Design tools and materials in creative work

Nicolai Brodersen Hansen  
Center for Advanced Visualisation and Interaction  
Aarhus University  
Helsingforsgade 14, 8200 Aarhus  
nbhansen@cavi.au.dk

Kim Halskov  
Center for Advanced Visualisation and Interaction  
Aarhus University  
Helsingforsgade 14, 8200 Aarhus  
halskov@cavi.au.dk

Peter Dalsgaard  
Digital Creativity Lab  
Center for Advanced Visualisation and Interaction  
Aarhus University  
Helsingforsgade 14, 8200 Aarhus  
dalsgaard@cavi.au.dk

Abstract
This workshop will examine and discuss the role and nature of design tools and materials in creative work, and explore how to meaningfully combine existing and novel tools to support and augment creative work. By exploring and combining methodological, theoretical, and design-oriented perspectives, participants will examine the potentials and limitations in current uses of design tools and materials, and discuss and explore when and how to introduce new ones. Participation in the workshop requires participants to document and analyse central themes in a case, and the resulting material will serve as the empirical grounding for workshop discussions.

Author Keywords
Creativity Studies; Computer-Supported Creativity; Collaborative Creativity; Ideation; Design.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
The creative industries have undergone fundamental transformations due to the introduction of novel digital tools, and this trend shows no sign of slowing down. There has been much interest in macro-level shifts in the marketplace, e.g. in disruptions to industries such as...
Workshop format

The workshop will be highly participatory with short and concise presentations and several group work sessions.

We will begin with short cycles of case/methods presentation (10-15 minutes each), focusing on insights and findings from the obligatory documentation and study of salient themes in one or more examples of computer-supported collaborative creativity.

This is followed by joint discussions in which we identify and articulate key themes, challenges, and potentials. After this, a rapid explorative design exercise, in which groups of participants develop a concept for a novel tool or system based on the discussions. We will end with a dialogue on how to establish a community around the topic of collaborative creativity support, and on the potentials of editing a special issue on the topic.

As design, music, film, and publishing. In contrast, relatively little attention is paid to how digital tools influence and transform the everyday creative work practices in the industry. Many creative work practices unfold in ways that would have been hard to imagine just a decade ago. In product design for instance, digital sketching tools, hardware prototypes, 3d printing and a host of other tools are now an integral part of creative work processes. In spite of this, we have limited knowledge of how and why digital tools and materials influence and transform creative work practices, for better or worse. When new digital tools appear, we tend to focus on the benefits and new opportunities they afford. However, they also bring new challenges in creative work, and it is often hard to integrate them into existing work practices.

In this workshop, we wish to examine design tools and materials in creative work, especially in terms of understanding the role and nature of existing tools, the potentials and limitations of novel digital tools, and the ways in which they may be meaningfully combined.

Related Work

In interaction design and HCI research, tools and materials are widely discussed from a design process perspective. Two prominent examples of this are sketching (e.g [2][13]) and prototyping (e.g. [10]), but there is also a wider focus on representing and transforming design problems, generating ideas or facilitating collaboration (e.g. [3][9]). These examples show how tools and materials augment our cognitive capability as design practitioners, something that has also been studied under the banner of "designerly tools", highlighting how the open-ended and wicked nature of design processes which how skill and adaptability are key aspects in using design tools.

Outside of design processes we find exciting work on creativity support tools. In example Chaudhuri and Koltun [4] has investigated how modeling 3d-objects might be supported by data-driven creativity support tools, and Aragon et al. [1] have studied how tools might foster remote collaboration in shared creative work. While commendable and a great first step, we also find that much of the work on creativity support start from specific tasks, and aims at supporting those tasks in their current form, rather than attempting to radically innovate the creative process.

In our own lab CAVI [11] tools and materials in a series of projects. We have developed what is now a well-established design ideation method, Inspiration Card Workshops [7], and experimented with how we can supplement and/or replace the analogue components of the method with digital ones in the iCard system, a multi surface collaborative ideation system. With the Process Reflection Tool [6] and SnapShot [8], online systems for documenting and collaborating on creative design projects, we have examined how the use of tools and materials can be documented and used to analyze a design process. With the Dialogue Labs [12] approach, we have explored novel formats for combining design ideation and concept development approaches in collaborative design.

Key themes and questions of the workshop

Based on the themes identified in related work, and on our findings from previous and ongoing research projects, we propose the following three themes pertaining to methodological, theoretical, use-oriented,
and design-oriented challenges. However we very much invite participants to reinterpret the current themes and contribute further themes based on their cases.

1) **What is the role of digital tools in creative work, and which theories can we draw upon (or develop) to help us understand it?** Understanding the role and nature of digital tools in creative work entails fundamental theoretical challenges [5]. Which theories can we draw upon and/or extend? Can existing frameworks in HCI - many of which are arguably oriented towards functional aspects and may have little to say about creative processes - still be of use, and how? Is there better suited theories outside of the normal scope of HCI research that are particularly productive for these purposes?

2) **How can we employ generative design materials?** Schön [14] coined the term generative metaphors, generative in the sense that "it generated new perceptions, explanations, and inventions" (ibid 259). We suggest extending the concept to generative design materials, i.e. digital and physical artifacts that, when employed in a design process, support the development and refinement of design concepts. How and why do some design materials work in this way, and can they be digitally augmented?

3) **How do we find the right balance between mirroring existing tools and developing new, digital tools?** Creative work often revolves around established processes and practices. New tools and materials should strive for a deep understanding of how and why existing tools function, and how they are intertwined with physical and socio-cultural structures of the workplace. It is pertinent to reflect on how and if a replacement of existing tools with novel digital tools should happen. When should we leave things be, when should we create hybrid tools, and when is the time ripe to replace traditional tools with entirely novel ones? How do we involve domain experts and professionals from the creative fields in designing new systems? Most current creative work practices rely on analogue tools such sticky notes, white boards, pen and paper etc. What is it that makes these tools so well-suited for creative work practices, and which strategies can we use for finding inspiration for strong mixes of analogue and digital tools?

**How to participate**

The workshop requires participants to commit to documenting and analysing one or more cases that focus on the use of design tools and materials in creative work. This forms the basis for presentations during the workshop and grounds the subsequent discussions. In order to participate, interested parties must therefore do the following:

1) Submit a proposal (2-4 pages SIGCHI Extended Abstracts Format) describing the case to be documented, the project or institutional/organizational frame (e.g. at which institution or company is it carried out and what partners are involved), the focus of the case (how a novel digital tool was introduced into an existing creative work practice and the challenges that this entailed), and the method and strategy for documenting and analysing the project.

2) Participants must then document the case as outlined in their proposals. This work forms the empirical data for the workshop.
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References