

Fixation and creativity in concept development: The attitudes and practices of expert designers



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Interviews were conducted with thirteen professional designers to understand their attitudes towards fixation and the practices they adopt to address it. Fixation was thought to be encouraged and discouraged by a wide range of factors related to the project, the client, the design team, the organisational culture and the design activities employed. The experiences that designers accumulate during their professional lives were associated with fixation in different ways. The experience of prior design failures was thought to encourage fixation whilst the experience of varied solutions was thought to discourage fixation. Recognising fixation episodes and reflecting on them was described as the means by which designers could guard against such episodes in the future and thus be more creative.

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The development of new products requires creative work to be done by engineers, designers and technologists. Design processes, whether systematic or intuitive, are often claimed to unlock this creativity by discouraging premature commitment to a particular representation of the design problem or to possible solutions to that problem. Despite this, it is often stated that designers do, in fact, become ‘set’, ‘blinkered’ or ‘blinded’ when developing ideas. The term ‘design fixation’ is often used to refer to this broad set of phenomena, or is used more narrowly to refer to the way in which designers inadvertently carry over specific and unhelpful features from a previous example when they are designing something new (Cardoso & Badke-Schaub, 2011a; Jansson & Smith, 1991; Purcell & Gero, 1992; 1996). These fixation effects have been described with respect to many areas of design practice, including not just engineering design, architecture and industrial design (as discussed later), but also, for example, software design (Goddard, 1976), interaction design (Hassard, Blandford, & Cox, 2009) and service design (Moreno, Hernández, Yang, Linsey, & Wood, 2014).

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or overcome. Much experimental research has been conducted over the last few decades, providing valuable insights into how fixation is induced and how its effects might be mitigated. However, to gain experimental control, this research has often eliminated many of the factors that characterise real design projects, including long time scales, multiple stakeholders, team work, concurrent projects and design expertise.¹ There is still a lack of in-depth qualitative research on fixation and so the concept has not been framed with respect to the real-world settings that the experiments simulate. To provide a more contextually rich account of design fixation in practice, this paper reports on an interview study with professional designers working in innovation consultancies. The resulting analysis enriches our understanding of designers' attitudes towards fixation and the practices they adopt to overcome it. This provides a firm grounding for the planning of future fixation research and for developing tools and training that might mitigate fixation effects.

The paper is structured as follows. Section 1 reviews the literature on creativity and fixation, primarily with a view to establishing the relevant concepts and methods that might inform research on fixation in design practice. Section 2 outlines the methodological approach taken in the study reported here, describing the designers involved and the nature of the data generated. Section 3 presents the findings from the study, focussing on the designers' attitudes towards fixation and the practices they adopt to tackle it. Section 4 discusses the implications of these results for design research, practice and education and proposes further related work, both qualitative and experimental.

1 Creativity and fixation

Although creativity is often freely spoken about, it can be difficult to conceptualise clearly and many different definitions have been proposed (Sternberg & Lubart, 1999, p. 4; Taylor, 1988). However, what these definitions often share is the joint requirement that the creative idea be both novel (to an individual, a group or the world²) and appropriate (Runco & Jaeger, 2012). It is sometimes additionally required that the idea be non-obvious, surprising or efficient (e.g. see Howard, Culley, & Dekoninck, 2008). These different features of creative ideas are elegantly combined in Newell, Shaw and Simon's (1962) multi-part definition of creative thinking, a definition that is particularly well-suited to considering the role of fixation in design work:

1. The product of [creative] thinking has novelty and value (either for the thinker or for his culture).
2. The thinking is unconventional, in the sense that it requires modification or rejection of previously accepted ideas.

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