Exploring the Relationships between Emotion and Design Process for Designers Today

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Abstract. Design process involved different sub-processes and components and each of them interacts with each other to build up a comprehensive system. Different aspects of factors may affect the process, which may lead to different design outcomes. In order to reach for different design outcomes, different design processes and methods should be introduced and adopted in order to maximise the result. Facing the changing nature of design discipline, design processes no longer lie on the conventional prototype, but in a more diverging and interactive model to incorporate new ideas and creativities to create breakthrough and innovation. This paper aims to understand the relationships between designers' emotion and decision-making process in every step and how does it affect the whole design process. Designers can understand the relations in-between and hence develop tailor-made methods and techniques to manipulate their own design process for required outcomes.

Keywords: Design Process, Decision-making, Emotionalise, Emotion, Designer

1 Introduction

Today, design is a professional activity that practiced by designers in a variety of design fields, for example, industrial design, graphic design, interior design etc. Therefore, designers are expected to be the creative people who make artifacts to respond to the various design requirements in an integrative and holistic way. Design Process is the working flow that designers practice everyday. It had developed and became one of the important topics throughout the design researches. Researches on design process help scholars to develop and shape different frameworks of design process. Those frameworks then provide designers new insights on the methods of manipulating the whole design process to reach for required outcomes. Therefore, designers can manage their own design process effectively as well as to improve the quality of their creative ideas and innovative design outcomes. However, as more researches further developed, it is not difficult to realise that designers nowadays would like to specify their own design process in order to fit for their working habits or reach for certain kind of required results (Best, 2006). It may include different kinds of new aspects of concern that directly contribute to; design and emotion could be one of them.

Most of the researches under design and emotion had investigated intensively on the emotional response of the users on the interaction with the design outcomes. Some other research aspects like 'emotional functions, 'design of experience' also had been researched. However, not many of them had conducted researches to investigate the actual relationships between emotion and design process. How the emotion could affect the design process, in what level that it will cause the function? From whom it was initiated and in what criteria and through what medium?

This paper aims to explain the functions of emotion in the design process and understand how it can cause affection to the decision-making process and even to the final design outcome. A new concept model will also propose to illustrate the close relationships between all those essential elements that involved in order to carrying out their interactive functions.

2 The Development of Design Process

In order to understand how the emotion affects the design process with different decision-making, it is essential to understand the development of design process from the past. In modern design studies, the discussion of design related to desing outcomes, designers and finally to the process of designing. (Goldschmidt, 1999) Design process and its relationship with the corresponding design outcomes had been explored and supported by different theories and models since 1960s. Different design scholars tried to find out some effective approaches for the designers to follow as a well-delineated path in their

creation. They generally believed that design processes could be divided into different stages. Archer (1965) was the first scholar who proposed the design process models called Analysis-Synthesis Model. The model included three main stages of designing (i.e. Analytical, Creative and Executive). He proposed that there was a distinction between problem analysis (in the Analytical stage) and design synthesis (in the Creative and Executive stages). Based on his model, he suggested that designers have to extensively analyse the problem, and thus fully define the problem then synthesise the solution. It is realised that Archer started the early investigation in design process which mainly focused on the cogitative steps and rational approaches. Learnt from Archer's logical approaches, Jones (1984) amplified the concept of the Analysis-Synthesis Model and connected it with intuitive, experience, and rigorous logical treatment. As a result, he proposed the concept of Systematic Design that suggested designers work on both logical analysis and creative thought together during the process of problem solving. In order to provide a guideline on the concept application to the designers, he proposed another design process that consists of three stages: analysis, synthesis and evaluation[1]. Designers would produce ideas and solutions with the consideration on real life limitations and logical judgment. Learning from the previous design models, it is realised that the early design process were mostly in logical flow with linear process. Those step by step design processes were supported by strong rational behind.

As more researched developed, various design methods were suggested to match with the practical design situations in 1980s. Based on the concept of Jones and the observation on the actual working process of designers, Luckman (1967) suggested the steps in the design process should recur at different levels of design detail. He emphasised that the three states Systematic Design concept (i.e. analysis, synthesis and evaluation) would be repeated in cycles in design practices. There were many repeated

translation of information (that included requirements, constraints, and experience) into potential solutions as well as evaluation throughout the whole design process. Hence, design process would be a non-linear process in the practice. On the other hand, Hillier, Musgrove and O' Sullivan (1984) argued that problem solving is the main part of design activities. Problem analysis was not only depended on cognition. Problem analysis but also included designer's own knowledge and imagination. Therefore, they proposed that design is a 'conjecture/analysis activity'. In the conjecture mode, the designers think in a cognitive way for the concept outline and then use artistic procedures of analogy, metaphor, sudden flashes of insight, etc., to create new ideas. In the analysis mode, the designers use rational scientific thinking to study the consequences of that new idea on the various requirements of the design problem. Hiller, Musgrove and O' Sullivan's study inspired Akin. Based on the Conjecture Analysis Model, Akin (1984) emphasised that design was a process of exploring problems. Physical and mathematical analysis are not the only way that used by the designers to structure their search. They also based on the personal knowledge and skills those have been developed through their own experiences to get judgment and evaluations[2]. Hence, he proposed that the design process consist with three reasoning domains, they were "The objective domain" (i.e. reality of problem), "The representational domain" (i.e. how reality is perceived) and "The construction domain" (i.e. the reality of the solution). According to Akin (1998), the design process should integrate physical and mathematical, and the personal knowledge and skills in order to solve multi-constraint design problems. On the other hand, based on the design processes employed in the design practices, Csikszentmilyi (1996) suggested another design process that included multi-directional research and thinking processes. Csikszentmilyi's deign process comprised of five steps, included: Preparation (i.e. immerse a set of problems that is interesting and arouse curiosity); Incubation (i.e. ideas are churned around, below the level of consciousness and unusual connections are made); Insight (i.e. pieces of puzzle begin to fall into place); Evaluation (i.e. decide which

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[1] According to Jones (1965), the three distinct stages of the design process included:
  1. Analysis: Listing of all design requirements and the reduction of these to a complete set of logically related performance specification.
  2. Synthesis: Finding possible solutions for each individual performance specification and building up complete designs from these with least possible compromise.
  3. Evaluation: Evaluating the accuracy with which alternative designs fulfill performance requirements for practical usages.

[2] According to Akin (1984), designers make judgment and evaluations in the design process included 'the directness of their correspondence to reality', 'the accuracy with which they simulate objects' and 'the evaluation of important design performance issues they enable', (e.g. composition, contextual congruency, and constructability)

insight is the most valuable and worth pursuing); and Elaboration (i.e. turn the insight into something real). He stated that the model of design process were helpful reference to the designers as it is a remarkably well-organising path in the creation. However, some scholars argued that design processes could not be standardised. Austin and Devlin (2003) argued that deign process was a process of discovery. The goal of the process might be fixed but the way of being reached was the unknown. They suggested that creative problem solving took a non-sequential, non-linear approach, and there was no clearly defined steps as it frequently involved new sources and innovative thinking. Best (2006) agreed with Austin and Devlin and emphasised that design process should depend on the different needs of clients and users. It evolved from tried and tested ways of problem solving and were repeatedly refined by the designer applying them on client projects. Therefore, it is realised that the concept of design process were became more diverge from those mentioned in the past decades. They were in multi-directions with non-linear process. However, they were still focused on the cognitive thinking.

3 Internal Factors Affected Design Process

Besides researching different structures and systems on design processes, some scholars also investigated the way how designers make decisions. Levin (1984) introduced design is a decision-making process. After understanding the problems, designers set the goals and then bear in mind. They came up with many different plans and exercised his discretion in choosing among a number of sets of parameters. They were processing certain information when they were making decisions. These information would be grouped into three main categories, included practical consideration, related knowledge and personal experience of users' requirement and previous designs, and conjecture. Designers control the information processing by the solutions derivation, consistency testing, and comparison and selection. In order to have satisfactory design outcomes, Herrmann and Schmidt (2002) pointed out that designers have to govern the process of transforming customer's information into the design concept under time and budget constraints. Hence, according to Longueville and his research team (2003), management skills were including in the study of decision-making processes in the recent years. Different management skills included time management and risk management were widely used to prescribe and optimise the decision-making process and the quality of the result. Designer would choose the most suitable management skills to develop a

closer organization of the decision-making. To enhance the performance of information processing and management skills, Almendra and Christiaans (2009) emphasised that the decision-making in a design process was a customer centric strategy. It was basically sustained by the accurate and updated understanding on the target users/consumers' needs. Hence, designers should choose the most effective way on knowledge access and management, and the usage of a strategy or plan to solve problems. Scaletsky and Marques (2009) got similar concept with Almendra and Christiaans on the importance of strengthening designers' management skill. They proposed that designer should also learn the skills of allocation and choosing on materials as it is one of the decisive factors of the design process. Besides the effectiveness on the costs of usage, aesthetics, or even material resistance are also the topics that have to take the serious consideration. Aken (2005) stated that designers do not only receive information from the objects but also learn knowledge, experience and skills from people. Since there are many hunman interactions involved in the design activities (included client and designer, designer and his design teammates), the pattern of communication adopted by the designers would affect the decision-making. According to Enayati (2002), the better communication skills the designer got, the more effective decision would be made. In addition, there are some other factors would be controlled by the designers and affected by their decision-making in specific decision process. Hence, all the factors those under designers control and drive designers to make detail considerations in their design processes, for example, information processing, usage of strategies, material allocations, etc, are named as internal factors.

4 External Factors Affected Design Process

As times go by, scholars found that some factors such as technological, social, cultural, economical, and some other factors would also affect the role of designers in the design process as well as their emotions. Among all those factors, the influence of the technological factors on the design process was the most obvious. The technological development increased the complexity and difficulties of generating outstanding design outcomes. Hummels (1999) pointed out that the current designs were not able to fulfil the users'/consumers' needs. Rosella (2002) agreed with Hummels and suggested combining emotions and technology in every design process in order to improve the design practice for fulfilling human's emotional needs. Thus, the new trend of

products focused on the way how deign outcomes and users interact. Sanders and Dandavate (1999) stated that advanced technology development affected the society to shift their productivity focus from providing functional products to providing human experience services. On the other hand, the technological and social changes were reflected on cultural aspect. The emphasis of the cultural contexts was changed from community focus to individual focus. Identity designs with strong personal emotions (either from designers or customers) thus were strongly required in the cultural groups in the society. Ben-Peshat (2004) pointed out that those designs generated a sense of identity by using symbiotic meanings, and worked as signs for the strong emotional impacts on the society. At the same time, design outcomes with emotions provided product differences and helped companies to gain new market opportunities in the changing economic environment. In order to support business objectives, design became a part of the new business strategies in those companies exploring competitive advantage through more integrated offerings. Suri (2003) pointed out that the products (or design outcomes) in the current market were similar in many aspects or features included technological functionality, price and quality. In order to improve the designs outcomes, designers were requested to design more outstanding outcomes to fulfil the needs of consumers. Designers have to understand the users' experience, explore design concept to contribute the users' and bring in emotional concerns in the design process. Meanwhile, there are some other external factors would also affect the designers' emotions and their decision-making. A border range of studies on the relationship between external environment and the emotions would be helpful to identify them in the future. It is realised that some external factors like social, cultural and technological development are not under the predictable control of designers. And they would affect designers' emotions and decision-making in their design processes that may manipulate/influence the internal factors. Hence, those factors could be named as external factors.

5 New Model to Explain the Functions of Emotion between External Factors and Internal Factors of Design Process

The purpose of this paper is to explain the functions of emotion to those internal and external factors that affect the design process. In order to do so, a new concept model, E-Wheel model (figure 1) had been proposed to explain the relationship among designers, internal factors, external factors and emotions. First of all, those external factors (may not under the predictable expectation and control of designers) such as social, cultural, and technological, etc will affect the emotion of the designers, as showed in the figure 1. The emotion of designers will engender the corresponding evaluation to the external factors. According to Scherer (1984), the emotion is a pattern of reactions to respond to external stimuli and also a process to engender evaluations to stimuli and situation. When designer bring in their emotion concerns to the decision-making process, it will hence affect their decision-making ability.

On the other hand, internal factors also consist of different decision-making processes. Designers will then make corresponding decisions (with the involvement of their emotion) to affect the internal factors (i.e. information processing, material allocation, etc.) of the design process. As a result, emotion could affect the internal factors that lead to the different changes of result on the design outcomes. Alternatively, those external factors will also affect the designers on how to make their own decisions directly (without the involvement of their emotions). Hence, the decisions made would affect those internal factors of the design process and as a result, the design outcome would then be affected as well.
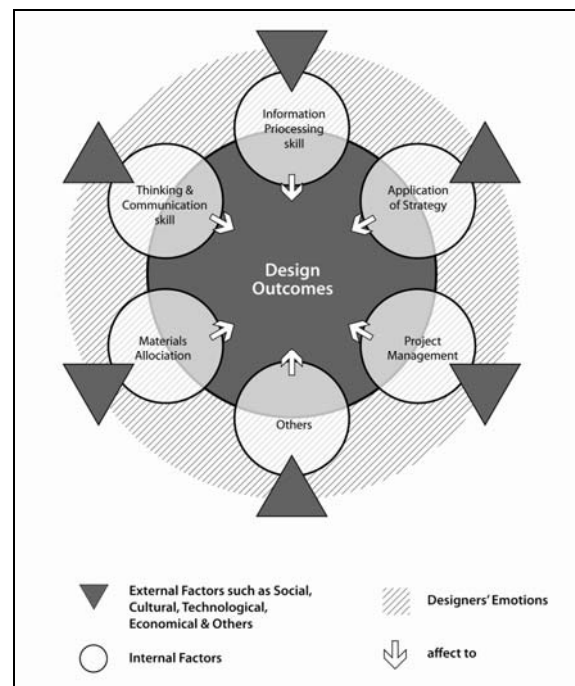

Fig. 1. E-Wheel model demonstrate the relationships and function of emotions to those internal and external factors that affect the design process

6 The Functions of Emotion to External Factors and Internal Factors

As illustrated in the E-Wheel model above, external factors in the design process (i.e. those are not under the predictable control of designers) would affect designers' emotions. A similar concept had been also raised by Forlizzi, Disalvo, and Hannington (2003). They proposed that the changes of external environments would affect the designers' reflective emotional responses (i.e. 'emotional experience'). The degree of affection of the external factors on the designers' emotion depended mainly on designers' awareness and reflection to the external environment (i.e. the external factors of the design process). Designers' ability on decision-making would be enhanced when designers bring their emotional concerns into the process. Vosburg (1998) claimed that emotional changes of designers would drive them to think in divergent directions and therefore the quality of their ideas would be raised. Emotional changes also help designers to have the ability on differentiating diverse information therefore they are able to choose the most effective strategies to solve the problems (i.e. decision-making processes).

On the other hand, it is found that different decision-making processes were included in the internal factors (those are under designer's control). When designers make decisions with their emotional concerns, those internal factors (i.e. information processing, material allocation, etc.) in the design process would be also affected. Kaufmann (2003) stated that some designers also experienced that positive emotions could be helpful on the information processing. Their abilities on analysing the received information will increase, it enhanced designers' abilities to make decisions. Since information processing is one of the internal factors in the design process, it is realised that the overall design process would be enhanced by introducing emotions. Hence, the corresponding design process would optimise the design outcomes, as stated by Best (2006), design process involves emotion would provide the quality assurance of the design outcomes.

7 Case Study to Illustrate the Concept Model

Besides, the proposed concept of E-Wheel model to explain the relationships between those external factors affect the emotions of designers (for corresponding responses) and those emotional changes directly affect their decision-making process (in the whole design process) could further be explained and illustrated by the following case studies.

Honeymoon Dessert Re-branding Campaign

Fig. 2. Tommy Li created a visual language steeped in modern Orientalism in his Honeymoon Dessert re-branding campaign.

Fig. 3. Some of the appealingly quaint, 'sweet' and nostalgia images were adorned the tableware, menus and takeaway items.

Based on the trend of the nostalgia among the younger generation in Hong Kong, designer Tommy Li created a visual language steeped in modern Orientalism in his Honeymoon Dessert re-branding campaign (fig. 2). They started to discuss with the six owner-shareholders of the company, researched the trend of younger generation in Hong Kong and then set the theme on the nostalgia on Hong Kong. Tommy Li and his team started to collect some of the appealingly quaint and 'sweet' images from Hong Kong old magazines and posters. For example, "A young girl smiles as she thinks of her boyfriend.", "A chubby baby is happily waving his arm in the air." The decision-making on choosing which picture were mainly based on how the picture caused the emotional response (included personal interest on nostalgia) of the design team. (fig. 3). The designers generated a sense of identity when they saw those old Hong Kong images with symbiotic meaning. The design team introduced their personal interest, intuitive evaluation and humour to design or edit, with professional skills within the design process. Those old Hong Kong images worked as the signs for the strong emotional impacts on the society. At the same time, they designed some monster characters loosely based on the

personalities of the six owner-shareholders of the company from the designers' point of view in the process. These unusual cartoon-like characters further presented the humour of the design team and proved to be a hit with local consumers.

Homeless's Wun Ying Collection

Fig. 4. The matchbox collector series, "Spark" recorded each short but valuable memory of Carrie Chau's career. (Chau, 2007)

Carrie Chau Wun Ying, is the main illustrator of Homeless which is a life style concept store. She is the developer of the Wun Ying Collection also, focusing on the original illustration to its production line. Her name continues to grow with her imaginative characters and her new products. Through her well-known illustrations, she spreads the positive messages of happiness and love by creating her artwork. According to Chau (2007), she mostly got inspiration from some "odd" things surrounded her as the starting of her design processes. They can be a printing, story,

people, atmosphere, current affairs and important things those happened around her and affected her emotions. Instead of considering much from the consumers' perspectives, she introduced her emotions into the design processes. For example, in the process for each matchbox of her collector series, "Spark" (fig. 4), she brought in her emotional responses on 'those single sparks in each of her drawing career stages' to the decision-making process when she started to determine which kind of technique or ways of expression she would be adopted, with professional knowledge and skills within the design process. In this case, her emotional responses to those external factors (i.e. story, people, atmosphere, current affairs, personal interest and intuitive evaluation) hence affected her decision-making which all introduced in her design processes.

These two case studies can fully support the proposed conceptual E-Wheel model and align with the concept of *Emotionalise Design*. Ho and Siu (2009) proposed that *Emotionalise Design* is the concept whereby designers introduce their own emotions into the design process to reach a design outcome. It explained that before the final design outcome appears in the market, designers have to undergo the design process. In many cases, designers usually include or introduce various emotion concerns in their design process to reach the final design outcome. On the other hand, the design outcome possesses certain types of the designer's emotion. That is complementary with the E-Wheel model that external factors will affect the designers' emotions, while their emotions will then affect different decision-making processes in the internal factors of the design process. Accordingly, the changed design process will hence develop different design outcomes. Therefore, it is understand that the designer's emotions will become the key and leading element in the design process and its functions in response to those external and internal factors of the whole design process.

8 Conclusions

This paper aims to reveal the function of emotions and understand how those internal and externals factors will affect the whole design process that contains different decision-making processes in-between and their relationships as well. External factors will affect the designers' emotions to make different decisions to affect those internal factors and hence, the design process will then be affected and changed eventually. From this concept, it gives some insights to understand how designers can realise their emotions to develop

corresponding response for optimising their design process that can achieve required design outcome.

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