

Shaping emotions: a study about the feeling of loneliness through the material interaction with surfaces

Elisabetta Cianfanelli, Margherita Tufarelli, Gabriele Goretti

University of Florence, Design Campus, Italy Nanjin School of Art and Design,
China

elisabetta.cianfanelli@unifi.it margherita.tufarelli@unifi.it
gabriele.goretti@qq.com

Abstract

This contribution aims to investigate how design culture can foster new models of emotional, social and cultural interaction that find in the pleasantness of the surface the creation of valuable experiences for users. In particular, the research examines interaction design from a different point of view, studying the relation of emotions and surfaces in a product-based interaction experience.

Specifically, the contribution presents the results of a workshop called shaping emotions: a formal exercise based on the understanding of how user sensations - without precise references on a particular product - can play a decisive role in defining strategies that embrace the aesthetic and typological sphere of use and meanings. This study has highlighted the transfer of intangible psycho-cognitive aspects into tangible elements whose syntax and semiotics is driven by a phenomenological approach to the formal interpretation of an emotional concept. Emotions that occur from experiential states place the feelings of the human being as a focus of the project; through

the design culture, the study tries to interpret experiences and desires as components of mixed emotions.

Authors keywords

Surfaces; emotions; interaction design; experience.

Introduction

For several years, scholars in the field of design research and experimental psychology have been interested in the study of emotions in relation to the products. Among the most known studies, we can recall those of Pieter Desmet, Donald Norman; in addition to those of Nico Henri Frijda about Emotions. Those studies gave us a solid base in studying emotions related to product design.

Initially emotions were generally considered as a problem, as something to be defeated by the use of rational thought. Only negative emotions triggered the interest of scholars who investigated the manifestation of anger, sadness, frustration, stress or anxiety (Norman, 2002). With modern studies, however, this condition has completely overturned: today science acknowledged that emotions play a fundamental role in guiding human choices and behaviors. Thus, positive and negative emotions are both considered and they represent a significant component in the way products are designed and used. Interaction design studies pay close attention to the role of emotions in the use of products and services. If we consider that the Interaction Design foundation defines interaction design as a discipline that deals with "the design of the interaction between users and products", it is easy to realize that it is not just a matter of studying the interaction with technological products, it is a study on the global relationship with the user.

The aim of this contribution is to focus on the study of the surface as the first step of the interaction between users and product. The surface is intended as the primary vehicle of the relationship- certainly emotional- that occurs. Returning to the technological devices, it is noteworthy to underline that in the age of the Internet of Things (IoT) and smart products, emotions play an even more fundamental role in the interaction with the user. The technological evolution allows us to design interactive products that do not necessarily have screens. Smart products nowadays are able to communicate with each other and, of course, with the user. It is therefore interesting to investigate how the design of the surface assumes even more a central role. The surface is intended as the "skin" of the product, the first factor with which users come into contact, becoming a kind of physical interface.

With the aim of investigating the relationship with the surface, this paper will describe a workshop called *Shaping Emotions*: a formal exercise based on the understanding of how user sensations - without precise references to a particular product - can play a decisive role in defining strategies that embrace

the aesthetic and typological sphere of use and meanings. The research team chooses to work on solitude, a condition that can be associated with positive or negative emotions depending on how it is perceived and experienced by the user. The condition of solitude has a strong connection with other feelings, it is linked to nostalgia and melancholy, but also to inwardness and creativity: to retreat into oneself to express a new life, a new thought or an evolutionary dimension of the self.

Solitude and mixed emotions

The user experience in relation to a specific product is strongly linked to the emotions that this product evokes. Before emotions aroused by the use of a product there are those provoked by its perception through one or more of the five senses. In this aspect of perception, the surface of the product is the primary actor with which the user comes into contact and, therefore, the first characteristic of the product to arouse an emotion.

To investigate this theme, we organized a weeklong workshop, during which the participants (students of the first cycle of university education in product design) worked on the design of a surface that refers to a specific sensation. The workshop took into consideration that many events that can be found in everyday life are due to unequivocal, but mixed emotions (Fokkinga, Desmet 2012). Participants were asked to give their own formal interpretation to the concept of solitude. The sense of loneliness is not necessary a consequence of the condition of being socially isolated as "the experience of isolation, the sense/ feeling/awareness to be separated from other people, [...] is not in itself an emotional state: it does not entail any particular desires or evaluations or pleasures or pains" (Koch, 1994), it depends on how people interpret and live with it.

The reason for choosing this sensation lies in the ambivalence of emotions connected to being alone: loneliness is the discrepancy between the social interactions an individual need and the level actually reached. Aloneness can simply refer to a condition of the absence of social interactions without any negative reference. Solitude is basically a subjective experience, on one hand an individual can feel lonely alone, but also in the middle of a crowd; on the other, solitude can have positive effects on individuals.

One study found that, although time spent alone tend to depress a person's mood and increase feelings of loneliness, it also help to improve their cognitive state, such as improving concentration. Furthermore, once the alone time is over, people's moods tend to increase significantly (Larson et al., 1982). Solitude is also associated with other positive growth experiences, like religious or identity building experiences (Suedfeld, 1982).

Although it is difficult to classify emotions, Frijda's work represents a substantial contribution to the arduous attempt to understand human emotions. The author elaborates 12 "laws of emotions", to which this research refers. In particular, it refers to the situational significance of emotions:

According to Frijda emotions are the result of specific situations, two similar situations give life to the same type of emotional response. Moreover, this study refers to the "law" of "Apparent Reality" according to which is the interpretation of reality to give origin to emotions, not the reality in itself (Frijda, 1986, 1988).

The fact is the same: an individual alone, yet this condition can be interpreted in two different ways. The first way links the condition of being alone with the feeling of loneliness, or a state of sadness in being alone. Solitude can also express the pleasure of being alone, to find oneself or enjoy their own interests. Therefore, solitude can arise negative or positive emotions and can arise both, it depends on the situation and on the interpreter.

Shaping Emotions

The experience described in this paper is about young designers dealing with the role of shape as a synaesthetic element, transcending specific product categories and developing concepts of pure content transfer through monomaterial prototypes (designed and subsequently prototypes through 3D printer). Specifically, the contribution presents the results of a workshop called shaping emotions: a formal exercise based on the understanding of how user sensations - without precise references on a particular product - can play a decisive role in defining strategies that embrace the aesthetic and typological sphere of use and meanings. The aim of the workshop was to allow participants to interpreted solitude and then, based on their personal interpretation, they proposed a concept of a surface that represented it. As Desmet wrote, "it is difficult to find general relationships between product appearance and emotional responses because emotions are essentially personal" (Desmet, Hekkert, 2002).

Participants were asked to give a personal interpretation to the concept of solitude, then they worked in pairs with the aim of confronting their personal interpretations with the partner and then synthesize in the project of a surface what was the result of a comparison on personal emotion. Participants, therefore, tried to create a synthesis and a relationship between the personal emotion and the appearance of the formal result. Students worked on a dimension of 200x200 mm, like a tile. Reasons lies in the goal to make them focus on designing a surface that led to the emotions connected to the concept of solitude and, of course, in prototyping requirements. Some of the results of the workshop will be described below:

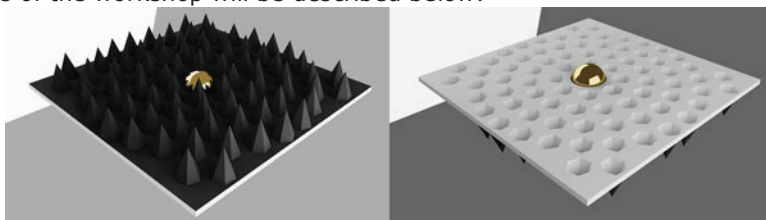


Figure 1. Shape of Solitude expressed by Giulia Piscitelli and Filippo Testi during the workshop Shaping Emotions.

Some participants choose to represent the ambivalence of solitude with their artifact. The example of Figure 1 makes clear the aim of emphasizing the negative (with black color) and the positive aspect (with white color) of solitude. In the first case the concept regards the interpretation of a solitary condition as an “other people” choice and, therefore, suffered by the individual. The individual is represented with a golden half-sphere that in the image on the left is isolated from sharp, hostile pyramids. Solitary, and here we explain the second meaning, are also those who isolate themselves by their choice, so those who take refuge in their own space and dedicate themselves to their own interests, obtaining a sense of absolute pleasure. The latter individuals do not seek any gratification or recognition from the society, but find satisfaction and well-being within themselves. On the other side of the surface, in fact, the pyramids disappear, giving way to the voids from which we can see their inner surface and the golden hemisphere that crosses the surface remaining the same. The first side aims to express the negative sense of Solitary, the other the positive one. The individual is symbolically represented by the sphere, which is distinguished by the surrounding pyramids by form and substance.

A tremendous condemnation or a marvelous conquest? This is the question, the primordial reflection present and underlined also in the second concept (figure 2), in which the participants gave an ambivalent interpretation of the concept of solitude similar to that illustrated in figure 1. In these examples of surface it is possible to observe how the participants have interpreted a mixed emotion derived from the condition of solitude. Other participants, on the other hand, gave an exclusively negative interpretation as can be seen in the example of Figure 3. We can see, in fact, how furrows placed at different levels trace individual paths that sometimes intersect.



Figure 2. *Shape of solitude expressed by Linda Baroncini and Samuele Salvadori during the workshop shaping emotions.*

These “meetings” between the lines are accidental and episodic and intend to represent a condition of inner solitude together with other individuals. A tangle of connected lines, in which, however, the single line remains visible, which therefore represents being really alone. The concept is further emphasized by the fact that the lines are at different height levels.

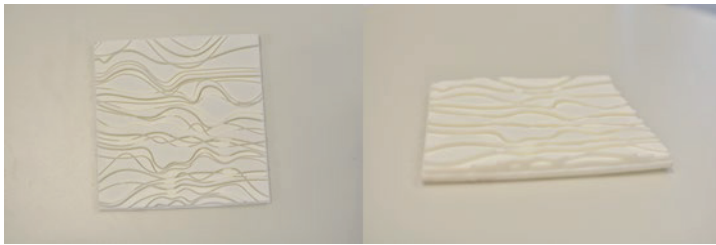


Figure 3. *Shape of solitude expressed by Sofia Collacchioni and Chiara Nardone during the workshop Shaping Emotions.*

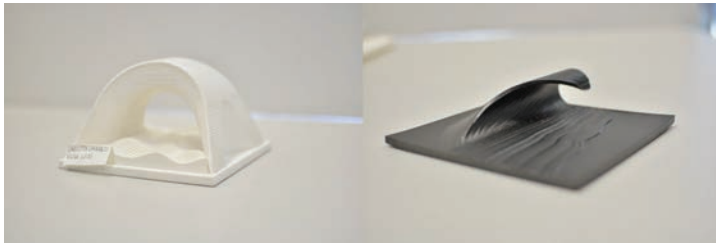


Figure 4. *Shape of solitude expressed by Carlotta Chiavacci and Elisa Luisi during the workshop Shaping Emotions.*

Some participants have interpreted solitude as a moment of refuge in themselves, a protection from the outside, a time dedicated to personal growth or of knowledge of the self. This type of interpretation emerges from the examples shown in fig. 4 in which we can notice that solitude becomes a cap, which isolates from the outside world protecting what is inside it.

In particular, while in the image on the left the insulation is rigid and permanent, in the image on the right we can perceive a reference to the symbology of the wave. The wave is nothing but water, like everything that surrounds it but at the same time isolates itself from the rest for a few moments. The wave refers to the fact that there is no separation between an individual and others, nor between people and reality they perceive as external. In this case, therefore, the condition of solitude is seen as a non-permanent protection.

3.1 Mixed emotions and shape definition

Each group of student analyzed their ideas and emotions about solitude. Then, following the models of “Mixed Emotion workshop” elaborated by Desmet, they tried to bring the analysis activity to specific subgroups of mixed emotions (ME):

- ME Group 1. Different stimuli lead to different feelings and different emotional contexts.

E.g. “I’m excited to attend the campus design of UNIFI, because it is clean and well organized but I’m scared of moving in another town”.



Figure 5. Mixed emotion group 1 diagram.

- ME Group 2. A negative event is set up as a positive event (or vice versa). E.g. “my friends have decided not to leave for the trip anymore. It will be a good opportunity for me to really know the place and a different culture”.

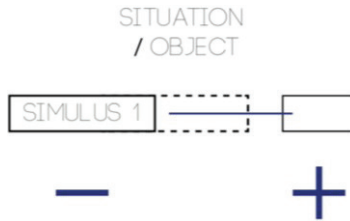


Figure 6. Mixed emotion group 2 diagram.

- Me Group 3. Ambivalent Contrasts, containing two choices for the user and the following two related emotional contexts.

E.g. “I had to study, so I decided not to go to Jenny’s party. This allows me to study, but at the same time I feel frustrated for not being with my friends”.

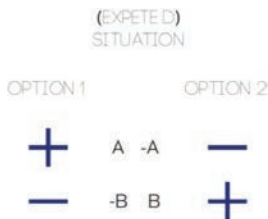


Figure 7. Mixed emotion group 3 diagram.

Discussion

The aim of this research was to experiment a sort of “primordial interaction design” based on the design of a surface as an activity that has the primary objective in finding shapes for emotions.

It is acknowledged that the processes of innovation can be incremental, substantial, radical and driven by meanings (Verganti, 2009, 2017); in this context the research aims to work particularly on the latter. The resulting models represent positive or negative emotions related to the personal perception of solitude. Through the shape the designer approaches or detaches him/herself from the reference archetype by structuring a dialogue between user and product that can develop products able to form these emotional connections with users. We believe that the study of the surfaces rises in importance in the context of Internet of Things, since the interaction with the technological object is not anymore to be intended as an exclusively screen-based action, on the contrary, it should be considered as a product-based environment in which the entire surface of the product is the interface.

Moreover, in the study of morphology, the shape has a crucial role in the age of interaction, performance and technologies incorporated into products: it can bring innovation both in the morphological aspects and in the pure formal and aesthetic aspects of the product.

This study has highlighted the transfer of intangible psycho-cognitive aspects into tangible elements whose syntax and semiotics is driven by a phenomenological approach to the formal interpretation of an emotional concept. Emotions that occur from experiential states place the feelings of the human being as a focus of the project; through the design culture, the study tries to interpret experiences and desires as components of mixed emotions.

The shape of a product has always represented an element of differentiation on the market; the shape structures a dialectic between user and product through the morphological aspects.

Through the form it is also possible to create new ways of using the product, leading the user to specific reference scenarios. But surely the element in which the shape plays a crucial role is the innovation of meaning (Verganti, 2009) or in the emotional design (Norman, 2002) that is the meaning that the product assumes in the habits and in the scenario of daily use.

The form is therefore intended as a driver of innovation processes in the contemporary interaction systems, amplifying and interpreting the functional values of the new technologies incorporated into the product of which it becomes a vehicle.

We therefore argue that the relationship between mixed emotions and design arises as a delicate terrain in which it can occur (Desmet 2012):

- an "enrichment" of a user experience;

- a lack of effect in the user experience;
- an impoverishment and worsening of the user experience.

First of all, the stimuli that determine the emotions were identified. In the case of a product, it is never a matter of the whole object to generate a certain state of mind, but an aspect or a part of it (Desmet, 2012). In particular, we can recall two types of emotions: a first "experiential" type that is developed in a direct interaction with the product or the product system; a second that is "behavioral" in which we can find a tendency to do or perform something, "good" in a definite way relative to usability.

Design should deal with the subjectivity of individuals' experience as along with the progress of science and technology information and the development of social economy, the human has entered into the experience economy era. To adapt to the requirements of the new age products, design emphasizes on interaction and blending more and more, the user experience (Junhong Hu; Xiaoshan Huang 2012)

Once researchers begin talking to individuals, however, they quickly learn that "alone" is an objective term-indicating whether a person lives with someone else, how many friends he or she has, and so on; but that "lonely" is subjective, a matter of what goes on in a person's head.

Conclusion

In the study of a product system, the form/function ratio becomes form/performance. In the form/performance relationship, dialogue takes place between formal and functional values (as tangible values) and between sensory and emotional values (as intangible values). Treating the complexity of solitude, in a qualitative and quantitative sense, means giving shape to the sensations in their multiple variations and the complexity of synthesizing them in a shape or a treatment of a surface, this was the focus of this research.

The research thus highlighted the transfer of intangible psycho-cognitive aspects into tangible elements, with their syntax and semiotics. In fact, the emotions that occur from experiential states, analyzed in this research, put human beings at the center of the design process. The research aimed at shaping experiences and desires as components of emotions through the design first, and consequently the realization of emotional models. We intended shape as an expression of the synthesis of feelings and experiences, which correspond to the perception of a physical or psychological condition.

The analysis of emotional models in which the designer wants to give shape to the ways of emotions bring with them fluidity and rigidity, intensity, roughness, density, discontinuity, fullness and emptiness that represent lifestyles. The emotional models we discussed in this paper tend to define sensations in shapes, textures and finishes.

We have created structures that are often complex in form, sometimes composed by layers with the intention of defining the emotional sphere in its qualitative and quantitative aspects and therefore representing the behavioral aspects of the user.

The various forms of solitude synthesized in material models the relationship between visceral emotions and reason. In these models the presence of human being becomes a permanence in which the curves, the rectified curves and the few lines represent the multiple expressions of the feeling of solitude.

Acknowledge

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