Study on Emotional Preferences using the Interactive Relationship by Contour Bias

Abstract: Contour bias is widely applied to product preferences; however, the degree of influence varies between products. This study considers chairs as an example. Classic chairs are highly appreciated. What contributes to the popularity of these chairs? This study employs photographs of classic chairs to eliminate other influencing factors. A preference experiment was conducted on the chair design outline to contrast the relationship between the outline contour and degree of preference. The applicability of this experiment for future chair designs can be summarized with the following four points: (1) Angularity and pointedness characteristics should be used to attract attention and excitement; (2) contour bias is applicable to all fields of design, especially for emotionally neutral objects and environments; (3) the contour characteristic should be used to create a positive first impression; and (4) the degree of angularity is directly proportional to the amygdale activation; thus, the design element's degree of angularity should be determined according to the design objective. Instead of implying disorder, bias reveals additional ordered possibilities.

Key words: Contour Bias, Preferences, Emotional design, Affordance

1. Introduction and Purpose

Bias is used for the design of the contradictions. Contradictions provide a more differentiated product possibility because the difference between the user's biases creates a fresh feeling. In recent years more attention has been paid to the interaction between the product and the user, and whether interactive imagery or product form operational interaction plays an important role. This study investigates whether the users' observed stimulation and the focus on the five senses in product operation give the impression of mutual analysis, turn contrasted bias from the established prejudice into a novel, interesting experience.

This study expects to determine the contour bias using the potential rules for a chair. In fact, what constitutes the people's favorite chair is not so complicated and perhaps there are design rules to follow. Contour bias exists in various products used in this experiment. Many observations have found that user prejudice toward products usually involves the product operation (typical, familiar design or concept) with a change due to (five senses) experience and its established impression through the typical interactions of the elements in the conflict (preferences).

This study used a questionnaire to establish user chair contour bias and identify the preferred user elements as a reference design for the chair. The purposes are as follows:

- · Lines the curvature and favorite relationship.
- Emotional Design phase Contour bias of value.

2. Literature Review

2.1 Contour bias

Contour bias is a tendency to favor items based on the Contour shape over sharp corners. The sharp corners on articles activate fear processing in the brains amygdala area. This fear reaction is a subconscious mechanism that detects potential threats. The angular characteristics in products will affect the human emotional and aesthetic perception of the items. In these experiments, when faced with items that had acute angles or curves (e.g.: square surface and circular surfaces), the curved items fared better in preference than acute angled items. Some experiments indicated the subject's preference using functional magnetic resonance imaging (fMRI) showing the subject's brain activity and amygdala activation proportional to the angularity and sharpness of the items. The subjects of these experiments were men and women, with the results proving that humans are born with a deeply rooted preference for the curve and prejudice against the sharp angle (Moshe Bar, Maital Neta, 2006).

This seems to fit the natural reaction of people looking forward to a potential threat, but also revealing that corners and curves also have an offsetting effect: angular articles help attract attention and Betting spirit; curved items help create a positive mood and aesthetic impression.

Contour bias applies to all areas of design, especially feelings toward neutral items and the environment. Designers can take advantage of angular and sharp qualities to attract attention, stimulate thinking and use curved characteristics to create a positive first impression. Broadly speaking, attraction is proportional to the angular extent and HO activation forces, therefore, the design target must be followed to determine the angularity of the design elements. (William Lidwell, Kritina Holden, Jill Butler, 2011).

2.2 The performance implications of emotional design

Donald A. Norman Emotional Design concept stated that the design features elicit emotion on three levels, as explained below:

• Instinct levels: the instinctive design level is related to the impact of the product, including the shape of the product, touch and feel.

• The behavior level: experience with the use of the product and the product gives, but the experience itself contains a lot of the aspect, such as the effectiveness of the functions and availability.

• Reflection levels: the highest level of feeling, emotion and cognition will be present at the reflection level

Thinking and emotions influence both. The reflecting level is also most likely to change with the culture, experience, education and individual differences. Change in this level can override the other levels. Corresponding product characteristics for these three levels as described below:

- Visceral level design: the appearance of the product.
- Behavior-level design: the use of pleasure and efficiency.
- Reflection level design: consider product rationalization and wisdom.

2.3 Affordance

Refers to an item that is actually used by the users. In other words, people relate directly to some aspect of the item because they clearly know how to use its features. The Door for example has the "open" function; the chair provides the "support" function. People learned how to use the article in part from cognitive psychology. The other part comes from the shape of the articles.

3. Methodology

3.1 Experimental Procedure

This experiment is designed to determine how Contour bias exists in the chair and how to influence people's preferences. Is the curve of the chair more loved by people, or is the angular design more attractive to people. Based on the results from this study what is it in the ingredients of a chair that affects people's preferences. The instructions and process in this study are as follows:

• One hundred pictures of classic chairs were sent in the mail to various experts to elicit a comprehensive opinion. Three experts were chosen to pick out the most popular 20 chairs for the experiment

• The 20 chairs were re-sorted using a straight line from an acute angle to the organic curves numbered A-T.

- Every chair was classified according to 1-7 grades from like to dislike.
- The above questionnaire was given to 120 people (60 female and 60 male), irrespective of age.

• Measured by a straight line for the preference of every chair and personal subjects - curve sort, compare and identify the subject and then by preference and right angle - curve relations and the existence of prejudice.

Example diagram as follows: from left to right, from top to bottom for the design straight from an acute angle to the curve of the design respectively.

No.	Chair Photo	Degree (1dislike; 7 favorite)
А		1 2 3 4 5 6 7
В		1 2 3 4 5 6 7
С		1 2 3 4 5 6 7

Table 1: 20 chairs designed questionnaire (Note: The design of the questionnaire did not follow the order number)

3.2 Experiment Description

Seven were subjects tested using the first 20 chairs from an acute angle straight line to the curve number. The subjects felt the most straight acute angle was No. 1, most curves and organic was No. 7. Because the sorting order was based on the subjects the feeling, so everyone's 1-7 chairs and were not the same. Please refer to Note.

The X-axis was measured by sorting 1 to 20. The Y-axis was 1 to 7 in preference. The X data is representative of the higher the degree of love. The X-axis digital subjects were identified as organic curves according to the curvature of the line chart to identify whether there is a relationship between preference and Contour bias.

Following seven charts, diagrams 1-7 according to data made a line chart analysis results based on seven subjects by measuring it chart as follow:



Figure.5 line chart-E Subject

Figure.6 line chart-F Subject



Figure.7 line chart-G Subject

4. Results

This study found that people are affected by many factors, for example: material, texture, structural stability, color, height, proportion and shape. The study presented pictures of chairs to reduce the interference factors. In functional visibility the objects actually bear the physical characteristics in large part depending on the curve shape. On the other hand users are aware of the suggestive qualities of the object, which elicits object preferences.

According to Moshe Bar and Maital Neta's (2006) theory of inference, people have a strong preference for the curve. A chair is a neutral item and will not have another association, so Contour bias ought to apply. However, according to the preferences of people for the curve over the acute angle in this arrangement, both ends of the chair present more variables because an excessively sharp curve or excessive angle will cause resentment. There is a clear contour bias in some subjects. The order is as follows:

- Subjects by A, C, G, exhibit substantial proportional contour bias.
- Subjects B, D, F cannot see out the law.
- Subject E exhibits proportional preference to the degree of the curve.

The emotional design curve bias value results are as follows:

The subject's feelings toward the product shape exhibited touch emotion instinct hierarchy: containing instinctive emotional stimulation and emotional influence.

• the level of behavior: the product use relationship with user past experience affected the present emotional stimulus response, and thus produced feelings of pleasure and displeasure.

• reflection levels: meaning and feeling, emotional and cognitive exist, there are considerable differences in the effect level with the user's culture, experience, education, and therefore, in considering the design to be reasonable.

5. Conclusions

This study analyzed user contour bias for the chair. Some subjects exhibited strong contour bias to the chair, while some people did not exhibit special preference for the organic chair curved form. The conclusions of this study are summarized as follows:

• angular and sharp qualities attract attention and stimulation.

· contour bias applies to all areas of design, especially emotionally neutral objects and the environment

• curve characteristics create a positive first impression.

• angular impact is proportional to the degree of will and amygdala activation, and therefore must be determined in accordance with the design goals for the angularity of the design elements.

6. Examples Citations

- [1] William Lidwell, Kritina Holden, Jill Butler (2011) Universal Principles of Design Uni-Books, Taiwan.
- [2] Moshe Bar, Maital Neta (2006) Humans Prefer Curved Visual Objects, Psychological Science, vol. 17.
- [3] Moshe Bar, Maital Neta (2007) Visual Elements of Subjective Preference Modulate Amygdala Activation, "Neuropsychologia", vol.45.
- 7. Note

