

DESIGNER'S KANSEI FEATURE ON CREATIVE ACTIONS BY META-COGNITIVE METHOD

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ABSTRACT:

No designer can describe his/her mechanism of own idea creation. But every designer expressed the idea in ordinary work? So, in this study, we investigated designer's thinking process through observation of designer's action (sketch) when he/she has decided the idea. The purpose of this research is to extract phenomenon from designer's creative process. We used meta-cognitive method to get these data's. Observation, protocol and internal observation were used to gather the data. After gathering the data, we tried to analyze these protocol data's recorded on video. We performed case studies related to design concept, idea sketching and rendering. Automobile styling and Japanese school bag design were selected for these design items. Also, we conducted an internal observation for each phase. The result of internal observation was that some unconscious action was discovered while automobile styling but while Japanese school bag's design, almost all action was described. We thought this difference caused designer's experience and design purpose. And while unconscious action, designer created some new idea was observed. We thought that was the point that designer could not describe their mechanism of creation.

1. BACKGROUND

Nowadays, new products provide more fertile lives to people. Even right now, there are designers from various fields who would be working to find new items based on their creativity.

This research is based on studying kansei characteristics of designers who is taking major part in developing new products. All humans have characteristics of their own. Especially as a designer, those who have to work on based on intensive creativity must be because of different way of thinking and emotional approach. How and in which process does designers takes to have new ideas.

Here, we study Kansei of Characteristic with 8 different types of cases and interviewing professional automotive designers and design majoring students.

How do the designers think and act when they are designing something based on experience and knowledge? There must be differences in designers to designer in action of creativity and thoughts. It can be the matter of skill or the way of approaching ideas. How do the designer's show their difference in kansei characteristics with when they are working on either experienced or inexperienced items? What are designer's thinking when they are materializing their works? Which element affects when designers are designers are making concepts, doing idea sketching and rendering? With these motives by using the method of Meta cognitive there is a necessity with studying kansei characteristics of designers. In other words there is a strong need with researching the origin of designer's creativity. These are the motives of this research.

2. RESERCH OF METHOD

In this research we study the theoretical background of meta cognitive to prove kansei characteristics of a designer by testing various steps of emotion and actions of molding.

Video tape recording methods were used for testing while making design concepts, idea sketching and rendering. By watching the video, analyzing the protocols and internal observation method was used, which is well known in the field of meta-cognitive. To justify what is internal observation is as follows. This is the method of psychology to study self consciousness. In the dictionary of conscious psychology defines as follows. To know self consciousness and experience careful research is carried on. In this experiment while designers are making in actions of design consciousness' data was materialized while working on both experienced and inexperienced subject. Data's results have shown that the experiments were compared and analyzed to extract kansei characteristics while designers are making creative jobs.

In the experiments with design concepts focusing on disaster was theme. To study on how designers materializing design concepts. While materializing their concepts designers are allowed to talk

about their thoughts and thinking, and the whole procedure is recorded in video. By reviewing this recorded data's, what designers have talked was made in word sentences and keywords are extracted from the sentence. Repeating of key words was counted and numeral zed. This was the study to realize what kind of procedures is taking place when designers are materializing their concepts.

In the study of idea sketching, automotive design was chosen as an experienced item, and designing kid's school bag was chosen for item of an inexperienced field. This is the experiment for studying thoughts and actions of the designer's creativity on different items. Every procedure was video recorded and by analyzing protocols and internal observation designers kansei characteristics were extracted and analyzed. During the study of rendering, it was carried exactly the same procedure as the idea sketching process. Data's from idea sketching and rendering actions were analyzed and compared. Rendering when all ideas are being materialized data's relating to creativity was extracted. Categorizing the data was possible from the record of protocol without the identical information from internal observation. From left record extracting data's of designers unconsciousness was possible.

3. RESERCH OF OBJECT

In this study of creativity and kansei characteristics shown during designers creative actions, and object to extract data of kansei characteristics by analyzing protocol by meta cognition and internal observation. In the creativity action of designer how does actions and thought of conscious and unconsciousness appears? By comparing and analyzing the data's to find elements that are existing during the creative actions. Investigating the possibility on usage of educative programs for future designers based on extracted data.

4. EXPERIMENT OF ORGANIZATION

Organization of creative actions and thoughts of designers are as follows. In the pre-experiment disaster focus was settled for the theme. This is the experiment on the procedure of materializing the design concept and to extract data's of actions and thoughts of designers.

In experiment of idea sketching designing automotive and kid's school bag was settled and object to extract data's of action and thoughts of designer during creative jobs. In the stage of rendering is also carried on exactly the same as what have done in idea sketching procedures.

Experiment was carried out to find what makes creativity and thought of designer makes differ from in rendering and sketching? It was to find actions of consciousness and unconsciousness from during the creative jobs of designers.

Table1. Organization of experiment

Process Items	Concept	Idea sketch	Rendering
Accident Lighting	○	○	
Automobile		●	●
School Bag		●	●

○ : Pre / ● : Experiment

4.1. EXPERIMENT OF DESIGN CONCEPT

This experiment is to find out what which process and ideas that designers are using to make conceptual decisions. Figure 1 is the image about ideas, pictures and situation recorded in word while designers got disaster focus as their theme.

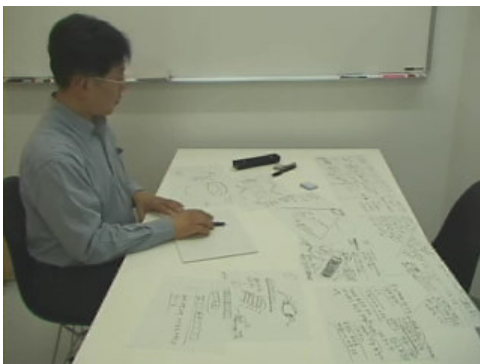


Figure 1. Experiment with design concept

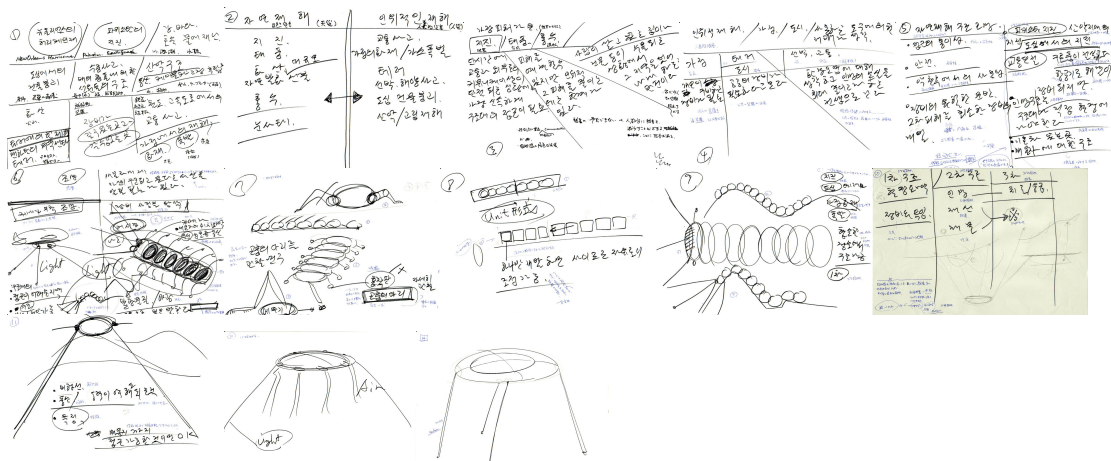


Figure 2. Concept decision procedure records

Until the theme disaster focus was decided, there were various ideas and thoughts were collected by designers. Figure 2 shows record of what designers thought when the concept was decided. Record of various ideas relating to disaster lighting concept. For easier and faster method idea was recorded in mother tongue (Korean), and function, mechanism for immovability was recorded in rough sketches. From upper left to down right, Figure 2 shows what was being thought about disaster lamp by words and pictures and layout in chronologically. What the designer has thought on the paper is reorganized as follows.

First, we think about the symbolic types of disasters that can be imagined.

Second, we divide natural and human disasters.

Third, we think about the disasters that brought tremendous damages.

Fourth, we think about the human disasters.

Fifth, we think about the huge disaster and effective and fast way of approach and rescue, and also thinking about where it can take place, in city or in mountain.

Sixth, we think of two types of disaster, where the place is difficult to approach and other one is about the mechanical product for lights that can be used for rescuing and finding injures.

Seventh, is about the idea of concept motives, which are being described with rough sketches.

Eighth, we think about the method for making the lights as a unit.

Ninth, we think about rescuing freely in narrow or rough places.

Tenth, we think about procedure of rescue. 1st step is for knowing the situation and moving injured to safe p

lace and continuing with first aid.

Eleventh, we think easy and effective system of approaching accident places such and zeppelin, balloons etc.

Twelfth, we think about method of approaching to disaster place.

Thirteenth, is about the function for the usage of disaster lamp and describing them in rough sketches.

With above actions it is easy to see the designer is approaching various methods to make concept decision.

Even it was working on the designing inexperienced field but it can be seen total three steps were made. First, the designer is thinking about the surroundings and situations where the product is going to be used, secondly, he is thinking about the production related technology and mechanism and thirdly the characteristics of product, functions and structure.

4.2 EXPERIMENT OF IDEA SKETCH

What does designer think when they are working in experienced or inexperienced field? With this motives car design was chosen for experienced and designing kids school bag was chosen for inexperienced field. Two products have no characters in common. Objective of experiment was to find the difference when they are working in experienced and inexperienced items. All procedure of the experiments was recorded in video tape and analyzed protocols with third person. And also process of analyzing protocols is recorded with video tape. And while in procedure of designing designer himself inside observer what he is thinking at that moments and information was record in sentences. From extracting keywords from sentences, comparing data's of protocol and internal observation, it was possible to distinguish items with conscious and unconsciousness. Unconsciousness was canceling the identical information's forms data of protocols and internal observation. And this kind of action can be observed from the designers while they are sketching. Figure 3 is a picture of procedure of idea sketching.

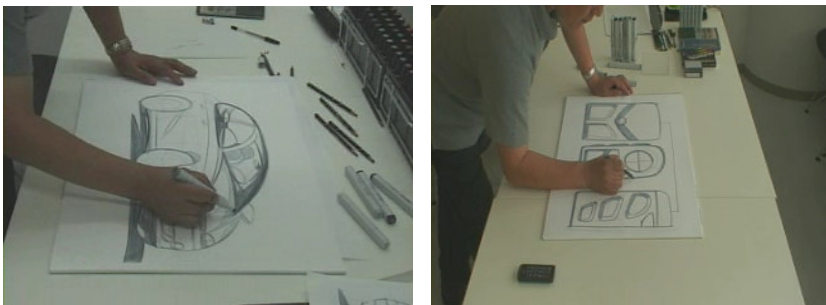


Figure 3. Idea sketching experiment of car and kids school bag

4.3 EXPERIMENT OF RENDERING

In the experiment of rendering same item and procedure was taken and experiment of idea sketching. In the stage of rendering which has more materialization, observation of action and attitude is the main object. 3 creative action (design concept, idea sketch, rendering) of designer was carried on to observe kansei characteristics. Figure 4 shows the experiment moments.



Figure 4. Rendering experiment with car design and kid's school bag design

5. ANALYSIS OF PROTOCOL AND INTERNAL OBSERVATION

Car design sketching and rendering, kids school bag sketching and rendering protocol was analyzed. Each experiment was done with 2 times of internal observation of designer himself to extract categories of thoughts and action. With watching recorded video tapes data of idea sketching careful study was carried on with internal observation. Category was distinguished by interviewing professional car designers in the field. Average age was 39.5 years old and average working years were 12.1 years. Object of data analyzing was objecting kansei characteristics shown in creative work.

Figure 5 is record of analyzing protocol with third person about car design and school bag design. Protocol was made while watching the video data, the third person writes down the questions and the item and the designer writes down the action of design and thoughts in sentence. When there is change in questions classify them in task, and each task were recorded by designer's action and thoughts. It was possible to distinguish items with conscious and unconsciousness. Unconsciousness was canceling the identical information's forms data of protocols and internal observation. Unconsciousness was affecting something on creative actions. Considered affective categories are as follows.

- . Style ; The category related to style.
- . Package; The Category related to layout of product and structure of space in the interior.

- . Image ; The category about our feelings towards products.
- . Design ; The category related to functions and structures of products.
- . Engineering ; The category related to production characteristic and mechanism.

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Figure 5. Protocols and Internal observation
 (Left : Protocol Data • Right : Internal observation Data)

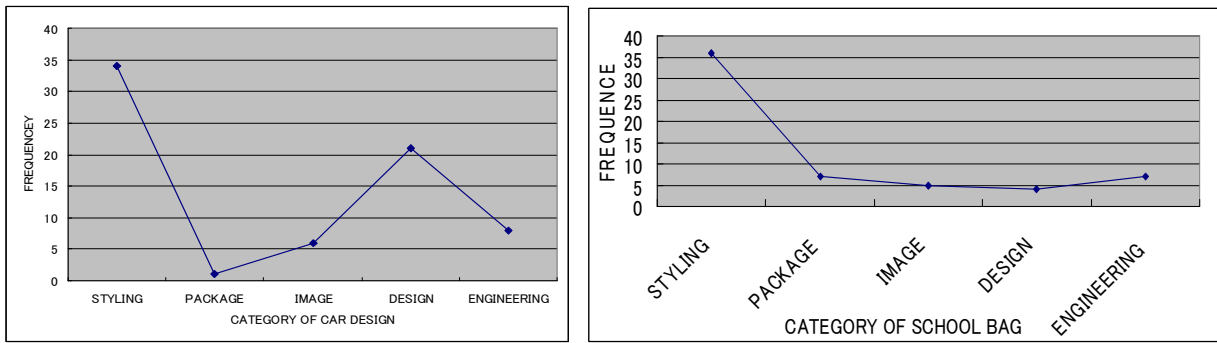


Figure 6. Category comparison of idea sketch
 (Left : Automobile • Right : School Bag)

Analyzing results with experienced car design and inexperienced designing school bag, styling took many portions and also the part of design. But inexperienced item like the school bag design only the styling part took the big portion. (Figure 6)

Table 2. Internal observation data and lofted category of car design idea sketching

Task / Contents		T1	T2	T3	T4	T5	T6	Total
		Internal observation	Action [A]	4	8	4	13	7
Thought [A]	4		10	11	26	10	9	70
Stay Item	Action [a]	2	4	2	12	5	2	27
	Thought [a]	1	5	8	21	7	6	48

Rest of the categories which designer did not hand conscious with but believe affects creativity in anyhow. Table 3 shows thoughts and action, task and lofted number of category / total category ratio

Table 3. Car idea sketching and creative act and ratio with thoughts

Task / Contents	T1	T2	T3	T4	T5	T6	Total
	Creative Action	0.5	0.5	0.5	0.9	0.7	0.5
Thought	0.2	0.5	0.7	0.8	0.7	0.7	0.685

With the same method idea sketching from school bag and rendering car design extracted kansei characteristics data's. Table 4 shows school bag idea sketching and creative action and thought ratio

Table 4. School bag idea sketching creative act and thought ratio

Task / Contents	T1	T2	T3	T4	T5	T6	T7	T8	Total
	Creative Action	0.5	0.3	0	0.7	0.5	0.4	0.5	0
Thought	0.8	0.5	0.8	0.7	0.4	0.4	0.7	0.7	0.644

Table 5. Car rendering creative act and thought ratio

Task Contents	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	Total
	Creative Action	0.5	1	1	1	1	1	1	1	1	0.6
Though	0.8	0.8	0.6	1	0.7	0.6	0.6	0.4	0.6	0.5	0.750

Table 6. School bag rendering creative act and thought ratio

Task Contents	T 1	T 2	T 3	T 4	T 5	Total
	Creative Action	0.7	0.2	1	0.3	1
Though	0.9	0.4	0.8	0.7	1	0.756

6. CONCLUSION

Table 7. Each experiment with creative act and thought ratio

Items	Creative Actions		Though	
	Idea Sketch	Rendering	Idea Sketch	Rendering
Automobile (Experience)	67.50%	87.80%	68.50%	75.00%
School Bag (Inexperience)	59.20%	52.90%	64.40%	75.60%

Numbers in table 6 shows unconscious number / total number. About the action experienced item shows more of the unconsciousness' action inside. Also in rendering unconscious action took higher place. This shows that experience let unconsciousness to creativity.

About the thoughts with idea sketching experienced and inexperience didn't show much difference. Same goes with rendering. In experienced items actions by unconsciousness took much higher ratio.

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