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# Workshop Extended Abstract: Visual Thinking & Digital Imagery

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**Abstract**

This workshop focuses on exploring the centrality of visual literacy and visual thinking to HCI. Drawing on emerging critical perspectives, the workshop will address visual literacy and visual thinking from an interdisciplinary and transdisciplinary design-orientation [2, 8], foregrounding the notion that imagery is a *primary form of* visual thinking. Imagery—which subsumes digital imagery—goes well beyond *sketching* and beyond storyboards, screenshots and wireframes. We will address how a broader framework for visual thinking and imagery in HCI can play a role in raising the visual standards of HCI research and practice. Workshop participants will investigate possibilities for developing a culture of curatorial gaze in HCI, in order to (i) promote collection of digital images as a method appropriate for a design-oriented discipline, (ii) invite others to contribute to a genre of working and corpus of imagery unique to HCI, and (iii) to expand the approaches that design-oriented HCI may productively and creatively draw upon.

**Keywords**

Visual Literacy; Visual Thinking; Design; Digital Imagery; Design-oriented HCI

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**ACM Classification Keywords**

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous

**General Terms**

Design, Theory

**Goals**

The thinking behind this workshop is described in an interactions article titled "Digital Imagery as Meaning & Form in HCI and Design: An introduction to the Visual Thinking Backpage Gallery. [1]" The article states: *"Visual thinking is the use of imagery and other visual form as a mechanism to make sense of the world and to create meaningful content. Digital imagery is a special form of visual thinking, one which is particularly salient for HCI and interaction design. Digital photographs are only digital imagery when they are also visual thinking—that is, when they are instrumental as agency of making sense or creating meaning. The distinction between digital and analogue imagery is not strikingly germane nor material, but I use the term digital imagery since most image making these days involves digital sensors and/or digital post-processing and distribution, and this use of digital technologies in turn enables a wider proliferation of imagery than ever before. The terms digital imagery and imagery are nearly interchangeable nowadays.*

*In HCI and interaction design, we often focus on textual forms of meaning making, even though we use imagery in all manner of interactivity design. In design traditions, still image making has long been regarded as a foundational skill. Still image making can also be regarded as a foundational skill in HCI and interaction design."*

The workshop aims to fully investigate this line of thinking in an expanded form that invites broad participation. The organizers are all engaged in one way or another with the use of visual thinking and imagery as a form of meaning making in HCI. One of the primary goals of the workshop is to create a broad culture in HCI which values excellence in imagery as much as it does excellence in writing. Our goal with this workshop is to discuss the role of imagery in HCI research and practice, especially the notion that visual form of sufficient quality may come to be regarded within HCI as a contribution in-and-of-itself. This goal is in keeping with HCI's continuing integration of its interdisciplinary and transdisciplinary design-orientation [2,8]. The sense is here one of curatorship and collection both in contrast and as a complement to social science methodologies. That is, we will position the workshop around the idea that artifacts of visual thinking of sufficient quality are archival knowledge artifacts of HCI and not data—knowledge artifacts which stand on their own merits in a way which resists decomposition or generalization.

For example, Figure 1 is a composite image showing three teapots with three inset images, each with distinct very highly selective focus—an image which can nowadays only be accomplished with expensive professional photographic equipment, or ironically old inexpensive film cameras and a digital scanner. The image engages multiple meanings, including and not limited to (i) ergonomic failures of contemporary consumer grade digital cameras to allow selective focus, (ii) the coming technological advances which may make plenoptic photography practical—plenoptic cameras allow focus to be selected after an image has been taken, rather than before [5], (iii) an HCI insider



Figure 1. Selective Focus

reference to Don Norman's love of teapots, and (iv) a deliberate set of aesthetic choices in the construction of a composite image, and there are many other possible meanings. The point here is that this image is not being treated as data, but rather a unique act of visual thinking with many layers of meaning. The case for preserving and engaging multiple meanings has been made in a more established design-oriented HCI context in [2].

Figure 1 is just an example. Figure 2 is an altogether different example, which shows the use of digital imagery in interactivity design in the context of an experience study, as the material content of the interactivity. The study is first described in [3]. The image shows an experience study in which participants were asked to select particular bar-coded image cards from a collection of such cards for use as a mechanism of external cognition in storytelling. The physical image cards were used to index into virtual, projected copies of the respective images during the storytelling phase of the study. What is important about this study is that the quality of the photographic content is paramount.

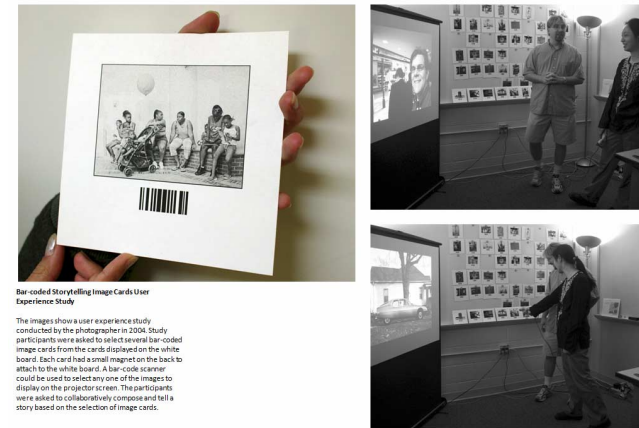


Figure 1. Imagery as Material Content of an Experience Study

The claim is that the quality of the imagery and the nature of the experience are inseparable.

### Topics

The topics to be investigated in this workshop include (i) understanding what are the potential roles of critique and explanation and quality in visual thinking, especially in the context of constructing imagery as archival knowledge artifacts of HCI in their own right, (ii) inventorying the potential roles of visual thinking and digital imagery in HCI, (iii) understanding how visual thinking objects may be collaboratively constructed, and (iv) motivating and reflecting how design has been integrated as a visual competency within HCI, and how it can be further integrated.

With respect to point (ii) above, [1] suggests the following inventory of roles of and for imagery as a primary form of visual thinking in HCI: "With respect to visual thinking, imagery may play a role (i) as a material of interaction design, (ii) as documentary observation and photo-ethnography, (iii) as a form of information, (iv) as a media and associated technology,

(v) as a contrast and synthesis of analogue and digital worlds, (vi) as a technical and compositional skill, (vii) as shared and externalized memory and cognition, (viii) as social mechanism of awareness and agency of social change, (ix) as method and material of appearance and behavioral prototyping, (x) as a special and distinct form of the digital commons, (xi) as mechanism of identity, and (xii) as a key component of professional presence and portfolio construction.” At least in part, success for this workshop is defined as understanding and pushing the limits and boundaries of this inventory of roles.

### Issues

As a particular emphasis, one of the central issues addressed by this workshop is the issue of how we can develop a visually critical curatorial gaze in HCI as a complement to present methodologies. The utility of curatorial gaze is to add elements of visual form not only as inputs to design processes within HCI, but also as outputs of design processes, both as material of design and as archival artifacts of design knowledge in their own right. Raising the standards of visual literacy within HCI will allow us to participate more fully in the designs that really shape the world—it is abundantly clear that quality of visual form as a matter of fashion as much or more than function has become a big force in the marketplace and one need only look at the success of particular contemporary tablets, and smart devices to confirm that this is so. Imagery is a powerful tool of persuasion (see for example [6,7]), and our mastery of it will enable us to ensure that our participation in such design contributes the values-rich perspective that HCI continues to master (see for example [4,10]).

### References

- [1] Eli Blevis. (2011). Digital Imagery as Meaning & Form in HCI and Design: An introduction to the Visual Thinking Backpage Gallery. *interactions* 18, 5 (Sep. 2011).
- [2] Eli Blevis & Erik Stolterman. (2009). Transcending disciplinary boundaries in interaction design. *interactions* 16, 5 (Sep. 2009), 48-51.
- [3] Eli Blevis, Youn-Kyung Lim, Muzaffer Ozakca, and Shweta Aneja. (2005). Designing interactivity for the specific context of designerly collaborations. In *Proc. CHI '05*. ACM, New York, NY, USA, 1216-1219.
- [4] Batya Friedman and Peter H. Kahn, Jr.. (2002). Human values, ethics, and design. In *The HCI handbook*, Julie A. Jacko and Andrew Sears (Eds.). L. Erlbaum Associates Inc., Hillsdale, NJ, USA 1177-1201.
- [5] T. Georgiev, A. Lumsdaine, & G. Chunev. (2011). Using Focused Plenoptic Cameras for Rich Image Capture. *IEEE Computer Graphics and Applications*, 31(1): 62-73.
- [6] Christopher Jordan. (2009). *Running the Numbers: An American Self-Portrait*. Munich: Prestel.
- [7] Mark Kingwell. (2005). The Truth in Photographs: Edward Burtnysky's Revelation of Excess. In Edward Burtnysky. *Burtnysky – China*. Göttingen: Steidl.
- [8] Manfred A. Max-Neef. (2005). Foundations of transdisciplinarity. *Ecological Economics*, 53(1), 5-16.
- [9] Phoebe Sengers and Bill Gaver. (2006). Staying open to interpretation: engaging multiple meanings in design and evaluation. In *Proc. DIS'06*. ACM, New York, NY, USA, 99-108.
- [10] Ron Wakkary and Karen Tanenbaum. (2009). A sustainable identity: the creativity of an everyday designer. In *Proc. CHI '09*. ACM, New York, NY, USA, 365-374.