

# *Timescales and ideospace: An examination of idea generation in design practice*

*Kathryn Shroyer, Terri Lovins and Jennifer Turns*, Department of Human Centered Design & Engineering, University of Washington, 3960 Benton Lane NE, Seattle, WA 98195, USA

*Monica E. Cardella*, School of Engineering Education, Purdue University, West Lafayette, IN 47906, USA

*Cynthia J. Atman*, Department of Human Centered Design & Engineering, University of Washington, Seattle, WA 98195, USA

*The generation of novel ideas is an important and difficult part of the creative design process. Much of the research on idea generation is focused on formalizing techniques to support idea generation and characterizing the effectiveness of these techniques as measured by quantity, quality, and creativity of ideas. Less is known about idea generation ‘in the wild,’ particularly idea generation across different timescales (i.e., idea generation across a multi-month project alongside idea generation in a period as small as several minutes). We present a qualitative case study of a professional design team’s use of idea generation with analyses at five emergent timescales. At each level we look at the structure, the content, and the actions of the team.*

© 2018 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

*Keywords: idea generation, design practice, design tools, research methods, collaborative design*

Idea generation, as part of the creative design process, can be understood as an activity where designers generate and consider multiple potential solutions to a given problem. A growing body of research investigates idea generation as a critical part of the design process. However, much of this research is conducted in lab settings and is concerned with the effectiveness of these techniques as defined by quantity, quality, and originality of ideas generated. We know little about how these techniques are deployed by designers ‘in the wild’ and situated in their overall design processes.

The work we present here seeks to examine how professional designers generate ideas in their everyday design work. Our analysis is conducted on a longitudinal video dataset that captures the work of a small design team working from October 2015 to January 2016 (Christensen & Abildgaard, 2017). We focus on idea generation practices in context and in relation to broadly accepted idea generation techniques by examining the activities of the design team at different timescales. We begin at the broadest level, revealing different

**Corresponding author:**  
Kathryn Shroyer  
[kshroyer@uw.edu](mailto:kshroyer@uw.edu)



[www.elsevier.com/locate/destud](http://www.elsevier.com/locate/destud)

0142-694X *Design Studies* ■ ■ (2018) ■ ■ – ■ ■ ■

<https://doi.org/10.1016/j.destud.2018.03.004>

© 2018 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

1

underlying structures at smaller and smaller levels of detail as we move from fifteen hours of data occurring across a three-month period, down to two minutes of a design team discussion. At each level, we examine the idea generation practices of the team, focusing on the structure we see, the activities of the design team, and the ideas they generate.

## *1 Background*

Idea generation is a critical part of the creative design process likely related to the quality of the final design solution. For example, early phases of the design process, including idea generation, have been shown to have the highest impact on the quality and manufacturing costs of the final design (Römer, Pache, Weißhahn, Lindemann, & Hacker, 2001).

While idea generation is important, designers of all levels and across design disciplines, experience limitations in generating many diverse ideas (Bruseberg & McDonagh-Philp, 2002; Linsey et al., 2010; Sio, Kotovsky, & Cagan, 2015; Vasconcelos & Crilly, 2016). One reason for this is a cognitive difficulty, termed fixation, where designers develop an early attachment to an initial idea and stop considering alternatives (Ullman, Dietterich, & Stauffer, 1988). Another reason, also a form of fixation, is an inability to break away from known examples or solutions (Linsey et al., 2010).

In response to these difficulties, a number of techniques for generating many diverse ideas have been developed in areas such as design, psychology, business, and engineering. These include brainstorming (Osborn, 1953), Morphological Analysis (Allen, 1962; Zwicky, 1969), Synectics (Gordon, 1961), Brainwriting (Geschka, Schaudé, & Schlicksupp, 1976), Nominal Group Technique (Van de Ven & Delbecq, 1974), and affinity diagramming (Mizuno, 1988).

Much of the current research on idea generation techniques is concerned with the effectiveness of the technique as defined by the novelty, variety, quantity, and quality of the resulting ideas (Shah, Smith, & Vargas-Hernandez, 2003). A subset of this research explores the nature of idea generation, covering topics such as the effects of timing and time constraints (Liikkanen, Björklund, Hämäläinen, & Koskinen, 2009; Tseng, Moss, Cagan, & Kotovsky, 2008), the use of examples (Perttula & Liikkanen, 2006), and the role of representation type (text vs. graphical) (McKoy, Vargas-Hernández, Summers, & Shah, 2001). Other research focuses on tools and techniques to support idea generation and methods by which to evaluate them (Bildá, Gero, & Purcell, 2006; Daly, Yilmaz, Christian, Seifert, & Gonzalez, 2012; Dorta, Lesage, & Pérez, 2009; Hernandez, Shah, & Smith, 2010; Jonson, 2005; Linsey et al., 2011; Nelson, Wilson, Rosen, & Yen, 2009; Shah et al., 2003). A common theme in several of these studies is an emphasis on generating a large number of ideas

Download English Version:

<https://daneshyari.com/en/article/6726441>

Download Persian Version:

<https://daneshyari.com/article/6726441>

[Daneshyari.com](https://daneshyari.com)