

## Designing Watch by Using Semiotics Approaches

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**Abstract:** Today industrial design is one of the most important pervasive components of design which covers many various field of activity. In the process of product design, understanding the impression of a whole design target is an essential issue. When a consumer is faced with an interactive product or interface, the designer need to have a thorough knowledge of the use of semiotics when attempting to convey feeling and emotions to the consumer. Designer work towards a product to be achieved with the help of representations of semiotic means, used according to identifiable aesthetic, criteria and cultural factors. In this area, Kansei engineering technique are being successfully applies in consumer product design. A Kansei engineering study applied to watch (as a case study) with especial attention in the selection of semiotics is presented. This study used most frequently selected kind of watch (from view point of shapes, sizes, colors, and material) which has been chosen by customers. Ten type of watches and total of twenty opposite Kansei words were used in the experiments. One hundred participants were asked to measure the intensity level of feeling using semantic differential method, toward Kansei words. Participant ask them about each watch if it's kind or rough, reliable or unreliable, positive or negative and etc. This step specified which signs refer to which result in user mind. In a reverse process this study could find for a specific judgment which signs are needed and which signs are more interest than the others.

**Keywords:** Semiotics, Kansei Engineering, Watch, Meaning, Cognition Science.

### 1. INTRODUCTION

In postmodern ages, products meaning changes from functional value to emotional value. This means it is possible that your glasses or your hat become your friend or your enemy. Also today

they make proportional reaction in user. This different kind of value, that is result of postmodern culture, is a semiotic value, which personalize product and make an emotional connection is in front of modern decoration. In this thinking the products are seen as a symbol to show people they are distinct similarities. The semiotic perspective of design focuses on viewing products as signs capable of communication. Vihma [1995] states that products are perceived in two ways; as presentations of themselves, and as representations of something else. While Vihma makes a distinction between the aesthetic and the semiotic part of the experience, another view represented by, e.g. Osgood et al. [1957], includes the meaning of the form in the notion of aesthetics [Warell, 2008]. Semiotics theory in product design, according to diverse side of each target group, must be considered before the practical phase of each project, and the lack of this consideration seems to be a mistake, however, still these studies are being ignored. Eckert [2000] reinforces the link and semiotic coherence between the consumers' end values, functionalities in any domains of influence, and product attributes as form, color, texture, and usability principles [Bouchard et al., 2007]. Semiotics is not widely institutionalized as an academic discipline. It is a field of study involving many different theoretical stances and methodological tools. Semiotics represents a range of studies in art, literature, anthropology and the mass media rather than an independent academic discipline. Those involved in semiotics include linguists, philosophers, psychologists, sociologists, anthropologists, literary, aesthetic and media theorists, psychoanalysts and educationalists [Chandler, 1999]. With this in mind, the present study aims to identify the group's aesthetic taste and life style, and sought to clarify the relationship between physical and material external signs in members of the target group. Given these relationships can help us better understand the language of products in the indigenous culture.

## **2. THE MEANING OF THE SIGN**

Sign, mark, password or code, is a group of symbols that can be made in a way which people can find them meaningful (Mohsenian Rad, 2004) and something observable or visible that swap by a relationship with another items. Necessarily, signs have to be physical aspects which can be received by one of the human senses, and also signified could be physical, mental, real, imaginary, natural or synthetic. Every word and gesture can be seen as a sign. Semiotics not only include signs in everyday life, such as traffic signs, symbols or pictures, but also study everything that can be replaced with another. This definition also includes our material culture such as architecture, furniture and product. Saussure [1983] says the dual nature of the sign includes signifier and signified. The relationship between the signifier and the signified is referred to as signification. Signifier is word, form, external world object, and anything that can be seen, heard or touched. Signified is content, concept, what is in the face of the world, understood and felt. On the other hand, the sign is the whole that results from the association of the signifier with the signified [Saussure 1983]. Pierce [1997], unlike him, attention to process and interpretation of signs or more than signs. In his view, semiotics requires three elements: sign, evidence, and interpretation. In other words, in the Pierce theory the points of semiotic triangle are icon, index and symbol. Short [1997] also made a very complex system which is based on the various types of relationships between them.

## **3. SIGN IN PRODUCTS AND THEIR EFFECTS**

In industrial design, any design can be considered as a medium that contains several levels of different messages for its audience. Signs might be a cause to improve the value of product and

facilitate communication processes between products and human. Many studies shows that the main symbolic function effects are 1) enhance the immaterial value, 2) facilitate reciprocal interaction between human and product, 3) personalizing product, 4) create an identity for product, 5) becoming user friend, and 6) add meaning to the functional and aesthetic aspects of the product [Burdek, 2005]. Signs in real life more than they appear help us to introduce concepts. They are symbols of the meaning of the abstract mind and our judgment is based on knowledge and background from which they are formed. Signs make our mind conditional, and if we do not aware they will trick us. Set of signs called genre. Genres make it possible to classify signs and their features. On the other hand signs have different meanings in different times and places. Signs are divided into two categories: implicit and explicit. Explicitly refer to the most direct meaning, and implicitly refer to something beyond the form and exterior.

#### **4. METHODOLOGY**

Kansei engineering method has been used in order to accommodate the physical characteristics and Kansei words, which strongly related to the semantic differential questionnaire. Kansei engineering is a way to convert the feelings and emotional impact to production parameters. It was developed in the 1970s [Nagamachi, 1997] and defined as a technique for translating the human Kansei into product design elements. This method has the ability to measure different emotions and show their relationship to the actual production characteristics. Therefore, there is possible to design products that it shows emotions and moods. Today this approach of design has been known as one of the pillars of professional development by the Royal Statistical Society. A proposed method to explore the aesthetic value is using questionnaires or interviews based on the sharp polarization technique. This means that respondents are asked to relate things into one valuable pair of contrasting traits. An easier way is to create two contrasting characteristics to judge. It should be noted that every time just one feature consider to not to make responsive feel puzzled. This way helps us to recognize dominant aesthetic interest groups, use to measure and classify them according to a predetermined framework and the analysis. Also this discovery give us standards and rules for behavior and thoughts of a member of target group. Some of the distinct aesthetic values in a range of bipolar adjective based on objective aesthetic values are: organic, soft, roundish, high, heavy, low light, easy, contradictory , sparsely, and based on subjective aesthetic values are: exciting, duplicate, comics, antiques ,traditional, different, romance ,complete, spiritual, fantasy.

##### **4.1. Target group**

The target group is a group of women belonging to the age between 25 to 30 years. The present study emphasis the aesthetic tastes and preferences of the target group and the result will be matched with the features of the watches. Selecting watch as a case study for this research has been one of the best options, because watch is a luxury product and its functional value is at a lower level than it's symbolic. Watch is in a close communication with its users and also is a symbol of her/his social status and cultural character. On the other hand, watches are routinely used and almost in every conditions and situations are with user, also having several watches for one person is not too abnormal, that this is proof of the positional feature of watches. Another reason to choose the watch was its variety of structural elements (surface, hands, numbers, and wrist), as components of a face that can be in different compositions and make variety of characters.

## 4.2. Kansei engineering phases

Kansei engineering model proposed by Schutte has been used in this study [Schutte, 2004]. At this model the appropriate product for the target group was selected. Then, initial demands and new product features are generally determined through interviews. According to this model, for the choice of Kansei words, at first one hundred words describing was collected through open interviews. Then twenty antonyms pairs of them were chosen to design the questionnaire. Five point semantic differential scale [Osgood, 1957] has been used in this study (Figure 1). Semantic Differential applies both on linguistic expressions and product semiotics, i.e. the language of signs and sign-systems [Schutte, 2005].

**Table 1:** One hundred collected Kansei words

powerful	artificial	imposing	sad	dependent	jealous	coordinated	delicate	repetitive	happy
fantasy	emotional	disappointed	immature	rough	mild	imaginary	updated	silly	nature
expensive	naive	smart	brave	strange	depressed	outdated	uninterested	intimate	sloopy
simple	banal	worthless	ambitious	amazing	odious	hasty	modern	weariful	secluded
comfortable	nostalgic	reclusion	amorously	lovely	excited	chic	mysterious	social	desirable
energetic	satisfynig	sharp	realistic	relaxing	rude	reliable	honest	dengerous	good tempered
fashionable	aristocratic	crafty	wise	enjoyable	annoying	innocent	boring	unreliable	interesting
ordinary	vulnerable	sedate	gaudy	efficient	paradoxical	renitent	moody	luxe	apathetic
weak	novel	ordered	stylish	patient	wary	jolly	attractive	joyful	authentic
classic	crowded	defiant	unobtrusive	wishy	lazy	mature	strict	passionate	serious

In the next step (extend the subsets) 500 watches were collected and decompose them to their elements. Then, according to the physical characteristics watches were divided into several groups. In each category, one was selected as the master because of having most of the group properties. Selecting watches as mentioned was according to physical characteristics such as color, form and material, and it has been tried to select watch from different styles and different characteristics. At the final step, combined physical and emotional semantic differences has been performed through words. Statistical procedures using mathematical and nonmathematical methods have been developed for use in Kansei engineering studies. It should be noted that the use of methods are depends on the context of the purpose of each study.

lovely      odious

**Figure 1:** A sample of 5-degree Semantic Differential method used in this study



**Figure 2:** Eight product samples

## 5. RESULTS AND DISCUSSION

All data has been analyzed using statistical analysis software to find relation between signs and feeling of users regarding product samples with emphasis on semiotics approaches. The results of this study clearly indicated that there is significantly correlated between five adjective include: lovely, smart, social, good-tempered, and reliable. This also illustrate secret classify that user has been made in mind. Results showed that there is noticeable meaning in any signs. This can discover meaning of the main items like dark or bright colors, big or small screen, different font and etc. Extremely wise or emotional are less loved, but having average amount of emotional factors make watches more attractive. The criteria to be considered wise is using vertical lines and symmetry and order, beside this white is more wise than black. In bright composition all things are clear, as in the logical issues exist, but black is secretive and stimulates curiosity. This rules change about gray family. They have potential to be wise, emotional or a combination of them. Table 2 shows results in this study that can be summarized in the table.

The most important results in detail is presented here. There is a clear correlation between powerful and reliability, which watch number one is much more powerful is also more reliable. Watches which has numbers are more reliable, perhaps because they have no risk of confusion at the time recognizing. The watch number seven was chosen as the high lovely one, and also has second place in modernize. This should be caused by empty minimalist surface, which the appearance is brief and devoid of detail. The watch number eight and four have been exist at the end of being loved or hated. The watch number five with color combination of black and gold, with using a simple combination in surface, include ordinary font numbers known as the most nostalgic one. Greek numbers used in older watches when being used in the newest one cause more nostalgic look. Chromatic colors look happier, more passionate, intimate and exciting, but charts any watch that place in the last grade fantasy and emotion has been considered weak and inefficient. Dark watches and number one with square surface are the most impatient and numbers eight and seven with their colorful design are good-tempered. In general non-black watches and roundish surface ones look more optimistic, but for being loved it's not necessary to be good manner, just avoid of being cranky. Watch numbers one and three with metal strap and silver colors are the most powerful elected watch. Results indicated that smart is the most correlated trait with loved, clever watches are at the top of the being loved rank. Watch numbers two, five and seven are the most intelligent and with accurate at the watch composition will understand the smart usage of irony elements and intelligent combination of detail create clever appearance that this is user-friendly.

Table 2: Classified adjectives regarding the main watch properties

	<b>small</b>	wary, emotional, weak, delicate, vulnerable, sad, indifferent, serious
	<b>large</b>	powerful, defiant, rough, jolly, reliable, energetic, social, happy
	<b>dark</b>	sad, odious, modern, moody, defiant, emotional, strange, secluded
<b>screen</b>	<b>bright</b>	wise, powerful, serious, reliable, strange, efficient, social, classic
	<b>circle</b>	emotional, good tempered, defiant, intimate, happy, social, smart
	<b>square</b>	wise, moody, powerful, rough, sad, indifferent, stylish, strange
	<b>formic</b>	fantasy, happy, emotional, defiant, unreliable, energetic, banal
	<b>simple</b>	nostalgic, wise, smart, simple, efficient, sad, reliable, classic
	<b>fantasy</b>	emotional, good tempered, defiant, smart, passionate, social, intimate
<b>number</b>	<b>dot and line</b>	modern, wise, indifferent, strange, smart, serious, sad, powerful
	<b>numberless</b>	strange, modern, indifferent, wise, wary, mild, sad, secluded
	<b>grecian</b>	nostalgic, classic, powerful, reliable, strange, serious, indifferent
	<b>metal</b>	powerful, wise, moody, rough, defiant, reliable, efficient
<b>wristlet</b>	<b>plastic</b>	unreliable, fantasy, happy, passionate, emotional, silly, simple, vulnerable
	<b>leather</b>	reliable, nostalgic, powerful, efficient, classic, social, smart, stylish
	<b>bright</b>	happy, passionate, excitement, fantasy, unreliable, defiant
<b>color</b>	<b>gray family</b>	indifferent, wise, mild, strange, efficient, modern, powerful
	<b>white or black</b>	defiant, rough, powerful, efficient, reliable, classic

Happy color and comic form of number eight make it a humorous watch. Square face in number one and black screen and no number or simple numbers in five and four watches are reason of serious appearance. The combination of silver and gold, due to the finding results shows luxury, what we can see in number one and six. Some watches are inefficient with pay attention to details, which can relate this judgment to its material. Emotional play with form and geometric measure is kind of de-familiarization and that feel courage in the face of the watch. Fantasy more than anything shows itself in bright and different funny usage of lines. From view point of social and isolated factor, this study shows that having numbers is the most important option to reach these factors. Numbers are like tongue in watches and seems that being empty and simple make watches sad. Black face, rectangular frame and less use of details intensify this feature. Although people don't like sad composition they also don't prefer exaggerate colorful happy ones. The middle amount of being sad or happy is more attractive.

## 6. CONCLUSION

Some of the Kansei words are more correlations with each other. They indicate which adjectives are in direct and which one is in inverse relationship. Watches with more details make to look more emotional and an empty surface is wiser in user mind. About feeling weak or powerful in face of watches, black ones look stronger than bright ones. Cool colors induce a feeling of power and warm colors are intimate. All the watch that have narrow wrist are considered delicate and watch that have thickened are more violent than the others. Have a strong and robust wrist vanish user fears about becoming open and also less delicate create more trust. Watches which exaggeratedly have been used plastic on their structure do not look very strong and reliable.

Watches which has small face has less powerful, while large screen size look more courage and bravery. Stimulating color, contrast and highlight are the elements in the composition of the energized watch. Thicker gauge, bright combining colors and bold use of color and sometimes underused, decorative elements and details of the watch shows more passionate.

All of the words divide in two groups, lovely and hateful. Noticing on this classify and physical feature of watches, it is clear to understand lovely elements and hidden meaning of signs. Results indicated that circle refers to emotional personality, and square refers to logical, as well as users with active and passive personality corresponding to chromatic and achromatic shapes, respectively. In a reverse process, this study could find for a specific judgment which signs are needed and which signs are more interest than the others. The result was that the target group prefer watches which their compositions are antithetical and amazing. In order to catch this taste, this research had to incorporate opposite features. Therefore, in the final design compound circle and square, chromatic and achromatic, roughness and softness have been considered. The results of this study can serve as references to the watch manufactures company, as well as watch designers for different markets and to design similar products.

## REFERENCES

- Burdek, Bernhard E. (2005). *Design: History, Theory and Practice of Product Design*, Birkhauser Pub./Basel/2005.
- Buchard C., Francois J. O., Mougnot C., Aoussat A., (2007). *A Kansei Based Image Retrieval System Based on the Conjoint Trends Analysis Method*, IASDR07, Hong Kong Polytechnic University.
- Chandler D. (199) *Semiotics for Beginners*.
- Eckert C, and Stacey, M.K. (2000). *Sources of Inspiration: A language of design*, *Design Studies*, 21, 99-112,
- Mohsenian Rad, M. (2004). *Communication*, Soroosh Pub. Tehran (in Persian).
- Nagamachi, M. (1997). *Kansei Engineering: The framework and methods*. Kaibundo Pub. Co. Japan, 1–9.
- Osgood, C. E.; Suci, G.J.; Tannenbaum, P. F., (1957). *The Measurement of Meaning*, Urbana, Ill: University of Illinois Press. ISBN: 0252745396.
- Saussure, Ferdinand de (1983). *Course in General Linguistics* (trans. Roy Harris). London: Duckworth.
- Schutte, S. (2005). *Engineering Emotional Values in Product Design -Kansei Engineering in Development*, Linköping Universitet, Institute of Technology, Linköping Studies in Science and Technology, Dissertation 951
- Schütte, S., Schütte, R., Eklund J.; (2005). *Affective Values of Lift Trucks - An Application of Kansei Engineering*. In *Proceedings of WMOD Conference*. Italy.
- Schutte, S., Eklund, J. Axelsson J., and M. Nagamachi. (2004). *Concepts, methods and tools in Kansei engineering*. *Theor Issues Ergon Sci*, 5(3), 214–232.
- Short T.L., (2009). *Peirce's Theory of Signs*, Cambridge: Cambridge University Press.
- Vihma, S. (1995). *Products as representations: a semiotic and aesthetic study of design products*, dissertation, University of Art and Design, Helsinki.
- Warell A. (2008) *Multi-modal visual experience of brand-specific automobile design*. *The TQM Journal*, Vol. 20 No. 4, 2008, pp. 356-371, Emerald Group Publishing Limited, 1754-2731, DOI 10.1108/17542730810881348.