In search of tools and methods for Positive Design,

Evaluation of pattern recognition as a conceptual tool

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Abstract: The goal of this paper is to see whether pattern recognition method could help improve ideal behavior of the users. In this paper the validity of pattern recognition method would be analyzed qualitatively. For this paper the design of a shoe storage has been chosen as a case study. Living spaces have become smaller, so a beneficial use of furniture within such a space could be important. A study was conducted and 30 participants were chosen from upper middle class. Based on field study and library research, a mood-board and a trend-board were made. The main focus was concentrated on existing products in the market. Afterwards, different behavioral patterns were generated and a scenario was chosen for such a pattern. The messy family pattern was chosen and a story board was made to present. Procedures of using current products were documented through photographs. Based on pattern recognition the location and density of current products in the market was visualized through perceptual maps. Simultaneously many ideas were generated and were located in the aforementioned map. Based on the obtained data design specifications were identified and concepts were generated. Evaluated concepts were reduced to three and at the end final concept was selected. The final concept was developed ergonomically and functionally.

Keywords: Product Design, Pattern Recognition, Positive Design, Design Methods
1 Introduction

The goal of the paper is to find methods and tools which could help operationalize and formulate positive design, especially in this paper we would like to see how Pattern recognition would help designers to reach positive design goals. Both concepts of pattern recognition and positive design sound to be somehow new in the field of design research. However we believe that both these could help designers generate better ideas if those concepts would be introduced correctly, academically and inspirationally. Research questions can be summarized as following:

1. What are the strengths and limitations of applying pattern recognition concept in positive design?

2. What contributions could be assumed between integrated pattern recognition and positive design?

This research is inspired by a plausible article in the field of positive design namely as "Managing as designing needs a theory of Design" [5]. In this research he explains that the work of a positive designer is comparable to the process of a sculptor, while a sculptor explores a relation between raw forms, generates movements between and dreams of an ideal form, in the same way designer generates different possible solution out of chaos of raw data and generates an ideal solution. Based on this, we think that pattern recognition can play an important role. Firstly on making the user focus on Interaction between users and their environment and secondly on helping the designer to generate and associate the relations with pre-existing or creative manners, habits and practices of users. This is what we name as patterns. The concept of association in design, borrowed from Jeffrey Bardzel [2], sounds inspirational for us. We think patterns can help designers generate or at least simulate better associations and more tangible design ideas.

The rest of the paper is based on a pilot study and extending it with a participant of the study. We think that such a research is useful not only for designers in order to generate how pattern recognition could help them, but also it could give the reader a clue about what kind of contribution could be given to the concept of positive design through pattern recognition approach. Regarding these questions, the rest of the paper works on the application of these concepts, firstly a review on the concepts of pattern recognition and positive design is introduced. Then a report of a pilot study on those concepts would be offered. Finally a proposal on the role of pattern recognition in positive design is introduced.

2 Definition of Concepts

The main concepts introduced in this part are some remarks and comments on Pattern Recognition and Positive Design.

2.1 Pattern Recognition

Normally by pattern recognition, scientific society moves toward concepts such as face, gesture and signature recognition, while by the term pattern we refer mostly to habits and practices of the users. This concept was first used by Christopher Alexander in his thesis as notes
on synthesis of form [1]. It was introduced to the Iranian design society by Sohrab Vosooughi, as the head of Ziba Design Company, in 2001 and after some years it was introduced in applied way for designers in International Journal of Design by Denef et al [3]. Although generating nature of users' interaction with the world through patterns might sound somehow subjective or qualitative, but it seems that this approach can be more inspirational for designers and does have sufficient background to be used as a design method.

2.2 Positive Design

This concept is something introduced by Donald Norman in reply to critics about negative or unethical interpretation of emotional design. Such a discussion is not that old, while negative aspects of Functional design was criticized by Italian Radical Design and then it was more developed by Anthony Dune and Fiona Raby in the name of Critical Design in their main publishing: Hertzian Tales[4]. Their main argumentations were that functional design has been designed for normal people, while critical design aims at showing abnormalities and problems in which the society is wrestling and confronting with. This discussion was continued in criticizing Emotional Design as well. The main critics were concentrated at this dilemma that whether the society can be manipulated through scientific study of emotions. Donald Norman tried to solve this, by commenting that although scientific study of emotion is not something un-ethical, however we cannot deny the relation between emotional design and its’ consequences in society. That is why the concept of Positive Design was introduced by him, extracted from Positive Psychology. While in functional design, the goal was to design for normal human, in positive design the goal is to change a normal user toward an Ideal user.

3 Hypothesis and Selection of method

Regarding the comments introduced above, our main research question was based on the nature of tools or methods which could support designers in generating ideas in parallel with Positive Design goals. Our proposal is that Pattern Recognition can play an important role to reach such a goal. We look at the concept of pattern recognition as something beyond mere qualitative data interpretation technique. We think the concept of pattern, if we consider this as a meaning making tool out of observational data, is extractable from Interaction between users and their environment. Extracting meaning out of Interaction, not only synchronically but also diachronically, would be utmost useful for designers [7]. Another important argumentation we have is that every product embeds a discourse in itself and it embeds a pattern of its’ own. Lack of understanding such a pattern would lead us to three consequences: Whether the traditional values and manners existing in the previous environment would be demolished or forgotten, or Anti-values and anti-morals would be reproduced in the name of the new product. In the worst situation, the new technology would be considered as an opponent to existing values and would be omitted or confronted in the target society.

Therefore, by introducing pattern recognition technique, two goals are expected to be obtained simultaneously:
a. Through the study, existing patterns, habits, manners, values and practices would be recognized, something which is hidden, and is not visible but could be resonated through our search for patterns (the metaphor of resonance is also extracted from Jeffrey Bardzell Terminology [2] while it is also used by James Gibson before [6].

b. More than that, introducing such patterns would be something which could be inspirational. This could be done by assigning patterns to the current habits and practices. This could associate new, novel and inspirational ideas and results. Again association is also another term used by Bardzell [2].

4 Report of the study

This report is generated from works of the third author as a participant in the course Design Project 1., conducted in Kish International Campus, University of Tehran for undergraduate students of Industrial Design. The course was supervised by first and second author. It was the second time pattern recognition was introduced as a technique for bachelor students in design, while others have chosen different topics regarding their own taste. While the task of the current project was mostly toward pattern recognition, different students had their own values and inspirations for application of such a concept in their own design exercises. One of them is introduced here to study the possible collaboration between pattern recognition and positive design. The task of this project was more inclined toward positive Design in the name of design of shoe-holder for keeping at apartments. In the following paragraphs, report of the study is introduced and afterwards, procedure and results of the project would be documented and analyzed.

The aim of this study was to find out the behavioral pattern of the families regarding their manner of shoe-keeping. Although in many countries people enter home while wearing their shoes, in some other regions they take off their shoes in order to respect the home and its spiritual value. This latter had influenced Iranian culture in interaction with shoes and still could be visible in some families and religious ceremonies. The atmosphere of a shoe-holder was expected to be a medium between interior and exterior of the home, something which was expected to let the user leave the problems of outside and enter the Sanctum of home (Fig 1). Unfortunately, as the study of current situations show, such concepts have been forgotten, omitted and even left away (Fig 2). On the other hand, the modern shoe-holder did not transfer the positive concepts of modern shoe-holder such as independence, discipline and maintenance of footwear. However, their modern and functional shape of such shoe holders have transferred just concepts such as fast take-off of shoes and leave them without any maintenance and shoe polishing.

In order to find the situation of the product, a market enquiry was conducted. First of all, local market has been investigated and only Kish wood industry had the appropriate condition. Kish wood is active in manufacturing all kinds of wooden furniture, but they don’t have various products regarding shoe-holder. Among foreign companies, IKEAs products are available and have good quality.
The target group of this study was chosen from people who take off their shoes either from outside or inside the door before entering the house. In both situation piles of shoes make an ugly view and give an unpleasant feeling. They also can afford to buy special facility for organizing their shoes.

In order to design a device, there was a need for knowing the target group and their behaviors. For this aim a study was carried out and thirty six participants were chosen randomly from Iranian middle class families. Middle class families were chosen due to the possibility to afford such a device and the importance of shoe-holder for them. Our ethnographic data showed that Lower class families do not pay attention to issues such as organizing shoes as they are
involved with basic needs. The chosen samples were observed and interviewed regarding their habits, interest and lifestyle. Based on this information, a trend board and a mood board were prepared (Fig 3, 4). To learn more about target groups, their behaviors were analyzed and it was tried to recognize different behavioral patterns.

Based on observational data and through data sorting methods, appropriate patterns which reflected lifestyle of these families were prepared. Four patterns were selected in which their main characteristics are introduced below:

- **Healthy family Pattern**: is a family who cares about themselves, such as the food they eat, the shoes they use. They normally use good quality shoes.

- **Messy family Pattern**: is a family who is always on rush. They never tidy up around themselves. They mostly forget where they have put their stuff and they can never find their shoes in shoe storage, because it’s too messy.

- **Populated family Pattern**: This family has many children and family members cannot spend enough time together. It can be hard to arrange such family because they have different ideas.

- **Compact family Pattern**: It is a family who has very few members and lives quite economically. They do not have enough space for their furniture and devices. All of their devices, the same as their home, is tiny too.

From these patterns, the messy family was chosen as target group for this study. A storyboard was prepared for better visual perception of it (Fig 5). 360 degree Analysis Technique was performed by taking shots continuously from the procedure of using the product by the user. This was done in order to find out steps of product use and some possible problems or difficulties.

![Fig 5. An image of the storyboard designed for the target group.](image)

For the next step, the goal was to understand the position of the available products and find out whether and in which way current products would satisfy the needs of users. For this aim several perperimental maps were made through different factors and variables (Fig 6, 7). These factors were considered one by one, as a result of market space, and populated parts and existing gaps in the map were visualized.
During the research process many concepts were generated. They were categorized and seven concepts were selected. After identifying the design specifications, three concepts were chosen. In order to choose the final concept, evaluation factors were chosen based on parameters such as safety, ease of production, acceptability of form and affordability. Each of these factors has got a score as its value in this project. Finally concept number 3 was chosen as the final concept (Fig 8,9,10).

Description of the final design

This concept is based on messy family pattern. The characteristics of such a design are as following:

1. The shoes would be kept separated from each other to promote shoe-keeping discipline.
2. There are different locations for different members of the family.
3. An aromatic system and semi-ventilator exists for removing bad smell of shoes and keeping the surrounding atmosphere of the shoe-holder clean.
4. Polishing devices were placed in one slot of shoe holder to motivate polishing behavior.
5. The final form is covered, so it would not have a negative visual effect for the users, whether they use this device outside or inside their entrance.
6. The final form was expected to be both appealing and simple at the same time. Its simplicity was the reason to make the device more user-friendly. Its appealing character was in order to make the device less boring for the target user.

5 Results

The sample project discussed above was one of the few projects conducted by students of Project 1. Design course for bachelor students. The main feedback was mostly based on the reaction of students in confronting the method. As far as we had witnessed, designers are mostly confused between qualitative and quantitative methods. Finding something between is not that easy. The result of our experimentation in using pattern recognition method with students showed that: In the beginning they could not communicate fruitfully with students, however they reacted quite positively when getting more acquainted with the method. They had a feeling of reaching an insight about their project and a deep understanding of the user. One of the projects, as done by the third author, was introduced in the previous part (Fig 11).

6 Discussion and Conclusion

As we mentioned, this study was based on the goals of Positive design. The goals were based on improving expectations of user from a normal user toward an Ideal user. We have considered positive design as a reaction to functional design and critical design as well. This procedure is based on understanding the culture of users from normal to ideal.

This procedure was implicitly defined as acculturation. By acculturation we mean accepting and improving the culture of users through the use of ethical codes and designed artifacts. As an example shoe-holder was chosen as a subject of study.

Based on going beyond what users want, we also put another step forward. Since the roots of
positive design is based on positive psychology, and positive psychology is based on emotions and feelings of people, so one important aspect of design, meaning emotional aspects could be compared and re-defined by artistic association. That part was covered by use of personas and stories for describing patterns. Going back to Faust we could have in mind that artistic procedure is consisted of discover, dream, design and deliver. We equalize procedure of discovery with problem analysis. Dream process could also be compared with problem solving and evaluation. If so, then imagination and vision would work as a tool in order to give us a vision and then based on that vision a correct solution could be introduced.

Based on such a picture, we could reach a correct solution. One of the findings would be to find a good strategy for the problem. The value of such a project would be based on intuitive inspirations that could help designers. In other words, pattern recognition has helped us to initiate and associate deep and tacit layers of users understanding. However, we think that such an effect would be implicit and needs more methods and conceptual tools to be explored and formulated. This is something which could generate plausible topics for further research.

References:


