Informing the Everyday Interface: Exploring User-Content Relationships in Interactive Art

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The relationship between interface and content helps to formulate the user experience. The term interface here refers to the way people access systems which in the context of this paper, are not limited to hardware such as mouse and keyboard, or to graphical user interfaces (GUI's). The interface has a significant effect on how the connection between the user and the content manifests and is traditionally seen as mediating this connection. This paper seeks to explore this relationship in instances where the user has a 'thick' relationship – meaning one with an increased personal or subjective association - to the content. Content (sometimes known as data) is, according to Webster's Revised Unabridged Dictionary, "that which is contained", in this case by a socio-technical system. In such systems, it is the interface that allows us to access, share, manipulate, generate or communicate with or through it. This paper explores complex content–interface relationships by looking at interactive artworks, commonly designed to be explicitly subjective and personal experiences. In doing so we ask whether use in an art context can inform the development of everyday systems where users have a personal or 'thick' relationship to the content, such as when choosing search terms, generating personal content through communication tools such as SMS and email, or when considering context aware or pervasive computing.

I n communication technologies where users are the architects of their own content the user/content relationship could be described as 'thick'. For example; you search for a particular file, person or item on the internet based on your own relationship to it – your keywords may be different to that of others, depending on the manner of your relationship to both the content you are searching for and the words you are using to search for it. For instance, if you used a web-based search engine to find an old friend from High School, the words that you use in your search are dictated by what you remember of him. Another person who is, say, looking for a plumber in their area, may also be looking for your friend, but the terms with which they search for him and their relationship to the search outcomes are completely different. The terms are defined, for each user, by their personal perspective formed through their social and cultural contexts. By looking at particular instances where a thick relationship is the key intention, such as in many interactive artworks, we intend to assess how this affects the content–interface relationship and design. This paper then asks whether the study of such complex content–interface relationships in interactive artworks can inform the design and development of technologies in the everyday.

In some situations interface and content have clearly differentiated boundaries. Generally speaking in an Excel spreadsheet or a Word document, it is reasonably straightforward to define what aspects are the interface and which the content. Another example is Extensible Markup Language (XML), or any of its brethren, which allow you to specify certain presentation and interface characteristics that will be applied, independent of the content, by the output mechanism. The focus here is on the efficiency achieved in separating content from appearance, which takes advantage of the system's ability to abstract and generalise. In these technologies content takes the form of inter-changeable data sets that can be added and subtracted, imported and

exported, received, sent or updated with little or no effect upon the interface.

In many interactive artworks and Virtual Environments (VE's) however this definition is not so clear. In the developing field of multi-user virtual spaces success is often considered to be largely dependent on creating for the participant, the sense of actually 'being somewhere' or 'presence' (Lombard, Ditton 1997). The boundaries between interface and content become harder to discern. Clive Fencott makes the connection

> …much of the true interface between user and VE is embedded in the content and effectively separated from the interface technology itself, i.e. joystick, keyboard etc (Fencott 1999).

In such systems, the user's relationship to the content is paramount to the nature and quality of their experience. We have not set out to argue that people's relationship to content isn't always subjective, rather that in these types of systems the user's relationship to their content is clearly and, beneficially, explicitly subjective.

1. What is the role of the interface?

Eric Bear of MONKEYmedia claims the majority of interactive media design does not have a complementary relationship between content and interface and stresses the need to match the message of the content with interaction techniques (1996a). This means building interfaces that complement the mode, style, emotion, context and intention of the content, and how the content will affect or be affected by the user. This suggests a situation where the interface is formulated by the relationship between the user's experience and the possibilities afforded by the content.

Design emphasis has shifted over the last few decades from the achievement of particular tasks, to supporting interaction and

communication (Preece et al 2002). Current changes taking place in our perception and use of interactive technologies includes a shift from single user to multiple users, from users to participants, or inhabitants in the case of virtual worlds, from desktop metaphors to mobile and ubiquitous computing, and from interface to interaction. Interactional environments and navigation systems are becoming social communication networks. Suchman (1987) maintains that traditionally systems designers have relied on computational models of development as opposed to situated interaction methodologies. We suggest this reliance on computational methods has contributed to the tendency for design practice to lack scope beyond the immediate, the aesthetic, and the technical. Even with an increased understanding of the wider concerns of interaction design - including phenomenological perspectives and the use of methods such as ethnography - there is still a focus on the technology first. We can no longer afford to see the user as a static object at a static desk, with data moving in, getting changed, and moving out (Bear 1996b). A phenomenological understanding shows us that people as a whole - not just their 'mind' or their clicking finger - affect, and are affected by, technology use. The understanding of where the boundaries of interface, experience and interaction lie, is an evolving one, and within HCI (Human Computer Interaction) one that is currently dominated by dialogue around context and embodiment.

2. Context & Content Aware

Literature on HCI, Interaction Design and User-Centred Design (UCD) identifies context of use as a critical factor when designing interactive systems (Dourish 1998)(Moran 2001)(Nardi 1993)(Preece et al 2002)(Shneiderman 2002)(Suchman 1987)(Winograd 1997). We suggest that in some instances the user's relationship to the content should be considered a dominant contextual element. In recognising the significance of technologies as social communication networks, and computing in general becoming more pervasive, the imbrication of

content/context/interface and the relevance of thick relationships in computing interaction moves into focus.

Traditionally our understanding of context has commonly been limited to geography, location, identity or time (Moran 2001). According to Dourish the limitation of this approach is that designers of interactive systems;

> *context and activity are separable*. … the content or activity is "within" while the context is "without" (Dourish 2004).

However even when people have considered the 'social environment', for example whether you are talking to your boss or our co-worker (Schilit et al 1994), this hasn't been extended to consider the content of the conversation. An often-used example of context aware computing is when a mobile phone knows where it is geographically, and thus knows how to act. But an understanding of how thick relationships effect interaction and interface considerations suggests the phone might need to be not only context aware, but relationship to content aware. If you are in a museum and your phone turns off, that is context aware. If you are in a museum and your phone sends all incoming calls to message bank except for the one from your friend who is ringing from outside to see where you are, that is relationship aware.

This understanding of context is also restricted by the notion that it is important now, simply because we have moved away from the desktop (e.g. Dourish 2001, 2004). Without a doubt the mobility of users causes many extras complexities – however this perception continues to preference the geography or location as making the difference to the users' experience. As we have pointed out, without moving from one's desk context of interface changes as relationships to content change. That is not to say that the computer should turn pink when you are chatting to a lover online. This would be a typical misinterpretation of

designing for context, a little like assuming that because people use stickies on their top of their desk, they can be replaced but putting stickies on the computer desktop. There is still something to be learnt about what defines different contexts of use in terms of relationship to content, and how the experience of interface and content may be subjectively woven throughout the emotional experience of interaction.

In exploring artworks we discover a range of questions that relate to similar concerns around maintaining and managing thick relationships that designers of desktop, mobile and context aware technologies may wish to consider. Another factor that leads us to interactive artworks is the notion of embodiment, artists have been dealing with real people walking in and around their work for a long time. It is likely that they struggle with many of the same questions and challenges in understanding interaction from a phenomenological perspective as designers should.

2. Thick relationships & the art interface

It is not a bold statement to suggest that art is about meaning making, and that in interactive art the content and the interface are fused to make a single entity through which an artist can communicate his or her ideas to those experiencing the work. In the artistic domain content is, most often, deliberately created or selected to forge a particular relationship between the work and its audience. And, in some successful cases, a thick relationship is formed. Consider when you engage with an artwork, it is not unusual to experience a personal response, perhaps even an emotional or reflective one. However most everyday technologies, and their interfaces, are not designed with this in mind, despite the level of intimacy you may be engaging in, and it is possible that the oft sort goal of usability may be an oversimplification. However in some situations, regardless of the developers, designers or producers intent, everyday technologies elicit the same thick connection. In these situations the user(s) has an intrinsically thick relationship with the

content their technology happens to be providing an interface too. A phone interview for a job for example, or an argument with your lover.

In order to seek a better understanding of how the possibilities afforded by the content can or might formulate or influence the interface and therefore the user experience we have identified virtual environments (VE) and, in particular, interactive artworks as rich sites for such research.

We will draw on the following three examples in exploring such complex user/interface/content relationships. Simon Penny's *Traces*, Lynette Wallworth's *Still:Waiting* and the iCinema project *Conversations*. *Traces* enables the description of space and movement to become an environment for communication and is part of ongoing work by Penny to develop intuitive interfaces, that incorporate the whole body (Penny 1997). *Still:Waiting* is a meditative work focusing on understanding difference and effecting change through movement. *Conversations*, a multi-user VE, enables users to unravel their own narrative depending on the interaction choices they make, and the content they both engage with and generate (iCinema 2004).

2.1 Traces

Traces makes use of distributed Cave Automatic Virtual Environment (CAVE) technology and is a reaction to the disembodied nature of traditional interfaces. Using a multi-camera system *Traces* reflects the users body movements through a representational model made up of translucent moving bits that change form over time.

The content of this work is created through use, and is both generative and responsive. The physical body *is* the interface for exploring an interpreted representation of self, and that of others networked from different locations. The boundaries between participant, interface and content are indiscernible. Through this work Penny emphasises moving beyond the Cartesian body mind split when exploring interaction and

technology use. *Traces* is a conscious effort to move away from GUI's and experience interaction

> 'which takes place in the space of the body' (Penny 1999).

In order to do this Penny has expanded the digital representation of the user beyond the single computational point – most commonly seen in the mouse, but also the case for traditional Head Mounted Display (HMD) Virtual Reality (VR) and CAVE's. To this end Penny has constructed a system that allows a 3d model of the user's entire body to be mapped in real time. Penny explores the ways people can physically communicate within this representational space, and has been credited with taking a technical space and turning it into a place of communication (Cyberstar Judges 1998). The fusion of action, interface and content is almost primitive, as is the level of sophistication that can be extracted from this particular thick relationship. Although on the surface this may be a simplistic interface – the level of interaction and emotional investment for the user is anything but, and very significant in terms of understanding embodiment for developing ubiquitous or wearable computing.

Unlike a typical HCI perspective we are less interested in the level of transparency or difficulty of the interface, than the way in which Penny perceives, builds upon and facilitates an intimate and embodied relationship between user and artwork.

2.2 Still:Waiting

Still:Waiting is part of exhibition *Terra Alterius* which asks what would it mean if Australia had been colonised as 'land of another', rather than land of 'no one' (terra nullius). Wallworth has set out to create an interactive space in which people negotiate their actions and reactions in order to experience the nature of the space, in part answering this question. Footage of native birds nesting represent this complex

proposition and participants can either learn about the nature of this foreign habitat, or disrupt it through movement. Learning new things takes time, and 'still waiting', in the space is required to achieve this. The footage of birds flying away from the tree is activated when people walk into the space, while the birds come back to the tree if someone sits down on one of the three tree stumps in the intimate space.

Still:Waiting seeks to build a relationship through movement and interaction between people and the work, and people in the work. What qualifies as interface in this instance is unclear. In a technical sense we can discuss floor pads and pressure sensors, how ever this hardware is not the negotiated experience, or mediator of communication between the audience and the work. And the content cannot merely be said to be the audio and video footage playing on the projection. At points our bodies are the interface, then the tree stumps, then the floor pads, but all together in this one intimate environment a thick relationship between content, context and participant is sort, and sometimes gained. Much like that of traditional installation the interaction is much more environmental, situated, contextualised. The artist doesn't perceive an interface or artefact through which people reach the content, but the development of a complex set of overlapping and fragile relationships and networks;

> I am interested in using technologies to structure spaces that encourage temporary inter-dependence. I think that feeling a part of a complex system is a useful sensation to achieve. Natural systems rely on complex relationships being maintained if not understood (Wallworth 2003).

2.3 Conversations

Conversations is an ambitious multi-user virtual environment where the story of Ronald Ryan's escape from Pentridge Prison, in Melbourne, is told. The viewer, using a HMD and spatialised 3D sound, bears witness

to Ryan's escape as it happens, through a stereoscopic filmic recreation that fully surrounds them. After witnessing the escape the viewer is delivered into a virtual world where ghosts from the story try to influence the viewer's idea of what actually happened during the escape and what is the just punishment for Ryan, last man hung in Australia. The person immersed in the environment can talk with the ghost and all the other people concurrently using the installation.

While immersed in the work, the act of looking at a ghost will encourage it to approach, if the user's interest is sparked in another direction they can disengage from the ghost by looking away. Ghosts will also offer to bring other ghosts, as the installation incorporates voice recognition to allow users to call up anyone they desire.

Each individual's experience of the work, which includes almost 2 hours of linear material, depends on which parts of the initial escape sequence they witness, which ghosts they chose to interact with and any information the voice recognition system can ascertain. The narrative they uncover in the work will influence their faith in the justice of Ryan's hanging.

In this work the interface is the focus of the user's gaze, their voice, the movement of their head and the ghosts they interact with. In this way is it impossible to separate interface from content as without the content there is nothing to trigger the user's gaze, nothing for them to talk to or turn to witness. Without the ghosts there is no narrative, no story and no interaction, and equally without the user's actions and words there is no artwork.

In trying to evaluate such works from a traditional HCI perspective there are many options, but existing HCI methods don't allow for direct evaluation of the emotional and experiential content of the work. This paper suggests that the relationship between the user and the work

changes the nature of the interface. A thick relationship to the content means that the interface is indeterminable, in the sense that is cannot be separated from the experience encountered.

2.4 Thick relationships at the art interface

We believe that the questions that artists are asking are similar to designers in terms of trying to connect people, to get them to engage with each other, and negotiate information in virtual space, perhaps to have a feeling of 'presence' or place in order to carry out ordinary, or extra-ordinary activities, activities in which thick relationships to content, be it communication or personal information are formulated or pre-existing. All three works mentioned attempt to negotiate subjective and intersubjective relationships in real or distributed space which is a common challenge in everyday communication technologies.

Unlike most designers artists are able to focus on one instance, often in a controlled space, in order to attempt their cultural exercises. For the same reason many things artists do in their single situated space are not comparable to that of mass distributed design products or software, but that is not so much our concern here. What they do do which this paper argues is transferable knowledge, is deal specifically with the invocation, generation and experience of personalised relationships – and melding of space, experience and interface to content. It is this intentional acknowledgement and seeking of the thick relationship that we have explored and hope to utilise within HCI.

A designer friend made the following observation; artists create relationships and designers create objects. This may be true, but equally true is that these two creations have many things in common and can, hopefully, learn from one another. It is this particular commonality which has been illustrated in this paper, the thick content/user relationship, that allows us to connect the domain of interactive art with that of the everyday.

3. Objects and Relationships

In the examples above the interface is not the component between the content and the user. The interface is part of the continuous, often changing dynamic and sometimes generative environment. Mark Weiser, father of Ubiquitous Computing, argues

> …the notion of interface itself is misleading since it implies a
> boundary or difference…the unit of design should be social
> people, in their environment (or context), with their various
> devices (MacColl et al, 2002).

In this sense we need to think in a broader way about the user/interface/content relationship. The way that artwork interfaces converge into environment, place, content and user means it is hard to define the boundaries, and this is the same with interfaces of the everyday, most obvious in context aware and ubiquitous computing. Can artists who are trying to engender a particular emotional experiences help us understand how certain emotional experiences can be supported, extended, contained, projected or negotiated? Or how the different ways of understanding, interpreting or considering interface can enable quite different outcomes? These artists are attempting to facilitate deep personal and interpersonal experiences through these works and are initiating the use of relationships that they hope will achieve this.

Seeing interface as an object that mediates interaction, or a conduit through which people communicate or make meaning, is the traditional HCI view of the interface (Dourish 2001). Most designers wouldn't argue the statement – 'the construction of the interface affects the user's experience', however we still tend to read the above as true. What these instances of interactive art may be telling us, in particular relative to thick relationships, is that this may turn out to be a limited way of

viewing the interface. Perhaps the interface is not so much a mediator, or conduit which shapes, but more a complex shifting constituent of that experience, a participator and contextualiser of communication. Not an object in between, but intricately woven into the relationship and formulation of the content and communication itself.

4. Conclusion

Moving beyond seeing the technology as a tool of productivity, to it becoming part of our environment of communication, expression, reflection, emotional exploration and social experiences calls for a more critical and phenomenological understanding of the interface. Through exploring the relationship between user, content and interface in interactive artworks, which often value and seek out very different user experiences to interactive systems designed for the everyday, we have sort to inform our understanding of user and content in relation to technology use and design in a broader context.

The idea that the interface does more than mediate, and that its boundaries can shift depending on the content and the user relationship, impacts on our understanding of people's relationships to technology use. Not only does it assist with understanding the scope of context aware computing, it reshapes our way of seeing design and use of interactive technologies. A better understanding of how personal/subjective relationships to content affect interface design broadens the design arena for technologies of the everyday. We see this as part of a necessary move towards accommodating different interactions and interfaces and a wider range of uses and users.

Acknowledgements

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