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# EXPLORING REFLECTIVE DESIGN: AN APPROACH TO DIGITAL ARCHIVES

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## ABSTRACT

In this short paper we discuss our explorations with adopting *reflective design* as an approach to designing a digital archive for the performing arts.

The stakeholders in this project are diverse, comprised of members of the partner organisation, the public, the design team and government funding agencies. Each stakeholder has different expectations and skills to bring to the project. It is proposed that *reflective design* with its mix of critical reflection with a human centred design and prototyping approach provides a methodological framework that enables the complexities of the project to be integrated into an action orientated design exploration.

## INTRODUCTION

From across the fields of design, technology and cultural studies there has been increasing interest in the role of both formal and informal digital archives in contemporary culture. Internationally cultural institutions are digitising their collections and moving them online. Whilst at the same time, much new information is only being manifest in digital form. Consequently our engagement with cultural heritage and contemporary cultural production is becoming increasingly digitally mediated.

There are many challenges regarding the design of digital archives, and not all of the challenges are technical. This is a time where there are many interesting possibilities for new perspectives on digital archives, in our research project we have explored how *Reflective Design* (Sengers et al. 2005) could provide a useful frame through which to rethink the role of interaction in digital archive design, that will enable the

development of new ideas regarding future digital archives.

## PROJECT CONTEXT

*The Circus Oz Living Archive Project* (hereafter The Living Archive Project) is an interdisciplinary research project working to design, develop and analyse a prototype of a participatory digital video archive. Funded under the Australian Research Council Linkage program, the research brings together researchers and academic and industry partners from across the fields of science, humanities, new media, performing arts and design. The research team is working closely with Circus Oz, building prototypes using the Circus Oz collection of performance and rehearsal video documentation. The project aims to drive innovations in performance development, performance research, and audience interaction with cultural institutions (Carlin and Mullet, 2010).

The potential of archives as cultural entities is an area of research and debate across a range of fields including archive theory, Human Computer Interaction (HCI), information design, cultural heritage and knowledge management. While there are many interesting technical challenges in the context of a move from analogue to digital media, as interaction designers we are interested in how we can utilise the possibilities of technology to enable different ideas of what an archive *could be*. As such, questions framing the project are centered around the future of archives and our role in designing them: What could digital archives be used for, and what could make digital archives more useful? In what ways, and by whom, can digital archives be accessed? What role can interaction, play in contemporary digital archives?

In response to this line of inquiry, our research is exploring the ways in which *Reflective Design* (Sengers et al. 2005) could be a useful methodology for overcoming some of the challenges in digital archive design. Reflective approaches are not new to fields of art and design, but design approaches that encourage critical reflection are still gaining traction in the HCI community. The general shift towards valuing reflection could be considered part of HCI's 'third wave', encompassing such approaches as Critical Design, Ludic Design, Value Sensitive Design and Value Centred Design amongst others (Fallman 2011).

Reflective Design draws on many of the threads present in third wave HCI to form a set of principles and strategies to assist HCI practitioners in supporting ‘critical reflection’, defined as ‘bringing unconscious aspects of experience to conscious awareness, thereby making them available for conscious choice’, as enabling more critical reflection could serve to help ‘designers [to] become more aware of the blind spots in the structure of HCI,’ and to ‘help users be more reflective about the role of technology in their lives’ (Sengers et al. 2005, p.50).

Reflective Design has provided the project team with principles for enabling critical reflection both in the project and in the archive design. A set of strategies presented by Sengers et al.—including ‘build technology as a probe, provide for interpretive flexibility, give users licence to participate, inspire rich feedback, and invert metaphors and cross boundaries’ (2005, p.65)—is a useful set of tools to begin to examine the role of IxD in digital archives. Sengers *et al.*’s argument for ‘reflection on the unconscious values embedded in computing and the practices it supports’ (2005, p.49) could be a useful frame through which to begin to examine some of the ‘unconscious values’ present in the HCI community relating to digital archive design, in order to explore potential new uses of digital archives.

#### THE ARCHIVE AS INFORMATION: UNCONSCIOUS VALUES IN THE DESIGN OF DIGITAL ARCHIVES

Digital archive research in HCI often takes an approach that could largely be classified as *informational*. The ‘informational’ model can be traced to HCI’s historical and intellectual roots in cognitive science, treating ‘information’ as something that can be ‘transmitted’ through some sort of information channel or conduit (Boehner et al. 2005). Conceiving the digital archive through the informational model frames it as being a repository of ‘information’, whose meaning can be ‘transmitted’ to a user via accessing the archive.

There are many examples of this ‘informational’ frame regarding HCI research in the field of archives. Many researchers approach the digital archive as a systems-design problem that focuses on metadata models and database architectures (Davies 2011). Others focus on interoperability (through metadata schema or other structures) (Hunter 2003), data mining (Wu et al. 2008), or machine indexing (Wong & Leung 2008), along with recent attention on user participation through ‘Web 2.0’ technology (O’Reilly 2005). There are benefits to this ‘informational’ frame: treating the archive—its records, its users, and their behaviour—as aggregates of ‘information’ can be extremely useful, as it encourages the development of efficient methods for storing, indexing, searching, organising and analysing information.

This predominant focus on storage, metadata, interoperability, systems-design and social analysis suggests unconscious values and assumptions in the

HCI community. One assumption is that digital archives should be treated as a problem of data indexing, data access and data analysis. More deeply embedded is the assumption that what people *want* from archives is predictability, efficiency, repeatability, ‘related’ data sets, and information that aligns with an algorithmic picture of social relations. Informational approaches can be restrictive in that they assume some level of knowing what you want from the archive: there is little room in the ‘information access’ paradigm for the addition or construction of multiple interpretations and/or multiple meanings, nor is there room for much ambiguity, serendipity or unexpected discovery. In fact, it is well acknowledged in the archive community that archives do not just ‘contain’ meaning, rather, they are socially constructed (Featherstone 2000) and are layered with existing and potential meaning(s) (Nesmith 2006). It is in this context that we believe *Reflective Design* could be an effective methodology for overcoming the limitations of an information dominant schema that permeates digital archive design.

#### REFLECTING ON THE ROLE OF INTERACTION DESIGN IN CONTEMPORARY DIGITAL ARCHIVES

In a 2002 paper, archivist and digital preservation pioneer Margaret Hedstrom asked some important—and as-yet unresolved—questions:

‘To whom does society grant the power to select archives? From what stores of recorded documentation are archives legitimately constituted? Who gets to decide what constitutes value?’ (Hedstrom 2002, p.34)

Hedstrom’s questions provide us with a useful starting point for a reflective discussion regarding digital archive design. The shift towards digitisation of archival records, combined with a move towards participatory digital environments and ‘cultures of participation’ (Fischer 2011) is a cause of many problems for contemporary archivists and archive theorists. Alongside a postmodern shift in the discourse around archives, digitisation has served to break down the traditional ‘authority’ of the archive and the archivist (Ketelaar 2001; Millar 2010), causing debate around the role of the archivist in managing the archive, and the role of the user in their relationship with the archive. In response to this debate archivists have argued for more ‘traces’ and ‘imprints’ of people in archives, in order to better reflect the postmodern nature of the contemporary archive and a more open-ended use of digital archives (Ketelaar 2001; Manoff 2006; Huvila 2008). The transition of the archive from analogue to digital raises with it many issues that are beyond the simple act of digitising, data access, and data storage.

Often when archivists consider the role of technology, their focus is on ‘the creation of records, their capture and storage, and the standards, processes, and procedures necessary to attain immutability, integrity, authenticity, and permanence’ (Hedstrom 2002, p.23). As such it could be argued that the archivist also adopts an ‘informational’ approach to the connections between

the archive and technology. Just as a designer may not understand the complexities of archival law, methods and traditions of care; an archivist may see technology as a tool that has certain capacities, and not all its 'material' possibilities.

This has raised important questions for the research team: What does it mean to design an archive that affords challenges to 'archival authority'? How might we design a digital archive that affords the messiness and multiplicity of the contemporary archive, especially one as open to interpretation as an archive of circus performance?

In response, we have adopted the stance that it is in the user's *interactions* with the archive that authority is challenged and meaning is constructed. Using this view we can begin to move away from the 'informational' paradigm and into the 'interactional' (Boehner et al. 2005). It is here that the role of the interaction designer becomes valuable, as the interaction designer controls the *realm of possibility*: every interface-design choice that we make has profound effects on the relative accessibility, importance, legitimacy and usefulness of archival records. When we think 'interactionally' instead of 'informationally', it is *the range of possible interactions with the archive* that determine the archive's subsequent use and value.

#### REFLECTIVE DESIGN IN THE LIVING ARCHIVE PROJECT

In the *Living Archive Project*, we are examining the design and use of the archive from the perspective of user interaction. Using a *Reflective Design* frame, we are experimenting with ways that might break down the predominant 'informational' view of the archive. The following examples refer to some of the strategies offered by *Reflective Design*, detailing how we are applying them in our research:

**Build technology as a probe.** The Living Archive (<http://archive.circusoz.com>) is a prototype designed for learning about the archive in use and to engage with Circus Oz about potential new uses and applications of the digital archive in practice. But it is also the 'real' archive that Circus Oz uses in its everyday practice of archiving of performance video and engaging with audiences. In this way the archive performs two parallel functions: a useful tool for Circus Oz (which encourages adoption and situational use), and a technology 'probe' that is a research tool for learning about digital archives.

**Provide for interpretive flexibility.** We are treating the archive as being layered with multiple levels of meaning, rather than being comprised of a single, archivist-controlled set of records and metadata. This conceptual model embraces multiple interpretations that can be added and modified without breaking the underlying 'canonical' data in the archive. This concept has been implemented through a database design that allows multiple parallel annotations of time-based media, and interfaces that can present both controlled

hierarchies of data, or 'flat' context-free data depending on the task at hand.

**Give users licence to participate; inspire rich feedback.** We are exploring opportunities for users of the archive to leave traces of their activity throughout the archive. We are framing much of the interaction with the archive as a form of storytelling and 'construction of meaning', which is informing the design choices that we make. One example is the naming of time-based annotations on videos 'stories' rather than 'comments' to encourage a narrative frame of mind when adding annotations. Another example is the ability for users to reorganise the archive into their own 'collections' with interstitial annotations to describe the new relationships that they are creating.

**Invert metaphors and cross boundaries.** By empowering users to curate and collect we are inverting the traditional authority of 'the collection', enabling the digital archive to present multiple 'collections' in the same digital space. To support these behaviours, we designed the archive as an 'API' (*Application Programming Interface*) to archive content, which refocuses our own design actions on figuring ways of designing *with* and *through* the archive, producing multiple, parallel 'archives', as opposed to designing one particular interface to 'an archive'. Returning to Hedstrom's questions regarding 'what constitutes value' in digital archives: if we can design open architectures, frameworks and interactions for digital archives that invite participation, perhaps *users* can decide what constitutes value, in 'their' archive

#### DISCUSSION: EXPERIMENTING WITH REFLECTIVE DESIGN AS A FRAME-SHIFTING APPROACH

Over the past 2 years the interdisciplinary research team involved in the design and manifestation of the *Living Archive* has identified some strengths of adopting a *Reflective Design* methodology for the research and design of this particular digital archive. These include the following:

**Encouraging the rethinking of unconscious values.** The information processing frame is 'deeply engrained in the practice of HCI' (Boehner et al. 2005, p.60), and we would argue that stepping away from this default 'informational' approach to the archive is the first step in enabling new possibilities regarding digital archives.

**Turning attention to participation and interaction instead of information.** Reflective design could break the 'either/or' paradigm of information structures, shifting our focus to the potential multifaceted use of archives rather than just how information is stored and accessed.

**Reflective Design could shift design focus to tacit knowledge.** Tacit knowledge is considered by many contemporary archivists to be an important element of meaning construction in archives (Ketelaar 2001; Millar 2010), above and beyond the 'information' stored in the archive. Using critical reflection about the role of

archives could help the design of archives that facilitate the creation of these other types of meaning.

## CONCLUSION

In response to the growing importance of digital archives in our society, there is a pressing need to develop new and innovative approaches to digital archive design. While the HCI community continues to push the boundaries of ‘informational’ approaches to digital archives, we believe that these approaches do not necessarily address some of the problematic issues raised by the archive community in the transition from analogue to digital archives, especially when we begin to frame archives as ‘living’.

We have begun to explore how digital archive design could benefit from ‘third wave’ HCI approaches that encourage us to reflect on underlying assumptions in our designs, and we have considered *Reflective Design* as one approach that could offer much to contemporary digital archive design. This strategy helped our project team embrace the open-ended nature of the contemporary archive and think about the archive in new ways to produce tangible design outcomes that may not have been otherwise considered. *Reflective Design* can be a useful strategy for rethinking the role of interaction with archives in order to move away from the predominant ‘informational’ paradigm, it could also serve to direct attention to potential new uses of archives in society.

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## REFERENCES

- Boehner, K. et al., 2005. Affect: from information to interaction. In *Proc. CC 2005*. New York, NY, USA: ACM, pp. 59–68.
- Carlin, D. & Mullett, J., 2010. Performing Data: The Circus Oz Living Archive. In *eResearch Australasia 2010*. Gold Coast.
- Davies, S., 2011. Still building the memex. *Communications of the ACM*, 54(2), pp.80–88.
- Fallman, D., 2011. The new good: exploring the potential of philosophy of technology to contribute to human-computer interaction. In *Proc. CHI 2011*. New York, NY, USA: ACM, pp. 1051–1060.
- Featherstone, M., 2000. Archiving cultures. *The British journal of sociology*, 51(1), pp.161–184.
- Fischer, G., 2011. Beyond interaction: meta-design and cultures of participation. In *Proc. OZCHI 2011*. pp. 112–121.
- Hedstrom, M., 2002. Archives, memory, and interfaces with the past. *Archival Science*, 2(1), pp.21–43.
- Hunter, J., 2003. Enhancing the semantic interoperability of multimedia through a core ontology. *IEEE Transactions on Circuits and Systems for Video Technology*, 13(1), pp.49–58.
- Huvila, I., 2008. Participatory archive: towards decentralised curation, radical user orientation, and broader contextualisation of records management. *Archival Science*, 8(1), pp.15–36.
- Ketelaar, E., 2001. Tacit narratives: The meanings of archives. *Archival Science*, 1(2), pp.131–141.
- Manoff, M., 2006. The Materiality of Digital Collections: Theoretical and Historical Perspectives. *portal: Libraries and the Academy*, 6(3), pp.311–325.
- Millar, L., 2010. *Archives: Principles and Practices*, Neal-Schuman Publishers.
- Nesmith, T., 2006. Reopening archives: bringing new contextualities into archival theory and practice. *Archivaria*, 60(60).
- O’Reilly, T., What Is Web 2.0 - O’Reilly Media. Available at: <http://oreilly.com/web2/archive/what-is-web-20.html> [Accessed August 13, 2012].
- Sengers, P. et al., 2005. Reflective design. In *Proc. CC 2005*. New York, NY, USA: ACM, pp. 49–58.
- Wong, R.C.F. & Leung, C.H.C., 2008. Automatic Semantic Annotation of Real-World Web Images. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 30(11), pp.1933–1944.
- Wright, P., Wallace, J. & McCarthy, J., 2008. Aesthetics and experience-centered design. *ACM Transactions on Computer-Human Interaction*, 15(4), p.18.
- Wu, X. et al., 2008. Top 10 algorithms in data mining. *Knowledge and Information Systems*, 14(1), pp.1–37.