

Artefact and Iteration: circular entanglements

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ABSTRACT

In this workshop proposal I discuss a case study physical computing environment named *Talk2Me*. This work was exhibited in February 2006 at The Block, Brisbane as an interactive installation in the early stages of its development. The major artefact in this work is a 10 metre wide X 3 metre high light-permeable white dome. There are other technologies and artefacts contained within the dome that make up this interactive environment.

The dome artefact has impacted heavily on the design process, including shaping the types of interactions involved, the kinds of technologies employed, and the choice of other artefacts. In this workshop paper, I chart some of the various iterations *Talk2Me* has undergone in the design process.

1. WHAT IS *Talk2Me*

Talk2Me is an interactive installation housed in a large portable light-permeable dome. The audience interacts—via microphones, SMS texting, and remotely—with characters (bots) in a text-based virtual environment (a MOO). A MOO is an electronic space many can log into, and type to communicate and build objects, such as rooms, recording devices, or keyword-responding characters like the talking bots in this particular MOO. In the current work-in-progress version the participant-audience members speak into one of the three suspended microphones in the space, or they may SMS a message to a mobile number. The speech and/or the SMS text are then converted to text within the MOO database. In turn the bots' responses, (they respond to designated keywords with a text output), and the SMS and online inputs are converted to audio and heard through one of the three suspended headphones in the space. The input/outputs are also displayed as text on one of the three screens in the dome environment as well as online through a client login interface developed for this work. The SMS and online inputted texts are also added to the database, so not only are they spoken and displayed at the time, but they also become future random outputs of the work. In this way the participant-audience members act in co-authoring the work. The bots respond to keywords from the audience, sometimes to each other, and well sometimes randomly. The participant-audience can also respond and engage with each other in all of the above ways, as well as by simply talking to each other in the physical space.

2. THE ARTEFACTS: PROS AND CONS

Many of the design considerations for the work *Talk2Me* developed from the initial choice of a dome shape to house the work. The words 'domestic' and 'dome' stem from the same root *domus* (the house or home). The dome also carries connotations of the Western monumental religious space of the *duomo*, or house of god, and of the non-Western, transient, and nomadic space of the 'yurt'. It was this play of

opposites—between familiarity and unfamiliarity, between a sense of space at once domestic and 'other', as well as my own experiences in dome architectures that drew me to this shape. I wanted a space without hard edges or sharp corners, somewhere that was easy to move in, and sympathetic to human form. I looked for dome structures and portable structures and ended up with the lightweight geodesic dome shown in Figure 1. When I first received the dome it was smaller than I had envisaged, more house-sized, more homely, and less exhibition-sized. The geodesic dome walls had flat planes between a rounded structure, the effect was less rounded than I had envisaged from the online images. I had to rethink the design rationale to 'adapt' to this altered sense of space, as well as actual available space. Eventually I came to see the space had its own distinct qualities. In particular when the doors were rolled up there was an impression of open-ness, and of being outside, whilst simultaneously being protected from the elements. There was also a sense of peacefulness and quiet. There were other disadvantages. The space, although designed for outdoor conditions, needed to be used at night or within a larger internal space for projections to be visible. There was also a security issue, with equipment needing to be ported in and out every day, as the structure is not lockable without building an enclosure to contain it. Design considerations and methods of working with the space were altered in order to work with these conditions.



Figure 1. *Talk2Me* at *ReActive* Exhibition, Brisbane 2006

In creating the environment my aim was to provide a people-friendly space. In this first iteration I have created a very minimal, even austere, but homely people-sized environment with relatively familiar technologies, such as speech-to-text, which many participants are likely to already have experienced in some form. Any 'familiar-enough' technology comes with its own advantages as well as pitfalls. This particular work (the first in a planned series of dome-housed installations) uses speech-to-text and text-to-speech technologies as the primary means of communication. Many people who have spent time on their home computers and toyed with speech technologies are unwilling to try again, or may have their own set of pre-determined and often 'grim' experiences, which in turn makes it difficult for them to have a 'fresh' or novel experience with speech technology. In this instance speech and text conversions are used as a form of play, as moves in a game, rather than as information exchange, or translation. This is not the usual expectation, or use-case scenario for working with speech technologies.

3. THE DESIGN RATIONALE

3.1 Pragmatics in refining early ideas

In its earliest instantiation as an artefact, *Talk2Me* existed not in a physical space, but in virtual space. It was a MOO—an interactive writing work—that enabled participants to experience a heightened level of engagement as they communicated with the ‘bots’ who inhabited the space. This engagement was both enhanced and restricted by the one-to-many participation and the nose-to-screen physical experience the MOO-space necessitates. Missing from the experience—and what I hoped to add—was an awareness of architecture and space, a sense of authentic embodiment, the physical sensation of motion, and the absent-minded physical rambling by foot we do as we explore any new environment.

There were many design possibilities. A major contender was the idea of two adjoining domes, large enough to allow many to wander freely within their white-walled minimalism. Sounds and phrases would randomly interact with audience movement in the spaces. I planned to build just one of the dome structures to start.

This design, like many of the designs in the process, was finalized around a funding deadline, and altered according to the amount of funding available, my location and the available facilities. Designs were scaled down or up according to the funding brief, with iterations occurred in peaks of activity around various funding deadlines.

The double-dome was shelved for future more solvent times. Instead I turned my attention to the ways in which audiences could co-author within a networked hybrid physical-virtual environment within the installation, this idea then merged into consideration of real-time speech-to-text technologies. However, I also put this iteration aside for a future iteration, where the texts and phrases from the MOO work would be triggered by audience engagement, but not written into in real-time to avoid non-ubiquitous paraphernalia within the installation.

3.2 Emerging Criteria

As my work on *Talk2Me* progressed, the overall design ideas and elements changed fast, with some emerging elements becoming permanent features. One particular design feature that became more central was my sense that the structure needed to be dome shaped; the methodology for constructing the dome needed to be decided upon; and that the dome needed to be located in a place for actual work to begin. It also became clear that motion, light, and sound would be deciding factors in the work’s design; that the work would be relatively abstract with ambiguous sensorial meanings amplified (rather than literal interpretations); and that the work’s form and content would continue to radically alter in its use and to be revealed in the process of its use. I began to consider the effects I wanted the work to have on participants: a slowing of their heartbeats, humour, and consideration and contemplation.

Physical as well as conceptual design features changed, and I became aware of how much would depend on the material aspects and actual location of the dome. The technologies I used would be those at hand—including ubiquitous computing, sensor devices, and mobile devices—triggering effects within the environment. The emphasis was to concentrate on developing a familiar environment where the

technology and the interactions were enjoyable, and where the technologies were used as tools to create certain effects, not the driving force.

Discussions began with many professionals; sound engineers, architects, construction engineers, builders, and in particular builder-designers working with natural materials. These discussions took place face-to-face, via email or via instant messaging. The dome I was looking for needed to be a dome-shaped container that could be constructed on site, was lightweight, able to house technologies, and one that was portable. I had no interest in dealing with building permits or heavy building processes. With all of these considerations in mind I began the process of elimination.

3.3 Hands-on Experience

I researched materials, building methods and scaling down the work, knowing that prototyping was the best way to begin to fund and build the work. I attended two hands-on workshops looking at different building methods and materials: hebel (a form of aerated concrete) and straw bale, both suitable for constructing domes on site.

Using hebel, large-scale designs are possible, but this process proved messy, dusty, very toxic, and labour-intensive by hand—or too expensive to have commercially produced. Straw bale would have worked well for a permanent installation, but was also messy and labour-intensive and there were concerns with humidity and damp straw in a Queensland climate. Of most concern would be the problems with portability. My knowledge and genuine understanding of the complexity of constructing a particular dome (as well as what the particularities of the actual dome would be) came by experiencing the materials and construction methods first hand, as well as through discussion with the architects, engineers, interior designers, builders, and construction consultants who were also hands-on at these workshops.

The focus of the search then moved onto nomadic and temporal structures. I again spent more time searching online, and after much emailing, more searching, and more emailing again, I finally settled on a geodesic yurt dome supplied by Shelter Systems, USA [1]. There was a deadline attached to the successful funding of the project from University of Queensland and whilst I was not 100% happy with all aspects of the chosen dome, at the time I was aware of a need for action, and that I would need to customise the dome where possible. I had not found the exact dome I had in mind, but I had searched long. I sensed that the moment I decided on this dome, a more perfect dome would emerge, and that this would continue to happen right throughout the process (although none within the price range have emerged in two years). I needed to begin. Repercussions follow any decision—good and bad—what form they will take and how extensive they will be are always difficult to foresee. Some turn out as happy mistakes. Others are/ are not redeemable despite the odds.

3.4 The Chosen

This Shelter Systems dome I chose is a relatively lightweight and readily portable structure that would allow relative ease of construction at future locations. Shelter Systems’ Yurt Domes are made of a woven, stretch-strengthened rip stop film. This film covering is white, incorporates UV sunscreen inhibitors, defuses the sun, provides 40% shade, is translucent, and transmits 60% light. This light is similar to the light that comes through white paper. The waterproof plastic copolymer covering is manufactured in three layers, which are heat

bonded together and arranged as panels that overlap, like tiles. Four doors and windows are evenly spaced around the dome. The dome is guyed and anchored, much like a tent. The frames are UV-stabilized PVC tubing. The whole structure came housed in two large bags with a combined weight of 70kg, is supported with a site full of FAQs and information that includes a long history of prior use in varied climatic conditions and for many purposes.

I chose the 20-foot yurt dome from the range available. I would have preferred the 30-foot dome, but there were budget considerations and I was still looking at this dome as a prototype, or a beginning dome—a pattern even—to construct the future ‘perfect’ dome from.

3.5 Locating Location

Finding space at an inner city campus for a 20-foot wide X 10 foot high dome structure (6.10 meter wide X 1.83 meter high) was not an easy task. Eventually a site beside the main building of the Sustainable Energy Research Centre Group (SERG) was offered. The site was far enough away from the main campus to ensure privacy while construction and development was in process, but it meant that the dome would be located outside. An outside location required extra considerations that were not part of the original planning. These included considering wind flow patterns, guying and anchoring, and wind fencing; security; access; sunshade; drainage and the need for a built level floor. I drafted workable solutions, and understood some degree of trial and error would be an inherent part of the process from here on in.

Permissions, keys and access were obtained and suitable areas on the site were mapped out. Two circles were divined; some further negotiation took place around some small jacaranda trees, an imported species, considered by Brisbane City Council to be weeds. Eventually these were chain-sawed down providing ground-cover mulch to be used as the floor cover. The site was now ready. I reinforced the fences, borrowed wheelbarrows, shovels tarpaulins, levels etc. A group of interested colleagues and friends assisted with the ‘raising of the yurt’. The trees come down, and the next day we moved.

3.6 Establishing the Space

The ‘raising of the yurt’ took place on a sunny Saturday afternoon in a collaborative manner. Different minds took the lead at various times, depending on the area of expertise required at the time. A user interface designer constantly interrogated the process for efficiency fallouts. There were plenty of those, and interesting discussions on the way. The instructions were clear but there were also many ways the poles could weave between each other. Guests had brought only round dishes for a picnic lunch, and by now we wanted the yurt dome shapes to be as symmetrical as possible.



Figure 4. Mulch is leveled



Figure 5. The dome is up

Major work methodology shifts occurred with the decision to place the dome outside. Changes in how I approached the dome and at what stage in the work process, the dome was

actually used, transpired over time. By the end of the setup for its first exhibition, the major work all took place in labs or my home or office, to be transferred later to the dome for testing. Water and electrics don’t mix and there was always some water in the dome, and unless the dome was built in a cage—rather spoiling the effect—there was no way to really store anything of value in there. Projection in the dome is really only bright enough at night or a darkened space. The dome is hot on hot days—of which Brisbane has many—so its use became more and more limited.

When the dome moved to its exhibition space, the room was darkened, air-conditioned and secure with reasonable access. The installation could be set up and remain so, work progressed much faster, the parts that had become separate modular entities, worked on in small separate spaces, were brought together to form a whole. The effect could then be more clearly evaluated.

4. THE THING ITSELF

Before considering the final exhibited artefact, I wish to return briefly to the moment when the dome actually became a dome—as opposed to two bags, one with poles and one with white fabric and some tags. Or even later—as the bags were opened out—there was a lot of white plastic with poles to be attached somehow. At that stage it was still simply a yurt. There was a point in the process where the dome emerged from the yurt and became a thing in and of itself. Where the dome became something to respond to as a space: “Oh it’s bigger than I thought”, “it lets in more light than I thought”. Without making too much of it, there is a moment with the dome (and later with the work itself) where the dome/work no longer becomes part of the person, or associated with that person, but the dome/work becomes an entity in and of itself that people, including the artist, designer or inventor, respond to. This is the moment for the artist as for the writer, known as ‘The death of the author’ [2]. With the ‘raising of the yurt’, easy engagement by the participants also ensured the dome was a thing in and of itself right from its first ‘out-of-the-bag’ moments. The dome had its own identity and sat in the world as an object, in a manner that people responded to. There would be future moments in the design process where my signature would once again take over, times when I was uncertain if there was any stamp anywhere, but at the moment that the yurt was raised I was left to respond to the thing [3] and its phenomenological presence in the world, along with the rest of them.

Design ideas that flowed were all small-scale, temporal, and surprisingly decorative. Most predominant were a series of mini-installation works, almost static mise-en-scenes with a performative element. Eventually I returned to implement the originating idea/s.

5. TECHNOLOGIES AND ARTEFACTS

The scale of the thing affected the actual chosen technologies—technology needed to be smaller, more contained. The technology artefacts comprised of a white isight webcam, three mac minis, a remote computer, a switch for to sustain the local area network, three firewire audio-in, a splitter, three projected screens, three suspended headphones three suspended microphones, and leads. In the first iteration all that was visible to the participants were the screens, the headphones and the microphones. The rest was under the floor. The technologies were small and modular, mainly black, silver or white. I added colour and texture to the space with three

dark red, circular floor mats. These were placed under the microphones and headphones. They acted as indicators to the participants for where to stand. The significance of the red dot in the art world means the item is sold, of course with installation there is usually—and the case here—nothing to be sold. The headphones were covered in burnt orange fake fur. They had a ‘goofy’ quality, also made art world references/tongue-in cheek jokes, and were from there on in referred to as ears. I had intended to add more textures and colours to the interior, but I was conscious that the installation could readily adopt the look of a campsite. By keeping the initial showing very minimal, I was aiming for a low-tech, classic, polished look to offset the impending hippy overtones of a ‘yurt’. I was strongly aware that the work could be easily dismissed or misread by first impressions. In retrospect I would like to have added at least another layer to the artefacts to emphasise their impact in the space, whilst maintaining the intended sparse elegance. It is clear the dome has heavily impacted on not only the technologies employed but also and more particularly on the scarcity and style of the artifacts added to the installation space.

6. TYPES OF INTERACTION

The dome container enveloped the participants and contained them within the experience. The dome structure acts as an auditorium and a projection space, operating as an autonomous environment, independent of its surrounds, and limits intervention from outside noise, light, and external events. I obtained ethical clearance and interviewed participants in *Talk2Me* in February 2006 using standard HCI/Interaction Design style user surveys, gaining valuable feedback. I also used simple technology probes to measure the amount of time spent by participants with the various technologies and artefacts, as well as to observe the types of bodily gestures, and to gauge the kinds of communication that occur between individuals within the space. The feedback suggests people feel safe within the space, and the dome is traditionally viewed throughout Eastern and Western cultures as a safe, spiritual place. I was surprised by the continual recurrence of the word ‘safe’ in this feedback, as I have never considered public gallery space, or for that matter any pre-existing installation work of mine to be ‘unsafe’. The work was shown in a very large open space and people reported they took comfort in entering a smaller room, and in so doing also retreating from the larger room, often returning several times in one visit. The most frequent feedback I received was surprise at the content in what was assumed to be a ‘technology-driven’ work. The voices were found to be agreeable and seductive to listen to, enticing people to stay longer. The most observable ‘oddity’ was that people felt very comfortable to shout loudly in the dome even though the walls are paper-thin. I think the tent-ness of it really worked. People relate readily to portable nomad-type spaces, and are happy to set up and bunk down and try out new things in a camping-type setting. What I observed was strangers talking with each other, with the main modality in the space being to talk. Once they had begun to talk to the work, they also began to talk to each other.

7. DIFFICULTIES

There were difficulties with screen and interface projection in a light-permeable rounded walled environment. I had also under-estimated the instructional design required to interact with the work. The biggest misconception was that the speech

was some kind of karaoke-style interaction. Naively I had initially hoped to make a solely audio work. I found that just as I had needed visual feedback in the making and fine-tuning of the interactivity with the MOO and the bots, so too the participants needed the same degree of visual feedback. Earlier technical difficulties meant I ran two versions with different means of interaction over the time-span of the exhibition. Feedback suggests that people were happiest with the first version that they had learned to interact with, and what I perceived to be the second significantly enhanced version took away a part of the play and sense of agency that the earliest participants had experienced, diminishing their next experience.

Another difficulty was that the space was not lived-in; it was instead commuted to, and used solely for testing. To obtain an extensive experience of the space itself, and to foster a more natural use of the technologies, it would have been beneficial to spend solid blocks of time, over a period of time, at a more natural pace than that of a final exhibition set-up. In this way one could experience the best ways to use the space, and problems to be avoided in the use of that space and its artefacts [4].

8. FUTURE AND REFLECTION

Talk2Me had a second iteration with a small showing for filming in order to demo at an international conference. I implemented many changes from the feedback. I added seating, made further information on the work available to the audience, and providing insight into the automata that form part of the interactions. The technology infrastructure of the installation was visible to the participants, sitting on vibrant coloured piles of felt. The screen interface, previously provided inside the curved dome was projected onto a suspended white wall within the dome. I added touch sensors so participants could easily flush the speech buffer when the bots get into a rant. They simply stomp on a stomper, any waiting speech was cleared and ready for their speech input. Most importantly simple clear instructions on how to work the installation were beside each participants seat.

Future work planned for this series will move from text to a visual and to an audio predominance. I could easily see these works—or indeed further iterations of the speech work—happening outside of the dome environment. When the work is exhibited the work is captured in stasis for a moment, this is an inert moment in the process. To build an ever-expanding work, there needs be resistance to the ‘stasis’ that the artefact holds, in order that the iteration be continued.

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