

**21<sup>ST</sup> CENTURY MAKERS AND MATERIALITIES**

**Proceedings of the 2nd Biennial**

**Research Through Design Conference | RTD 2015**

Peeters, J., and Trotto, A. 2015. Reflections on Designing for Aesthetic Engagement. In: Proceedings of the 2nd Biennial Research Through Design Conference, 25-27 March 2015, Cambridge, UK, Article 12. DOI: [10.6084/m9.figshare.1327999](https://doi.org/10.6084/m9.figshare.1327999).





# Reflections on Designing for Aesthetic Engagement

Jeroen Peeters and Ambra Trotto

Interactive Institute Swedish ICT Department of Informatics,  
Umeå University, Sweden

jeroen@tii.se  
ambra@tii.se

**Abstract:** Recently, there has been a clear shift in the Interaction Design community towards the design for engagement as opposed to more traditional ideals of efficiency and functionality. Our work explores how to design for aesthetic engagement in interaction; building on an approach founded on phenomenology, embodiment, pragmatist aesthetics and embodied cognition. In this paper, we present four different research through design projects we have undertaken, in which we leveraged this approach. These designs cover a wide range of contexts, scales and use. Together, they describe and open up a design space: each of the projects provides rich, aesthetic experiences that respect complexity

and ambiguity. They entice people to engage with body and mind, where meaning arises in dialogue with the artifact.

We present and critically reflect on these projects in the form of an annotated portfolio. Comparing and contrasting the project results reveals insights into our overall approach and research interest regarding how to design for engagement.

We conclude with opportunities that these reflections offer for the design of engaging interactions. Furthermore, we expand on the implications that these reflections suggest towards further trajectories of practice-based research into such experiences.

**Keywords:** Interaction Design; Aesthetics; Engagement; Experience; Reflection.





## Introduction

The field of Industrial Design has moved towards the digital, and the Human Computer Interaction field has moved towards experience (Bødker, 2006). In recognition of the need to move towards rich experiences, a great deal of research attention has been directed towards identifying approaches on how to design for such experiences (e.g. Norman 2005; Forlizzi and Battarbee 2004; Locher et al. 2010; McCarthy and Wright 2004). In exploring ways to understand experiences in design, other fields of study such as ecological perception, phenomenology and pragmatism, are increasingly employed in design research.

According to ecological perception (Gibson 1979), we perceive the world in terms of the action possibilities through which we can interact with it using our bodies. Building on the phenomenological perspective, we live in a world that is inherently meaningful and we continuously live in experiences (Merleau Ponty 1962). Other influences include embodied cognition (Clark 1997), a field that describes how our mind is fundamentally formed by the shape of our bodies.

In our work, we draw upon these foundations to explore engagement in design. We view engagement as a fully involved relation between a person and an artifact. To design for such involvement, we are inspired by the notion of aesthetic engagement as described in the work of Berleant (1991).

Berleant outlines aesthetic engagement as an active, participatory and rich sensorial involvement in which object and perceiver become one and the factors and forces that engage become a continuous whole. This notion of engagement reflects personal and dynamic elements of experience, resonating with the phenomenological discourse.

The clarity of how to design for such notions of experience is often muffled by the inherent complexity and ephemeral nature of what an experience is. In our work, it often proved difficult to be conclusive and decisive in reconnecting theoretically informed frameworks to the design cases they influenced, and vice versa. In this paper, we reflect on the ways in which a number of our design research projects elicit engagement or possess qualities that potentially ignite engagement. Our aim is to unravel and highlight how the artifacts that have been developed, may aid in sketching out a design space for aesthetic engagement.

## Setting the Design Space

We aim at opening a design space and sketching its relevant dimensions, initially described by the ways in which the projects in this paper elicit engagement.

Our design work builds on a phenomenological approach: meaning is released in dialogue, emanating from the interaction between people, the system and the context, or among people in a context, through the system. As such, meaning is dynamic, complex, ungraspable and ephemeral. Meaning is subjective; it is released in dialogue between a person and an artifact through one's perceptual abilities and cannot be detached from socio-cultural context or past experiences.

It follows that we cannot design for a certain experience; rather, we can only provide the scaffolding to opportune a certain experience.

## Annotated Portfolio

Inspired by the qualities offered by annotated portfolios (Gaver and Bowers 2012) we present and reflect on four projects that have explored the theme of aesthetic engagement.

Creating an annotated portfolio provides a vehicle to present our work in the form of a more structured reflection. Presenting projects together makes implicit values and intuitive decisions embodied in the artifacts explicit. Highlighting this tacit knowledge gives value to the body of work outside of the particular examples, providing direction for future projects by identifying intriguing opportunities or missed chances while further establishing continuity in approach.

Some of these projects have been individual design projects, while other projects involved design teams of several designers and researchers. The projects presented in this paper were carried out during the first author's Master's and present PhD education.

The work is embodied in the form of experienceable prototypes, and the scope and results of these projects vary widely. For example: in size (e.g. from small artifact to room-sized immersive installation), in context (e.g. from a smart living-room to a train station), in deployment (e.g. from explorative concept to user-tested prototypes and museum installations) and the modalities used (e.g. from visual to a combination of senses).

To gain more insight into the particular details and dynamics of each design, we recommend the reader to view the videos referenced in captions on each project page.



the body of work started to emerge. These salient themes start to sketch the dimensions and boundaries describing a design space around aesthetic engagement.

In the following pages, we first present brief descriptions to convey the design intention and result of each project. This is followed by reflections for each individual project on how they elicit engagement.

## Implied by Light

This project (See Figures 2, 3) explored the potential for a visual communication system in the context of train stations. Based on the notion of implicit communication, the prototype installation finds a new balance between quality of information and aesthetics of representation. The design is intended as an addition to existing communication systems.

The lighting sculpture would be placed in the departure hall of a train station. It features an abstracted and reshaped map of the whole railway network. A continuous light pulse radiates outwards from the central hub of the network. Local disruptions in the service are displayed through slight delays in the lighting effect. In the event of disruptions, it is not exactly clear at first sight which location or which line is not functioning properly. This invites commuters to form their own interpretation of the state of the network and relate this to their personal situation.

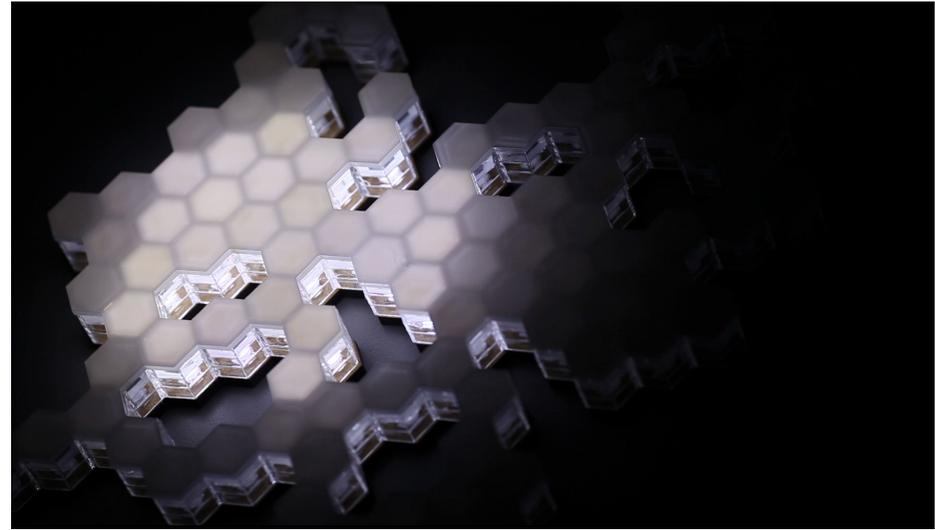
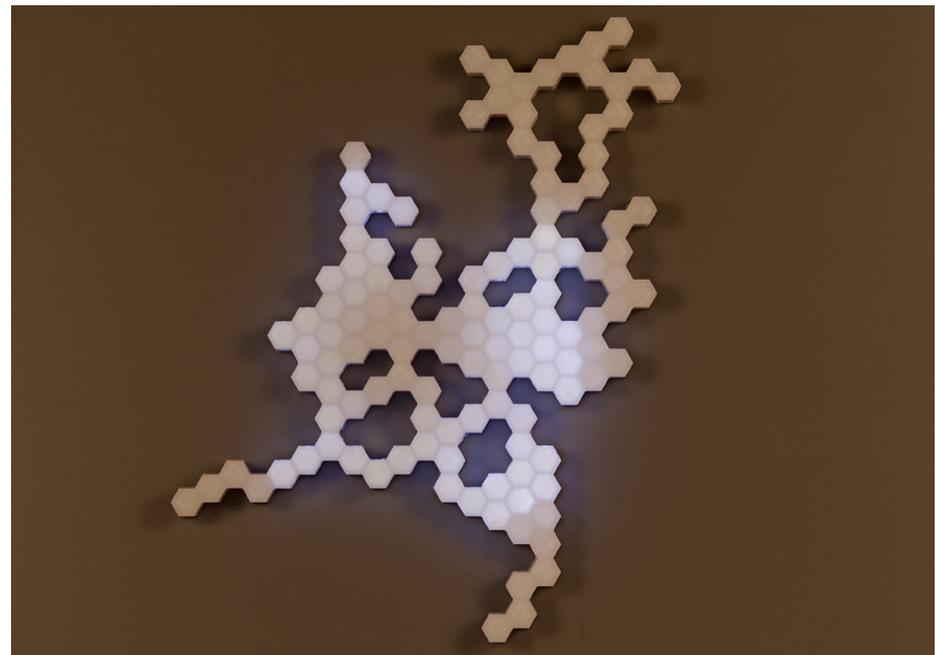


Figure 2. (above) The lighting pattern emerging from the central hub of the network.

Figure 3. (below) An overview of the sculpture. Note: A video is available at: <https://vimeo.com/28024956>



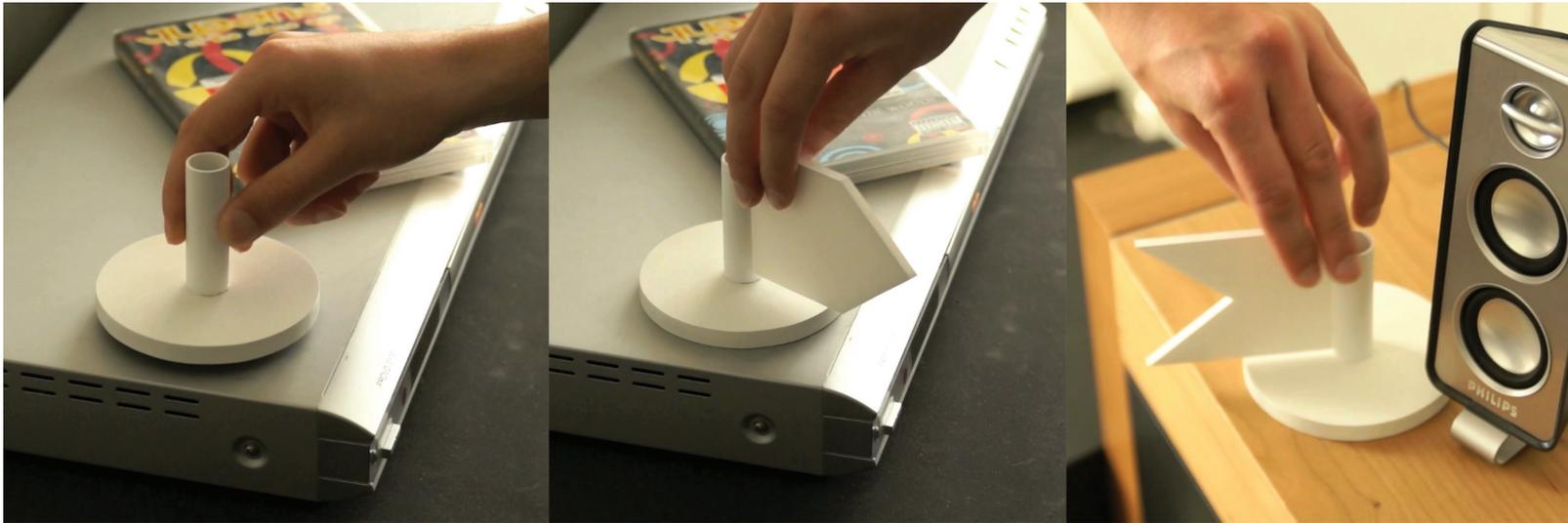
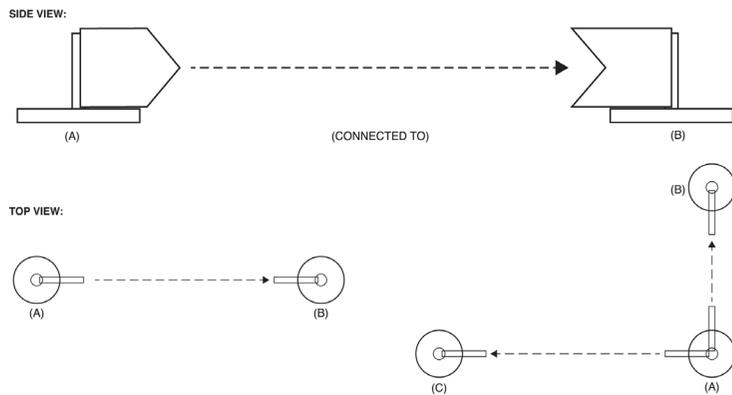


Figure 4 (above, from left to right). Placing a node, establishing a start point and establishing an end point.

Figure 5 (below). A schematic overview of how the Nodes system works. The top view shows two possible configurations for a simple three point network. [A video is available at: <https://vimeo.com/109583086>].



## Nodes

Nodes is an interface design enabling people to manage wireless connections between devices in a smart home environment (see Figures 4, 5). The design is based on human tendencies to order visual information, as described in the Gestalt Laws of Grouping (Rock and Palmer 1990).

By placing physical objects that constitute nodes of a network, on top of or near entertainment devices around the living room, people are able to determine which of these devices they intend to connect. Start and end points are added to the nodes to establish the connections. This is achieved by placing flat forms that are shaped like an arrow (start point) or the negative shape of an arrow (end point). Aiming a start point at an end point establishes the connection between two nodes and visualizes its directionality.

## DiffractMe!

DiffractMe! is an interactive installation (see Figures 6, 7) that was the result of a deep exploration to extract subtle physical qualities of experience from personal skills. The installation aimed to socially connect and engage visitors through rich interaction based on skills, allowing them to manipulate natural light through an interactive façade. In the installation, two visitors each manipulate an interactive surface. The two surfaces are interconnected, engaging visitors in a subtle, haptic dialogue. Their movements are transferred to the bottom row of a matrix of prisms. The prisms are mounted on axis inside a wooden frame and are inter-connected through magnets. Each prism can rock back and forth, transferring its movement to its neighbours in a ripple-like effect. This results in a colourful, dynamic display of diffracted light into the environment.

*Figure 6 (above right). Two visitors interact with a DiffractMe! prototype.*

*Figure 7 (right). Close up of the prisms, magnets and frame. A video is available at: <https://vimeo.com/99613869>*





Figure 8 (top). One of the paintings in the installation with overlaid data from the Internet.

Figure 9 (bottom ). A sequence showing how the panels rotating to line-up and reveal a painting.

## Ballade of Women

Ballade of Women (see Figures 8, 9) was an exhibition that sensitized people towards contemporary issues of women's rights through the personal stories of three historical characters.

Three paintings depicting these characters were visually fragmented to their contours, scaled and suspended in a three-dimensional space. The paintings were projected onto the suspended panels that were controlled by motors allowing them to rotate independently. The panels rotated to reveal or hide the full paintings from viewers depending on their position and movement in the room, tracked by Kinect cameras.

Directional speakers bounced recordings of poetry related to the themes of the exhibition around the room.

A software program collected opinions and relevant information related to the themes of the exhibition. This information was visually overlaid on top of the paintings. This online behaviour also influenced the movement of the panels in the installation.

## Reflection on Implied by Light

Implied by Light presents railway information ambiguously. It elicits people to relate the visual cues to their past experiences and knowledge of the network, and their travelling intentions, in order to interpret the information's relevance and allow meaning to arise.

The installation elicits involved behaviour, triggering people to make an effort and allow personal meaning to arise.

On a sensory level, the installation elicits less engagement. The lighting pulse is continuous and quickly becomes repetitive and predictable. This reduces the richness that is found in the ambiguity of the information it presents.

**ambiguous**  
**visual**  
**past experiences**  
  
**relevance**

**involved**  
  
**personal**

**repetitive**  
**predictable**

## Reflection on Nodes

The Nodes design is distributed and localized, and elicits physical engagement: it requires people to move around the living room and to place the different nodes and signifiers. While doing this, it evokes people to physically project their mental model into the environment, in the way that they construct the nodes of the network and the directionality of connections. The Nodes system does not reduce the complexity of wireless networks between devices to a single solution. Rather it allows people to decide themselves in what order and directions they think they require the necessary connections.

Evaluation and reflections also suggested displeasure of participants in using the Nodes system. Although the design requires effort on behalf of the user, it does not reward these efforts with a seductive sensual experience. Nodes also does not lighten the work required to fulfill the task. As such, it becomes an embodied puzzle, that does not elicit lasting and meaningful engagement.

**physical**

**project mental models**

**complexity**

**effort**

**sensual**

**embodied puzzle**



## Reflection on DiffractMe!

The DiffractMe! installation mediates a subtle dialogue between two visitors through carefully designed physical qualities of interaction. This coupling is open-ended, but very direct and limited, eliciting only subtle hand movements. It becomes predictable, because it does not elicit the potential complexity of an embodied dialogue between people.

The motivation for visitors to interact with the installation are straightforward, and do not go beyond these physical qualities.

The design elicits a very specific type of behaviour with a very specific goal: move your hands to get the prisms to move in a resonating way. This goal is difficult to achieve and not very rewarding.

**subtle  
dialogue**

**open-ended  
direct  
limited**

**motivation  
physical qualities**

**goal  
unrewarding**

## Reflection on Ballade of Women

In Ballade of Women visitors are free to move around the space and experiment with the responsive behaviour of the installation.

Ballade of Women does not clearly reveal a logical narrative or structure, but presents three stories in a complex, fragmented way: the visual fragmentation of paintings and the fragmented, directional audio of poetry related to the theme. This elicited visitors to construct their own narrative structure and relate it to their personal feelings regarding the themes, forming their interpretation of the exhibition.

The installation was rich and immersive, filling an entire room and surrounding visitors with dynamic audio and visuals. Their full body movement in the space opened a dialogue with the installation. However, the behaviour of the installation was also influenced by comments and news on social media website, making it unclear and ambiguous how it responded to visitor's movements.

**free  
movement**

**narrative  
complexity  
fragmented**

**relate to personal**

**rich  
immersive**

**unclear  
ambiguous**

## Exploring Aesthetic Engagement

In describing the projects using annotations and visual materials, their particular design decisions become more prominent. Placed in the form of a portfolio, projects are contrasted against each other and they can be further described as attention is drawn towards what separates them from one another. These separations give rise to new perspectives that highlight connections between the differences. This reveals conceptual values, recurring in different forms and with varying success throughout the four projects, becoming thematic for the body of work as a whole.

We defined these salient themes as:

The way in which the designs involve the body; i.e. to what extent the designs elicit engagement of the perceptual motor-skills of the people that use them.

The way in which the designs involve the mind; i.e. to what extent the designs elicit engagement of the social, emotional and cognitive skills of the people that use them

The way in which engaging interactions balance and integrate these different elements of experience.

Below, we briefly discuss these themes in more general terms, in order to unravel what opportunities they might offers for future work.

## Physical Qualities and the Body

In principle, all of our experiences, included engaging experiences, are governed by the interaction between our body and artifact (or other bodies) in the world. This theme relates to what Berleant calls perceptual integration, the unification of senses in experience. A number of salient elements of bodily interaction surfaced in our reflections.

The first one is that the more physical qualities are actively involved in triggering the functionality of a design, the more engagement it elicits. For example, the Implied by Light project is visually stimulating, but one can sit back and watch it passively. The Nodes system elicits more active involvement, requiring a person to move around a room and use their entire body to trigger the functionality.

The second element is closely related to this, and concerns the richness of sensory experiences. The richer in terms of the type and level of senses involved, the wider the “bandwith” of the dialogue between person and artifact. The immersive light, sound and projections in the Ballade of Women installation were overwhelming and powerful, eliciting an almost inescapable involvement with the design.



Thirdly, the artifact needs to afford bodily involvement in an open-ended way. The absence of a clear goal or way of interacting, e.g. providing a very narrow path of physical interaction, elicits a predictable experience. This does not afford experimentation as to how to use one's body in the interaction. For example, the DiffractMe! installation limits the possibilities of interaction by evoking visitors to move their hand up or down. This predictability does not elicit lasting engagement because it does not allow for experimentation.

## **Complexity and Ambiguity**

Other recurring themes in the reflections relate to other human skills, i.e. emotional, cognitive and social skills. A common thread amongst the four projects is that they elicit a degree of open-endedness, in which they open up and create complexity and ambiguity and allow for a person to interpret their own meaning. This theme resonates with Berleant's concept of participation, the active involvement in making sense by a person as a whole.

A design that does not reduce the complexity of the experience it elicits, but rather respects it to an appropriate degree, opens up complexity. The Ballade of Women installation, respects the inherent complexity of women's rights issues. This is reflected in the open-ended and personally created narrative it elicits and that afford a personal reflection.

Ambiguity relates to the uncertainty of interpretation, allowing for different ways to make sense of this complexity. It allows a person to invest in his relation to the artifact and form his own narrative as opposed to being forced to accept one dictated by the designer (Gaver et al. 2003). It allows his personal past to shape his present experience, eliciting a personal perspective, empowering and respecting his individual identity. For example, the Nodes system does not reduce a wireless network to exist in one configuration, the connection possibilities are multiple and so are the configurations it affords. Functional configurations can be made in different forms, allowing users to interpret the ambiguous set of options in their own way.

## **Balance and Personal Perspectives**

This is related to Berleant's theme of continuity, the unity and inseparability of the forces involved in aesthetic engagement. It is in fact difficult to be precise on how experiential qualities elicit aesthetic engagement. Experiential qualities are difficult to separate into specific categories and it is unclear whether this is really necessary to be able to understand and design for them.

In our work, we find that the designs that elicit the most engagement are the designs that emphasize a unity of mind and body and address a multitude of abilities.

Qualities that involve sensual and physical faculties depend on more intellectual faculties and vice versa. For example, to make sense of complexity, the physical engagement needs to be elicited by open-ended opportunities. This reflects and allows for the complex meaning to be discovered. Richness in physical interaction allows for richness in meaning beyond the physical.

If an artifact embodies a balance between all of one's abilities addresses all of a person's skills and elicits true expression of a person in the interaction that they have with that artifact.. Affording a personal perspective based on one's total being in the world: the uniqueness of one's body and one's past experiences in the broadest sense.

## Conclusions and Future Work

In this paper, we have presented and reflected on four design research projects that explore aesthetic engagement. We have started to sketch the dimensions and boundaries of a design space. This design space sketched in this paper is characterized by sensual qualities that open up and balance complexity and ambiguity, and allow for engaging aesthetic interactions that afford, respect, give expression to and expand personal perspectives.

In our future work, we aim to further articulate and evaluate the boundaries and opportunities that form this design space through practice-based design-research.

## Acknowledgements

We would like to express our deepest thanks to all those that were involved in the projects: For Implied by Light and Nodes: Caroline Hummels, students and staff at Industrial Design, Eindhoven University of Technology. For Ballade of Women, part of the Light through Culture design school: Patrizia Marti, students and staff at the Department of Social, Political and Cognitive Sciences, University of Siena. For DiffractMe! and Ballade of Women: Stoffel Kuenen and the Umeå Institute of Design, and most importantly, the Umeå studio of Interactive Institute Swedish ICT.

All images by the authors, except: Figures 2 and 3 by Kevin Smeekens. Figures 6, 7 and 8 by Lorenzo Vannucci. Figure 9 by VanAllesWatOntwerp. Figures 10 and 11 by Sara Colombazzi.

## References

- Berleant, A. 1991. *Art and Engagement*. Philadelphia: Temple University Press.
- Bødker, S. 2006. When second wave HCI meets third wave challenges. In: *NORDICHI '06 the 4th Nordic Conference on Human-Computer Interaction*, Oslo, Norway, October 14 – 18. New York: ACM, 1-8.



Clark, A. 1997. *Being there: Putting brain, body and world together again*. Cambridge: MIT Press.

Forlizzi, J. & Battarbee, K. 2004. Understanding experience in interactive systems. In: *DIS '04 the 5th conference on Designing interactive systems: processes, practices, methods and techniques*, Cambridge, MA, USA, August 1 – 4. New York: ACM, 261-268

Gaver, W. and Bowers, J. 2012. Annotated portfolios. *Interactions* 19, 4, 40-49.

Gaver, W., Beaver, J., Benford, S. 2003. Ambiguity as a resource for design. In: *CHI '03 the SIGCHI Conference on Human Factors in Computing Systems*, Fort Lauderdale, FL, USA, April 5 – 10. New York, ACM, 233-240.

Gibson, J.J. 1979. *The ecological approach to visual perception*. London: Lawrence Erlbaum (reprinted in 1986).

Locher, P.J., Overbeeke, C.J. & Wensveen, S.A.G. 2010. Aesthetic Interaction: A Framework. *Design Issues*, 26(2), 70-79.

McCarthy, J. and Wright, P. 2004. *Technology as Experience*. Cambridge, MA: MIT Press.

Mendels, P. 2013. *From collection to reflection: on designing Freed, a tool for free and flexible organization of designers' digital work*. Thesis (PhD).

Eindhoven University of Technology.

Merleau-Ponty, M. 1962. *Phenomenology of Perception*, trans. Colin Smith, New York: Humanities Press.

Norman, D. 2005. *Emotional Design*. New York: Basic Books.

Rock, I., & Palmer, S. 1990. The Legacy of Gestalt Psychology. *Scientific American*, December, 262, 84-90.

