# Dialogic Shifts: The rhythm and sequence of artefacts in aesthetically informed interaction design practice

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**ABSTRACT**

Aesthetic accounts of interaction design (Löwgren 2008, Wright et al 2008) acknowledge the importance of the descriptive and dialogic roles that design artefacts play. Yet, much of the focus in this aesthetic turn (Udsen 2005) concerns final designs, or *products* of the design project. Ephemeral artefacts that are produced in the course of these projects or the design actions by those who created the artefacts inside projects are often omitted and rarely discussed. This paper critically reflects on a project to shed some light on the 'secret life of artifacts' and the role they play through making and using by the project team.

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Artefacts, co-design, perception, experience, inhabitation

**ACM Classification Keywords**
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**INTRODUCTION**

Current discourse in interaction design presents a diversity of performances where artefacts have been effective in facilitating interaction, knowledge transfer, generating ideas, provoking reflection or communicating understandings (Arias and Fischer 2000; Krippendorff 2006). Within this discourse, there is also evidence of the potency of artefacts as a 'language' in making intangible knowledge more tangible and accessible (Akama 2007; Rettig 2007). Furthermore, contributions from the work by Gaver et. al. (1999) and Sanders (2002) demonstrates the generative, creative role that artefacts play in a co-design process. Among the diversity of artifacts' performances presented in the literature, this paper focuses on three ways of framing artefacts as things that help to disclose and describe what's going on in a given situation, whilst also being things that help generate ideas for what to do in a given situation.

In envisaging artefacts as expressive, we draw on Dewey's (1934) theories regarding the expressive nature of objects and, ultimately, their ability to enable experiential perception. In order to build a more clear understanding of what we mean when we say 'inhabitation of experience' and, how our work impacts the practice of design, we must start with our understanding of perception and experience.

Dewey positions experience as a result of perception of the relationship between 'doing' and 'undergoing' - or between what I did, and what that doing did to me. In casting experience in a perceptual light, he acknowledges that perception has a dual action of reception and action, that the object and its observer are joined by perception, and affect one another through the action of interpretation. In his framework, statements *point* to an experience, describing the elements that make up the "conditions under which an experience of an object or situation may be had" (p. 84). Expressions, on the other hand, *constitute* an experience; they afford a perception of the relationship between proposed actions and consequences.

## Aesthetic Interaction Design as Practice

Aesthetic accounts of interaction design acknowledge the importance of dialogic and constructivist approaches to the criticism, understanding, and the subsequent design of products and services. Wright et al (2008) conceptualise a framework for aesthetic accounts of HCI and interaction design through the themes of; a holistic approach to human experience, co-construction of meaning and continuous engagement in making sense of experience. Bardzell (2009) introduces critical approaches to interaction design and discusses how the "critical examination of artefacts creates opportunities to develop new ideas". Löwgren (2008) stresses the need for holistic, interpretive approaches to dealing with aesthetics in interaction design. However, the focus in this aesthetic turn (Udsen 2005) had inadvertently focused on the final designed outcome, or *products* of design projects. Work by Ross et al (2008) has taken an aesthetic view on the processes inside projects, and Hummels et al (2008) examine the relationship between different types of artefacts used during the design process. Little is known or discussed about the artefacts produced in the course of these projects, or the design actions that take place inside projects. This is a concern that is taken up in this paper due to our understanding that design practices are embodied, situated and distributed. In this context artefacts play a critical role in its making and use among people whether intentionally or unconsciously (Kimbell

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2009). Kimbell provides a useful framework, 'designs-in-practice' and 'design-as-practice', as a way to ground the discourse of design firmly in practice theory (as opposed to abstraction of design as rational problem-solving, an individual skill or just a field of knowledge). Practice theory acknowledges and privileges embodied and situated ways of doing, knowing, and habitual routines that take place in design practice. Kimbell also implicates artefacts in this practice, and that these artefacts (and also, products and services) are always incomplete as they evolve through space and time, being passed through hands and among minds of other people.

Kimbell's framework provides a fruitful way to begin examining and focusing on the role of artefacts within a design project. The design project, which will be detailed later, is the site of design-as-practice, where embodied, situated ways of doing, knowing and habitual routines took place. Within this dynamic site of investigation, we further examine what artefacts did, and how they facilitated certain interactions and understanding. In particular, we detail the transformation of artefacts from one form to another, catalysed by different creators or motivated by different purposes, that had enabled a shift in the team's understanding, interpretation and capacities within the project. We detail this with the example of one set of artefacts from the project, which are described along a dialogic spectrum to provide tangible accounts of their role and agency. The spectrum illustrates how the artefact evolved and transformed according to the requirements and questioning that was being generated. We see the design project as a dynamic, 'living' entity where the artefacts provided a 'living rhythm' that enabled shifts in understanding for team members in the project. Through this discussion and demonstration, we aim to broaden understanding of the relationship between artefacts, design action and design practice.

## Project description

The artefacts described in this paper are drawn from an interaction design project called Loupe undertaken by the Australasian CRC for Interaction Design (ACID) in partnership with an Australian professional services firm. This involved the partner team members collaborating with a multi-disciplinary research team of university academics coming from various design and non design related faculties. The intention behind Loupe was to explore the role data visualization could play in enhancing customer experience of online financial products and services. Using the partner organisation as a site for investigation, the project explored data visualization as an object for sense-making and communication within an online social space. We will analyse and describe the design actions that the team used to modulate the dialogic potential of each artefact, and then discuss emergent themes of these observations.

# Dialogic Shifts

Artefacts play a critical role in design because they are able to trigger and reveal multiple meanings. Krippendorff (2006, p. 46) describes artefacts as having 'experiential histories, which are woven into social or cultural histories.' Different people understand the same artefact differently, according to the individual nature of prior experience. These differences in understanding make artefacts particularly useful for drawing people into interactions that are designed to surface tacit understandings. Awareness of these differences can also help us to integrate another person's understanding into our own, and with that deeper understanding of the issue at hand. Krippendorff explains that this second-order understanding is dialogic in nature, this is because 'the meanings held by others cannot be observed, they may be inferred from the interactions they inform and from how they surface in conversations' (p. 69). It is the abstraction or ephemeral nature of experiences and meaning making that make it a particularly complex area to investigate through objective methods. It is essential that designers use methods that enable them to make this tacit knowledge as explicit as possible. Artefacts are one such way, for as Krippendorff explains, artefacts are the language of interaction, enabling, facilitating and accelerating different expressions and understandings to be exchanged. As such an artifacts' physicality (or object-ness) is as important as the dialogue it enables.

This paper frames artefacts in terms of their dialogic potential; this is their ability to engage people in the process of co-constructing understanding of the qualities and opportunities of a situation. We present a group of related artefacts; describing their histories and roles in the project, and the design actions that the team used to move from one artefact and generate the next. A detailed discussion of these is undertaken in each section to enable a greater understanding of their agency in the design process.


**Figure 1. A spectrum of dialogic potential, ranging from descriptive to dialogic**

The selection of artefacts from Loupe are described along a spectrum of dialogic potential (Figure 1) to provide tangible accounts of their role and agency and to illustrate the paper's discussion. These artefacts are by no means intended to describe the full range of the spectrum, as other types of artefacts can extend this spectrum further in both directions.

The notion of the spectrum is founded in Krippendorff's premise that “artefacts do not have a clear beginning and an end. They have precursors and consequences, often recognizable only in retrospect” (2006 p. 177). He explains that artefacts are often transitioning from one manifestation to another, or its materialization could be called by another name whilst the idea 'lives' on in another artefact. When we look at the spectrum above, it is easy to assume that the transitions between these artefacts went uniformly from left to right, always moving from the descriptive to the dialogic, but this is not actually the case. When closely examined, the transitions

between the key artefacts shown in figure 1. are not as simple as inferred by this diagram. These transitions include cycles of iteration between dialogic and descriptive modes, and moves that extend beyond the edges of the illustrated spectrum.

## Visualising practice

As part of the project, a deeper understanding of the current activity within the client's organization was needed and it was decided that qualitative interviews with senior staff and a contextual enquiry into how the work was processed was needed. This qualitative data collection comprised of three preliminary interviews with senior staff in the partner's team, followed by one of our researchers shadowing the team for nine half days over a three week period observing their day to day practices, and concluded by short interviews with four of their senior analysts. This section describes key artefacts used to communicate the findings of this process and how these artefacts inspired further research which, in turn, produced artefacts that helped build a shared understanding of accountancy work practices.

As the project team discussed the data collected within the partner's organisation, a dominant theme that emerged was the tension between explicit and implicit activities that related to roles within the partner team. This analysis resulted in a visualization of the data being assembled in a spreadsheet format (Figure 2). This visualization revealed that some roles did far more than they reported. In particular it highlighted that the role of Senior Analyst performed a lot of day-to-day tasks that are not part of their specified role, and that their reported tasks were fewer in number and more abstract in their nature, than their counterparts.


**Figure 2: Visualization of perceived roles and actual roles**

The data represented in this visualization (Figure 2) generated further discussion at the workshop because, for those members of the project team that weren't familiar with the day-to-day workings of the partner, it provided them with insight into the everyday activities of the organisation. This information was then used as the basis for the second week of observational research. This visualization drew attention to behavioural differences in the partner team, and was an important artefact for communicating the outcomes of the initial observational research and generating discussion from the project team that propelled the project to focus more closely on the behaviours and practices of accountants.

The team then began to examine and collect data that could help provide a more sophisticated understanding of practices and behaviours in the partner teams. We used a version of Indi Young's (2008) Mental Modelling method to analyse and represent this data. An example of the mental model produced in this activity can be seen in Figure 3.

**Figure 3: Mental model of 'being an accountant'**

This process took 3-4 iterations with team members collaboratively analysing the data and picking meaningful labels that represented these tasks, and groupings of tasks. This process of language and data analysis enabled the researchers to connect to the everyday activities of accountants and gave insight into how these people experienced this activity. The team constructing the mental model could, through engagement with these various layers of data, inhabit the experience of working as an accountant in our partner organisation. Consequently they were able to develop an understanding that an online environment needed to provide features that allowed the staff to collaborate, to engage in joint problem solving, and to meet their needs for compliance regulations, amongst other things.

When we now reflect on the transitional path taken through artefacts over time, it becomes apparent that while a linear path was taken from the data visualization to the mental model, it was not a direct transition. The sequence and rhythm of this transition included artefacts that were generated from dialogue.

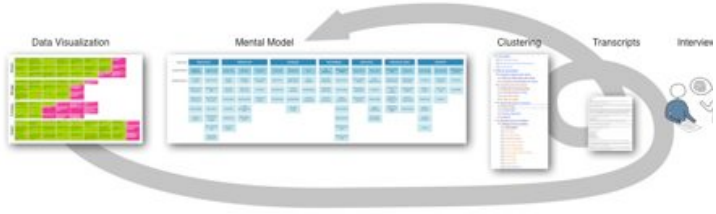


**Figure 4. The transitional path between the original data visualization and the mental model**

# Conclusion

Through a discussion of a set of design project artefacts, this paper has argued that the processes of making and communicating through such artefacts is one of transition, where the role of an artefact shifts from being descriptive

of a particular situation or knowledge set, to creating an expressive mode of engagement that opens up dialogue and co-construction of meaning between people. Dewey's theory of the expressive object (1934) has provided a framework of statements and expressions useful for understanding and communicating the shifts that this transformation requires.

Artefacts that function as expressions invite and allow people to inhabit a proposed experience. Within the common vernacular of business, this may be interpreted as to 'own' or have 'buy-in' to a situation, but in this case it is not as rhetoric but rather as authentic connection. As such, the artefacts become catalysts for activating our perception of the proposed experience of the thing, rather than objects to be cognitively understood as a thing. For example, how we read or engage with a report as a thing will be informed by our previous experience of such an artefact. In this way these artefacts affect the relationship between action and consequences as they can magnify, mirror, 'talk back' (Schön 1986) and focus on certain aspects of an experience.

Finally, our reflection has identified ways that visual communication can transition an artefact into either more dialogic or more descriptive forms. By opening an artefact up to interpretation and dialogue, or by closing it down to a concrete representation of a system, visual communication offers many 'moves' or shifts for the designer to transition artefacts into different uses and roles. We hope that this account of artefacts in aesthetically informed interaction design will help add to the discourse around design-as-practice, by giving a clear account of designs-in-practice.

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## References

Akama, Yoko, Cooper, Roslyn, Vaughan, Laurene, Viller, Stephen, Simpson, Matthew and Yuille, Jeremy (2007) *'Show And Tell: Accessing And Communicating Implicit Knowledge Through Artefacts'*, Artifact, 1:3,172-181.

Arias, E., & Fischer, M. (2000). Boundary Objects: *Their Role in Articulating the Task at Hand and Making Information Relevant to It.* Paper presented at the International Symposium on Interactive & Collaborative Computing, University of Wollongong.

Bardzell, J (2009) Interaction Criticism and Aesthetics, chi 2009

Dewey, J. (1934). *Art as Experience*. New York: Minton, Balch & Co.

Gaver, B., Dunne, A., & Pacenti, E. (1999). Cultural Probes. Interactions, 6(1), 21-29.

Caroline Hummels, Tom Djajadiningrat, & Kees Overbeeke. (2008, December 4). Knowing, doing and feeling: communicating with your digital products. Retrieved March 23, 2010, from http://citeseerx.ist.psu.edu/viewdoc/summary?doi=?doi=10.1.1.124.7718

Kimbell, L. (2009) Beyond design thinking: Design-as-practice and designs-in-practice. Paper presented at the CRESC Conference, Manchester

Krippendorff, K. (2006). The Semantic Turn: A New Foundation for Design. Boca Raton: Taylor & Francis.

Löwgren, J. (2008). Five things I believe about the aesthetics of interaction design. Position paper for Dagstuhl seminar on The study of visual aesthetics in HCI.

Rettig, M. (2007). '*Do And Think And Play And Show And Tell: Artefacts All The Time',* Artifact,1:3, 182-189.

Ross, P. R., Overbeeke, C. J., Wensveen, S. A., & Hummels, C. M. (2008). A designerly critique on enchantment. *Personal Ubiquitous Computing.*, *12*(5), 359-371.

Sanders, E. (2002). From user-centred to participatory design approaches. In J. Frascara (Ed.), *Design and the Social Sciences: Making Connections* (pp. 1-8). London: Taylor & Francis.

Schön, D. A. (1983). *The reflective practitioner*. Basic Books.

Udsen, L. E., & Jørgensen, A. H. (2005). The aesthetic turn: unravelling recent aesthetic approaches to human-computer interaction. *Digital Creativity*, *16*(4), 205.

Wright, P., Wallace, J., & McCarthy, J. (2008). Aesthetics and experience-centered design. *ACM Trans. Comput.-Hum. Interact.*, *15*(4), 1-21.

Young, I. (2008). Mental Models: Aligning Design Strategy with Human Behavior (1st ed.). Rosenfeld Media.