

Expression modes used by consumers in conveying desire for product form: A case study of a car

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Received 16 April 2004; received in revised form 13 June 2005; accepted 15 June 2005

Available online 11 August 2005

Abstract

Understanding consumers' latent desires for product form has become an important issue in the product design community. Previous studies in this field generally achieved this objective by considering the usage of emotion-related words. However, this approach was limited in its ability to accurately reflect the consumers' latent desires. Accordingly, the aim of this study is to identify the habitual expression modes used by individuals when conveying their desires for product forms. An oral styling procedure is conducted in which 23 subjects describe the form of their imagined car to a designer, who progressively sketches the car as it is described. Nine experts, including linguists, product designers, and marketing planners, are requested individually to analyze the descriptions provided by the subjects and to classify them into distinct expression modes. A hierarchical clustering method is employed to integrate the opinions of the experts. As a result, a total of five expression modes are identified, namely Explaining Form, Analogizing, Classifying, Conveying Emotions, and Associating. The results of a usage frequency analysis indicate that the five modes have virtually identical usages in the earlier styling stages. However, the Explaining Form mode dominates in the later styling stages. The results of this study provide a foundation for the future development of enhanced investigation techniques aimed at understanding consumers' latent desires for product form.

Relevance to industry

This paper identifies five expression modes commonly used by consumers when attempting to convey their desires for product form. The usages of these expression modes are analyzed in different styling situations. Product form designers can better understand consumer needs by using the five expression modes synthetically or individually as investigation tools according to the particular design conditions. © 2005 Elsevier B.V. All rights reserved.

Keywords: Latent desire for product form; Expression modes; Product design; Car; Kansei engineering

1. Introduction

Consumer satisfaction with form plays an essential role in determining the success of a product (Cooper and Kleinschmidt, 1987; Bruce and Whitehead, 1988). In recent years, many product manufacturers have adopted a consumer-oriented design and development approach in

order to enhance consumer satisfaction. During the product form design procedure, product developers investigate and define consumers' preferences and establish these preferences as objectives of the later design stages (Moulson and Sproles, 2000). However, developers commonly experience difficulties in truly understanding the preferred product form since most consumers lack the necessary skills to describe their desire for form clearly and comprehensively.

Previous researchers have developed various approaches to address this problem. For example, Nagamachi (1995) considered the "Kansei Engineering" approach, in which a consumer's desire for form was presented in terms of

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emotional responses (typically expressed using adjectives, e.g. “lovely”, “noble”, “spirited”, etc.). The relationships between the emotional responses and the corresponding form elements were established through intensive investigations and statistical analysis. The various relationships were then integrated to create an inference model of product form. Approaches of this type have been adopted in many subsequent product design studies. In order to enhance the accuracy of the inference results, various inferential models have been applied in the Kansei Engineering field, including the Rule-Based Inference Model (e.g. Yang et al., 1999), fuzzy inference models (e.g. Chi et al., 2003), and neural network models (e.g. Ishihara et al., 1995; Hsiao and Huang, 2002). Additionally, McDonagha et al. (2002) proposed a Product Personality Profiling (PPP) method using mood boards and visual product evaluation techniques to elicit user perceptions and emotional responses when developing new products.

The approaches introduced above all employed some form of “emotional response” to define the consumers’ desires for the product and then applied an inference process to develop the associated form elements. Regardless of the inference model applied, the consumers’ responses to form must first be measured using some form of rating scale, ranking method, or semantic differential technique, etc. Therefore, when describing their form aspirations, consumers are obliged to operate within a restricted framework and are prevented from expressing their responses naturally. Consequently, the collected data are shaped to some extent by the choice of stimulant and the design of the investigative tool (Cooke, 1994). As a result, the inferred form may misinterpret, or miss completely, the consumers’ true aspirations.

A fundamental issue is whether or not the use of emotional responses represents the only means utilized by consumers to communicate their desires for form. This would seem unlikely since individuals generally employ various strategies to make themselves understood when communicating with others as part of their daily lives (Ulusoy, 1999). For example, they may use such phrases as “It is a sports car”, “It has a streamlined shape”, “It looks expensive”, etc. when describing a car. Furthermore, different individuals are liable to utilize different expressions to describe the same car since these expressions reflect their personal cognition of that vehicle. Janlert and Stolterman (1997) explained the cognition of an object as its “character”, defined as a coherent set of characteristics and attributes which apply equally to appearance and behavior, cutting across different functions, situations and value systems (aesthetical, technical, ethical), and providing support for anticipation, interpretation and interaction purposes. Therefore, the natural descriptions employed by an individual to describe an object orally are likely to reflect the characteristics and attributes of special interest to that particular speaker. In consumer-oriented design, satisfying the consumers’ aspirations is a fundamental

design target. In order to better understand the consumer’s true desires, and to avoid misunderstanding or missing completely their personal preferences, it is essential to develop methods to capture the consumers’ cognition models for product form. In developing such methods, it is first necessary to analyze the expression modes typically used by consumers to convey their desires for product form.

This study commences by conducting an “oral styling task” in which 23 test subjects are asked to concretize their aspirations for the form of an imagined car using oral descriptions. The oral descriptions utilized by the consumers when expressing their desires for the car form are recorded. As each subject describes the car, a designer progressively generates the corresponding form. The various natural language expressions are analyzed by linguists, product designers, and marketing planners, and are subsequently clustered into meaningful and distinct expression modes. The use of the various expression modes at different phases of the styling process is analyzed. The present results provide a sound theoretical foundation for the future development of an enhanced investigation approach for product form design.

2. Method

2.1. Subjects

Twenty-three undergraduate and graduate students (12 males, 11 females, average age 23 years old) were invited to participate in the oral styling task. To ensure the use of completely natural expressions when describing the imagined car, the subjects were selected from four specifically design-unrelated academic departments (Business Management, Accounting, Chemical Engineering and Electrical Engineering).

2.2. Example product

The factors affecting product form have two principal origins, namely functional and psychological (Krippendorff and Butter, 1984). Since the current study focuses on the psychological factors, the functional factors must be controlled to prevent subjects from pursuing functional thinking. Accordingly, this study specified a passenger car as the imagined product since vehicles of this type have broadly similar functional structures. Moreover, the subjects were required only to describe the side-view of the imagined car rather than the complete form since the side-form is the view which mainly shapes the key form features of a car.

2.3. Oral styling task

Typical consumer descriptions for desired car form were obtained by conducting an “oral styling task” in which all of the 23 subjects participated individually. Fig. 1 presents

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