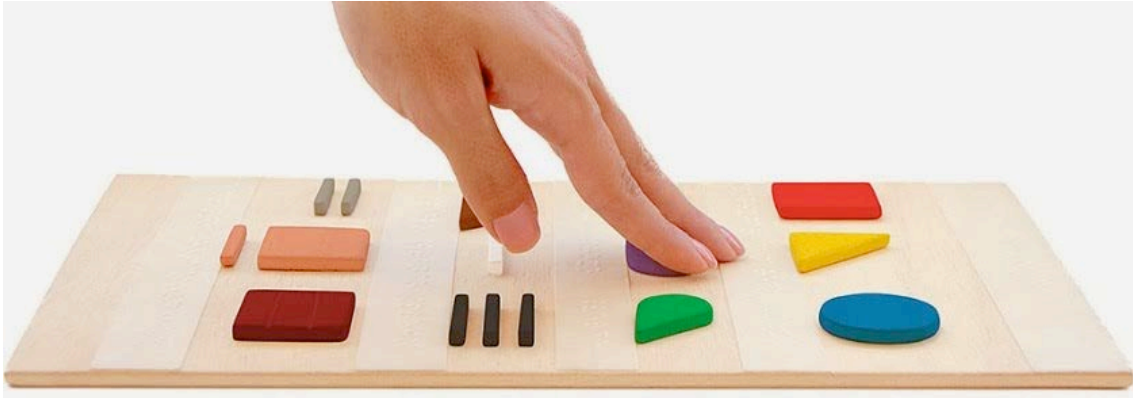
Figure 4: Filipa Nogueira Pires (2012).

4. TOD PROJECT AN PRELIMINARY RESULTS

The construction of this project is based on user centred design thinking.

TOD Project will be conceived and designed based on the literature review and the results of an inquiry supported by questionnaire. Construction of the final questionnaire was based on Survey Pre-tests This was done in phases. . A 1st phase questionnaire was written in Portuguese and targeted 350 respondents. In a 2nd phase questionnaire was translate to English to reach a wider audience. The target was increased for a total of 450 respondents both in Portuguese and in English. TOD's prototype is being developed at the same time as data is being analysed.

4.1. QUESTIONNAIRE DATA COLLECTION AND ANALYSIS OF RESPONSE TENDENCIES

The objective of the questionnaire (Appendix) was to identify travellers problems related to packing hand baggage and during transportation.

We intend to survey the following target groups: Tourists travellers, Business travellers and Crew/Staff travellers.

4.2. RESPONSE TENDENCIES TO QUESTION 32

Question 32: "Identify which of these objects and procedures you would include in your ideal travel kit?"

The following items correspond to the most voted needs identified (400 respondents)

- Bags for dirty clothes 73,9 %
- Shoe bags 66,5 %
- Universal electrical current adapter 65,0 %
- Travel set of daily use articles of personal hygiene care 61,4 %
- Padlock 57,1 %
- Pharmacy organizer (SOS) and transportation of daily use medicinal products 56,9 %
- Extra foldable lightweight bag for a return trip 53,0 %
- Set of empty bottles for toiletries, size for cabin luggage 51,0 %
- Portable rechargeable battery (to ensure the usability of gadgets) 42,4 %
- Vacuum bags with the function to save space in the suitcases 41,6 %
- Check list 39,1 %
- Purse for documents 33,8 %
- Suitcase organizers 30,7 %
- Instructions and techniques to avoid forgetfulness 29,4 %
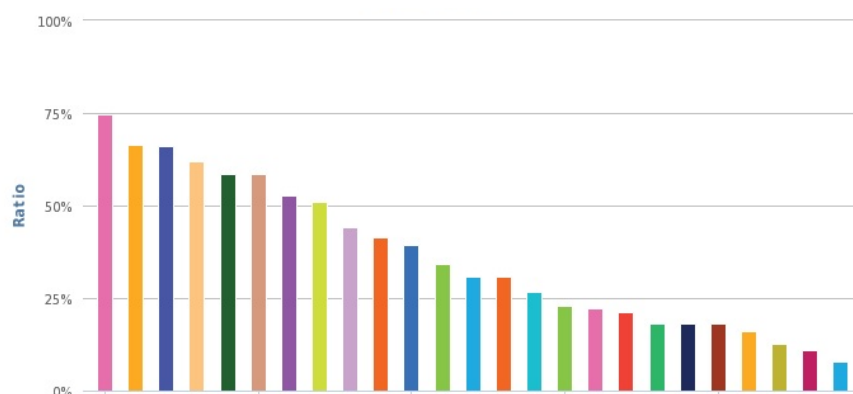
Graph 1: Question 32 Identifies which of these objects and procedures will be included in this "travel kit" (400 respondents).

4.3. RESPONSE TENDENCIES TO QUESTION 33

Question 33: "Specify which objects and procedures not listed above are important for you, so that your trip becomes comfortable. (optional answer)"

The feedback to open questions (qualitative ones) has led the project into a surprising and innovative new path, a turning point. A new concept emerged, which is now in experimental and developmental stages.

The new conceptual approach is directly related to the cabin suitcase, the ease of organization and access to objects used during flight.

At the present moment we cannot reveal more information about the final product due to the possibility of an eventual patent.

5. CONCLUSION

Traveling involves carrying luggage and modern life every-day objects.

The main goal of this project is to increase the comfort of today's traveller and increase the convenience and usefulness of hand luggage during flight time.

Our investigation on the main products available on the market related to the organization facilitators of cabin suitcases leads us to conclude there is still a gap on the organization, manageability, accessibility and transport of objects commonly used in air travel.

So, it makes sense to develop an organizer, in the form of a customizable travel kit, which simultaneously simplifies organization and expands user's interface and functionality of hand luggage. That is the main purpose of the present project.

The intention is to organize and group all necessary objects on the move, arranging them through a new concept, making it an innovative product that will contribute to the comfort of today's traveller.

Conceptualized in the area of fashion design, this project can only be brought to life by bringing together knowledge from other areas of study such as anthropology, psychology, sociology, economics, management, law, marketing and advertising.

in the study area of fashion design, this project can only be validated by the crossing of knowledge brought by these areas.

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ATTACHMENTS

Questionnaire for Travellers | FA-ULisboa | CIAUD | 2015 Access:
http://www.survio.com/survey/d/C9P9A7G9G6K2G3A2A

FA-ULisboa | 2015 | CIAUD | Questionário a Viajantes Access:
http://www.survio.com/survey/d/Y5M4R4B9P7A7M0A1R

PERPLEXITY

The good, the bad, and the mixed:
How designers experience singular and ambivalent emotions during idea generation

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ABSTRACT

Although emotion, cognition, and behavior are intricately linked, little is known about the role of designers' emotions in their professional practice. While designer cognition and behaviour have been investigated in design research, most empirical work addressing emotion in design is focused on the affective experiences of users, not designers. Psychological research tells us that emotions influence higher order cognitive processes such as judgment, decision-making, and creativity, and that they may do so by acting as feedback systems for cognition and behavior. A small, preliminary study on emotion in designers (Sas & Zhang, 2010) suggested that designers experience complex combinations of contradictory or ambivalent emotions as they design, particularly during ideation. This project will build on these initial results to more deeply explore how designers experience ambivalent emotional conjunctions in their work using a phenomenographic approach to qualitative research.

Keyword(s): designers, emotions, creativity, design thinking and design research.

INTRODUCTION

Designer cognition and design thinking are an established theme in research on designers, with the work of Cross (2011 & 2006) as one influential and widely-recognized example. Emotions are known to exert a substantial pull on higher-level cognitive functions such as direction of attention, interpretation of stimuli, judgment, decision-making, reasoning, and creativity (Blanchette & Richards, 2010; Davis, 2009; De Dreu, Baas, & Nijstad, 2008; Yang & Hung, 2014), all of which are important to the professional practices of designers. However, despite the important implications of this relationship, existing research on the role of emotion in design overwhelmingly focuses on users' feelings in relation to design processes and products while scant attention has given to designers' affective experiences in the design space (Ho & Siu, 2012; Sas & Zhang, 2010).

Though few in number, initial empirical investigations lend preliminary support to the idea that designers' emotions play an important role in the design space. For example, Sas & Zhang (2010) found that designers described emotional states arising in all phases of their design work, with frustration, excitement, and anxiety dominated the affective experiences of their participants. Idea generation in particular was closely associated with emotions in several studies. Solovyova (2003) described the influence of emotional memories as precedents for ideation in an experiment with architects, suggesting that affective encoding and decoding of design precedents may be important when they are recalled during ideation activities. Dong, Kleinsmann, & Valkenburg (2008) noted specific patterns of emotional expression when analyzing the discourse of their designer participants, with positive-affect evaluations more associated with knowledge generation work including as idea and insight generation. Finally, Sas & Zhang (2010) found that their participants often experienced ambivalent or conflicting emotional states – such as mild anxiety coupled with excitement – during ideation activities.

While most research on affect and creativity has focused on singular emotional states, a small but provocative body of work has recently begun exploring emotional ambivalence as a potential source of creativity (Fong, 2006; Moss & Wilson, 2015). Building on these themes, this research project will explore designers' experiences with both singular and ambivalent emotional states in

the design space, particularly related to idea generation, a specific component of creativity (Davis, 2009) that is also a crucial responsibility of designers (Cross, 2011). Preliminary research questions include:

1. When describing their experiences with ideation, to what extent do designers recognize and attend to emotions that may occur as part of these experiences?
2. When designers do describe affective experiences during ideation, what are the characteristics of the emotions they identify?
3. Do designers more commonly identify mono-affective states or states that incorporate two or more emotions? What patterns of emotional experiences, if any, emerge from their narratives and do any of these patterns represent ambivalent emotional conjunctions?
4. Are their particular activities associated with ideation that are also associated with emotional experiences and if so, what is the nature of these activities and related emotions or emotional patterns?
5. What effects, if any, do designers perceive that emotions have on design behaviors and outcomes?
6. What strategies do designers use to manage emotions during ideation?

Since this project is still in its formative stages, this paper will outline some of important theoretical and empirical foundations drawn from both psychological and design research, as well as provide a general overview of methodological issues under consideration.

BRIEF LITERATURE REVIEW

PSYCHOLOGICAL PERSPECTIVES ON EMOTIONS

While the word emotion is widely used and understood in day-to-day conversation, it is important to define it from an academic perspective, although this can be somewhat challenging as there is disagreement across fields about the meaning of the concept (Mulligan & Scherer, 2012). However, most scholarly definitions categorize an emotion as mental state that (1) can include affective, cognitive, physiological, and behavioural components; (2) emerges as a result of a triggering event or thoughts about that event; (3) and is episodic in nature, with a beginning, middle, and end, although duration may vary

(Baumeister, Vohs, DeWall, & Zhang, 2007; Mulligan & Scherer, 2012; Sas & Zhang, 2010). Two other important features of emotions include (1) valence or direction, which delineates whether the emotion is positive and pleasurable or negative and unpleasant in character and (2) intensity or arousal level, which indicates the potential of the emotion to incite the subject into action (Davis, 2009, De Dreu et al, 2008; Mulligan & Scherer, 2012; Sas & Zhang, 2010; Yang & Hung, 2014). The terms "feeling," "affect," "mood," and similar are frequently used interchangeably with emotion to represent the same phenomenon, and that will be the case in this research as well.

Traditional psychological models of emotion have positioned feelings as a direct cause of behaviour but more recent work conceptualizes emotions as a feedback system that influences behaviour through the mediating effects of cognition (Baumeister et al, 2007). In this model, emotions serve as a source of feedback in a cognitive system of anticipation and reflection, allowing for comparison of the triggering event and situational factors against previous experiences to generate new information that influences subsequent thoughts, judgments, and decisions. While there are still some situations where emotions set off a rapid behavioural response with little to no time for reflection on the past and future in relation to the present, this model argues that the primary purpose of feelings is not to serve as direct causation for action but rather to supply information to the cognitive system so it can mediate prior to selecting a new thought or behaviour. Given the importance of feedback and reflection to designers' cognition and decision-making (Cross, 2006 & 2011; Schön, 1983), this emotion-as-feedback approach offers a valuable framework for understanding emotion in the design space and will be the theoretical touchstone for this research. In terms of ambiguous emotional states, it is proposed that these states provide the individual with information that a situation is unusual, thus triggering cognitive processes that allow for a wider range of unanticipated associations, essentially shaking up routine cognitive processes that would be likely to foreclose on the novel associations that are a hallmark of creativity (Fong, 2006; Moss & Wilson, 2014).

Within the design thinking approach outlined by Cross (2011), designers are primarily concerned with creating novel, innovative solutions to ill-structured problems. This conception can be mapped onto the general construct of creativity in the psychological literature, which is typically composed of three related processes: problem identification, idea generation, and evaluation (Davis, 2009). It is also common to see a twofold approach that collapses problem identification and ideation into a single category called generative processes along with evaluative processes, a model that has been preliminarily validated by neuroimaging studies (Ellamil et al, 2012). Since design thinking closely aligns problem understanding and ideation as closely entwined processes (Dorst & Cross, 2001), this general twofold construct of creativity seems like an appropriate foundation for exploring designers' emotions in their design work.

Overall, the psychological research literature examining mood and creativity is ambiguous, with many studies demonstrating a link between positive mood and creativity, while multiple others indicate an association between negative mood and creativity (Davis, 2009; Yang & Hung, 2014). A meta-analysis of relevant studies demonstrated a slight edge for positive emotions in relation to ideation, while another multi-study project supported the idea that high-arousal emotions are associated with fluency in ideation while negative emotions are associated with persistence (Davis, 2009; De Dreu et al, 2008). However, these findings cannot be considered a definitive statement on the relationship between ideation and affect, in part because the relationship may not be simple enough to reduce to a single emotional state (or characteristic) that consistently causes a particular effect. The focus on single-mood states and single-mood characteristics may instead be masking ambivalent mood conjunctions that include combinations of positive, negative, high-arousal, and/or low-arousal feelings which arise when confronted with an ill-structured problem. Again, the findings of Sas and Zhang (2010) support the idea that designers can both perceive and articulate these complex affective states in their design work.

LIMITATIONS OF CURRENT RESEARCH

Most psychological research on creativity is experimental in nature, meaning subjects are working on artificial tasks in laboratory settings, rather than contextually-meaningful tasks in rich, authentic environments. Subjects are typically drawn from the general population, not specifically creative professionals such as designers, whose domain expertise, experience, and motivation for tasks may be different than the general public. Finally, the goal of most psychological research is to isolate variables in order to delineate associations and effects as clearly as possible. Obviously, this limits our ability to generalize experimental findings to designers and design situations, which are deeply contextualized, involve creative expertise, and are likely to involve divergent experiences rather than singular explanations. However, psychological findings on creativity and affect do provide encouragement and a referent context for exploring the link between emotions and designers in their design practice in the absence of established research findings on designers and emotion.

PRELIMINARY METHODOLOGICAL ISSUES

APPROACH

Phenomenography, which is concerned with subjective experiences, interpretations, and analysis of aspects of reality (Marton, 1981), will be the analytic approach used in this research. This approach is appropriate to the identified research questions, which are concerned with designers' lived experiences emotion in their design practice. This methodology emphasizes the exploration of commonalities as well as differences in participants' experiences of the phenomenon in question (Marton, 1981), providing for greater depth of understanding of participants' perceptions and a richer narrative analysis of designer affect in idea generation than is currently available.

SUBJECTS

Subjects will be design professionals with at least five years of experience in visual design (meaning, a field concerned with graphic or visual communication). At this point, an estimated 20-25 subjects will be recruited to

participate in the study, which is a number considered appropriate to phenomenography (Marton, 1981).

DATA COLLECTION & ANALYSIS

Data will be collected via semi-structured interview protocols. The intent of the interviews will be to ask subjects to describe and explore their perceptions of their emotions relative to a specific, recent design problem they have worked on. Using a particular experience as an anchor will provide subjects with a context for selecting actual emotional experiences and perceptions, rather than relying on potentially inaccurate generalizations or characterizations of what they think they would feel. Once data has been collected, an iterative process will be used to develop general themes regarding emotional types and conjunctions, functional effects of these emotions, management strategies, and any other important themes that may arise from the data. Responses will then be sorted into these categories, again using an iterative approach that may include amending categorical definitions and re-sorting responses until clear and consistent interpretations and themes emerge.

ANTICIPATED RESULTS

Given the inextricable connections between emotion, cognition, and behaviour, it is essential that design research begin to examine affective issues in the professional practice of design to augment and amplify our current understanding of how designers think, know, and act. This is particularly important in relation to ideation, which is a critical task of designers and also a task fraught with uncertainty, which is typically experienced as an emotional state and may also be a source of ambivalent emotional experiences (Tracey & Hutchinson, 2015). Given the relationships between emotion, memory, and design precedents in ideation (Hutchinson & Tracey, 2015; Solovyova, 2003), this research will also provide important insights that may set a foundation for greater exploration of how remembered and situational emotions and emotional ambivalence interact in the creative process. This research also has the potential to extend and enrich psychological research on emotion and creativity by moving away from experimentally-induced, single-mood states and into a

complex and authentic context for creativity as practice by creative professionals. Finally, this research has important implications for design educators, who are tasked with providing students with experiences necessary to develop and grow as designers. When more is known about the emotional aspects of what it means to be a designer, educators will be better prepared to support students in exploring and understanding their emotional selves in terms of their professional practice.

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A Outra Alternativa
Poderá o design redimir-se fora de si mesmo?

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RESUMO

Este artigo enquadra-se num percurso focado no que se identificou como falha do design. Esta falha é passível de assinalar simultaneamente falência e ruptura, e é indissociável do que se aponta também como falha contemporânea:

porque é que a comunidade dos humanos, hoje sustentada num patamar de oferta que tudo promete como acessível e realizador para todos, se afunda em camadas acumuladas de erro que sistemática e simultaneamente mediatiza e esquece, euforicamente lançada numa gigante e interminável festa?

A academia e a ciência não podem escapar à questão supracitada, já que são pilares fundamentais da nossa contemporaneidade. Fazem, então, parte do ardil que se intui e tenta desmontar. Como, então agir e investigar dentro da academia e do design? Como operacionalizar a escala do problema? E qual é, então, o papel de uma estação comunitária de rádio, a Rádio Manobras?

Espaço Comum, Criatividade, Falência, Rádio, Porto

O PROBLEMA É METODOLÓGICO, SENDO QUE A METODOLOGIA É UMA INVENÇÃO DA CIÊNCIA

"Margaret Thatcher's famous dictum that 'there is no alternative' to unregulated capitalism has ceased to be a smug, self-satisfied pronouncement from on high and has instead become a shrill and desperate mantra of a crisis-ridden and potentially suicidal system (...)" (Haiven, 2014, p.7)

O sufoco desta ideia de que não há alternativa, hoje propagada politicamente até à exaustão para impôr a chamada austeridade, sustenta-se nos supostos imperativos da razão, da autoridade dos técnicos e, em última instância, da exactidão da ciência. Apesar de todas as filosofias e escritos científicos em contrário, que dissecam a sempre evasiva verdade, que alertam para a complexidade da natureza e do humano e que reconhecem na história da ciência a sua própria falibilidade, é o gene determinista da ciência que prevalece como sua mão operativa, como seu agente primeiro no tecido humano, recusando ou simplificando a evidente obscuridade do real.

De tal modo que as próprias oposições ideológicas não conseguem esgrimir argumentos que se imponham, iluminados, como saídas claras, como produtos novos de efeito imediato. Provavelmente porque essas saídas não poderão ser nem iluminadas, nem claras, nem imediatas, já que terão obrigatoriamente que incorporar a incerteza, a complexidade e o tempo próprios. Ou seja, essas saídas não podem responder nem ser avaliadas pelos pressupostos que governam as ordens actuais, incluindo as ortodoxias operativas da ciência e do design. Mas é o que tentam. Não estamos – já não estamos, ainda não estamos – preparados: por vício ou por défice, progredimos no funcionamento conjunto das nossas formas de pensar e da valorização que fazemos da vida, tendo na racionalidade um instrumento contaminado que torna qualquer exercício de interpretação um risco, risco esse que corremos também aqui, mas que assumimos como forma paradoxal mas inevitável de questionamento.

A investigação na qual este escrito se insere procura uma tomada de consciência em como o design é também agente na ordem dominante sem alternativa aparente que sumariamente se apontou. Ela debate-se então com um dilema que é antes de mais metodológico: exige-se a definição de princípos de pensamento e acção que simultaneamente transcendam e incorporem o ardil

que se quer dissecar. É precisamente na esfera metodológica – invenção da ciência – que intuitivamente se identifica campo privilegiado de debate desta investigação, no qual este escrito procura avançar.

METODOLOGIA COMO CAMPO DE INVESTIGAÇÃO: ENSAIO DE ESTRATÉGIAS DE RELAÇÃO COM O CAMPO DEFINIDO DE INVESTIGAÇÃO

Podemos enunciar o gesto metodológico geral que se vem concretizando como um passo atrás na ordem presumida das coisas. Este "atrás" remete primeiro para a distância, para a procura de uma posição na qual as geometrias estabelecidas possam ser observadas como estruturas artificiais sobre o magma das coisas – sobre o tangível, fluido e complexo jogo de tensões que de facto está em operação – para pressentir e ler este magma de novo. Só então se propõe remeter e integrar o factor tempo e então reconhecer outras geometrias que foram ou poderão vir a ser leituras e relações com o magma. Se considerarmos as actividades humanas em funcionamento de cruzeiro – incluindo o design e a academia – como um território "dentro", o "passo atrás" é a tentativa do salto para uma posição "fora", é parte da investigação e constitui, de facto, o cerne da sua condição experimental.

O design como disciplina é uma construção recente. No entanto, o contexto histórico que lhe deu origem sofreu uma tal transformação, por via acelerada das condições económicas, produtivas, tecnológicas, sociais, que podemos perguntar da sua adequabilidade e da sua obsolescência. Em qualquer caso, o "passo atrás" implica trespassar a disciplina para o seu magma. Design como interface humanizador entre técnica e quotidiano? Design intérprete criador do quotidiano? Talvez, mas a palavra "Design" está "dentro". É inércia para o "passo atrás". Por isso escolhemos abolir ainda que temporariamente o termo Design e focar a atenção numa tensão no magma que identificamos como instância anterior – **relação entre criatividade e espaço comum** – na qual se procura medir impactos, analisar razões e fazer uma revisão crítica das práticas tendo em conta as suas motivações e reberberações mais largas.

CRIATIVIDADE E INVESTIGAÇÃO

Criatividade e investigação são termos que a pesquisa em curso deverá aprofundar e relacionar, cada um por si e na sua inter-relação. Por agora, sinalizamos a partilha que eles fazem de um terreno entre um "dentro" e um "fora" – que não estamos em condições de relacionar com a ideia de "dobra" tal como proposta por Deleuze – e que propomos condensar na expressão "estado de indagação", componente essencial da existência humana, força motriz de proposição, realização, transformação e, em última instância, de dignidade existencial individual e colectiva. É do estado de indagação, ou graças a ele, que emerge a criação, a descoberta, e podemos dizer que tanto a investigação como o acto criativo são já obra em si enquanto operação gestacional antes de qualquer concretização em forma, objecto, artificialismo. Ferramenta, energia, impulso, humanidade, dom, cultura, condição ou factor, o "estado de indagação" é coisa e obra em si. Por outro lado, as condições em que surge e se precipita essa operação gestacional são obra que precede e condiciona este estado de indagação. E estas condições, hoje, desconsideram a indagação como obra em si, pois só admitem os resultados previsíveis do sistema de cálculo de que são feitas e que tendem a perpetuar. Ou seja, recusam absurdamente a obra "pergunta".

ESPAÇO COMUM

O espaço comum é aquele que não é privado, espaço partilhado e também vulgar no sentido de abundante e ao alcance de todos. Ao contrário do espaço privatizado, que definiu as suas fronteiras e levantou dentro delas as suas bandeiras, o espaço comum é-o na medida em que as fronteiras e as bandeiras nunca se lhe sobrepõem e nunca o marcam em definitivo, porque, nesse momento, o comum seria privatizado por tais marcas. No limite, o espaço comum pode ser destruído até pela tentativa da sua própria definição. Então, num certo sentido, o espaço comum pode ser apenas algo que não é. Ou, hipótese alternativa, algo que se dispõe a não ser. Evitando desafiar Nietzsche quando este afirma que "a palavra torna o incomum comum", sugere-se provisoriamente que o comum apenas se concretiza na palavra que assume a sua transitoriedade, ou dito de outro modo, na palavra que se dispõe a morrer no comum.

A palavra definitiva não pertence ao espaço comum. O espaço comum é o imenso que convoca para o fio de uma faca a partilha das dores do desconhecido e do possível ainda sem vocabulário nem gramática. Este espaço é incompatível com o universo das certezas que diabolizámos no início.

INDAGAÇÃO NO ESPAÇO COMUM

Avançamos, então, que a indagação é o habitar possível do espaço comum, desde que considerada como obra em si antes de uma qualquer sua precipitação em definição, fronteira, marca, produto ou sentença, já que a resolução do "estado de indagação" tende a anular esse mesmo estado que, como avançámos, é essência da nossa natureza individual e colectiva. Na medida em que uma resolução obstruir a abundância do espaço comum, cerceia o próprio ser individual e colectivo. Pelo contrário, na medida em que cuidar de manter essa mesma abundância, contribui para a consciência e usufruto da sua perenidade: tensão experimental em contínuo, capaz de agir sem se tornar refém da sua formulação e do seu efeito. Nada de novo, mas talvez largamente – e com alguma probabilidade intencionalmente – esquecido.

RADICALIZAÇÃO DOS MODOS DE INVESTIGAÇÃO NÃO COMO REDUÇÃO MAS COMO AMPLIAÇÃO

O "passo atrás" implica agir "fora" das estruturas disciplinares; o "passo atrás" comprometido "dentro" implica uma conexão com as estruturas disciplinares. Em resposta, elegem-se dois modos extremos de funcionamento:

›› a filosofia enquanto estratagema ou tentativa de acesso à densidade que precede os signos e os modelos, mesmo que através deles mas necessariamente enquanto âmbito do seu questionamento.

›› o estar no quotidiano tangível enquanto colecta directa de matéria-prima, exercício de sagueza de observação e desenvolvimento de percepção, feitos dentro (para e com o corpo) e fora (com e para o ambiente natural e social).

Na combinação dos dois, procura-se a proximidade ao que acontece e a libertação da intuição como garantias de emancipação. Ao privilégio dos acontecimentos correspondem instrumentos como o inventário ou a lista, que

são partilhas tanto quanto possível omissas do risco da interpretação. À libertação da intuição corresponde a constatação preserverante e humilde da transitoriedade das hipóteses e das concretizações e, em última instância, da predisposição para a abundância do espaço comum.

Mas não estamos longe da ciência tal como ela teoricamente se enuncia. Trata-se de etnografia, observação militante e disposição rigorosa porque aprofundada dos dados e da sua reberberação no corpo da investigação. Mas encarados como vida e não como procedimento, apropriados para uma regeneração da vida por via da vida. Esta é a militância, disposta a encarar o silêncio como resultado e a exercer com pudor as relações com o legível, a evidenciar o cinismo da palavra e da imagem domesticadores da criatividade e desafiando a obrigatoriedade da certeza que privatiza o espaço comum. Trata-se de um labor de descoberta de linguagem e das condições da sua partilha como tentativa de ruptura de um ciclo vicioso de contaminações estruturais artificiosas e subreptícias. Exercício humano ancestral em concretização circunstancial.

COMO OPERACIONALIZAR A ESCALA DO PROBLEMA?
E QUAL É O PAPEL DA RÁDIO MANOBRAS?

As perguntas respondem-se uma à outra. Já enunciámos esta simbiose quando elegemos a Filosofia e o Estar no quotidiano tangível como os dois modos privilegiados e extremos de funcionamento. Concretizado enquanto envolvimento numa rádio comunitária do Porto, o caso define um território de reverberação e investigação: som, palavra, comunidade, cidade, comunicação, dispositivo mediador no espaço comum. O "passo atrás na ordem presumida das coisas" traduz-se, neste caso, numa redução voluntária dos meios, no questionamento dos pressupostos que definem hoje o meio, num multimedia practicado ao nível da sua essência: o espectro FM como bem comum, o som como textura dos sentidos, a palavra ensaiando a re-inscrição das suas correspondências lexicais. Design como ecologia dos sentidos, design como etimologia da comunicação.

A Rádio Manobras é deste modo o contexto no qual se procura encontrar e trabalhar as possibilidades da "outra alternativa". Pergunta-se, agindo: Como suscitar, actuar e progredir no triângulo Meio - Equipa - Cidade? Como ser

Rádio fora do mercado da Rádio? Como trabalhar a palavra e o som e manter a Rádio emancipada da palavra e do som? Como criar um espaço comum que não se eclipsa na própria marca? Como estabelecer relações com estruturas e modos operativos aparentemente agrestes ao que se enuncia? E como transformar essa relação em proficuidade? Como resolver no seio dos participantes voluntariado e sobrevivência? Tenta-se responder fazendo, facilitando o fazer de outros, trazendo para a rádio a incerteza, a complexidade e o tempo próprios do realmente possível.

EM SUMA

A prática do Design é hoje indissociável das condições contemporâneas de relação entre criação e espaço comum, condições essas que estabelecem um loop vicioso de condicionamento daquela prática e, em termos fundamentais, do estado de indagação que é vital tanto ao Design como à condição humana tomada na sua completude.

Investigar este loop vicioso implica uma abordagem metodológica que considere e se afaste das circunstâncias em que a contemporaneidade se desenrola, o que inclui esta investigação.

Esta abordagem metodológica, cerne da investigação, é pragmatizada no caso da Rádio Manobras, no qual os factores que compõem e condicionam a relação entre criação e espaço comum são identificados, experimentados, observados e dissecados dinamicamente no curso de um projecto que propõe agir criativamente no espaço comum da cidade.

A sua concretização previsível é uma aproximação actualizada às condições de acção e transformação no espaço comum, sob a forma de um mapa lexical que emerge do que acima se nomeou como o magma das coisas.

Esta investigação dedica-se a um modo de "estar" indissociável do "fazer", indagado no comum.

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Postparadise
Towards disembodiment of information

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ABSTRACT

The necessity to understand and to control seems to be embedded in human nature, as much as we have changed the world around us. Virtual and artificial intelligence have also reinforced this idea, using information in the form of codes to programme virtual life forms, offering us the promise that one day we might be able to control and create life.

Gradually, a posthumanist definition of human started to crystallise around the idea that information is what primarily defines who we are, as is the case for intelligent machines or virtual life forms. The information generated by our own brains became, at least in theory, disembodied. Redefined as information, the new 'soul' can now dwell in the technological age.

Our ambition is leading us to believe that this theory can be put into practice, allowing us to imagine futures where we take charge of the powers that we for so long attributed to the Gods.

Keyword(s): Information, Neuroscience, Posthumanism and Spirituality.

BACKGROUND

According to Cary Wolfe, Professor of English at Rice University, posthumanism is a term that seems to have originated in humanities and social sciences during the 1990s, in, among others, the writings of Katherine Hayles, professor of literature at Duke University. The concept embraces the idea of a human being not only defined by its biological body, but most importantly by its contemporary technological environments, that are in constant change. In other words, the body is seen as a prosthesis that can be compared to the tools or technologies of its time. This raises the notion that human beings are in a constant state of redefinition according to the historical moment in which they exist. For example, in the current informational era, characterised by computerisation and digital environments, what it is to be human is defined by and exists in relation to these immaterial environments. This might explain the posthuman necessity to privilege immateriality above the materiality that defines us as humans (Wolfe, 2010). This tendency has in my view fostered the current ambition of specific movements to disembody the immaterial information contained in our biological bodies. In addition Katherine Hayles highlights in her book How We Became Posthuman that in the posthumanist model there are no crucial differences between human beings and computer simulation (Hayles, 1999). This idea will lead me to an exploration of virtual environments in the following section, that will help me to better understand this posthuman connection, supporting at the same time a more complete understanding of an informational disembodied human being.

**SO HUMANS CREATED MACHINES
IN THEIR OWN IMAGE**

Virtuality encompasses the idea that computers can be perceived as informational environments capable of containing life forms - computer programs - able to evolve in ways that may not have been predicted by the creator (Hayles, 1999). This assumption is exemplified by the Evolved Virtual Creatures research project (Sims, 1994). It was developed by Karl Sims using a supercomputer, where virtual 'creatures', made of simple virtual blocks, were created in order to simulate Darwinian evolution processes. These block

creatures were assigned specific tasks in virtual environments, like swimming or competing with each other, in order to survive and evolve. Once a creature evolved, multiple copies could be made containing its ancestors' information, incorporating successful mutations as the result of the learning process during the tasks. Each of the creatures evolved independently from each other and in a variety of ways, aiming to better adapt themselves to the virtual conditions to which they were subjected.

The fact that the creatures were designed to adapt according to the Darwinian evolutionary system, makes an interesting comparison with our own evolutionary path, and of course it supports the idea that virtual systems can be 'alive' just as human beings are.

In the late 1940s, the Hungarian Mathematician John Von Neumann proposed a formal model of self-replicating machines (Neumann, 1966) that can be seen as a precursor to the Evolved Virtual Creatures project. It achieved great visibility with John Horton Conway's Game of Life - known also as Life (Gardner, 1970) - later in the 1970s (Grimshaw, 2014), which kick-started an entire research field called Cellular Automata. The game is based in a virtual bi-dimensional universe where cellular automata are governed by simple lifelike rules: birth, death and survival. Each of the cells in this universe can be in one of two states: alive or dead. The game starts with a single initial pattern of live cells, and from there the pattern evolves without any need for external input. Whether a cell is born, survives or dies is determined by the number of live neighbours it has.

Lee Marvin Minsky, cognitive scientist and co-founder of AI American Massachusetts Institute of Technology Lab, advocates a model of the human mind analogous to the principles of cellular automata. Known as Society of Mind (Minsky, 1986), it envisages mental activity as a series of discrete cognitive processes such as comparing, remembering, predicting, and so on. Each one requires a particular combination of interactions between individual elements – or 'agents' as Minsky calls them. These agents are the building blocks of the complex mind, just as cells are the building blocks of complex patterns in cellular automata. He uses the term 'agency' to describe the

combination required to perform a given cognitive task. The sum of these agents and our actions can be understood as a society or a state of mind. Agents can also be switched off and on by other agents – the K lines – depending on whether or not they are required for a particular task. Because each agent is interconnected to others, a chain of effects is generated within the brain when switching them on or off. As we have seen before, this also happens in cellular automata systems when a cell dies or is born – or to put it another way, when a cell is 'on' or 'off.'

These analogies between (albeit far less complex) cellular automata and human beings, give credence to the hypothesis that the information contained within the human brain - and I am specifically referring to what we call consciousness - could potentially follow the same processes as cellular automata, and other machines that we are creating in our own image. Moreover, it is relatively easy to imagine situations where the information held by automatons is edited and stored in different media or even modified to run in different programs. The fact that we created and understand this information gives us the power to manipulate it. Could the same be done with human consciousness, if it were fully understood? (Chalmers, 1996) In the next section, I will explore how Singularity and the Transhumanist movement responds to this question.

IN SEARCH OF ETERNITY

Transhumanism is a cultural and intellectual movement with a focus on posthumanist topics. Adherents' main goal is to develop speculative and emerging technologies to further human well-being, maximising their interactions and envisioning a future where human capacities are expanded by the use of technology (http://humanityplus.org).

Far from representing a possible dystopian scenario, the disembodiment of consciousness is seen among the community as a means of achieving immortality, controlling life and even creating it. They suggest a system of consciousness and mind upload. The human brain is permanently 'backed up' like data on a hard drive, so functioning copies could be replicated.

These transhumanist aims are in line with what futurologists call Singularity - a speculative future or era when artificial intelligence will surpass human intelligence (Kurzweil, 2005). In this era, it is believed that automatons will be able to self-replicate and improve themselves autonomously. According to futurologist Ray Kurzweil, director of engineering at Google, Singularity is very near (Kurzweil, 2009). He envisions that in the near future, a complete brain emulation will allow direct modelling of the entire human brain. It will be possible to scan in detail the structure of a specific brain and build software capable of functioning in exactly the same way as the original version, when run in a specific type of hardware built for the effect (Sandberg, 2008).

Projects are currently in progress to accomplish these aims, one being the International 2045 initiative (http://2045.com), founded by Russian entrepreneur Dmitry Itskov. The project aims to create an artificial medium to which human consciousness could be transferred, thereby achieving cybernetic immortality, by the year 2045.

Figure 1. 2045 Initiative. Immortality Button. 2013.

 Figure 1 shows a section of the 2045 initiative's website, where users can create a "personalised immortal avatar" of themselves at the click of a button. To my surprise, I hesitated before clicking. This moment of truth made me wonder whether we genuinely do want to achieve immortality through technology.

If we consider death to be "The irreversible cessation of all integrated functioning of the human organism as a whole, mental or physical" (Cruz, 2001), it follows that emulating a complete human brain would require us to confront similar issues to those we must confront when dealing with death as a notion. In my opinion, it is impossible to consider the notion of human disembodiment without addressing spirituality in some way. The more porous the boundaries between our bodies and technology become, the more new ways of understanding our existence will begin to emerge. In the next chapter, I will develop this idea further by drawing parallels between two Asian faiths and posthumanist principles.

SPIRITUAL AUTOMATONS

In Western civilisation, Judeo-Christian monotheistic religions have been promising us immortality in the afterlife, espousing the idea that such power can only be held by one supreme being: God. Furthermore, only Him can give life. The idea that humans could create living objects for example - and therefore assuming the role of God - is a blasphemy in the eyes of Judeo-Christian religions.

In the book The Pearly Gates of Cyberspace, Margaret Wertheim introduces the idea that our technological environments have left little room for pre-existing notions of spirituality, leading us to explore new forms of spirituality through technology (Wertheim, 1999). It is interesting to note that the 2045 project has the support of spiritual leader the Dalai Lama (2045 Strategic Social Initiative, 2012, "The Dalai Lama Supports 2045's Avatar Project", para. 1).

Buddhism has been shown to be open to dialogues with science as well as technology. The Kalama Sutta, states that the assessment of evidence to explain the universe should not be replaced by the reliance on faith or superstition common in most religions, highlighting the importance of some key principles of the scientific method (Soma, 1963).

In a talk given by the Dalai Lama at the annual meeting of the Society for Neuroscience on November 2005 , Tenzin Gyatso, the Dalai Lama, shows enthusiasm towards discoveries in cosmology, biology, neuroscience and quantum mechanics, stating that these and other scientific fields might offer greater understanding of the human condition (His Holiness The 14th Dalai Lama of Tibet, 2005, "Science at the Crossroads", para. 3). The same article mentions a number of commonalities between science and Buddhist thinking. They share a deep suspicion of any notion of absolutes, such as the existence of a soul. They also share an understanding of life based on causality and empiricism. The Buddhist leader also states that traditional transcripts should be updated according to scientific discoveries. Furthermore, the Buddhist interpretation of reality, as stated by the Dalai Lama, is based on overcoming suffering and a quest to perfect the human condition. It also sits easily with the transhumanist quest for a more wholesome and fulfilling way of being, facilitated by achieving greater control over the positive and negative fluctuations of the mind.

Like Buddhism, Shinto is one of the most common faiths in Japan and the country's indigenous religion. It continues to exert a powerful influence on Japan's contemporary culture. One of its main components is Animism: the belief that inanimate objects and natural phenomena ranging from trees, the wind and mountains to individual grains of rice, have a spiritual life or 'tama'. They are assigned specific named gods ('mi') with individual characteristics who have the power to influence people's lives (Schodt, 1988).

Over the years Shinto has evolved alongside Japanese culture, embracing an increasingly technological and automated society. This began with its adoption of man-made objects and tools made of natural materials, which gained a spiritual life or 'tama' after being used by humans. In the post-war period, as the pace of technological innovation increased, Shinto embraced increasingly complex and artificial objects and machines, giving them a spiritual life. This tradition is now so rooted in Japanese culture that today, devotees take manufactured items such as cars to shrines and temples to pray for them.

In 1999, Sony launched a robot 'pet' dog called AIBO. Equipped with Artificial Intelligence, it was billed as being able to 'develop its own personality.' The product was discontinued in 2006, and when supplies of replacement parts dried up eight years later, desperate owners struggled to keep their pets 'alive'. Some held AIBO funerals (see fig. 2 on next page).

Figure 2. Zackary Canepari, Drea Cooper. AIBO funeral - film still (Cooper, 2015).

Considering man-made objects to be spiritual and living entities effectively gives human beings the power to confer life. From a Judeo-Christian perspective, this is heinous and blasphemous. Heather Knight, a researcher at the Carnegie Mellon University in Pittsburgh, asserts that these contrasting beliefs could explain western cultures' deep-rooted fear and suspicion of robots as opposed to Japan's more welcoming attitude. Unlike us, the Japanese make no distinction between humans and robots in spiritual terms. This has obvious resonance with posthumanist topics we have touched on. According to Katherine Hayles, posthumans also consider there to be no fundamental differences between humans and automatons or robots. Both are composed of informational patterns – 'spirit', in the Shinto faith – and both are confined to physical bodies. Using this model, we can envision scenarios where the information contained within our brains could be disembodied and transported into other media. I suggest that this is not so different from the process by which the Japanese

robots' intelligent algorithms build individual characters and personalities over time. Why should they not deserve a funeral too?

A POSTSPIRITUALITY

Recently, increasing dialogue between western and eastern cultures has called into question established notions of mind and spirit, enabling us to see fundamental issues related to our existence from different angles. The convergences we have touched on between technology and spirituality prove that it is possible for ancient belief systems to coexist with contemporary technological and scientific innovation – paralleling posthumanism's ongoing relationship with technological progress. This new way of seeing spirituality allows us to imagine a new category where nothing is predetermined or limited by obsolete dogmas or beliefs. Instead, it can freely evolve alongside emerging cultural, historical, scientific and technological developments. It becomes, in effect, a postspirituality – where the soul, redefined as information, can dwell in the information age.

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Design boundaries in Brazilian SMEs
A case study in the furniture sector

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ABSTRACT

Most design approaches have their foundations in the United States and European western countries (e.g. Design Thinking; Design Culture, Strategic Design). When dealing with different contextual frameworks we face diverse constraints and problems as we explore the design potential in enterprises.
In this paper, we clarify some design constraints in a Brazilian enterprise through a case study, aiming to provide an initial framework for further discussion about design in this context.
We suppose that different conditions for design development in a firm, such as the lack of product strategy, portfolio development and management, commercial skills, the difficulty to reproduce design into production, and the informal way of framing its business, lead to the need of situated design practices that require design know-how.
The implementation of the new design into production and market does not rely only on "good" design practice by itself. It requires considerable effort from other areas of the company on diverse levels.

Keyword(s): Design, SMEs' constraints, furniture sector, Brazil.

INTRODUCTION

The goal of this paper is to identify the difficulty to develop design, and to clarify the design process adopted by a small furniture company in an empirical case. Three main questions regarding many SMEs in the furniture industry are pointed out below:

1. What happens when the resources to fully develop the expected design phases are not sufficient?
2. In practice, how are adaptations done during the design process?
3. What are the main suggestions for the design process in this case?

This paper is not focused on aesthetics evaluation. In this sense, one design concern related to the firm's economic sustainability is "what is visually spectacular rather than economically significant" (Heskett, 2009, p. 83).

Heskett (2009) emphasises that "Design is about envisioning change". However, the organizational context is crucial:

> *"designers are not independent spirits, but dependent on the view of design held by management or the cultural imperatives of an organization" Heskett (2009, p. 83).*

BRAZILIAN CONTEXT

Despite the argument of globalization as a means to shrink distances and empower developing countries (Friedman, 2005), there are many constraints to be overcome in enterprises from these countries in order to achieve innovative behaviour.

Latin America presents a different historical background, technological approach, development and macroeconomic policy when compared to Europe and the USA, where most design approaches come from.

The imitation of products previously manufactured by a pioneer is a way to survive in SMEs. This behaviour can be noticed in clusters where the creation of an SME is linked with a reaction to the unemployment condition in Latin America (Altenburg et al, 1999).

The social inequalities, low quality of education and lack of management skills and knowledge are barriers to the consolidation of economic growth (ECLAC,

2015; OECD, 2014) in spite of the high craft skills identified in Latin America (Altenburg et al, 1999).

Manufacturing and services correspond to 20% of the productivity growth in Brazil. Over 80% of the added value and employment are concentrated in these sectors. The productivity growth in Brazil is associated with low added value sectors, agriculture, and mining, whereas in Asia the economic growth is based on manufacturing (OECD, 2013).

DESIGN: SUMMING UP DEFINITIONS AND POTENTIAL

We can find several design definitions (see for instance Baxter, 1998, p. 16; Bürdek, 2006; Munari, 2008; Norman, 2008; Brown, 2009, p. 16; Bonsiepe, 2011; Deserti, Rizzo, 2014), ranging from product development (Baxter, 1998) to problem solving and user-centered design (Bürdek, 2006; Bonsiepe, 2011; Munari, 2008, Brown, 2011), emotional design (Norman, 2008) and design culture (Deserti, Rizzo, 2014).

Deserti and Rizzo (2014) define design as the mediator of the production and consumption worlds. This concept refers to the design culture that relies on:

> *"... the necessity of rooting design deeply within the enterprise, which takes both a long time and the ability to adapt it to the specificity of the situation" (Deserti, Rizzo, 2014, p. 56)*

We note that **there is not a recipe for design**. It is an oriented creative process in which we use **available** know-how, knowledge, information and resources. This way, **the designer makes decisions and prioritizes according to the real conditions of each project**, adapting approaches, tools and techniques in order to reach a design that makes a difference for people and companies. It is more an overlapping process than a linear one.

According to Zurlo and Cautela (2014, p. 35):

> *"... design can be used both as an innovation tool to improve the style of a product with its minimum potentialities and as a tool to reconfigure and change the ecosystems of product-services and business models. [...] The heuristics that designers use in innovative processes can be interpreted as a mix of*

> *codified grammar and a series of linguistic improvisations arising from a specific context."*

Design can contribute to the company in several ways and levels.

METHODOLOGY

The research strategy selected was a case study indicated in explorative studies where we deal with a contemporary phenomenon in a real context, and the boundaries between the context and the phenomenon are not clearly defined (Yin, 1994). Semi structured interviews, archives, desk research (websites, brochures) and conversations with the entrepreneur and designers were used as data collection methods. In the second phase, the designers interpreted the planned and the real design process, using as reference the double diamond model (Design Council, 2005, 2007). They could stretch and shrink the stages according to their perceived emphasis and time spent on the design process. Finally, a suggestion was provided after interpretation and analysis of the planned and accomplished design process.

THE CHAIR DESIGN: A CASE STUDY

In 2014, the entrepreneur of a small furniture factory in Minas Gerais requested a design center at a large non-profit organization that aims to support industrial development in Brazil, to make some designs suitable for their manufacturing factory. The company intended to introduce its products into a new target market for the company - restaurants and hotels - just before the World Cup in Brazil.

A senior designer was the first person who the entrepreneur met. He identified design problems referring to feasibility, ergonomics and the target market.

Two budget proposals were developed to fit the entrepreneur's conditions. It was established that just the chair would be developed, considering: (1) a more complex design than the table, (2) its market importance, and (3) its sales (e.g. the sale of seats for restaurants is greater than the sale of tables).

After the budget alterations, the team reorganized the schedule of activities aiming to find opportunities to guide the product development according to the time afforded by the available budget. The initial plan had to be revised and reduced. The planned design process is illustrated below (Figure 1):
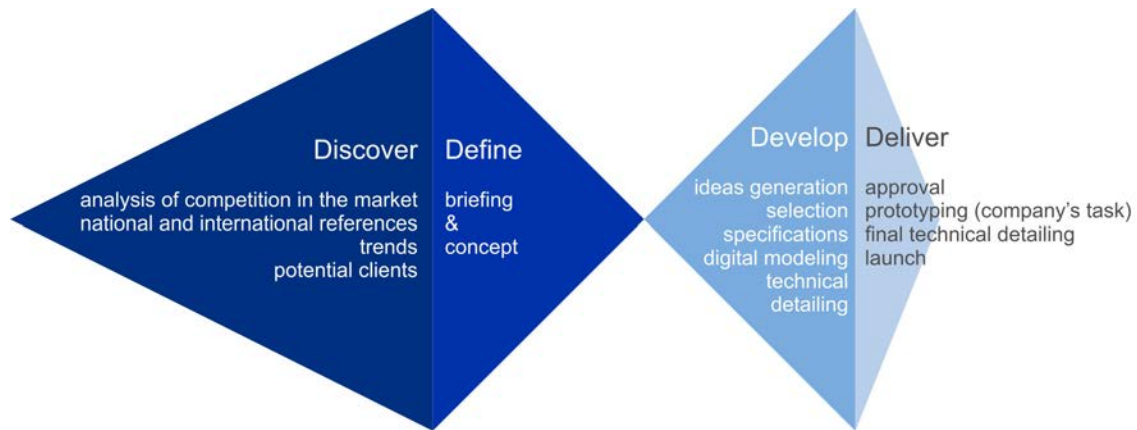

Figure 1. Divergent and convergent stages of the foreseen design process for the small Brazilian furniture company. An interpretation of the design process by designers [based on the "double diamond" model (Design Council, 2005, 2007)].

The team was composed of four designers. They considered the manufacturing possibilities through pictures of the factory, manufactured products, and store. Moreover, other questions about manufacturing processes aiming to ensure the feasibility and mobile conversations were used to get more information.

The briefing requested the development of a restaurant chair to be used in hotels. The chair should match different dinner tables. There were no more indications such as target public, market share, historical data or prior research. The specification of what range the design should reach was an important orientation. The research phase contributed to this aim. It was done mainly through websites, focusing on possible competitors and scenarios regarding the identity of the brand. Iconographic panels were also developed in order to illustrate and communicate the brand concepts. This phase was essential to better define the briefing.

The ideas generation and selection phases happened after the research phase and briefing detailing.

The final selected solution was a modular chair whose seat and back were assembling-disassembling parts, enabling the change of complements such as fabrics and materials. The design allowed different compositions that made it suitable for different interiors and situations. This strategy favours the manufacturing of different products using the same basic manufacturing processes and project.

Figure 2. 3D rendering of the proposed chair design. Reprinted with permission.

The technical detailing was delivered with additional real scale (1:1) views of the product.

In this case, the designers could not check the prototype phase, which was also reduced. This would be accomplished by the company because of the budget limitations.

Despite the fact that additional real scale views of the product and some of its parts were provided by the designers, the first prototype did not follow the design specifications and was different from the proposed product.

Figure 3: The first prototype accomplished by the company. Reprinted with permission.

Another prototype was made in the carpentry factory at the design center. One of the designers was responsible for following and checking the prototyping process. Figure 4 shows the unexpected longer lasting deliver stage, where prototyping was supported by the design staff.
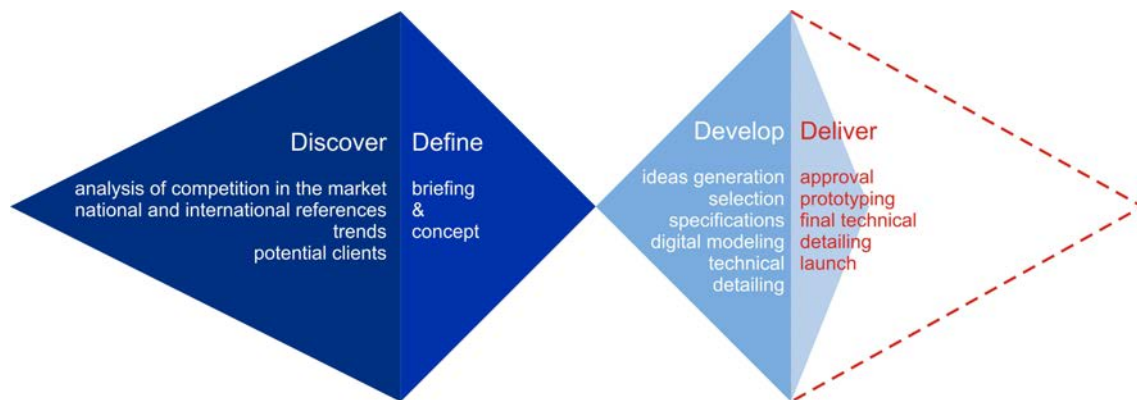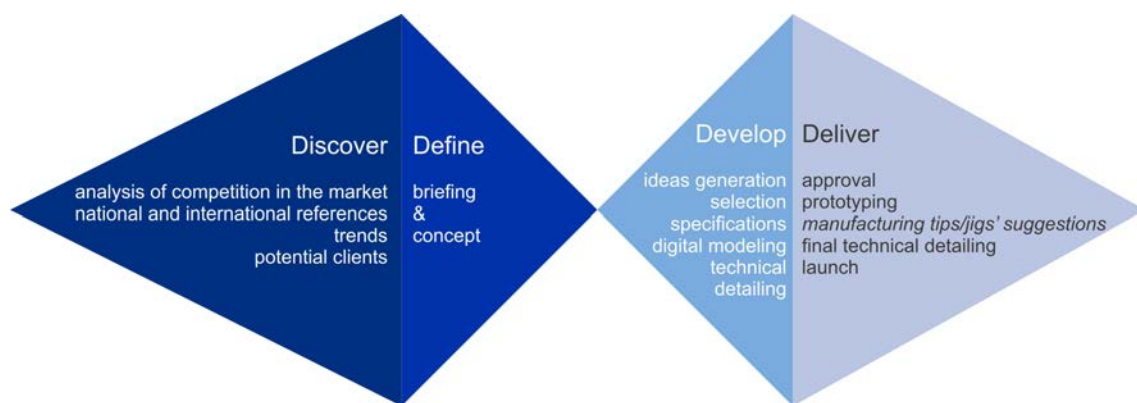

Figure 4. Divergent and convergent stages of the design process for the small Brazilian furniture company. An interpretation of the reality of the design process by designers [based on the "double diamond" model (Design Council, 2005, 2007)].

The second chair prototype was considered consistent with the proposed design.

Figure 5. The second functional prototype made by the carpentry factory of the non-profit organization where the designers worked at. Reprinted with permission.

According to the entrepreneur, another difficulty was related to commercial skills: "Now we need to deal with the trade issue. We have the product, but we do not know how to sell it."[1]

CONCLUSION

Technical factors, such as ergonomics, design feasibility for manufacturing, and market, still matter. The company should be able to provide the proposed product, which has to be feasible and clearly present advantages compared to its competitors, presenting features consonant with the target market. In this sense, some design phases and knowledge are essential to provide guidance and better define the problems to be solved, such as:

— the market research,
— the briefing detailing,
— the knowledge about ergonomics, manufacturing processes and their possibilities,
— and the prototyping support.

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[1] "Temos agora a questão comercial. Temos o produto mas não sabemos como vender."

The technical detailing interpretation and the difficulty to establish templates for prototyping and manufacturing are still limitations on the operational level. This knowledge is not easily available, especially for SMEs that sometimes present a more informal way of framing their business (see for instance Altenburg et al, 1999).

Figure 6 illustrates the suggested design process for this case's experience regarding the importance of supporting prototyping, which was not expected by the design staff at the beginning:

Figure 6. Divergent and convergent stages of the design process of the small Brazilian furniture company case. The design process interpretation was based on the "double diamond" model (Design Council, 2005, 2007).

The designer's know-how and interpretation used to adapt tools and techniques to the specific context are crucial in this kind of situation where we deal with scarce time and resources without interdisciplinary team cooperation, as well as company limitations on different levels, even when we are exploring the "minimum potentialities" of design.

In this case, the designer develops a lean design approach identifying the essential phases to be accomplished according to the context, creating a situated practice based on design knowledge and specialized experience (e. g. related to the furniture sector). The designer's expectations about the manufacturing high craft skills to accomplish the prototyping stage were frustrated, highlighting the need to strongly support the firm also in this phase.

From this case, we suggest the importance of mixing at least one senior designer in the design staff to contribute mainly to craft and to contextualize the design process what we named *situated design practices*.

We conclude by answering the proposed questions that synthesise the lessons learnt from this case:

1. What happens when the resources to fully develop the expected design phases are not sufficient?
The staff relies on the most experienced designers to plan the design development.

2. In practice, how are the adaptations done during the design process?
The team tries to reach a "lean" design approach, prioritizing essential activities.

3. What are the main suggestions for the design process in this case?
   — To include experienced designers in the staff to drive the design process.
   — To analyse the market and consumption context of the product.
   — To know the manufacturing possibilities and to help the entrepreneur, providing suggestions of standard control related to the proposed design, supporting prototyping jointly with the company.

Commercial skills to insert the new product into the market are also a constraint. Moreover, we perceived that other stakeholders influence purchasing decisions, such as architects and interior designers in business-to-business transactions.

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Get Lost! and *Filtershuffle:*
Designing mobile applications for unpredictability

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ABSTRACT

Computacional systems have permeated our lives, enhancing our daily interactions and aiding us in every task, simple or complex, reducing errors and promoting optimisation. However, this highly useful pursuit of efficiency brings with it unforeseen disadvantages: by preventing errors and accidents, we are are less likely to stumble upon something unexpected and surprising, something that challenges us and exposes us to novel experiences.
To this regard, we present two mobile applications currently in development, *Get Lost!* and *Filtershuffle*, which utilise the concepts of randomness and defamiliarisation within the categories, respectively, of urban exploration and digital photography, as methods to re-introduce unexpectedness and unpredictability into our technology-enhanced lives.

Keyword(s): Interaction Design, Iterative Design, Ubiquitous Computing, Randomness, Defamiliarisation.

INTRODUCTION

"Who really wants a faster, seamless, more optimal and efficient life?"
— Mark Sheppard[1]

Ubiquitous computing, and in particular Internet-connected smartphones, have come to reshape interactions between ourselves and our surroundings. Our daily lives are now enhanced by these devices, facilitating our tasks and our routines, in what Elisa Giaccardi calls the "connected everyday" (2014). They allow us to more easily communicate, navigate unknown places, record (and share) our memories, eat, exercise, sleep, and so on. Practically all of our everyday activities can, in some way, be aided or enhanced by one of these devices, optimising our lives and promoting efficiency.

However, optimisation and efficiency are not always be the most desired outcome. There is a growing concern (Danzico 2010, Smith 2015) that the reliance on these systems may take away spontaneity, unpredictability, chance and the possibility to be surprised. We are less likely to get lost, wander and stumble upon something unexpected. Through the complete control, and consequent predictability of our tools, errors and accidents become rarer, and so do the serendipitous discoveries that can result of them.

RANDOMNESS AND DEFAMILIARISATION

One potential method to bring back unexpectedness into our connected everyday (Giaccardi 2014) is through the implementation of the concepts of randomness and defamiliarisation in the digital interactive systems we rely on (Leong 2009, Helmes 2011). Abandoning the goal-driven, purposeful employment of such systems and adopting a more wander-like mindset, abdicating control, can have an important impact into our enjoyment and engagement with both our surroundings and our personal media.

Through random led interactions, we are able introduce chance, luck and surprise, adding value and meaning to our activities, such as in the case of

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[1] http://civictripod.com/interview-mark-shepard/

music listening (Bull 2006, Leong 2009), photo display technologies (Leong 2009, Helmes 2011), as well as in urban exploration[2] and game design (Costikyan 2013).

Through defamiliarisation, we transform the familiar in unfamiliar. Through it we increase difficulty and length of interpretation (Shklovsky 1915, 55) as a way to break routine and the "habituation and automatisation of perception" (Leong 2009). By altering our perception of the object, we are forced to see it anew, provoking contemplation, critical analysis, and challenging discourse (Bell, Blythe and Sengers 2005).

We explore these key concepts of randomness and defamiliarisation with two prototypes currently in development, *Get Lost!* and *Filtershuffle*, which apply them to our interactions with space and media, encouraging the accident and the unexpectedness.

DESIGN APPROACH

GET LOST!

Get Lost! is a digital compass. Inspired by the concept of the *dérive*, as well as the works by Mark Sheppard, *Get Lost!* proposes that we explore space freely, helping not just to get to a destination but to enjoy the journey, as well. To do so, we add randomness to the interaction.

The user is initially prompted for a destination. Subsequently, the system indicates the direction of such destination as a traditional compass would for the magnetic north. What differentiates *Get Lost!* from a traditional navigation system is that we introduce a zone of confusion: when approaching the goal, the compass adds a random deviation angle to the direction, changing the direction in which the needle of the compass is pointing and, consequently, prompting the user to wander, getting 'lost' in the process.

If the user gets too far or too near from the goal, the system resets the deviation to 0, pointing, once again, to the correct destination. With enough time passing

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[2] Such as with Mark Sheppard's Serendipitor or Broken City Lab's Drift.

and after enough time wandering through the zone of confusion, the user will eventually reach the intended destination.
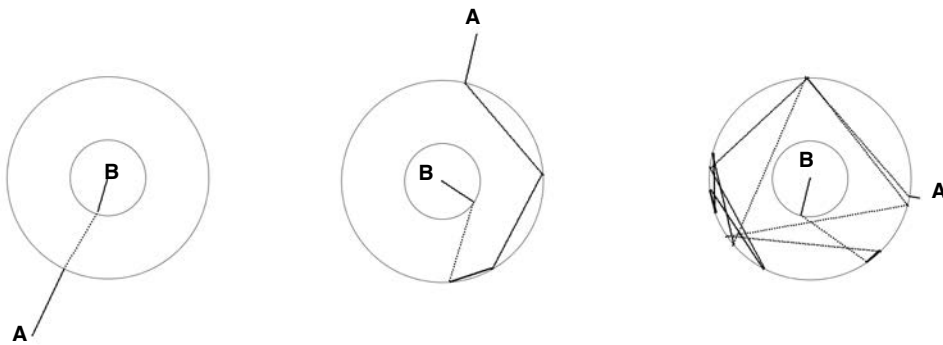

Figure 1. Graphical representations of the user's path from starting point (A), entering the *zone of confusion,* and reaching the desired destination (B).

FILTERSHUFFLE

With *Filtershuffle*, we intend to challenge how we view our surroundings, through its representation in digital photography.

Inspired by the concept of defamiliarisation, we built upon the common practice of applying photographic filters, adding an element of randomness to the process.

Using *Filtershuffle*, after the moment of taking the photograph, a randomly generated filter is automatically applied to the photograph, before its representation and visualisation on the screen. The manipulated image is final, and the user is not able to alter it in any fashion, only to save the image to the device, share it with others (through social media or their personal contacts) or delete it completely.

In commonly used applications of these genre, the choice of the filter is a considerate, pondered action by part of the photographer, done before or after the shot, but always inline of the aesthetic intentions of the person who is taking the photograph. With *Filtershuffle*, the intention is to create surprise and,

perhaps, serendipitous glee, through the juxtaposition between the original, unadulterated moment of photographic capture and the unpredictable result.

Figure 2. From left to to right: original image, followed by possible manipulations in *Filtershuffle*.

CONCLUSION AND FUTURE WORK

Through our literature review we have identified the potential of the application of randomness and defamiliarisation in interactive systems as a method to introduce unexpectedness and serendipity into our routines. This has become the starting point to the design of two mobile applications that address this within the areas of urban exploration and the capturing and sharing of digital photography.

Exploratory interviews with potential users were extremely positive and have left us expectant for the potentials of these applications. We will continue with further development and we expect to be able to present them at UD15. We also expect, within the following months, to have gathered results from user testing, and of a series of workshop sessions, as well as further information regarding the value of randomness and defamiliarisation in the interactive systems of our daily life.

We are already considering, as well, the creation of a wearable component to *Get Lost!*, as a method of mitigation the necessity of staring into a screen while navigating a city.

It is our hope that, with a new breed of applications less concerned with efficiency and productivity and more with exploration, discovery and surprise, we are able to bring back positive uncertainty into our lives without relishing the benefits that current technology and digital media yield.

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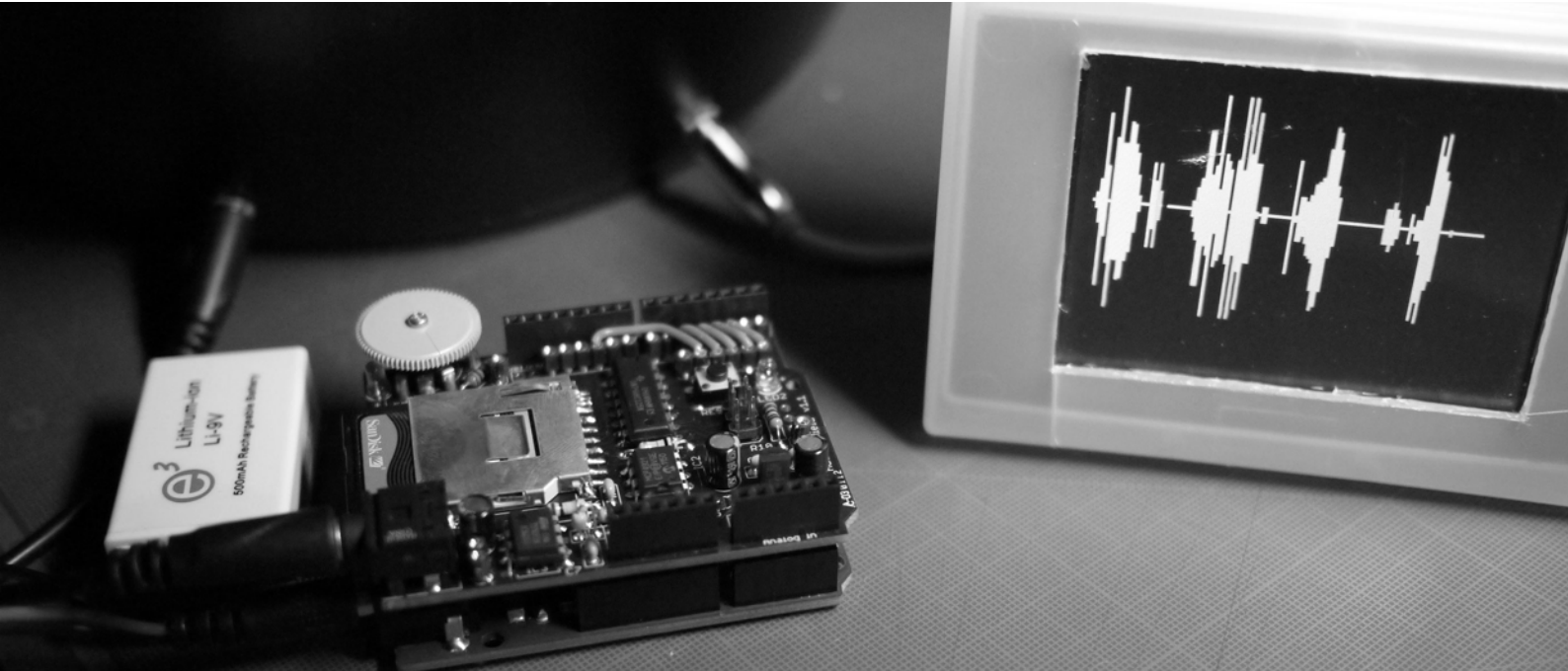
Evaluating engagement in aesthetic interaction through prosody

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ABSTRACT

This article explores expressive affordances as a measure of engagement in aesthetic interaction, toward an analysis framework for tangible interfaces. This framework aims to assist in designing for expressiveness and assessing human engagement. From a review of current literature we arrive at two aesthetic approaches to interaction: the pragmatist and the naturalist. These are used to examine theoretical and empirical studies on the relations between aesthetics and affordances. We conclude that expressiveness results from cognitive flows between the user space and the artefact space, and that while interaction properties can help improve adequacy, interaction success is ultimately left to subjective judgement. Prosody is advanced as a candidate to describe a range of expressiveness in aesthetic engagement, and we propose a tangible interface designed to test this in empirical studies.

Keyword(s): Aesthetics, Interaction, Affordances, Design and Prosody.

INTRODUCTION

This paper summarizes different approaches to aesthetics in interaction processes. The discussion is grounded on a review of theoretical and empirical studies of interactive affordances. This exploration maps expressive affordance in relation to dominant paradigms of interaction theory, toward future work in complementing frameworks for the design and observation of interaction aesthetics. The concept of prosody is advanced as a candidate to reconcile aesthetical approaches to interaction properties and dimensions. Finally, practical developments are briefly described, which will serve as a sandbox for the design of interaction experiences, designed to study expressiveness as a possible measure of aesthetic engagement.

MAPPING EXPRESSIVENESS WITHIN INTERACTION AESTHETICS

The theory of interaction aesthetics is increasingly presented with new challenges, most evident when such theory is confronted with artistic and speculative developments. This is where interaction with digital media is most permeable to interference, as it is often desirable and stimulated, if not arguably embedded (Dunne, 2006). Following Latour's hybrid agency in technical mediation (1994), this paper explores the study of interaction aesthetics and affordances, regarding digital devices with (or through) which humans communicate and construct meaning. Relating this study to its applicability in speculative developments, we are addressing expressiveness in interaction processes, as it contributes to sense-making (Locher, Overbeeke & Wensveen, 2010; Xenakis & Arnellos, 2013) and enactive cognition (González, 2013).

We approach expressiveness as the range of significant manifestations that a user is able to generate, from combined agency with any given mediative artefact. These manifestations can be observed through lenses of various types. Analysis can be steered toward establishing causality from interaction properties (Lenz, Diefenbach & Hassenzahl, 2013; Lenz, Diefenbach & Hassenzahl, 2014; Lim, Lee & Kim, 2011; Lim, Lee & Lee, 2009), or qualifying and contextualizing experience results (Marti, 2010; Ross & Wensveen, 2010). Focus can be set on material properties of artefacts (Gross, Bardzell & Bardzell,

2014; Wiberg & Robles, 2010), cultural background of users (Locher, Overbeeke & Wensveen, 2010; Ross & Wensveen, 2010; Xenakis & Arnellos, 2013; Xenakis & Arnellos, 2014), spatial and bodily context (Alaoui, Caramiaux, Serrano & Bevilacqua, 2012; Reybrouck, 2012), user-product and user-designer dynamics (Desmet, Nicolás & Schoormans, 2008; Lenz, Diefenbach & Hassenzahl, 2013). Frameworks are necessarily cross-disciplinary, and require a combination of objective quantification and subjective analysis. In any case, expressiveness is an active translation mechanism of communicative media, and must be accounted for, toward a more effective analysis framework. Thus we must first look into interaction aesthetics and affordances, in order to pinpoint qualities, properties and dimensions that may be instrumental in designing for expressiveness. To properly assess their applicability, they must be exposed under the light of different approaches. In the last decades, changes to the media landscape have shifted the ground under these approaches, affecting their momentum in the research field. In an attempt to organize this field, Udsen and Jørgensen (2005) proposed the idea of an aesthetic turn, argued by the authors through four approaches: the cultural, the functionalist, the experience-based and the techno-futurist.

Upon reviewing these approaches, we observe that they naturally fold into two: the pragmatist and the naturalist. On the pragmatist side, we include a transitional functionalist, and its employment of aesthetics as a rationalized mechanism (Ross & Wensveen, 2010) within the human-computer dyad. The transitional quality is based on the acceptance of aesthetics as not just functionally but also culturally significant (Murray, 2012; Norman, 2005), while maintaining a quantitative approach to its analysis (Davis, 1989; Hartmann, Sutcliffe & De Angeli, 2008; Tractinsky, Katz & Ikar, 2000). Under this model, aesthetics are nonetheless mostly perceived as resulting from embedded properties, drawn from artefacts through optimally predictable procedure.

The naturalist model concerns interaction with the ungraspable (Hummels & Overbeeke, 2010), with hybrid actants (Latour, 1994), through embodied action (Alaoui, Caramiaux, Serrano & Bevilacqua, 2012; Beilharz, 2011; Hummels &

Overbeeke, 2010; Reybrouck, 2012). This model tries to combine and update the cultural and the experience-based approaches under a unified theoretical model, which Xenakis best describes as "an alternative to the idea of aesthetic objects that carry inherent values by explaining 'the aesthetic' as emergent in perception within a context of uncertain interaction" (Xenakis & Arnellos, 2014).

Authors such as Norman (2005) and Murray (2012) provide crossovers between these two models, acknowledging their mutual influence, even when defaulting to the pragmatist field. This crossover, in both instances, is largely supported by a theory of affordances, extended from Gibson's ecological model (1986). Interactive affordances are theorized as the main locus of play for interaction aesthetics, linking properties embedded by design, with active cognition and sense-making. As this is the turning point from where interaction expressiveness springs, it becomes a prime candidate for observation under the light of the pragmatist and naturalist approaches.

In a theoretical study, Xenakis et al. (2013) explored interaction aesthetics, regarding their role in enhancing the detection of affordances. The authors argue that interaction aesthetics and interaction affordances are functionally related, based on the claim that the aesthetic experience, through its triggered emotional states, guides users in the sense-making process, thus influencing the dynamic discovery of interactive potency. Citing Locher et al. (2010), the authors refer an 'aesthetics of use' as providing action-driven affordances, which influence the interaction. Operative terms are related to actions and dimensions, argued to support the cognitive process leading to interaction continuation: *anticipate, feel, select, evaluate, judge.* Locher et al. (2010) provide further operative terms: *expressive, pleasantness, attractive, force, glance* — approximating to Norman's "visceral effectiveness" (Norman, 2005). This model views affordances on the cognitive level, as a dynamic result of aesthetic interaction, and largely dependent on the designer's presets and the user's immediate contributions to the emerging experience. Under this model, expressiveness resides within user-activated processes, albeit modulated by artefacts' communicative programs.

Lenz et al. (2013) developed and tested a vocabulary for interaction attributes, as an instrument to design and evaluate resulting experiences.

Describing operations on the interaction level, according to the authors, becomes critical to an informed design and analysis of the experience level. Wiberg et al. (2010) also stress the need for a vocabulary that addresses this ontological distinction, and "enables constructive techniques for design"(Wiberg & Robles, 2010). Establishing a usable vocabulary for such descriptions would therefore complement the cognitive action model of the naturalist approach. The strategic use of these properties, as compositional elements, would serve the purpose of modelling affordances for action discovery and expressive potency, allowing a predictable range of expressiveness in interaction. In this model, unlike the naturalist approach, expressiveness is latent within artefact properties, and activated by user-driven activities as interpretative programs.

Applying aesthetical approaches to the review of theoretical and empirical studies, allows a clearer understanding of two important aspects: how they shape our views on the phenomenology of interaction, and how these views guide the consideration of affordances in designing interactions. As a result of this review, we conclude that the naturalist approach to interaction aesthetics leans on theoretical support to explain the conceptual dimensions of affordances. From this viewpoint, expressiveness lies in the user's domain, and the artefact is afforded aesthetic potential by the user's willingness to engage it and generate involvement.

The pragmatist approach mainly draws from empirical analysis to describe the operational properties of affordances, focusing on the artefact as main locus of interface, and on its embedded programs of action. Expressiveness would then result from a set of modulated properties, working together, creating engagement on the user's part.

We conclude that expressiveness, as elicited by affordances in an interactive setting, results from cognitive flows between the user space and the artefact space, and while interaction properties can help improve adequacy, user autonomy ultimately determines what is a successful interaction, irrespective of the artefact's embedded program. Establishing that interaction affordances affect user behavior, but that users have ultimate control in defining interaction goals, expressiveness can go no further than signaling successful interaction within the user space, as a measure of involvement. **We believe that this measure of involvement is relevant to the study on non-functionalist and speculative digital interfaces, experiences and devices.**

To address this purpose we are importing the concept of prosody, as a measure of expressiveness. Prosody is applied in conversation analysis, and studies the elements of language that contribute to turn-taking (Selting, 2000), rhythm and intonation, in any oral discourse (Barth-Weingarten, Reber & Selting, 2010). Prosody is not embedded in discourse, nor is it a single fixed notation system. Qualities of prosody take form as it happens. Prosody deals with the totality of sound from the structure of grammar, thus providing interesting approximations with interaction properties and resulting experiences. Prosody deals with both serendipity and intentionality, and it is as measurable as it can be unpredictable. This tentative approximation aims to assist in identifying and measuring expressive affordances in interaction aesthetics, which we believe valuable to research and practice in digital media.

EXPERIMENTAL APPLICATION

A prototype interface is under development, to test prosody as a measure of engagement in an experimental study. Its behavior and physical configuration are designed for this specific purpose.

The device consists of a conversational synthesizer: a procedural sound generator that responds to audio input, here provided by utterances from participants. Figure 1 presents a UML schema of the device's fundamental components and operation. Figure 2 represents the tangible interface: an obscured helmet with embedded microphone and speakers, connected to a synthesizer and CPU. Following the purpose of stimulating and observing

conversational behaviour between human and machine, the device's configuration narrows its focus focus on the desired variables. Placing inputs and outputs on the inside of a helmet, while blocking the view to the outside, provides a personal acoustic chamber for the experiment, isolating environmental interference. The privacy afforded by the helmet is expected to facilitate a more spontaneous disposition, as participants can eventually become distracted from external scrutiny.

The data collected during experiments conducted with the device will be the object of future analysis, focused on the research of expressive affordances in experience design.
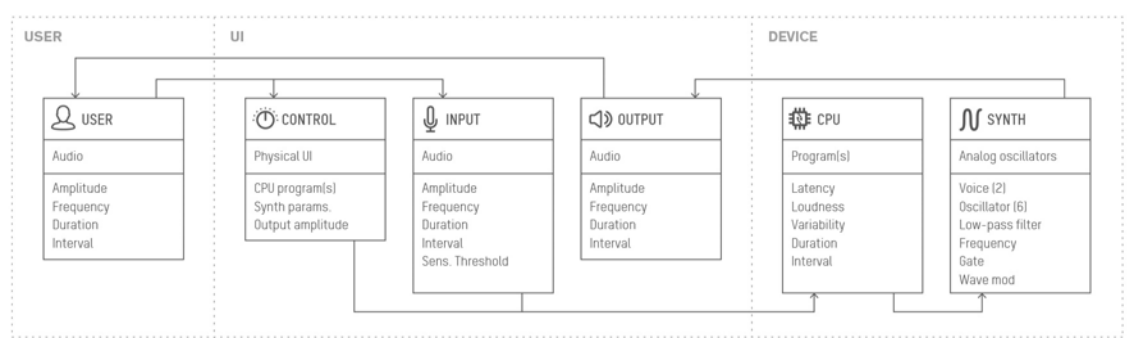

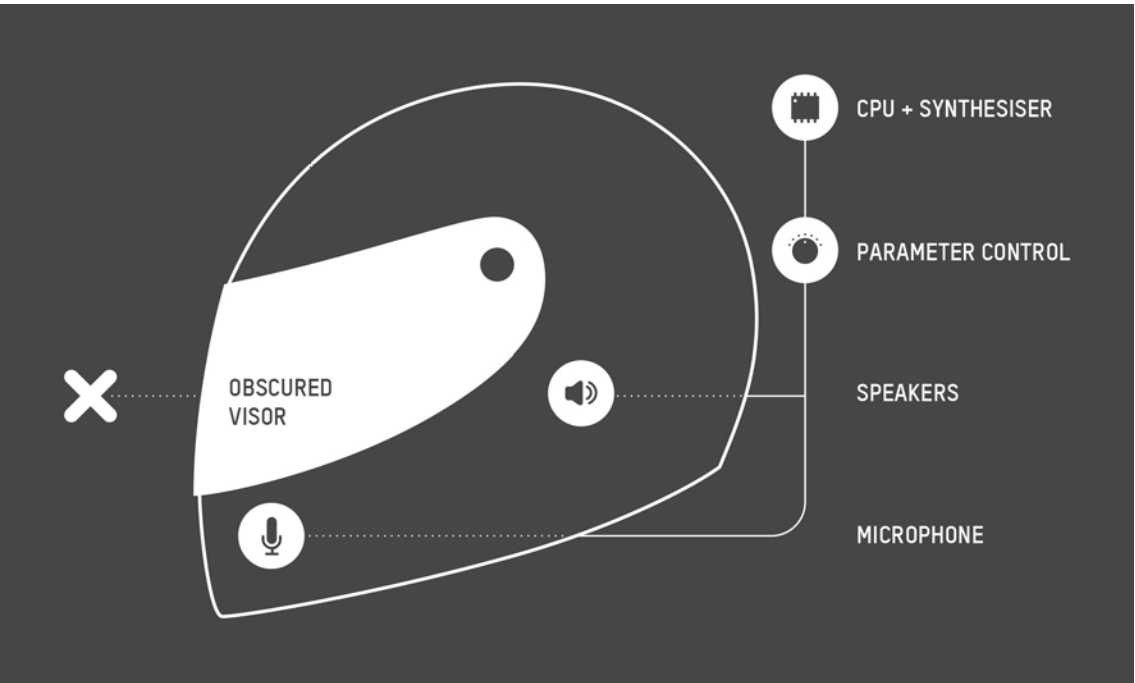Figure 1. UML schema of device components and operation.

Figure 2. Physical interface for experimental study.

CONCLUSION

After reviewing theoretical approaches and practical applications of interaction aesthetics and interactive affordances, with the purpose of exploring expressiveness in interaction processes, Udsen and Jørgensen's (2005) aesthetic turn is summarized into the naturalist and pragmatist approaches. The naturalist approach combines the cultural and the experience-based approaches, focusing on user space, dealing with aesthetics as emerging within perception, in a context of uncertain interaction. The pragmatist approach relates to the functionalist and focuses on artefact space, offering a transitional model drawn from HCI, observing aesthetics as resulting from the embedded properties of artefacts and having an operative role in goal-oriented action. Under the naturalist approach, expressiveness is drawn from user-activated processes, and modelled by the artefact's communicative programs. The pragmatist approach places expressiveness dormant within artefact properties, activated by user-driven activity as an interpretative program. We find that expressiveness, as elicited by affordances in an interactive setting, results from cognitive flows between the user space and the artefact space, and while interaction properties can help improve adequacy, user autonomy ultimately determines what is a successful interaction, irrespective of a designer's embedded program.

Prosody is advanced as a candidate to champion the cause of expressiveness, as a measure of engagement in aesthetic interaction. Such measurement is to be the object of practical experiments, complemented by qualitative data collection. The first device under development for these experiments is briefly described, and we hope to discuss experiment results in the near future.

LIMITATIONS

At this stage, the employment of prosody is a tentative proposal, that results from exploring and reviewing the theoretical fields of aesthetics, interaction and linguistics. Its assistive potential within an analysis framework, or as a design tool, is yet to be determined and fully supported.

FUTURE WORK

It is our specific goal to explore additional concepts from linguistics, to provide useful and operative analogies, toward a framework of expressive affordances. Identifying expressive affordances requires further experimental studies, and understanding their cognitive role will benefit from wider theoretical explorations. However, the turning point for this research lies somewhere between theoretical development and practical engagement, in researching how affordances mediate properties and meanings.

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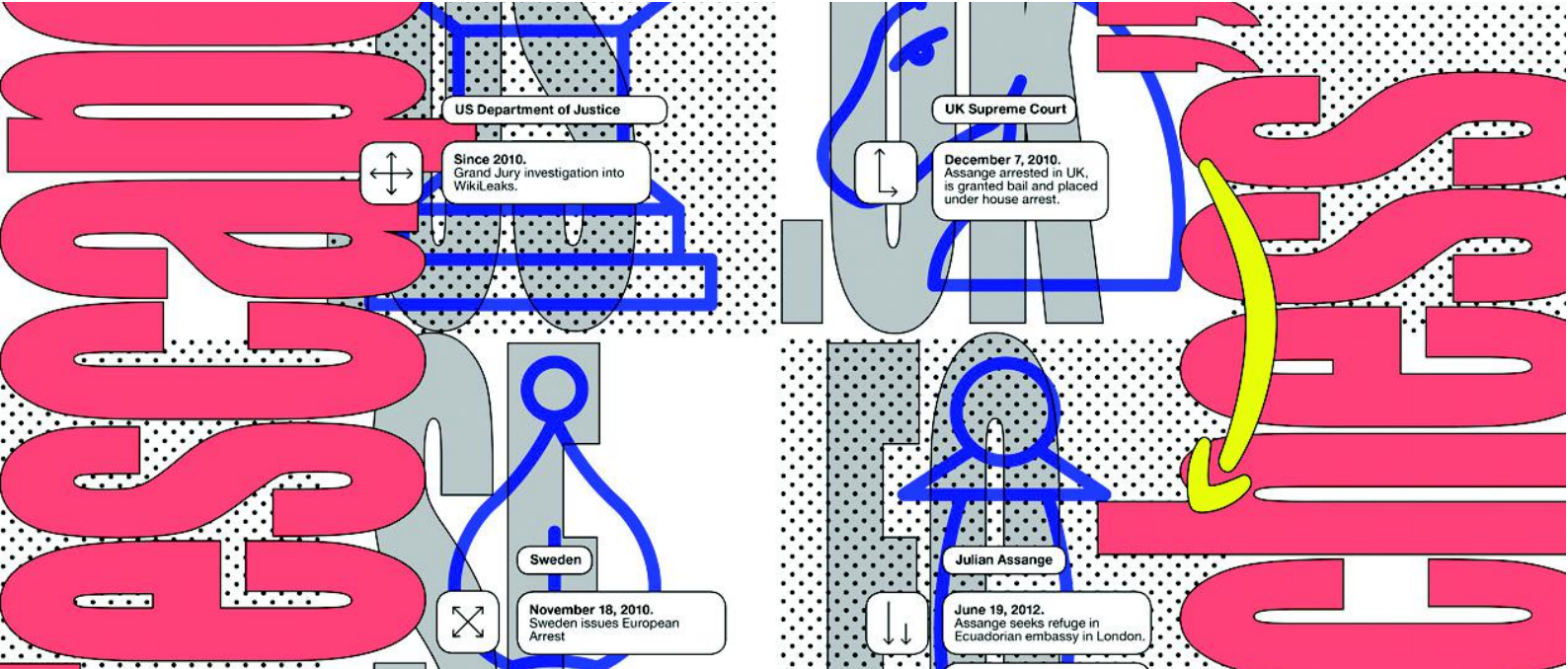
Towards a political dimension
of speculative design
Graphic design, critical-speculative practices
and articulation of conflicts

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ABSTRACT

The research focuses on critical and speculative practices emerging in the field of graphic design. Graphic design lacks in-depth reflections about experimental practices that strive for a critical role within the discipline, through speculative design approaches. The research starts with a theoretical investigation, where critical-speculative practices are analysed both in an historical perspective with graphic design tradition and through a comparison with the set of theories underpinning concepts like "critical theory" and "speculation".
The research will then focus on those projects and modes of productions able to open up spaces of negotiation and articulation of conflicts regarding social, cultural, and ideological issues. During this phase the political dimension will emerge as the foundation of every practice aiming for a critical and speculative role.

Keyword(s): graphic design, critical-speculative design, politics of representation, space of negotiation, conflicts

INTRODUCTION

The research focuses on critical and speculative practices emerging in the field of graphic design. Graphic design lacks in-depth reflections about experimental practices that strive for critical production through speculative design approaches. Theoretical scaffolding is needed in order to define forms and strategies employed, as well as different ways to publish and spread those projects. The main purposes is to establish under which conditions a speculative graphic design project works as an investigative tool (Blauvelt & Davis, 1997; Laranjo, 2014; Mazé, 2009), formulating and visualizing a critical stance through narratives or scenarios.

This critical dimension cannot be limited to the project's content, but should be linked to its cultural relevance – that is, its capability to spread out within the cultural environment, integrating the speculative hypothesis or scenario into the social imagery.

Through this research, the frame moves from the field of interaction design and HCI to that of graphic and communication design. That is, within the research framework critical-speculative projects will be evaluated as communication acts, since they are developed as such – as a publication, a video or photographic scenario, an advertising campaign or an exhibition. Within this framework two new aspects should play a major role: the project's rhetorical – and political – dimension and the ability to permeate its cultural environment.

However, this paper aims to define when a speculative graphic design project can be defined as critical, linking this critical dimension with the production of "unstable knowledge" (Pethick, 2009) and the articulation of conflictual situations.

DEFINING CRITICAL-SPECULATIVE PRACTICES IN GRAPHIC DESIGN

A NEW FRAMEWORK FOR CRITICAL-SPECULATIVE DESIGN

Today critical-speculative design is usually identified with Critical Design. The work of Dunne and Raby helped to highlight the need for a certain kind of practices and the value of speculative approaches. But after almost fifteen years

Critical Design struggles to present itself as a legitimate tool for investigation. The reasons of this suspicion highlight some issues with Critical Design and critical-speculative practices in general.

Since Critical Design emerged from the field of interaction design, it often employs a scenario design strategy where a new technology is developed and articulated through its ethical, social and economical consequences. By introducing a new technology in a futuristic scenario the goal is "to challenge narrow assumptions, preconceptions and givens about the role products play in everyday life" (Dunne & Raby, 2013). But too often the critical premise seems denied by the aesthetic dimension of the projects. As noted by Carl DiSalvo, "It would seem as if the project is reductively spectacular: pragmatic information and critical perspectives have been exchanged for extraordinary images. [...] The problem is that the speculation seems disconnected from the very practices and issues it purports to be commenting on"[1] (DiSalvo, 2012).

While they are claiming a critical role against the status quo – represented by capitalistic production, free market dogma and mass consumption – these projects employ visual and aesthetic means that embed and reproduce some of the cultural cliché at the heart of that same status quo.

Another issue regards the ways Critical Design spreads and publishes its projects to a wider audience – and therefor its ability to permeate culture. The most common remark is that these projects are made for a very narrow audience – that is, other designers interested in that practice. This situation could be challenged through design and communicative strategies, since scenarios and narratives can be employed to represent and visualize everyday situations very close to the user's experience[2]. But the elitism persists since the

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[1] Furthermore this spectacularization seems rooted in the western cultural and social imaginary: "the near-futures envisioned by the great majority of projects seem devoid of people of colour, who rarely (if ever) make an appearance in clean, perfectly squared, aseptic worlds. Couple depicted in these scenarios seem to be consistently heterosexual and bound by traditional notions of marriage and monogamy. There are no power structures made visible that divide the wealthy and the poor, or the colonialist and colonised" (Prado&Oliveira 2015).

[2] "critical design, tactically speaking, should not be absorbed into the social practices of the artworld, with their institutional structures of exhibitions, museums, and funding. Rather, critical design works best when it is operating within industry and commerce, not because art can't get into everyday life, but rather because it is easier to get design into everyday life in predictably quotidian ways" (Bardzell and Bardzell 2013).

outputs of critical-speculative projects struggle to leave academic or artistic contexts.

These limits point out the need to move the focus from interaction design and HCI field to that of communication design.

The first step is to compare critical-speculative projects emerged at the beginning of XXI century with traditional discourses and practices of graphic design, highlighting continuities and gaps. At the same time these projects are associated with those theories that back concepts such as "critical theory", "criticism", "speculative theory", "speculation". This clarification is necessary in order to establish under which conditions a graphic design project can be defined as critical and speculative (Bardzell & Bardzell, 2013).
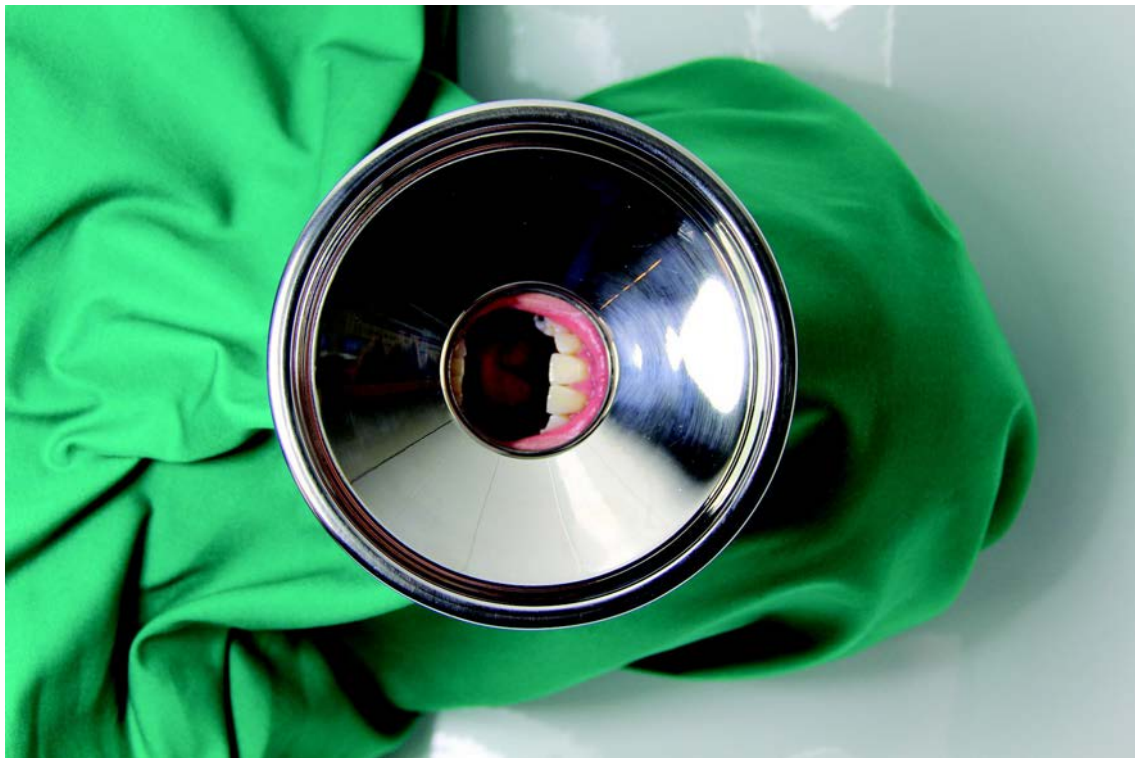

Figure 1. Michael Burton and Michiko Nitta, Republic of Salivation, from the After Agri project (2010). The project has been criticized by Prado and Oliveira for the cultural cliché embedded in its visual representations.

CRITICISM AND GRAPHIC DESIGN

Critical-speculative graphic design can be linked to the theoretical discussions arose within the discipline at the end of the XX century. These discussions tried to provide a critical-theoretical scaffolding to the discipline in order to legitimate it as a valid investigative tool (Heller 1997, Smith 1994, Swanson 1997). As observed by Francisco Laranjo, this is "an important transition in graphic design practice and education: from the designer as author to the designer as researcher [...] a consequence of the maturation of the discipline, seeking legitimacy to be used as an investigative tool" (Laranjo 2104).

Of course, this is not a description of what the discipline is, but rather a trend in the field of graphic design. However it is possible to define some features that seem to characterize this critical dimension:

– autonomy and research: it is necessary to seek autonomous spaces in order to develop critical and experimental paths of inquiry not restricted to professional or market models; these spaces represent the opportunity to enhance the designer's activity in terms of "problem-finding" rather than "problem-solving" (Blauvelt 2006; Blauvelt & Davis, 1997; Metahaven, 2011);

– politics of representation: the idea of graphic design not just as a profession or a service, but as a complex cultural system through which cultural stereotypes and ideologies are embedded and reproduced – but also exposed and contested. In this framework, tools and concepts from cultural studies can be combined with those of visual rhetorics (Buchanan, 1985; Buchanan, 2001; Smith, 1994; Swanson, 1997):

– reflexivity: the focus moves from the final output (or product) to creative processes and design practices employed during the project. Against the Black Box model[3] – where the final product conceals its material conditions and ideological premises – a reflexive design practice is introduced (Revell, 2014; Smith, 1994; Van Toorn, 2006);

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[3] "look at Apple's iPod. You could look at it for the rest of your life and never understand how it works, not without extensive training and insider knowledge. [...] this progress speaks of Bruno Latour's idea of the Black Box – the more advanced technology becomes, the harder it is to understand" (Revell 2014).

– negotiation: the idea of communication process as a negotiation space or a contested terrain (Kellner, 1995). The ultimate use of a product – or the final meaning of a message – is usually pre-imposed by the designer/client relationship, without any space for the user. This model is contested by practices that seek for not-expected outcomes, trying to embed these feedbacks into the design process (De Certeau, 1984; Howard, 1997; Smith, 1994).

Figure 2. Jan Van Toorn, exhibition poster for Van Abbemuseum (1971) Van Toorn anticipated most of the reflexive practices in the 70s.

SPECULATION AND GRAPHIC DESIGN

These characteristics help to define a project as critical. But what does it mean to develop a critical stance through a speculative design process?

Here "speculative design" is understood within the context of "speculative theory". A theory is speculative when concepts are employed not to describe a state of things, but rather to change it: "the role of theory [...] is speculative: not to explain what is known but to challenge us to see in new ways, to generate new

modes of engagement or ideas" (Bardzell & Bardzell, 2013). So a speculative project should introduce in order to develop a new perspective, a new representation of a certain situation: through the distance created between a situation and its new representation, a critical stance can be developed and a new knowledge can be articulated[4]. Dutch curator Emily Pethick has defined this kind of cultural production as "unstable knowledge", that is a knowledge that "did not rest with a singular viewpoint, but contained many differering, and often conflictual, perspectives". So a critical-speculative project should be able to "relentlessly re-inscribe a split in the heart of any discourse, opening it for negotiation. To give in to this ambiguity is to keep open the possibility for constant re-articulation and negotiation" (Pethick, 2009). In Metahaven's *Sealand* identity project (2004), the critical value of the speculative approach doesn't lie within the fictional branding of a micro-nation identity, but rather in the narrative construction of a scenario where concepts like identity, nation, branding are called into question. The project doesn't describe a reality, it questions the meaning of that reality, by introducing a divergent perspective and representation of it.

Something similar could be said about Ruben Pater's *Drone Survival Guide* (2013): here the drone issue is approached by the point of view of those who have to deal with that technology within their everyday life. The project, designed as an informative manual and translated into 32 languages, shows the 27 best known military drones and "lists a series of countermeasures to avoid detection by the drones' sensors, and how to disrupt them"[5]. However the guide doesn't seek to promote anti-drone warfare but rather to represent an oncoming scenario by the point of view of those who suffer this technology. *Drone Survival Guide* is speculative since it represents a given situation introducing an

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[4] In this sense the real value of a speculative project is the distance between the reality as it is usually perceived and the new representation of that reality introduced by the project, as noted by Emily McVarish: "to say that such work doesn't touch reality would be a mistake, since, even if only by comparison with 'real' or practical work, it enters our sense of the real: what is and what is not possible within the confines or definitions of the real, what would have to change in order for something different to be possible, and so on. This more elastic sense of the real is speculative work's great gift to us, since it reminds us that reality, at least social reality, is a construct – a construct in which design participates" (Emily McVarish in Sueda 2014).

[5] http://www.untold-stories.net/?p=Drone-Survival-Guide

hidden or forgotten perspective within it; and by creating such a distance with the "normal" reality it demands for a change – or negotiation – of that situation.

Figure 4. Ruben Pater, Drone Survival Guide (2013).

A CRITICAL OMISSION: SPECULATIVE DESIGN AND THE POLITICAL

The concept of "unstable knowledge" introduced by Emily Pethick helps to redefine the critical dimension of speculative practices as the construction of different perspectives within situations that can be defined as conflictual. In this sense, critical-speculative practices could be understood as inquiry tools to investigate political issues.

The term "political" here is used with the frame of political philosophy, which at its most simple definition can be described as the way society is established and organised. As Mahmoud Keshavarz and Ramia Mazé have outlined "This includes a concern for how identities, subjectivities, and collectivities are posited – including how these are instituted by design, as one of the practices that organizes human coexistence. [...] Design can be understood as a form of intervention in which a particular social order may be confronted with others"

(Keshavarz & Mazé, 2013). By introducing new representations of different social or aesthetic orders (Ranciére, 2004b) speculative design should be able to articulate and visualize different and opposite points of view.

However it has been noticed that the majority of critical-speculative projects, especially within interaction design field, are developed without any political dimension[6]. By avoiding any references to this dimension critical-speculative design seems to follow a major tendency in contemporary cultural debate, that is the post-political trend. In Western democracies there's an increasingly strong tendency to exclude, or at least reduce, moments of social conflict (which mask critical points regarding social tensions and contradictions) from all representation or coverage. Consequently such moments of conflict find no appropriate forms through which they might further develop or play out.

Figure 3. PRISM: The Beacom Frame, by Julian Oliver and Dana Vasiliev. It was banned by the technical supervisors of Transmediale 2014 under threat of arrest.

This post-political character seems to be a distinguishing feature also in design practice (Laranjo, 2015), but in the context of critical and speculative practices

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such an omission raises some critical questions (DiSalvo, 2012, Metahaven, 2011). Avoiding these issues seems to be the first cause of the cultural impasse described by Prado and Oliveira (Prado & Oliveira, 2015), since engaging with the political dimension involved in the situation described by the speculative scenario could be a way to make visible the hidden power structures "that divide the wealthy and the poor, or the colonialist and colonised", or at least to articulate different perspectives within the same scenarios – instead of visualise it through a mono-perspective or Western-centred point of view.

But engaging with the political could be also a good strategy in order to challenge the narrowness of critical-speculative design's public dimension. As observed by Carl DiSalvo: "to not address politics in social contexts where they are usually present is a striking omission. It is also a missed opportunity. If one purpose of speculative design is to prompt reflection on contemporary issues [...] then engaging with politics and the political could lend speculative design projects tractability and fodder for dialogue and debate" (DiSalvo, 2012). This is clear for the case of *PRISM: The Beacon Frame* by Julian Oliver and Dana Vasiliev (2014), an interactive installation that simulates NSA technology by scanning local cellphones and wireless networks and hijacking private devices. During the exhibition at Transmediale 2014, *PRISM* raised so much concerns and anxiety among visitors that the installation was removed with the threat of reporting the designers to the German Federal Police[7]. This overstated reaction can be ascribed to the relevance of the issue raised by PRISM – that is, the problem of government surveillance and the rights to privacy in the age of internet. An issue that, especially in Germany, is at the centre of political debate and public concern.

It's not surprising then that most of interesting projects emerged from the field of visual communication address to political issues and conflictual situations. From Metahaven's *Black Transparency*, to other works such as Noortje van Eekelen's *The Spectacle of the Tragedy*, Ruben Pater's *Drone Survival Guide* and Laura Kurgan's *Million Dollar Blocks*, these works seek to articulate and

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[7] https://criticalengineering.org/projects/prism-the-beacon-frame/

visualize different perspectives within problematic situations that address to political issues.

This should be the starting point for an in-depth research around critical-speculative design practices, aimed to define conditions under which such practices could be really marked as critical and speculative – that is, a design practice proposing new representations of a given state of things, through which different perspectives are articulated and developed in order to prompt new ways of understanding and engaging social problems.

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