ORIGINAL ARTICLE

THE ROLE OF EXPERIENCE IN KANSEI DESIGN PROCESS

Search for a Mechanism of Design Creation Through Case Studies (1)

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Abstract: It seems that there are two different streams of a discussion on “experience”. Researchers in marketing talk about experiences given to customers through services and products. Researchers in usability focus on user-experience of operating products. In a product development process, the former experience is examined in a definition phase, and the latter in an evaluation phase. A question here is how we get experience ideas in a discovery phase. This paper tends to shed light on the role of designers’ experience in a primary design phase. We conducted interviews with designers and design managers. Analyzing them, we found that there were two basic steps in minds of designers. Direct experiences make possible for designers not only to do “re-definition” of themes, but also to do “discovering analogies” for solutions. So we propose that “experience design” should be understood as “design by experience”. In addition, understanding the mechanism of creation, corporations can start dealing with experiences of designers in more organized ways.

Keywords: Design process, Experience, Observation, Creative thinking, Interview

1. INTRODUCTION

“User experience” has received a lot of attention recently as a value that affects products and brands. A new way of thinking has opened up, in which the user’s experience with goods and services is now as much a subject of design as shape and function. “How should we weave experience into the design?” is a hot issue in the fields of marketing and usability research. “Experience design” is an emerging buzzword in the design industry, too [1-3].

Attention to “experience” in the marketing research field was triggered by Joseph Pine and James Gilmore’s Experience Economy and Bernd Schmitt’s Experiential Marketing.

Conventional marketing has focused on the functions of goods or services, and the benefits provide by them. Users have traditionally been regarded as rational decision-makers. However, in this new approach, researchers are emphasizing the users’ sensuous and emotional aspects [4]. Therefore, they argue that it is important to create a comprehensive experience for users.

On the other hand, “user experience” has become an important issue in the area of functional design as well. “Human centered design”, as advocated by Donald Norman etc., is the concept of trying to create high quality user experiences through improvement in product usability [5-6]. This research aims at reducing the user’s physical and cognitive burden by analyzing the causes of human error in using products or systems.

From the above, we can see that the word “experience” has a different meaning in each approach. The former is a designed or prearranged experience in user life scenarios. Gilmour et al. call this “theater experience” [7]. The latter is the experience of an interactive relation between the user and the system. Therefore, interface attributions such as intuitiveness, smoothness, inconsistency, and so on are key to the “experience.”

Susan Squires outlines three phases in product-development research: discovery research, definition research, and evaluation research [8] [Table 1]. According to her, usability belongs to the evaluation research phase, utilizing a prototype as an evaluation subject, and questions of marketing belong to definition research, trying to gauge the reliability of hypothetical scenarios. Here, we should note the absence of...
In order to establish a comprehensive design methodology for “experience design,” it is clear that organizational efforts in the discovery phase are important. This study focuses on this first stage in the design process, the discovery research phase. We conducted 2 to 3-hour interviews with product designers in Japan in order to understand how they got core ideas for products. Also, we did shorter interviews with managers in their offices to examine the relationship between individual designers and organizations. From these interviews we tried to determine how designers create experiences for users and what the sources of their ideas are.

2. INTERVIEW

Table 2: Interview respondents list

<table>
<thead>
<tr>
<th>DATE</th>
<th>VISITING PLACE</th>
<th>RESPONDENT’S TITLE</th>
<th>INTERVIEW CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002.12.25</td>
<td>NEC Design</td>
<td>President</td>
<td>Design strategy</td>
</tr>
<tr>
<td>2002.12.27</td>
<td>NEC Design</td>
<td>Designer</td>
<td>Design of desktop PC NEC Valuestar FS</td>
</tr>
<tr>
<td>2002.12.27</td>
<td>NEC Design</td>
<td>Chief Designer</td>
<td>Design of note PC NEC LAVIE series</td>
</tr>
<tr>
<td>2003.01.17</td>
<td>Hitachi Design Headquaters</td>
<td>Superintendent Designer</td>
<td>Design strategy, advanced design</td>
</tr>
<tr>
<td>2003.02.10</td>
<td>Ricoh Synthetic Design Center</td>
<td>Subsection Chief Designer</td>
<td>Design of interface of Ricoh SL3400</td>
</tr>
<tr>
<td>2003.02.10</td>
<td>Ricoh Synthetic Design Center</td>
<td>Designer</td>
<td>Design of coin collecting machine for copier</td>
</tr>
<tr>
<td>2003.03.10</td>
<td>Sony Design Center</td>
<td>Senior Designer</td>
<td>Interaction design of general display controls and channel server CoCoon</td>
</tr>
<tr>
<td>2003.03.10</td>
<td>Sony Design Center</td>
<td>Senior Designer</td>
<td>Interaction design of WEB service ImageStation</td>
</tr>
<tr>
<td>2003.03.11</td>
<td>Nissan Design Headquaters</td>
<td>Section Chief</td>
<td>Design strategy</td>
</tr>
<tr>
<td>2003.03.11</td>
<td>Nissan Design Headquaters</td>
<td>Senior Designer</td>
<td>Exterior Design of Nissan March</td>
</tr>
<tr>
<td>2003.03.11</td>
<td>Nissan Design Headquaters</td>
<td>Designer</td>
<td>Interior Design of Nissan Cube</td>
</tr>
<tr>
<td>2003.06.09</td>
<td>Toshiba Design Center</td>
<td>Division Manager</td>
<td>Design Strategy</td>
</tr>
<tr>
<td>2003.06.09</td>
<td>Toshiba Design Center</td>
<td>Section Chief Designer</td>
<td>Design of IH cooker IHC-25P series</td>
</tr>
<tr>
<td>2003.06.11</td>
<td>Mazda Design Headquaters</td>
<td>Chief Designer, Section Chief Designer, Senior Designer</td>
<td>Design of Mazda RX-8</td>
</tr>
</tbody>
</table>
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information with group members, etc.). The questions we gave to each designer and manager were semi-structured, however, in each case, the designed items and design environment were very different so the interview data varied in content. For example, in one interview at the Sony Design Center, we mainly received information about how the designer reached a design solution, solved engineering issues and persuaded others of his viewpoint. In another case at the Hitachi Design Headquarters, corporate design strategy was a main topic and the interviewees revealed how they create a product identity for Hitachi. We conducted 14 interviews in 2 years. All the interviews were open-coded (1st coding), and codes were categorized into groups (2nd coding) which showed common meanings [9]. We then analyzed interrelationships among those groups. Finally, we performed a comparative study among all the coding patterns. Although the content of each interview was unique, we isolated a common rule related to the issue of experience and design. We hypothesized a design theory from analysis of the interviews with designers, especially in the initial phase of product design development.

In this paper, we focus on an interview with a designer for the Nissan Motor Company because this sample was well balanced, describing the activities of both the individual and the organization, and also covered the whole project from start to end. To support this example, we describe the analyses of 2 additional interviews.

2.2. Case of Nissan March

2.2.1. Product Outline

The Nissan March [Figure 1] is the Nissan Motor Company’s compact car. A recent major model change was executed at the beginning of 2002. The former model of March recorded unusual longtime selling in both Japan and Europe. The new model of March was long-awaited by Nissan as the successor to the previous successful model. Right after its launch on the market, the new model became immediately popular. It acquired a G-mark in 2002.

2.2.2. Organization and Process of Nissan March Design (1st Coding)

When development of the new March started, Nissan was trying to fully revise its management system for design decisions. Both the president and the head of the design department were hired from outside the company. Moreover, the business goal, design policy, and design management tools were completely changed. The design policy ("Be clear, be creative, be consistent") was established under the business goal ("Make a strong brand to lead the world."). In addition, as a management tools, a vocabulary to express design tastes and a language to show conceptual shapes in 3-dimensional modeling were created. They were distributed to designers as a set, in booklet form.

The vocabulary was established to express form-design tastes in a common language among Nissan designers. It was composed of adjectives matched to related photographs so that the designers could understand them intuitively. In order to establish the vocabulary, designers from Nissan’s studios in Japan, the U.S., and Europe had repeated arguments about the forms of expression that should be common in the company. The aim of the modeling language was to promote the sharing of concrete form expression (basic forms such as side windows, combination tail lamps, and wheels) among the designers taking charge of different

Figure 1: NISSAN March
(Photo provided by Nissan Motor Co., Ltd.)
types of car. The following is a summary of the interview with Yoshikazu Endo who took charge of the exterior design of the Nissan March.

- I was assigned to investigate future compact car images in 1998.
- Though winning a competition used to be my first priority, I started to feel the necessity of returning to essentials.
- I happened to see the word “fantasia” in a magazine article in which the design director of the Italian tableware maker Alessi was interviewed. And I was affected by the way it shows the Italian view of a life. It is said that “fantasia” means to live happily without a dull moment.
- Since I often had the opportunity to travel to Europe on business trips, I keenly realized that the quality of daily life was important to design.
- I noticed that people’s cars and lives were closely related in Europe.
- I had a challenge in 3-dimensional CAD when the March project started. I changed the proportion of the old model in many ways on the screen, careful not to lose the virtue of the previous March.
- I thought that a car people did not get bored with was a car they could empathize with.
- I understood the feeling of a bump and of natural posture in this car by participating in running tests of packaging prototypes.
- It was by accident that I compared the relation between a person and a car to the relation between a person and a dog. I thought that the old March was similar to the French bulldog.
- Since there are many basic cars in town, I think that a harmless character is necessary for them, even if they run side by side on a road. I took notice of the peaceful feeling of the characters created by the cartoonist Akira Toriyama, and his deformation technique. Applying them, I tried to change the proportion of the car, stretching or compressing it on the CAD screen.
- I could repeatedly obtain feedback from reality in weekly meetings, because I could express many possibilities quickly utilizing 3-dimensional CAD.

2.2.3. Categorical Analysis (2nd Coding)

In order to understand the structure of the March design process, we analyzed the interview and categorized the subjects mentioned into groups, assigning each group a name. Figure 2 shows a chart of the group categories.

3. CONSIDERATION

In the preceding section, we introduced the thinking and activity of one of the designers of the Nissan March in the early phase of the design process. In this section, we will summarize that experience and try to put it into the form of a diagram. Furthermore, we will do the same for 2 other cases, a Toshiba Corporation IH cooker IHC-25P series [Figure 3] and a Mazda Motor Corporation sports car Mazda RX-8 [Figure 4].

3.1. Design flow of the Nissan March

The reform of the organization of Nissan’s design headquarters and changes to its design management were undertaken around the same time as the development of the new March. These innovations affected the thought of Endo. When Nissan established the new vocabulary, it thoroughly reviewed the old design of the company. Endo similarly analyzed the design of the old March in great detail and found a new incarnation for March.

He had experienced life in Europe, and gotten in touch with the way of thinking of an Italian designer at the time. At the same time, he developed a deep understanding of the role of compact cars in Europe. He also came to see the French bulldog as an analogy for the old March. Furthermore, he noticed the utility
Figure 2: Categorical Analysis of NISSAN March Interview
of a cartoon technique as an expression method. CAD provided him with the means to apply the technique to the March design.

By synthesizing those experiences and awareness, he redefined the theme of the next March as a car that fit the lifestyle of people who enjoy life. This redefinition was important for him, setting the design theme that differentiated the old model March from the new. Next, he developed an analogy of “the relation between a person and dog,” inspired by the old March, and appropriated an expression technique from comics. These became the engine for solving the problem [Figure 5].

3.2. Design flow of the Toshiba IH cooker IHC-25P series

A designer for Toshiba Corporation, Matsumoto had strongly felt the mismatch of home cooking appliances and tableware in her experience as a housewife. From her direct talks with buyers, and from her research about storage space in the home kitchen, she became aware of a relation between the rareness of IH cooker usage and that mismatch.

There was little opportunity to make Matsumoto’s awareness of the issue take shape in Toshiba’s current product development system, in which products were developed by request from the product planning division. However, there was another chance for her to visualize her idea and present it to members in each division: the design presentation fair run by the Toshiba Design Center. There, the idea was welcomed by a director of the home appliance division.

When development began, designing a pan that embodied simplicity and high quality became a more important design issue than sketching a beautiful shape [Figure 6].

3.3. Design flow of the Mazda RX-8

The Mazda RX-8 was created under a new concept that the sports car had “four sheets [10].” When the chief designer, Maeda, saw the show car that first applied the concept, he thought it lacked the quality of a sports car. He then thoroughly analyzed the style of the sports car, not only his own company’s cars but also competitors’ cars. As a result, he recognized that the expression of “lightness” was an important factor. At the same time, he tried to apply the corporate policy of giving an “athletic” feeling to the RX-8’s shape. Moreover, he arranged opportunities to tour sports car museums and to visit dealers or make test runs in order to share the experience of the “sports car” with his team members. He also talked to them about the ideal image of a sports car. He found that he could spend more time communicating with members through the traditional design method, which was shape modeling with clay by hand [Figure 7].

3.4. Feedback from Interviewees
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Figure 5: Initial Idea Flow of NISSAN March

Figure 6: Initial Idea Flow of TOSHIBA IHC-25 Series

Figure 7: Initial Idea Flow of MAZDA RX-8
After producing the flow charts, we sent them to each interviewee group for feedback. We did not provide any formal questionnaires, but instead, we inquired as to whether the charts adequately described the project progress. All 3 groups responded to our query, and they generally agreed with the charts. Above all, one respondent strongly supported the proposed steps, saying “Many people have said that my design was produced from a flash of inspiration, but in reality it was the result of the accumulation of information and a great amount of effort. The flow-chart made me realize how the idea came about.” Qualitative research always includes an element of subjectivity. In addition, this research is limited by the small number of subjects. As a result, we cannot extend our hypothesis to all design activity, however, we consider that our interpretation and discovery are strongly grounded on the data we collected.

3.5. Two experiences

In the 3 design cases, we can see close interrelationships among experiences of individual designers, projects, and organizations [Figure 8]. And also, we found that designers usually “redefine the problem” for given design themes in their own ways, as well as in other interviews we do not take up in this paper. We recognized that the designers arrived at this redefinition after adjusting themselves to the problem.

The next activity was for the designers to find a clue for solving the problem that they had redefined. Endo noticed the importance of the relation between cars and people. Then, he noticed the effectiveness of a drawing technique taken from comics (deformation). Discovery of this clue led directly to the design idea. It was like discovering the formula for solving the problem that they redefined, or like discovering a rough sketch of the idea. In other words, it was “discovery by analogy” [Figure 9].

This interactive relationship among 3 factors and the core steps of idea development are seen in other interviews with strength differences. In a series of interviews, there were some cases those described small projects dealing with regular tasks in each office. In those situations, organizational factors like routine processes and guidelines were seemed to be strong, while individual experience did not seem to be taking an important role. And when project themes were simple and clear, designers were not clearly conscious of redefinition of the problems and seldom developed analogies citing from far domains for solutions. In those daily situations, our findings about creative process may not be explicitly seen, but when a design theme is complex, namely when a project needs innovation, they are appropriate to describe a dynamic mechanism of a design process.

The design activity in the early discovery phase can
be defined as the phase of "redefinition of the problem" to "discovery by analogy." We should therefore recognize that "experience design" in this phase is "design by experiencing," as a way to get to know the user situation directly. And by that we can understand that it includes observation aimed at rediscovering a theme harmonizing with the real situation, and observation aimed at discovering by analogy [Figure 10].

4. CONCLUSION

Methods commonly called "experience design" today are mainly concerned with user experience based on hypotheses made during the definition and evaluation phases, as shown in section 1. However we found that in the discovery phase the designers' own experiences were important. Also, in the discovery phase, we noted that the designers undertook their design activities under the influence of interactive relations with corporate strategies, project goals, and personal experiences. One might say that the organization provides a framework and a direction for the project solution, and that the individual puts a soul into it.

However, methodology in the discovery phase is little discussed in the design field in Japan today. It depends on a personal sense, effort, and experiential accumulation. Ethnographical methods are reported to be effective in the U.S. [11-12]. However, it is assumed to be unlikely for Japanese corporations to invite ethnography specialists into product development any time soon. We expect that more discussions about methodology will take place and that the methods available to designers and engineers for discovering and sharing will be developed.

In this paper, we reviewed the meaning of the term "experience" which is currently attracting much attention in the field of product development, and we highlighted some of the problems involved in the design process. Analyzing a limited number of interviews, we hypothesized that there is a step in which a designer develops a core idea for a product, and this step consists of a phase of redefinition of the problem and a phase of discovery by analogy. In other words, "experience design" is "design by experience," especially in the discovery phase of product development.

We will continue to collect cases of concrete design activities, and to utilize them to define methods in the design process.

REFERENCES

5. D.A. Norman; Pasokon wo kakuse analogu hassou de


9. The technique of analysis of coding the interview contents starting from “open coding” is a method, commonly used in sociology. Our analysis was mainly based on the “Grounded Theory”, originally developed by B.G.Glaser and A.L.Strauss in the 1960’s which is now widely used in qualitative research, especially in the fields of education, nursing, and welfare. Like the KJ method, it is a useful method for interpreting information. The Grounded Theory uses data from direct interviews and observations whereas the KJ method tries to include many other factors in addition.


11. W.Reese; Behavioral Scientists Enter Design: Seven Critical Stories In; S.Squires, B.Byrne (Ed.) Creating Breakthrough Ideas, Bergin & Garvey, Westport, 17-43 (2002).