

Industrial design strategies for eliciting surprise



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This paper reports on strategies industrial designers use when attempting to elicit surprise. Thirty senior representatives from influential design organisations were interviewed. A situational analysis of the responses suggests strategies that designers use as motivation for starting a design project. These include observations of social issues in the designers' world and observations of their personal experience at behavioural, cognitive and emotional levels. We also found strategies that designers apply during the design process: using archetypes in unexpected contexts/objects, challenging assumptions of appearance, magical interactions, the smart doubling of things and unexpected scale. We suggest that a research through design approach may uncover further strategies that designers use implicitly and did not explicitly mention during the interviews.

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Picture yourself choosing a new mobile phone. You look at shelves full of models with similar technical specifications. Suddenly, a model grabs your attention and without conscious effort you find yourself holding it. There is something different about this model, something unexpected. It is irresistibly novel. Now picture yourself in the middle of the jungle. You hear a noise behind you. Your full attention is now occupied with assessing whether there is a threat nearby. Your heart and breathing rates shoot up. In both cases, your brain is experiencing a discrepancy between what it expects to experience and the actual stimulus or event. In other words, and at different levels, you are experiencing surprise. Your brain needs to assess whether the new and unexpected stimuli are potentially beneficial (pleasant surprise) or detrimental (unpleasant surprise) for you, so it pours attention resources towards the surprising stimuli. This is one of the most powerful effects of surprise and has important implications for design: it grabs our attention towards the surprising stimuli without our conscious effort. People experience surprise when they appraise a design as 'novel' or 'unexpected'. While 'novelty' is one of the main factors that designers can bring to a product, little has been reported about what strategies designers use when they intend to surprise.

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This paper considers surprise as an emotional response (Ekman, 1992, p. 170) towards incongruent (Ludden, 2008; Ludden, Schifferstein, & Hekkert, 2008),



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unexpected (Plutchik, 1991; pp. 105–106), unfamiliar (Frijda, 1986, p. 18; Rodríguez Ramírez, 2011; pp. 6–7; Roseman, 1996, p. 245) or sudden (Frijda, 1986, p. 18) stimuli. Surprise can be identified behaviourally through wide eyes, short interruption of breathing, loss of muscle tone (Frijda, 1986, p. 18) and raised eyebrows (Corina, 1989, p. 230). Novel, unexpected and complex stimuli that elicit surprise can also elicit high levels of arousal, curiosity, exploratory behaviour, interest and fascination (Frijda, 1986, p. 345; Plutchik, 1991, p. 102). While some authors do not consider surprise an emotion and suggest it lacks hedonic value (see discussion in Ludden, 2008, p. 20; Ortony, Clore, & Collins, 1988), other authors classify it as an emotion with a high level of arousal that can be pleasant or unpleasant (Ekman, 1992). Surprise does not need to involve extreme uncertainty (Roseman, 1996, p. 244). If people appraise that an event was within their control, they can still experience surprise (Roseman, 1996, p. 244).

The unexpected characteristic of a stimulus means that it has novelty. From an evolutionary perspective, surprise is elicited by novel stimuli so that we can focus our attention on potentially dangerous or beneficial stimuli and thus surprise has also been described as a threat-detecting stimulus (Schutzwohl & Borgstedt, 2005), and a sense-making process (Pezzo, 2003), i.e. is that thing suddenly moving in the grass going to attack me?

Designed objects can be the stimuli that elicit surprise and some characteristics of a surprising experience can be valuable to study in design. For instance, surprise has the potential to elicit aesthetic experiences. Plutchik suggests that admiration is a combination of surprise, pleasure and a sense of approval (Plutchik, 1991, p. 102). The potential for eliciting surprise through incongruous characteristics of objects has also been suggested as an aesthetic experience (Hekkert, 2006, p. 168). Curiosity, interest, fascination, arousal and its impact on behaviour are characteristics that make surprise an important emotion to study in industrial design.

Surprise has often been used in design as an element for eliciting an experience of amazement (Desmet, 2003, p. 8), to create a sense of novelty (Desmet, 2002, p. 117), 'to increase interest or prolong the attention value of a product' (Hekkert, 2006, p. 168), to 'engage the user' (Grimaldi, 2006, p. 3), and to elicit curiosity and further exploration of the object (Ludden, 2008; pp. 17–18). Research has highlighted the value of surprise as an element that can help increase interest at the point of sale of a product (for instance Ludden et al., 2008, p. 28).

From the customers and users' points of view, surprise can make objects grab attention at the purchase stage as well as making them interesting and fascinating to use. While surprise is characterised by a short-term duration and a rapid extinction, its effect can produce a longer-term experience of interest, amusement and fascination (Ludden, 2008, p. 120). This can result in the

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