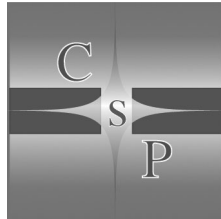


Design & Emotion Moves

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Edited by

Pieter M.A. Desmet, Jeroen van Erp
and MariAnne Karlsson



Cambridge Scholars Publishing

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DESIGN & EMOTION MOVES

PIETER M.A. DESMET, JEROEN VAN ERP
AND MARIANNE KARLSSON

1. Introduction

Eighteen authors who presented their research at the 5th international Design & Emotion conference were invited to write a chapter that shares their research approaches to and insights into the domain of design & emotion. The result is this book, an attempt to present a cross section of current developments in design & emotion research activities. Please do not let the word “emotion” mislead you. Strictly speaking, the concept of emotion refers to a particular and specific affective phenomenon: a relatively brief episode of coordinated brain, autonomic, and behavioural changes that facilitate a response to an external or internal event of significance for the organism (see Scherer et al. 2001). Readers will find, however, that many chapters do not actually discuss emotions. This is because in this book –as in the design (research) discipline in general– the word emotion is used to represent a perspective that is much wider than the formal definition would strictly allow for. What all the chapters do have in common is that their focus always includes some kind of affective aspect involved in the user-product relationship. Emotion is an affective phenomenon, but so are moods, feelings, experiences, and general pleasure. Although all of these phenomena are represented by design & emotion research, the term emotion is used because it clearly expresses, without requiring lengthy explanations, the affective basis of the research domain. This justifies the suggestion to characterise design & emotion as a research domain rather than a research topic, emphasizing its multifaceted and multidisciplinary nature. In spite of the wide variety of themes, angles and approaches, all research activities in this domain share the basic proposition that in order to understand users (or consumers) and the users’ behaviour, one must understand the affective responses that are involved in the processes of buying, using, and owning products. This proposition represents the backbone of this book. Consequently, all the chapters report and discuss (the development) of methods, theories, or tools that can assist

those who want to understand the affective impact of design, and those who want to explore the use of structured approaches to design for emotion activities.

2. Structure of the book

The book is not structured in sections; all the chapters are simply placed in alphabetical order according to the names of the first author. This pragmatic decision was made because we found that all our attempts to formulate unambiguous sections failed to be satisfactory. As all the chapters touch upon several themes, a categorisation into specific themes would not do justice to their conceptual richness. As an alternative, we produced an informal composition, as shown in the graphical overviews at the end of this introduction, which should be of some assistance in finding chapters that meet your particular interests. These are loosely defined compositions; one according to approach-based categories, and the other according to thematic categories. Although most chapters do not fit in only one particular category, the categories cover all the chapters. The themes were derived from the chapters (as opposed to being pre-defined) and represent current directions and challenges for the D&E research agenda.

Dynamic interaction

The famous Wii game console of Nintendo, which has sold over 9.5 million units since its introduction in November 2006, is as innovative as it is successful. The console was specifically designed to engage users with the active physical and social interactions that are required to play the game. A distinguishing feature is the wireless controller, the Wii Remote, which can be used as a handheld pointing device and which detects movement in three dimensions. The excitement of the game is generated by the dynamic interaction with the Wii Remote, as well as by the social interaction involved in gaming together (Figure 0-1).

Products are not static but dynamic stimuli. Product usage and ownership involves emotional episodes that may include a variety of both pleasant and unpleasant experiences. The majority of techniques to measure emotions have difficulties with this dynamic nature. We are still a long way from being able to model, or even understand the emotional episodes involved in the interaction between user and product in the actual context of usage.



Figure 0-1. People at play with the Wii game console.

Several of the chapters describe studies that have, in different ways, undertaken the challenge to understand the multidimensional and dynamic nature of design as an emotional stimulus. Gomez, Popovic, and Bucolo studied emotions involved in the driving experience. More specifically, they studied emotions during interaction between driver and vehicle interface in a natural driving situation. Their aim was to identify aspects that affected the driving experience, and the effect of emotions experienced while driving on the overall emotional experience. Adank and Warell present and discuss techniques that can be used to assess sensory product experience in user-product interactions. Schrammel, Geven, Leitner, and Tscheligi studied how people organize their experiences and which factors are relevant for evoking positive and negative experiences in their encounters and interaction with technology and artefacts. On the basis of an exploration of the mechanisms of magic, De Groot and Hughes introduce a framework that can help designers navigate the various elements that constitute a magical engagement with products or services. This challenge also involves the relationship between the emotional

episodes and behaviour and attitudes. Porat and Tractinsky studied the effect on attitude of emotions experienced while visiting an e-store, in relation to dimensions such as usability and aesthetics. Chapman discusses the relationships between users and their products in the context of adapting and evolving consumer behaviour, and the emergent paradigm of “emotionally durable design”. Finally, Lee, Davidoff, Zimmerman, and Dey explored the roles that a smart home can play in enabling families to regain control of their lives.

Sources / stimuli

One of the musical instruments used by Icelandic singer Björk on her recent world tour was the “Reactable”, an innovative collaborative multi-touch interfaced synthesizer. The instrument, which was developed by scientists at the Universitat Pompeu Fabra Barcelona (Spain), enables several performers to simultaneously share control by moving and rotating physical objects on a luminous round table surface. In doing so, users can create complex and dynamic sonic topologies. In addition, a projector draws dynamic animations on its surface, providing a visual feedback of the state, the activity and the main characteristics of the sounds produced by the audio synthesizer. Musicians are animated by the multi-experiential nature of the instrument, involving dynamic, visual, auditory, tactual, and social sensations (Figure 0-2).



Figure 0-2. The Reactable music instrument.

One part of the challenge in understanding how products elicit emotions is to understand in what ways products can act as emotional stimuli. There is a wide variety of emotional stimuli; some direct, and some indirect and more associative. In design experience, the object of our experience is not necessarily the design itself, but it can also be an associated person, company, event, activity, idea, or memory. Moreover, the object of experience may vary within one and the same interaction.

Fisher and Nordli investigated the specific influence of product shape on emotional responses. Porter, Chhibber, and Porter studied the influence of various types of potential sources of pleasure, functionality, and usability, of different population demographics. Demir and Erbuğ investigated product-related determinants of satisfaction, and found that product groups differ in terms of the sources of the overall satisfaction response. Karana and van Kesteren focused on the experience of materials, for which they proposed a framework that includes several main components: physical characteristics, sensorial properties, meanings and emotions. Zwartkruis-Pelgrim, Hoonhout, Lashina, de Kort, and IJsselsteijn studied the effects of ambient scent and coloured light on atmosphere experience.

Sensorial experience

Readers may recognise the memory of the biscuit tin kept stored by our parents on the top shelf of the kitchen cabinet, teasing us with its unreachable presence. For Alessi, Stefano Giovanni designed the “Mary Biscuit” cookie box that teases us in an even more sophisticated way: by rousing our senses. The plastic box is brightly coloured and semi-transparent. To avoid any doubt about the function of the box, the lid has the shape of a Mary Biscuit, and even smells like vanilla. The translucent material reveals shades of the seductive biscuits inside. What is even more teasing is the fact that the lid is much smaller than the box. The consequence of this design is that you may find yourself wriggling your hand into the box to grope around for the last cookie (Figure 0-3).

When it comes to the senses, design activities are often dominated by the visual appearance. Visual appearance is easy to communicate (drawings) and we have a language for discussing appearance (size, shape, colour, etcetera). Obviously, design for experience requires a more complete focus on all human senses. One of the challenges in this area is the necessity to simulate and test sensorial experiences during design processes. We can make a drawing to simulate a visual appearance, but how do we simulate,



Figure 0-3. The Mary Biscuit cookie box.

for instance, tactile experiences? There is a need for instruments that can effectively measure sensorial experience, and means for communicating experiential aspects that are understood by the various disciplines involved in new product development processes. Furthermore, there is a need for theory that can help us to explain how experiences are connected to the senses, and how sensations interact with product experiences.

Hughes and Tillotson focused on scent, and present some design proposals that demonstrate how designers are able to envision new modes of interaction with scent-producing devices. Adank and Warell introduce techniques that connect sensory responses to product features and characteristics. Martin-Juchat and Marynower adopted a multi-sensorial approach in their analysis of the experience of a car park design.

Pleasant emotions

In a joint project, the design agency KVD (based in Amsterdam, The Netherlands) and the Department of Industrial Design Engineering of Delft

University developed a series of in-flight meals for economy class intercontinental flights of KLM Air France. The aim was to introduce meals that elicit more pleasant emotions than those that are traditionally served during flights. Research indicated that the nature of the emotions that passengers want to experience differs according to the type of meal. An experiential character was defined for each type of meal. For instance, for the main breakfast meal the metaphor ‘the charger, like a morning walk in the park’ was used to express a character of being invigorating, engaging and dedicated (Figure 0-4).

The interest in emotion emerged from the experience that an understanding of qualities like functionality, usability, and safety, is not always sufficient for developing products that people actually enjoy using or owning. Acknowledging a need for theory and methods, researchers started to adopt the topic of subjective product pleasure as a necessary object of study. Nowadays, pleasure, a basic dimension involved in all affective responses in the human-product relationship, is an indisputably relevant phenomenon in design research. At the same time it is only a basic and therefore general dimension of affect, ignoring the enormous diversity of pleasant experiences involved in using products. An emerging theme focuses on this diversity and explores possibilities to differentiate between types of pleasure, or types of positive experiences.

Three chapters focus on specific pleasant emotions: Desmet explored the similarities and differences in the eliciting conditions for the two emotions of desire and inspiration, Demir and Erbuğ studied product related



Figure 0-4. Morning Tapas airline breakfast for KLM.

determinants involved in the specific emotion of satisfaction, and Grimaldi explored the possibilities to design for the specific emotion of surprise.

Identity / branding

Internet Protocol Television (IPTV) is a system which involves delivery of a digital television service using the Internet protocol over a network infrastructure. Instead of being delivered through traditional broadcast and cable formats, content is received through the technologies used for computer networks. In 2007, the communication and design agency Fabrique (based in Delft, The Netherlands) was invited to design a set-top box for the IPTV service to be launched by KPN, a Dutch telecom company. The design, which resembles a small dog, was primarily based on the key experiential brand experience of KPN, which is characterised as a combined experience of reliability and innovativeness. Although when first confronted with the product, most people did not know what the product was, at the same time they experienced it as somehow friendly and familiar. In that way the design communicates the novelty of the product and service in a non-alienating fashion (Figure 0-5).

Over the years, many approaches, methods, and tools have been developed that can assist in emotion-focused design activities. Measurement instruments have been developed that can be used to determine specific emotion profiles, and approaches have been developed that link subjective



Figure 0-5. Internet Protocol Television set-top box for KPN Telecom.

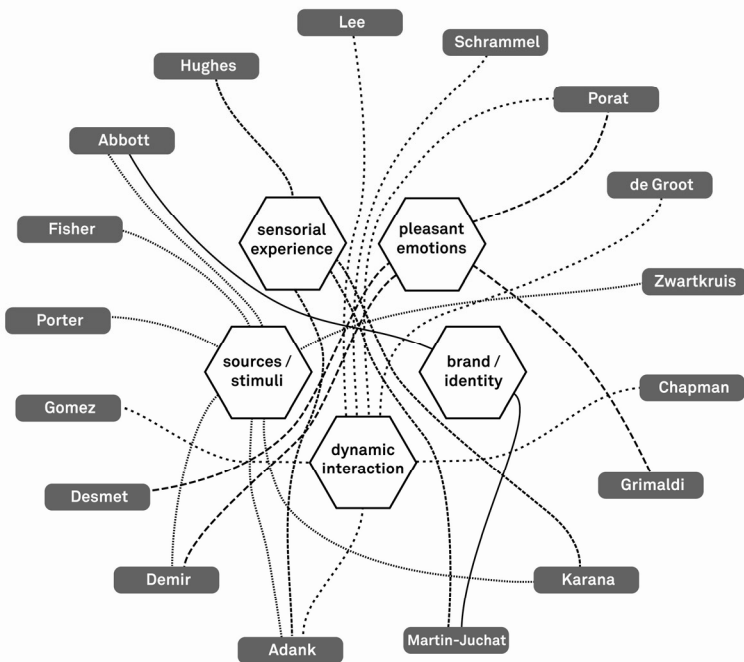
sensorial experiences to objective product properties. The possibilities created by these methods and tools also introduce a new challenge. The ability to design for emotion requires a strong vision on what kind of experience one wants to design for. Companies often find it difficult to formulate their ‘emotional intention,’ which, on the one hand should reflect the needs of the user, and on the other should also reflect the identity of the company or brand. Given their stimulus-independent character (one can, for example, be inspired by a shape, an idea, a company, a service, a brand, an activity, etcetera), emotions are particularly useful for formulating experiences that generate coherence between brand identity and product design. An important research theme is therefore the relationship between emotion and (brand) identity.

In a case study, Martin-Juchat and Marynower explored the relationship between emotion, design and communication, using sociosemiotics to interpret the success of the Lyon Auto car park. Abbott, Shackleton, Holland, Guest, and Jenkins studied brand categorisation and the identification of influencing product attributes, diagnosing the “Bentleyness” of automotive design properties.

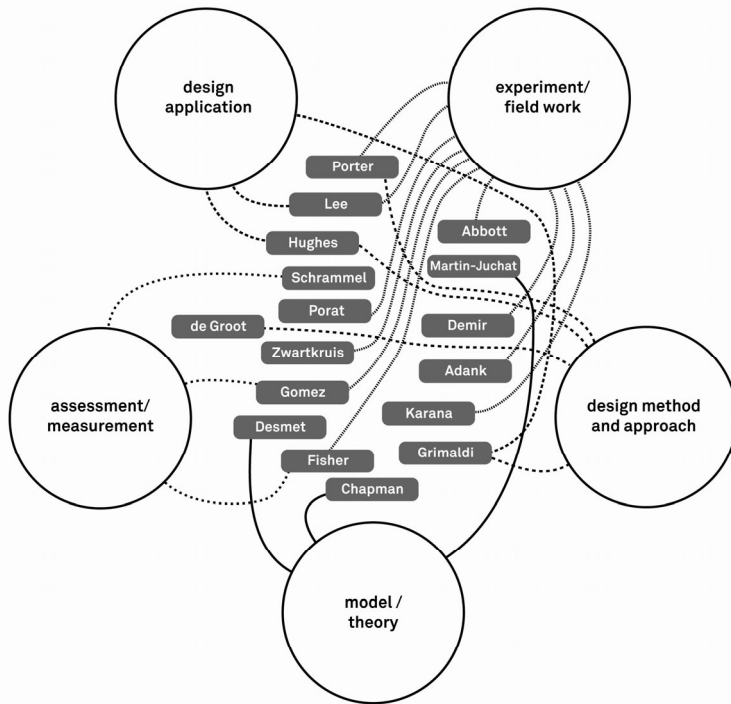
3. Gothenburg Design & Emotion conference

The International Conference on Design & Emotion is a forum where practitioners, researchers and industry meet and exchange knowledge and insights concerning the cross-disciplinary field of design & emotion. The first conference was hosted by Delft University in 1999. Since then conferences have been organised every two years in close co-operation with a new hosting organization. Conferences with a variety of sub-themes have been held in Potsdam, Germany (2000), in Loughborough, UK (2002), and in Ankara, Turkey (2004). The fifth and most recent edition took place in September 2006 in the wonderful city of Gothenburg, Sweden. The event was organised in cooperation with Chalmers University of Technology and hosted more than 200 delegates, representing more than 30 nationalities. More than 300 abstracts were submitted, and almost 100 papers were presented, addressing a wide variety of topics, discussing the practical, theoretical, societal, and methodological issues relevant to the domain of design & emotion. The programme included four key-note speakers.

Simonetta Carbonaro from Domus Academy, Milan and Borås University, argued that if consumption cannot be reduced to simply functional expectations (form follows function), a next step is considering



the merely emotional and multi-sensorial benefits of what is referred to as “experience marketing”. However, this assumption neglects the significance of consumption as a gesture which also seeks an existential, subjective and collective “sense”. There is a latent consumer need hiding in most of the consumption gestures that management and marketing disciplines have not sufficiently explored and grasped yet: the search for “sense”, or the return to “meaning” after an extended period of purposeful ephemeral merriment. The presentation by Fleming Hansen from the Copenhagen School of Business Administration and Economics was concerned with the measurement of emotions and the study of the role of emotions in consumer choice. Contemporary neurological findings suggest that emotions may play a role in their own right, quite differently from the way in which they have been considered in traditional consumer behaviour theory. Young-Ill Kim, from Hyundai and Kia Motors, spoke on differences between east and west. He argued that East and West differ in



culture, differences which have been created by differences in, for instance, climate, nature, food and the way of life throughout numerous years. These differences can also be traced in the design of environments and artefacts. Marije Volgelzang, with a background from the Design Academy at Eindhoven, told a tale of food design and different ways of approaching food and design. Her talk illustrated what one can accomplish using food as a design material and how emotions can be triggered by different food designs.

Befitting the emotional atmosphere, we enjoyed our conference dinner surrounded by living—and swimming—sharks! This inspiring event contributed directly to the main goal of the Design & Emotion society: to facilitate dialogue between designers, researchers and industry. With a record number of delegates, the Gothenburg conference illustrated the vibrancy of the design & emotion research domain, and that the interest in

experience has outlived the suggestion that this may be a passing academic fashion, soon to be replaced by a newly launched research trend.

Design & Emotion Society

The Design & Emotion society raises issues and facilitates dialogue among practitioners, researchers and industry, in order to integrate salient themes of emotional experience into the design profession. The society, which was established in 1999, is a network organization that is used to exchange insights, research, methods and tools that support design for emotion activities. Although the initiative originated from the discipline of product design and design research, through the years practitioners from other design disciplines such as interaction design and branding design, have contributed to and benefited from the network and activities. Since its establishment, various sub-movements have arisen, and critical reflections on experience-driven design have emerged. The society acclaims this lively direction and willingly accepts the challenge to guide and stimulate the ongoing dialogue. Over the years, the network has expanded and the number of members has grown to over 3000. More importantly, after these successful conferences, a worldwide acknowledgement of the significance of the area of design & emotion was observed. In 2008, the Hong Kong Polytechnic University will host the sixth edition of the D&E conference.

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CHAPTER ONE

ENGINEERING EMOTIONAL PRODUCT IDENTITIES IN HIGH-LUXURY VEHICLES

MARCUS ABBOTT, JOHN P. SHACKLETON,
RAY HOLLAND, PETER GUEST
AND MELINDA-JUNE JENKINS

1. Automotive product uniformity

Product uniformity is a contemporary concept pervading many areas of consumerism in the developed world. It is, therefore, reflected widely in the literature (Hekkert et al. 2003; Karjalainen 2005; Snelders et al. 1999; Karjalainen et al. 2005); Simonetta Carbonaro and Christain Votava describe it as “*a vicious cycle of innovation pressure, information food and shorter product life cycles*” (Carbonaro et al. 2005) which inevitably impacts upon the product development - product consumption relationship. It is especially significant in the automotive marketplace, where the differentiation between the product offerings of different vehicle manufacturers has been narrowing for a number of decades as industry consolidation and production technologies have matured and globalised. Product performance (for example; power, acceleration, ride, handling, braking), quality levels, reliability, durability and safety levels, are no longer a competitive influence exclusive to the more expensive and luxurious marques. They have reached a level of “technical parity”, converging to become a minimum requirement of the now experienced and knowledgeable consumer visiting any showroom (Accenture 2005; Antlitz et al. 2004; Cornet et al. 2005; Di Riso et al. 2005; Gruntings et al. 2005; Jacoby 2006).

When evaluating this trend, it can be deduced that that which the consumer expects from a product could be defined in terms of product quality, being on the one hand objective; “*expressed by a state of physical*

fulfilment” (for example, the product meets its targets; is functional) or on the other, subjective; “*expressed by user satisfaction*” (for example, the way the product meets its targets; is delightful or appealing) (Kano et al. 1984). Kano’s model for quality has been adapted more recently (e.g., Schutte 2005) to give an insight into the natural cycle of technology diffusion experienced by automotive consumers and those participating in many other mature product segments (de Chernatony et al. 2003). Many objective benefits were once attractive to automotive consumers when

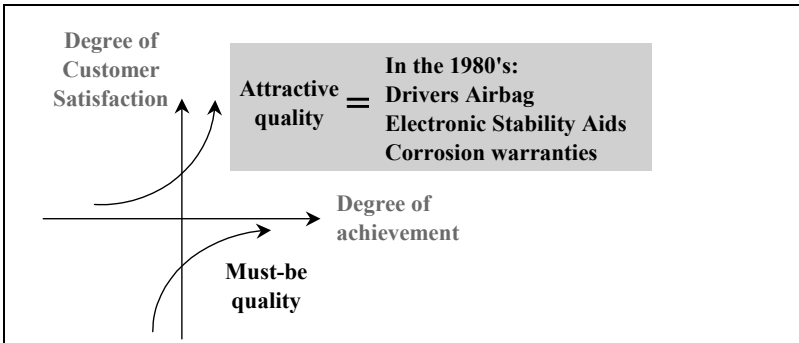


Figure 1-1. Kano Model (Kano et al. 1984) with examples of “attractive qualities” in automotive products in the 1980’s.

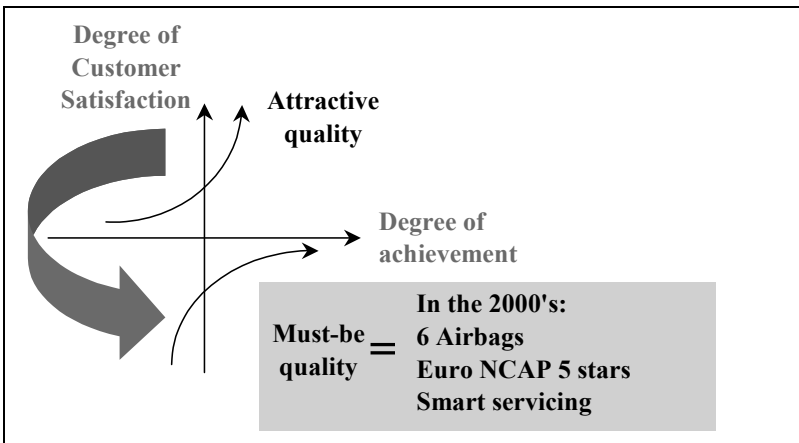


Figure 1-2. Kano Model (following the adaptation by Schutte 2005) with examples of “must-be qualities” in automotive products, 2000 onwards.

they were unexpected against normal performance and were rarely obtainable (Figure 1-1). During the past 25 years, however, they have become somewhat ubiquitous, obtainable and therefore largely expected, moving them from attractive to must-be qualities in consumers expectations (Figure 1-2).

2. The rise of the brand

The question can be posed, therefore; what are the new attractive product qualities for today's consumer in the automotive marketplace? There is significant evidence to suggest one answer may be the brand and brand-design. Branding is a cognitive concept (Franzen et al. 2001), made within the minds of the consumer (de Chernatony et al. 2003), with some physical manifestations (like a logo (e.g., the Nike "tick"), or sound (e.g., the Windows start-up tune) (Lindstrom 2005)) that promotes and motivates, for example, evocative cognitive associations that may include emotional thoughts and responses and narrative strings of "code" creating, in the most successful brands, rich streams of meaning (Alexander 1996; Karjalainen 2005; MacFarquhar 1994; Valentine et al. 1993) and the further expression of self-beliefs and values. Within the automotive marketplace, leveraging the brand's values through the design of the product, is one of the new product differentiation strategies and the battleground upon which commercial advantage is now being fought (Figure 1-3)

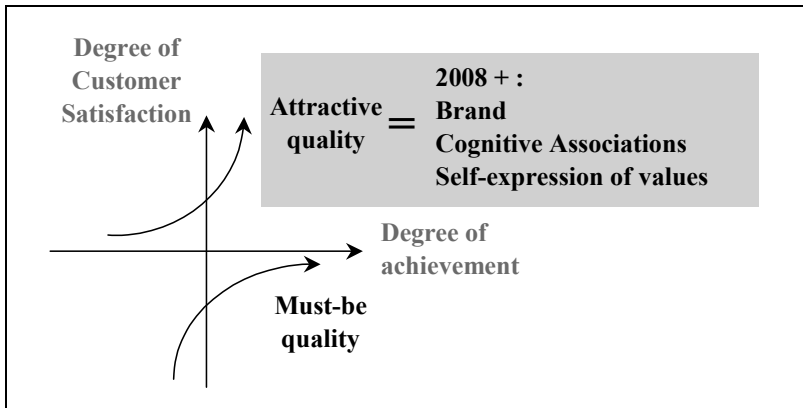


Figure 1-3. Kano Model (Kano et al. 1984) with examples of "attractive qualities" and "must-be qualities" for automotive products, 2008 onwards.

(Barroff 2006; Di Riso et al. 2005; Gonzalez 2006; Gruntegs et al. 2005; Simms et al. 2006).

Profitability, and even survival, appears to increasingly depend on the potency of the company's brand image and the distinguishability of its branded products (Carbon et al. 2005). Companies with strong brands have found that competitive advantage *and* competitive protection can be earned by carefully aligning key product qualities to their brand values (Aaker 1991; Rowland et al. 1994). Automakers focusing on the once attractive qualities of safety, for example, in their attribute based marketing campaigns, have found their market share correspondingly decline (Cornet et al. 2005) whilst the top product properties consistently held now by "high-involvement" products include attributes (the emotions, values and thoughts which we *attribute* to a product) that stimulate positive cognitive/associational links (of people, places, or life-styles), uniqueness (or novelty), nostalgic value and sensory appeal (Martin 1998). Consumer research and other commentary, therefore, support the proposition that a new preference exists for emotionally stimulating, brand related properties as the new attractive qualities of products in the automotive marketplace (e.g., Zhang et al. 1999). Stefan Jacoby, Executive Vice President for Marketing, Volkswagen Group, appropriately reflects; "*We produce cars, but sell emotions*" (Jacoby 2006).

In response to the rise of the brand, companies have shifted their focus from a singular approach to brand development (typically advertising communications) to broader and more diverse brand focused design, development, manufacturing, and product extension and marketing strategies. Brand strength has subsequently turned into a key business health-check (Haug et al. 2006; Phillips 2005; Reynolds et al. 2005; Valentine et al. 2000) whilst in many businesses every employee is being promoted as a brand ambassador (Heaton et al. 2005), and in automotive R&D divisions, developing products that embody attributes that enhance the brand are at the heart of many design and engineering attribute-management processes.

3. High-luxury and "pinnacle" brands

The high-luxury automotive segment, (cars selling for over €150,000), and "pinnacle" automotive segment (cars selling for over €220,000) are markets where the importance of the brand is distinct and marked. For