Towards a unified model of aesthetic pleasure in design

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ABSTRACT

In this study we test the Unified Model of Aesthetics (Hekkert, 2014), which posits that the aesthetic sense has evolved to identify and value prospects for safety and accomplishment. The principles of unity-in-variety, most-advanced-yet-acceptable and autonomous-yet-connected are considered manifestations of these conflicting urges at separate levels of stimulus processing. We empirically integrate these principles to gauge their unique contribution to the aesthetic experience, using two distinct surveys (study 1—300 respondents and 20 stimuli, study 2—60 respondents and 24 stimuli). Both surveys confirm the three principles constituting the Unified Model of Aesthetics. The principles are found to operate independently and jointly, although unity-in-variety has the strongest impact on aesthetic pleasure.

1. Introduction

When considering cars, phones or clothing, it does not take much effort to realize that products can evoke sensory delight. In recent years academic interest for product aesthetics has burgeoned, finding that products’ perceived beauty contributes to their usability (Sonderegger & Sauer, 2010) and market success (Landwehr, Wentzel, & Herrmann, 2013). Moreover, aesthetic considerations are not restricted to certain ‘aestheticized’ product categories. Even objects as mundane as toothbrushes or food packaging can have an aesthetic impact on users, as they too are the result of more or less careful design.

However, knowing that aesthetic pleasure matters for product design does not necessarily imply understanding why. For that purpose, we are generally referred to the vast literature concerning aesthetics in the arts, which has identified a number of factors deemed relevant for aesthetic appreciation. Within psychology the branch of empirical aesthetics initially focused on objects’ structural, perceptual features (e.g. Boselie & Leeuwenberg, 1985; Cupchik & Berlyne, 1979). When also taking into account an object’s (proto-)typicality and meaning (i.e. Bornstein, 1989; Leder, Carbon, & Ripsas, 2006; Whitfield, 1983), it broadened its scope to aspects of a more cognitive nature. Additionally, research in social psychology and sociology has substantiated the social significance of aesthetic preferences (Bourdieu, 1993; Temme, 1992)

Hence, although individual strands of research have identified a number of mechanisms to account for observed aesthetic preferences, paying heed to the intricately complex and multidimensional nature of the aesthetic experience, a more general theoretical foundation has so far been largely lacking. Therefore, much can be gained in the domain of object aesthetics from a more comprehensive, fundamental theoretical framework.

In this paper, we will elaborate and empirically test a framework that manages to reconcile diverse factors salient for product design aesthetics – The Unified Model of Aesthetics, originally coined by Hekkert (2014).

2. Safety and accomplishment

Aesthetic appreciation quite obviously differs a lot over time and across regions as well as individuals. It is therefore tempting to assume that it is heavily culturally mediated. The capacity in itself to unfold aesthetic appreciation, however, does appear to manifest itself universally. This has given way to the dominant view in psychology that aesthetic sensitivity must be part of the human biological make-up and, by implication, that it has developed throughout the evolution of our species (e.g., Hekkert, 2006; Pinker, 2002; Ramachandran & Hirstein, 1999). Moreover, if its underpinning is biological, this feeds the expectation that, regardless of its variegated manifestations, the aesthetic experience abides to
In line with such an evolutionary account, we adopt a strict notion of aesthetic appreciation or aesthetic pleasure (see also Bijlevens et al., 2017), as “… The pleasure people derive from processing ‘the object’ for its own sake,” “as a source of immediate experiential pleasure in itself, and not essentially for its utility in producing something else that is either useful or pleasurable” (Dutton, 2009, p. 52). Aesthetic pleasure thus conceived is an affective response that guides our adaptive behaviour (Damasio & Carvalho, 2013), supports perception (Barrett & Bar, 2009), and is distinguishable from emotions (e.g., Batson, Shaw, & Oleson, 1992; Brehm, Miron, & Miller, 2009). In contrast to emotions, which allow us to evaluate the beneficial or harmful nature of a situation, aesthetic pleasure serves no immediate practical function (see Hekkert, 2014). In order to account for this anomaly, the by-product hypothesis has taken root (Hekkert & Leder, 2008; Johnston, 2003). The success of our species has depended on its adaptation to varying circumstances. This has entailed reconciling two conflicting urges. On the one hand, we seek safety. Partly, we survive by staying out of harm’s way. On the other hand, though, we need to take some risk as well. To find food and shelter, our species had to be able to take initiative with uncertain outcome. Therefore, a need for accomplishment has evolved to balance out the need for safety. Instrumental to fulfilling these urges are our faculties. They provide information about our environment and thereby enable us to identify possible threats and opportunities. As fluent processing of this information thus entails an evolutionary advantage (see Reber, Schwarz, & Winkielman, 2004), it is assumed that we have developed an ability to derive pleasure from this sense-making process—an aesthetic sense. Aesthetic pleasure can thus be defined as pleasure that emanates exclusively from perceiving, from sensory-motor understanding in itself (Hekkert & Leder, 2008; Hekkert, 2014). As the aesthetic sense is a by-product of the faculties that allow us to make sense of our surroundings, it is likely to be triggered primarily in those situations that are conducive to the functioning of these faculties. In other words, aesthetic pleasure will be a function of the extent to which a stimulus can be processed smoothly in line with evolutionary drives. Whereas uncomplicated sensory information allows for an economical, fast and therefore safe operation of our senses, discordant input enables them to identify prospects for accomplishment. After all, the primary task for any organism is the preservation of life and the furtherance of conditions for growth (Damasio, 1999). Hence, the aesthetic pleasure evoked by a stimulus is hypothesized to depend on the perceived balance it strikes between these conflicting urges (Hekkert, 2014).

By no means the aforementioned should be taken to downplay the complexity of the aesthetic experience. As indicated above, factors of a perceptual, cognitive as well as social nature come into play. At these distinct levels of stimulus processing, different issues are at stake. Still, we argue that these can effectively be traced back to evolutionary drives. Therefore, UMA accommodates for multiple dimensions that can be considered different manifestations of the fundamental balance between safety and accomplishment. In the following paragraphs we will introduce three basic principles, pertaining to either the perceptual, cognitive or social plain.

2.1. Perceptual unity-in-variety

Throughout the literature, it has been substantiated repeatedly that people value perceptual input to be orderly and coherent. By presumably allowing easy and efficient perceptual processing unity increases aesthetic pleasure. This is most evident in the operation of the Gestalt laws, as documented by behavioral psychology. Stimuli that display symmetry, continuity, closure, repetition, … are found to make a coherent impression, and — for that reason — they are liked more (Arneheim, 1954; Wagemans et al., 2012).

However, as our environment is made up from diverse elements, our senses have evolved to cope precisely with this variety of information. If perceptual input would be overly unified, the senses would get dulled (Berlyne, 1971; Biederman & Vessel, 2006). Therefore, we like some challenge in the form of variety to counterbalance unity, if only to enable us to perceive discrete entities. Thus, on the perceptual level, we derive aesthetic pleasure from stimuli that fulfill our need for both unity and variety.

Previous research has consistently provided robust support for the importance of unity-in-variety in the aesthetic appraisal of stimuli. In the domain of product design, both unity and variety, although negatively related, have been found to add to aesthetic appreciation when statistically controlling for one another. This clearly suggests that a maximization of both characteristics is liked best (Post, Bijlevens, & Hekkert, 2016).

2.2. Cognitive typicality and novelty

We need to bring structure into our experiences. Although unity and variety go some way in ordering our impressions, we need to construe meaning to these impressions for them to be useful for further action. Therefore, cognitive processing entails recognizing and meaningfully categorizing perceptual input. To do this we rely on previous experiences. Encounters with similar stimuli provide a frame of reference, so higher similarity allows for smoother processing. In this vein, psychological research has established that appreciation rises with the sheer frequency of confronting a particular stimulus—a mechanism that has come to be known as the ‘mere exposure effect’ (Bornstein, 1989; Zajonc, 1968). Moreover, as we have to categorize the things we perceive, stimuli that are clear exemplars of a category can be processed more easily, which again drives appreciation (Whitfield, 1983). In other words, we value a degree of typicality as this increases recognisability.

On the other hand, stimuli that are novel are liked as well for enabling us to learn and enrich our experience (Bornstein, 1989). Similar to the account about the evolution of the senses on the perceptual level, Biederman and Vessel (2006) argue that this is due to our brain having adapted to cope with new, atypical information. Illustrating the balance between typicality and novelty, Biederman and Vessel (2006) find higher levels of appreciation for novel stimuli, but only on the condition that observers are able to recognize what they are seeing.

In the domain of product design, this balance has been subsumed under the acronym MAYA—aesthetic appreciation will be highest for designs that manage to be Most Advanced, Yet Acceptable (Hekkert, Snelders & Van Wieringen, 2003). In practice, it would seem to imply that we tend to like products that we can easily recognize (say, as a drill hammer, a television set or a car), but that offer a new take on such type of products.

The literature has provided substantiation to the MAYA principle, finding once more a negative correlation between typicality and novelty, but positive effects on aesthetic appreciation (Carbon, 2010; Thurgood, Hekkert, & Bijlevens, 2014).

2.3. Social connectedness and autonomy

Apart from the perceptual and cognitive impressions they make on us, objects, and more specifically consumer products, also function socially and evoke social meanings. In everyday usage, products (and the way they are designed) get associated with certain groups of people and assigned an affective value (Barrett & Bar, 2009). They come to symbolize a group identity and this in turn is likely to affect aesthetic appreciation of those belonging—or
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