CO-DESIGNING WITH SUSTAINABLE PRACTICES IN FASHION DESIGN TEACHING

Co-design com Prática Sustentável no Ensino de Design de Moda

CoDiseñando con Prácticas sostenibles en las Enseñanzas de Diseño de Moda

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Resumo

A questão da sustentabilidade é apresentada hoje como um dos principais desafios da sociedade hipermoderna. Designers de moda e educadores têm a oportunidade de adotar um paradigma de design de moda, que se afasta das estruturas clássicas da moda rápida e pode guiá-los para um novo conceito de moda ética e sustentável. A partir dessa abordagem, é possível trabalhar com critérios de projeto, fabricação e consumo; mas também reativar a longevidade das roupas, melhorando a experiência do usuário e a consideração do desperdício de moda. Nossa pesquisa é baseada no conceito de moda lenta e na aplicação de métodos de co-design em salas de aula, para incentivar o desenvolvimento de práticas sustentáveis e novos métodos de colaboração na educação, envolvendo, no processo de geração e desenvolvimento, designers, pesquisadores, artesãos, diferentes grupos sociais e organizações não-governamentais.

A abordagem metodológica qualitativa foi empregada a partir da prática do design participativo em comunidades offline, onde várias estratégias de design para a sustentabilidade foram implementadas, como técnicas de pirataria, decodificação e recodificação de roupas de segunda mão, todas baseadas em critérios de otimização e melhoria da qualidade das peças de vestuário.

A amostra incluiu 30 participantes divididos em 5 grupos, cujos membros adotaram diferentes papéis e ações dentro dos grupos. Também foram utilizados vários instrumentos de coleta de dados que mediram os níveis de conscientização e os impactos positivos sustentáveis nos participantes do workshop.

Palavras-chave: Co-Design; Sustentabilidade; Hacking.

Abstract

The issue of sustainability is presented today as one of the main challenges facing hypermodern society. Fashion designers and educators have the opportunity to adopt a fashion design paradigm, which departs from the classic structures of fast fashion and can guide them towards a new concept of ethical and sustainable fashion. From this approach it is possible to work with design, manufacturing and consumption criteria; but also reactivate the longevity of the garments, improving the user experience and the consideration of fashion waste. Our research is based on the concept of slow fashion and the application of co-design methods in classrooms, to encourage the development of sustainable practices and new collaborative methods in education, involving designers, researchers, craftsmen and different social groups

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and non-governmental organizations in the generation and development process.

The qualitative methodological view was approached from the practice of participatory design in offline communities, where various design strategies for sustainability were implemented, such as; piracy, decoding and recoding techniques for second-hand clothing, all based on criteria of optimization and quality improvement of the garments.

The sample included 30 participants divided into 5 groups, whose members adopted different roles and actions within the groups. Various data collection instruments were also used that measured awareness levels and sustainable positive impacts on workshop participants.

Keywords: Co-Design; Sustainability; Hacking.

Resumen

El tema de la sostenibilidad se presenta hoy como uno de los principales desafíos a los que se enfrenta la sociedad hipermoderna. Los educadores y diseñadores de moda tienen la oportunidad de adoptar un paradigma de diseño de moda, que se aleja de las estructuras clásicas de la moda rápida y que puede guiarlos hacia un nuevo concepto de moda ética y sostenible. Desde este enfoque es posible trabajar con criterios de diseño, fabricación y consumo; pero también reactivar la longevidad de las prendas, mejorando la experiencia del usuario y la consideración del residuo de moda. Nuestra investigación se basa en el concepto de moda lenta y la aplicación de métodos de codiseño en las aulas, para alentar el desarrollo de prácticas sostenibles y nuevos métodos colaborativos en la educación implicando, en el proceso de generación y desarrollo, a diseñadores, investigadores, artesanos y diferentes grupos sociales y organizaciones no gubernamentales.

El enfoque metodológico cualitativo se abordó desde la práctica del diseño participativo en comunidades offline, donde se implementaron varias estrategias de diseño para la sostenibilidad, tales como; técnicas de piratería, descodificación y recodificación de ropa de segunda mano, todas ellas basadas en criterios de optimización y mejora de la calidad de las prendas.

La muestra incluyó a 30 participantes divididos en 5 grupos, cuyos miembros adoptaron diferentes roles y acciones dentro de los grupos. También se utilizaron varios instrumentos de recopilación de datos que midieron los niveles de conciencia e impactos positivos sostenibles en los participantes de los talleres.

Palabras clave: Codiseño; Sostenibilidad; Pirateo.

1 INTRODUCTION

Sustainability has become one of the most important and popular topics in the last 10 years which is being researched deeply by the academy, and, with particular relevance, to the textile and fashion disciplines. A growing number of researchers have published interesting articles that provide a wealth of knowledge about sustainable practices for research and development, as well as the consequences and negative impacts arising from bad practices and the rapid consumer industry (e g., Black, 2008; Chen and Burns 2006; Dickson 2011 Faud-Luke 2002; Fletcher, 2008; Fletcher, 2010 Fletcher, 2012; Fletcher and Grose, 2012; Howard, 2004; Pookulangara and Shephard, 2013).

Consumption growth driven by planned obsolescence (production of perishable products) was accelerated by distribution processes timing and rapid industry dominated by "just in time" production. Changing trends in fashion drive these factors. This system of throwaway fashion has caused a destructive need in the consumer where more often than not they buy more than they need.

According to the study by the Ellen MacArthur Foundation and the Circular Fibers Initiative, between 2000 and 2015 the production of garments doubled worldwide, going from 50,000 million garments to 100,000 million. Likewise, the Global Fashion Agenda forecasts that by 2030 world consumption will reach 102 million tons. This will mean an average consumption of 11.86 kilos / person compared to 8.5 in 2015.

Consequently this has led to the accumulation of waste derived from malpractice consumption, which in recent years has significantly increased textile waste and apparel at landfills. The latest data released by the 2017 *United States Environmental Protection Agency* (EPA) report 8.9 million tons in clothing and shoe waste in the US alone, with a rate of only 13.6% recycling. The average increase in waste in the last three years has been 0.22 million tons and forecasts continue to rise. According to Eurostat reports during 2016, Italy tops the list of the most polluting countries with 465,000 tons of recovered selective waste. While Spain in ninth place quantifies 98,881 tons, which represents less than 10% of recyclability out of a total of 900,000 tons of waste generated.

On average, the quantity of textile waste European citizens generated varied between just over two kilograms to nearly 15 kilograms.

Simultaneously slow fashion movement has emerged strongly to counter it, on the one hand, the devastating effects caused by the insatiable demand for fast fashion, and, secondly, to challenge the current system of mass production. Slow fashion seeks to improve the quality and transparency of the processes of production and consumption that addresses issues related to cultural diversity, identity, symbolic expression, durable product design and emotional involvement over time (Nakano, 2009; Fletcher, 2008). Slow fashion not only complies with ethical and ecological requirements (eco mode) but it is involved in processes and practices for reusing and recycling outputting existing clothing to minimise waste. These practices challenge the obsession with the growth of the fashion industry of mass production, stopping the throwaway system and instead offering alternative solutions for durability aas well as production systems based on life cycle management through upcycling and downcycling (Bir-

twistle and Moore 2007; Elsasser, 2011; Janigo and Wu, 2015; McDonald, Oates, Tyne, Alevizou and Mc Morland, 2009). The emergence of new businesses in the apparel industry, based on the creation of productive balance scenarios and finding solutions provides a new opportunity to slow down waste and increase sustainable growth (Janigo and Wu, 2015).

In particular, the practice of "do it yourself" (DIY) and the reuse of old materials, which are activities that have always been part of the fashion world are assuming, at present, a new co-creative social dimension by applying integrated participatory design practices in collaborative scenarios, using co-design strategies for it's implementation (Janigo and Wu, 2015).

Hacking is the practice of "do it yourself" through actions of co-design and direct interventions on the technique or process. According to Galloway, Brucker, Gaye, Goodman and Hill (2004) acts of piracy can be made by gaining access to technology and information from it (by transparency) empowering users (through co-producer and prosumer), decentralising control (through processes involving breaking the hierarchies) and creating beauty overcoming the limitations (through collaborative redesign of used clothing).

Hacking originated from the world of software programming providing valuable characteristics that are now beginning to assume essential values in the efforts of committed and sustainable fashion beyond the limits of conventional production (Von Bush, 2009). However these new paradigms of activist thinking and implementation practices for sustainable co-design processes are rare in academic practices and collaborations between design schools and public or private entities.

This point of our research focuses on the creation of co-design scenarios which involved researchers, students design, craftspeople and social groups that combined practical hacking in fashion with both optimisation strategies of eco-design and end of product's life cycle (upcycling) to redesign their clothes.

2 THEORETICAL FRAMEWORK

2.1 Less by more towards a new concept of wealth

The origins of slow fashion lie in the slow food movement that began in Italy in the 1980's as a reaction of a group of activists to the opening of a new McDonald's restaurant.

According to Fletcher the "slow food movement is a Gestalt switch" (FLETCHER, 2010, p.260), that assumes priorities and economic and business practices since the consecration of the values and behaviors, replacing the fast model and distorted current consumption and production by a new holistic model conventionally integrated from a broader set of objectives, which are based on traditional economic values, ecological diversity, health, leisure, employment ,security and future security. Inside this system the slow fashion, in contrast to fast fashion, considers like its predecessor, slow food, slow culture and values, an essential part of the system.

Slow fashion represents a break with the current rapid system despite the general in-

dustry's view which is somewhat distorted. Current approaches continue conceiving it as a slowdown focused on marketing strategies that continue to expand and improve sales. The latest proposals from some of the major industries of mass production show this distorted and confused vision. For example, H & M with its line Conscious and close the loop. Moreover, its Spanish counterpart Zara, with the development of its programme Inditex Green to Wear the line Eco War Ning and the label Join life which identifies different types of garments made with a sustainable settings such as Care for Water, Care for Fiber and Care for Climate. However, slow fashion means something higher than false metaphors, which need to be defined inside a real system change that challenges the economic and productivity growth, core values and worldview accelerated fashion to redefine itself within a system truly rich "less by more" against classical visions of fast fashion of "more by less".

The slow movement in fashion is not considered a descriptor speed slows production processes; but a different worldview that employs variable time to strengthen relations value and extend the boundaries of obsolescence to overcome it. The slow movement in fashion has a strong cultural and biophysical relationship between product and experiences, through diversity, durability, pleasure and quality. Slow fashion incorporates social responsibility processes which work, sustainability and transparency (Fletcher, 2008)

Slow food and slow fashion are visions that are conceived within a slow macro-culture, that definitely change the economic and social practices by introducing them and incorporating them within their culture as part of the debate. These conflicting visions raise new questions, not on the ability to produce more, but on the socio- cultural and ecological consequences. Slow fashion is not seen as an obstacle or slowing fast system of production and consumption but rather, as a change of the system, defying growth and globalisation to safeguard the durability and diversity of a new and standardised system. Slow fashion proposes new work systems based on co-creative experiences. These models are changes in the relations of consumption and production brought about by the new consumer attitudes and new social policies, which are based on a new development system, extending the creative boundaries to the public and their real needs. This new system, which promotes relations of trust and intensifies the states of consciousness, connectes: communities of manufacturers, artisans, designers and customers through a model of ecological, social and productive growth that sells less for more. This model invites reflection on the true value of things, considering the product at a higher rate of value to protect the ethical principles of respect and social awareness. Participatory design practices are at the core of this collaborative system from which the concept of co-design emerges and evolves.

2.2 Co-Design as a methodology for work in the area of sustainability design

Since the first proposals suggested by Pine (1993) customisation practices have evolved to find fully integrated consumer processes and design practices. Several authors agree on the definition of co-design as a process of integrated value, which combines the consumer's

customising choice from a list of options and predefined components (Fiore, Lee, Kunz and Campbell, 2001; Piller, Schubert, Koch and Möslein, 2005; Ulrich Anderson- Connell, and Wu, 2003). Co-design emerges strongly as a method of co-creative work that is revitalising new ways to understanding and working with design and research participation. Several studies show that over the past 10 years, research on participatory design (PD) has changed both the role of the participants and the ways of thinking, which currently addresses the new domains of collective creativity and design processing (e.g., Liem and Sanders, Sanders and Stappers, 2008).

Sanders (2008) portrayed 3 diverse perspectives that emerged from early approaches to user-centered design to current participatory design:

1. The user-centered approach
2. Innovation directed towards the user
3. Innovation through co-creation
A reconstruction of these three approaches has been illustrated in figure 1
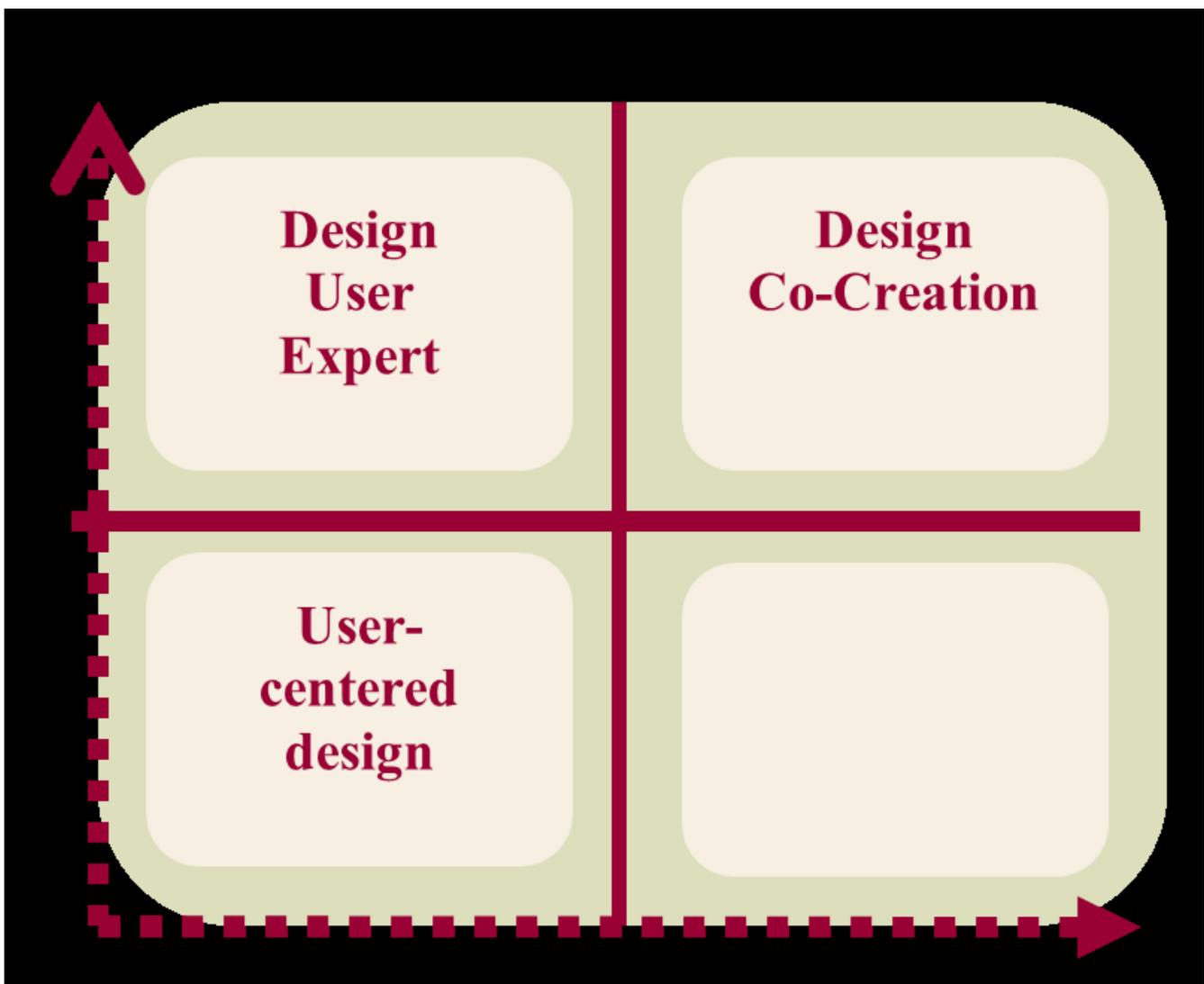
Figure 1: Three design approaches. Source: own elaboration from Liem & Sanders (2011)

The belief in the resurgence of new roles for designers (Lee, 2008; Sanders, 2008; Sanders and Stappers, 2008) which promotes a new system of learning is now established at the center of the debate. Various academic teaching designers defend educating designers from the base of co-design to avoid future possible rejection caused by the lack of co-creative culture, since not everyone thinks that everyone is creative (Pardo-Cuenca, 2014; Pardo-Cuenca and Prado-Gascó, 2015; Sanders and Stappers, 2008).

Recently, several studies focusing on the teachings of fashion, have addressed new methodological approaches based on practical fashion using strategies to manage co-design projects (Pardo-Cuenca and Baldan, 2014; Pardo-Cuenca, Hernandis and Lupano, 2013).

Co-design is also addressed from the practices of sustainable fashion, for its ability to break the mold and hierarchies promoted by the fast fashion industry, giving it more egalitarian potential. Co-design breaks the barriers involving and engaging the consumer in the process of design, customising processes and adding value through the experience. According to Otto von Busch (2009) co-designed fashion is a free market where everybody can participate. Co-design proposes new roles as facilitators for designers, developers and generators, which allow the design to flow in all directions designing with people and not for people. The co-design unites the world experts (abstract space) with the world of people (concrete space). (See figure 2).

WORLD OF EXPERTS

ABSTRACT SPACE   **PUBLIC PARTICIPATION (PP)**

KINGDOM OF COLLABORATION   **PARTICIPATION DESIGN (PD)**

CONCRETE SPACE

WORLD OF PEOPLE   **COMUNITY OF PARTICIPATION (CP)**

Figure 2: Space defined by Lee. Source: own elaboration based on Lee's spatial concept (2008)

Co-design creates opportunities to paticipate with design professionals, communities and the public within a collaborative framework. Consumers share responsibility and commitment to the other agents involved in all phases of design development. Consumer involvement can vary depending on the interests and needs of the practice or action. Figure 3 shows a scheme in relation to this point.

DIY practices are considered as co-design approaches which involve consumers in a wide variety of customisation processes, which are operated from activism in crafts to activism as a practice of hacking fashion. Both approaches aim to emphasise on the social commitment, both from the point of view of the quality of the garment (the amount above) and from the domination and conquest of a system and / or closed process that extends its codes to the public domain. Consumers share responsibility and commitment to the other agents involved in all phases of the design development.
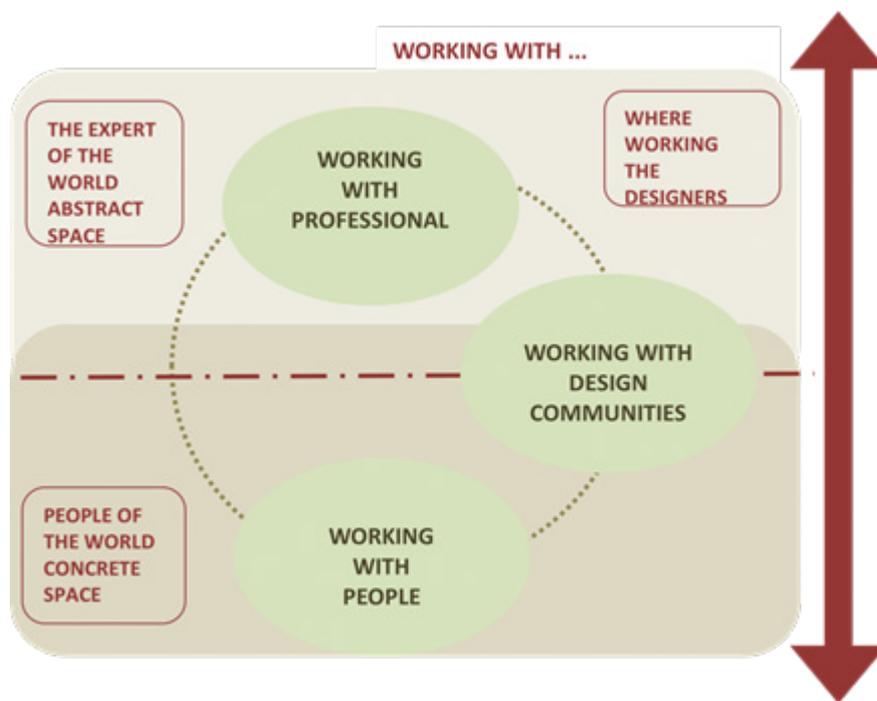

Figure 3: Space for participatory design. Source: own elaboration from Lee (2008)

Hacking is the practice of "do it yourself" through actions of co-design and direct interventions on the technique or process. Hacking originated from the world of software programming provides valuable characteristics that are beginning to assume as essential values the efforts of committed and sustainable fashion beyond the limits of conventional production (Galloway et al., 2004; Von Bush, 2009).

From the field of design business, a recent study explored co-design processes involving consumers who redesigned their used clothing. This study offered a sustainable alternative based on the redesign of second-hand clothing that was very well accepted by the study participants (Janigo and Wu, 2015).

Although in the business world this study suggests a major change in the business and culture of future fashion business; in academic spaces, there are difficulties on how to methodologically approach the processes of co-design integrated in classrooms. In addition, the consulted fashion literature does not offer information on how to conduct these aspects in didactics, despite the fact that both activists and academics recommend a change in working methods and tools.

The main objective of this research is to promote and develop new collaborative work methods from fashion design teaching, involving multidisciplinary teams made up of designers and non-designers (that is, researchers, artisans and other social groups). A second objective is to extend the creative processes of academic and private design to the public domain, to respond to real needs that are built from sustainable solutions.

The proposal was implemented through an action plan to raise sensitivity of fair trade, responsible consumption and the co-design of sustainable fashion. It was structured in various workshops and macro meetings.

The workshops which were held at the EASD and comprised of several aims:

• Working with a social community of individuals to conduct a co-design project, which promotes the environmental commitment and responsible consumption of the participants in the field of fashion.

• Working from the early stages of transformation design and new emerging social needs using innovative tactics co-design with sustainable design techniques of hacking and upcycling.

Our considerations raise compliance with the following hypothesis:

• That the use of collaborative methodologies involving multidisciplinary teams working in sustainable fashion teaching, provide positive effects on participants, stimulating the co-creative process and ethical and sustainable thinking from the first front of design education.

• That the use of innovation strategies in co-design through craft techniques of hacking and upcycling, increases the levels of involvement and understanding of the value of processes, work and materials, as well as the significant innovation of the results found.

3 METHODOLOGY

In our research we used the qualitative participatory design approach based on innovative strategies in co- design. This methodology integrates participatory action process with active subjects (non-designers) in the role of co-designers, who work collaboratively with researchers, designers and other stakeholders. Designers and researchers become facilitators of collaborative design that guide the research inciting the commitment and complicity (e.g., Lee, 2008; Pardo-Cuenca & Baldan, 2014; Sanders, 2006; Sanders & Stappers, 2008).

The use of this methodology and innovative work leads us to develop works of great cultural significance that increases the understanding of the value of activities and things, the uniqueness and difference of the processes and work items that are developed in the inside of new open community space. The central themes revolve around learning from co-creation and from the awareness of artisanal and sustainable processes as a source of cultural richness and creative potential of innovation in sustainable design. The focus of the action revolves around the exchange of roles among participants (i.e., artisans, designers, social groups as non designers, researchers, social educator) to joint reflection and active participation of all its members.

The search for solutions in the project was based on the commitment and involvement of the participants to stimulate co-creative, ethical and sustainable thinking through crafts. Partaking in these practices and applying different tactics and design tools have aroused the curiosity and enthusiasm of the participants' knowledge of new forms of work and the appreciation of traditional processes driven from the use of techniques hacked into and upcycling.

3.1. Overview

This research is part of the project "Weaving Ethical Alternatives among Generations". The co-direction was directed by the principal investigators of this work and the NGO SETEM *País Valencià*, which also had the support of the Clean Clothes Campaign. The workspace was developed in the installations of the headquarters of Velluters of the *Escola Superior d'Art i Disseny de València* (EASD) .The workshops were composed of students, social groups, researchers and craftspeople.

3.2. Participants and data collection

The extraction of the sample was divided into two selection processes. The sample selection directed by SETEM was conducted by convenience sampling from social groups and artisans who came from workshops that had been developed outside the premises of the EASD, under the project "Weaving Ethical Alternatives among Generations"

The selection of the sample was extracted from the EASD of Valencia also for convenience from design students of the Masters course in Fashion Co-design and Sustainability, along with the principal investigator of this project, who took an active role , who also joined in the entire process.

The total sample consisted of 30 participants who were divided into 5 groups of 6 people each. Each group consisted of one student design as a facilitator, one artisan as a co-designer and a facilitator, 4 subject non- designers as co-designers (2 subjects <50; 2 subjects> 50 years) and one researcher as facilitator.

2.3. Procedure

The procedure was carried out through three working sessions that were organised around a common design project where we discusssed general issues of sustainability in fashion and responsible consumption .

2.3.1. 1st Session: Preference, Sensitivity and Knowledge

The aim of the first session was to sensitise groups:

1.The project was explained, the objectives of the workshop were raised and the subject was defined. The principal investigator presented the project, the objectives and theme. The proposed theme was "hacked into garments" in the fashion industry. The principal investigator gave a brief introduction of the concept of hacking and its use in design practice. The aim was to raise sensitivity and to convey to all participants (designers, craftspeople and social groups) basic knowledge about the concept of hacking in fashion and how these would work in the workshop through a design strategy.

Next the groups were defined, and the designers (facilitators/students) of each group explained the work's phases, the techniques and strategies that were going to be worked on.

2.   Focus group and idea generation from the analysis of the garments

a)   Assessment and analysis of all garments from a questionnaire ad hoc and the technique of thinking aloud.

b)   Joint debate groups and decision-making of an only garment from the basic strategy addressing "optimisation of the garment".

c)   Assessment and analysis of the chosen garment and ideas generation for change and/or modification.

Once everyone understood the working methodology, the designers / facilitators of each group asked participants to speak of the garments, which had been requested from them weeks before the workshop. To do this from a focus group the participant had to answer a short questionnaire. The goal of this first part was to select a single item from each of the

groups. The garments were chosen to maintain a link with the users; emotional, aesthetic or functional (See figure 4)

Figure 4: Focus Group Participants

To develop correctly the focus group two types of questionnaires were proposed. The first questionnaire was designed to address general issues of the garments and find out what reasons had prompted the participant to choose the garment for the workshop. Moreover, the think aloud technique was also employed, which allowed the extraction of more and better information on each of the garments. After selecting the item by consensus and considering a greater adjustment of the possibilities of this to the objectives of the research we moved onto a second questionnaire to decide what features were to be modified in the subsequent workshop and why. This process took into account the eco design strategy agreed by the designers and the principal investigator that was to enhance the optimisation of the garment. Table 1 shows the issues to be worked on in terms of dynamics.

Item	Individual Questionaries	Focus Group Questionaries
1	Why did you choose this garment?	What possibilities does this garment have to improve?
2	How much time do you have it?	What is missing or extra?
3	How did you get it?	What posibilities of change does it presente?
4	What would you like it to become?	-
5	What do you like most and least about tha garment?	-

Table 1: Focus Group Questionnarie. Source: own elaboration

2.3.2. 2nd Session: Planing and Learning the Technique

The second session was structured in the following way:

1. In the first part an artisan explained the technique of garments' decoding for about two hours, where she showed with different garments how to extract the patterns of these using them as reference (decoding parts) without pattern tables or previous knowledge (See picture 5, 6 and 7).

Figure 5: Two examples of original garments

Figure 6: Artisan working

Figure7: Artisan working

2.   In the second part each group, guided by the facilitator, met together and they were shown the work kit (second-hand garment kit or left-overs of fabric pieces) to value it, which they were going to work a new pirated garment. The steps followed were:

a)   Valuation of kit and possibilities of remanufacturing.

b)   Decoding of the model garment from the pattern.

c)   Disassembly of kit

The model garment should be kept completely, as this is only used as a reference. The second-hand garment kit could be completely disassembled for reuse from the modified and removed from the model garment.

The resulting garment should respond to the consensual features in the focus group which should generally be liable to an improvement to levels of optimisation of material, use, shape etc (See figure 8).

Once explained the technique of garments' decoding by the craftswoman guide, the working groups began to work. The goal was to extract the pattern from the model garment applying the technique of garments' decoding to recover its original shape.

Figure 8: An example of modal garment and second hand garment kit to disassemble for reuse

3. In the third session we developed a design strategy for optimizing. The goal was to hack and recode the model garment from the new pattern extracted in the previous step. The groups altered the original pattern and recoded it according to agreements by the focus group considering the limitations of the work kit, which been chosen by the facilitator.

Regarding the work kit the second-hand garment was the most commonly employed by each group but this one didn't always fit with the garment to which they aspired for its size, similarities, shapes etc...

The pattern resulting was optimised from the decisions reached by all participants, focused on optimizing the new garment (See figure 9).

Figure 9: Designer working with people

2.3.3. 3rd Session: Construction, Recoding and Assemblage

The last session focused on the recoding, construction and assemblage of the new garment from the extracted codes of the pattern in the above process, that is, the new pattern optimised, where it was considered the limitations of the kit, the limitation of the decoding process itself and code setting.

The construction and the assemblage of the resulting new garment were worked with the support of a craftswoman and a designer guide who attended each of the groups organising, facilitating and leading the work.

The principal investigator of this project attended and resolved any group doubts (See figure 10 and 11).
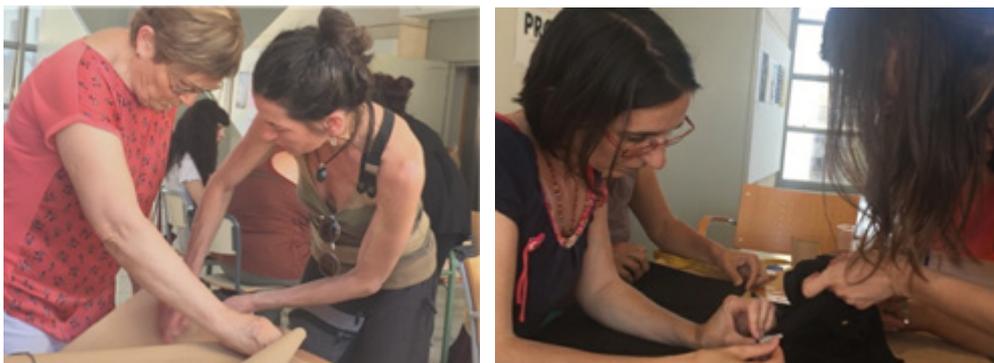
Figure 10: Designer and Co-designer constructing the garments with artisans

Figure 11: Designer and Co-designer constructing the garments with artisans.

2.3. Data analysis

Data analysis was carried out through participatory workshops and observation through a short questionnaire that was passed to designers who led each of the working groups.

Item	Ad hoc questionnarie
V.1	Difficulty of the task
V.2	Perceived Motivation
V.3	Involvement of participants
V.4	Group ability to cope with tasks

Tabela 2: Pesquisa qualitativa versus pesquisa quantitativa. Fonte: own source

4 RESULTS

The quantitative results obtained from the questionnaires showed a high agreement coefficient Cohen Kappa. The values were as follows: Group 1 (kappa = 81-1); Group 2 (kappa = 81-1); Group 3 (kappa = 81-1); Group 4 (kappa = 81-1); Group 5 (kappa = 81-1).

According to the results obtained through participatory observation conducted by the designers (facilitators) we can say that the level of involvement and motivation of the participants at the workshop were high in all its phases. In addition, participants were very satisfied with the knowledge acquired and showed a high degree of sensitivity to social issues and environmental respect. Regarding the final prototypes results obtained from the recoding of the clothes, they were satisfactory and met expectations. All prototypes were exposed in a joint project supported by SETEM (PV) (See figure 14 and 15).

Figure 12: One example of garment transformation from the original garment a-b using second hand garment kit

Figure 13: Final Result

4 CONCLUSION

This study develops a methodology of co-creative scope, which was conducted through several steps, aimed to promote from the base of the fashion design education practice new collaborative workspaces, involving in the process designers, non designer and craftspeople. This proposal advances the theories of Sanders and Stappers (2008) on the importance of working in co-design from the base of education, and raises its application to the fields of fashion design with social and environmental focus. This study offers a collaborative view of work that goes beyond the creative boundaries of fashion design classrooms, working for the benefit of individuals and for building and strengthening ecological awareness and respect. Our research aims to provide answers to social, educational and environmental problems providing design solutions from the field of responsible and sustainable consumption, working with people and not for people.

Practical experience offered with pirating fashion advances in theory and practices described in studies of Von Busch (2009) on how pirating can change the way designers interact with other co-designers such as consumers, craftspeople etc. and how it is possible to intervene in the production process of fashion by emerging new competence in garments, affecting both consumer behavior as the production chain. In our study, designers facilitated thoughts and design processes of open code from hacker culture and their skills, which combined with eco-design strategies and techniques upcycling. We have built a social community of individuals with extensive interfaces between craftspeople, designers and non-designers who not only improved and created new bonds in their relationships, proving to be co-authors of the new designs, but also discovered new social, ethical and sustainable benefits.

On the other hand, participants have increased and improved relations with fashion and clothing competence because they understand their techniques and production processes. In addition conducted sustainable approaches have further enhanced the value of the products and have contributed to an integral thinking in all participants from slow fashion.

In our study, pirating and upcycling techniques oppose the paradigm throwaway system of fast fashion industry and the vision of a ready-to-wear product. With these practices we contribute to the theories of other scholars (e.g., Birtwistle and Moore 2007; Elsasser, 2011; Janigo and Wu, 2015; McDonald et al., 2009) sensitising participants on the incessant waste of consumption and offering alternative durable solutions to output existing clothing and waste reduction. Moreover we also strengthen the vision of other authors (e.g., Fletcher, 2008 Nakano 2009), directing the look of the participants, towards an approach that improves the understanding of the processes and quality criteria, and also building a social narrative that powers sensuousness of the product working from the cultural tradition, craftsmanship and durability of the products.

In summary, with this research we have built a community of people who have

not only learned to work collaboratively to benefit from shared creative potential, but have also learned to increase the competences of the clothes, redesigning and hacking by use of various strategies of eco design and upcycling. Our achievements extend the boundaries of design and fashion consumption beyond the boundaries among classical relationships of designer, producer and consumer, opening the knowledge and traceability of products and their production processes, which are worked under collaborative, sustainable and ethical principles, but also enhancing the identity, longevity values and competences of fashion through craftsmanship.

The social benefits of this work are part of the development of a collaborative project undertaken with the NGO SETEM (PV), under the project "Weaving Ethical Alternatives among Generations.[1]

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