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Design Case: From LIGHTBOX to LOVE BOX

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ABSTRACT

This Design Case study will explore how the Lightbox project that was exhibited at the Lightwave Festival (Science Gallery Dublin Jan-Feb 2009) can contribute to further discussion and research about the ways in which we consider the use of analogy and the 'technosensory' in design research.

Introduction to the Lightbox

In considering how a phenomenon like the Aurora Australis could be presented to an audience in Dublin we wondered how the ethereal features of the Aurora could be communicated to an audience in another hemisphere. Rauri Glynn wondered, "Suppose that it is possible to reconfigure the spatial attributes of one space to give some of the same sensory experiences that another one provides." (Glynn 1996) His question gave us a strategy. If we could use an analogical approach to reconfigure the science gallery in Dublin, would that create some of the sensory experiences that might be felt if an audience saw the Aurora Australis in the Southern Hemisphere?

The Lightbox explores how an audience could engage with science, the exploration of Antarctica, and optics by using an analogical design strategy.

As David Wong (Wong 1993, p 1259) notes, "Through analogies, an understanding of novel situations may be constructed by comparison to more familiar domains of knowledge". Hernan and Goldschmidt refer to Vosniadou and Ortony when describing analogy as entailing "the transfer of relational information from a known situation (usually referred to as *source* or *base*), to a situation that needs explanation (referred to as

target), where at least one of the related elements is not known. (Hernan, C and Goldschmidt, 1999) The Analogy happens because of the possible relationship between the target and the source.

This case study will seek to discuss ways we can reflect on the use of analogy and how this may inform design research

Description of the Lightbox Project

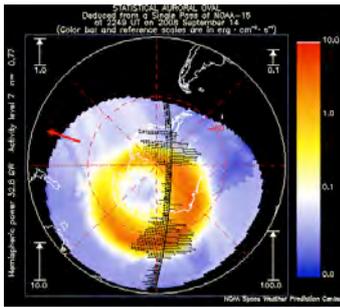
The Lightbox is an installation that takes imagery and sound from the Antarctic and presents it to a Northern Hemisphere audience using a room converted into a low tech visual communication device (the Camera Obscura). Images of the Aurora Australis (fig.1) taken from data, video and photographs from Scott Base and McMurdo Station in Antarctica are treated digitally and projected onto the walls of the space that the Lightbox structure sits in.



(Fig. 1)

Using the Camera Obscura effect this imagery is then projected into the darkened space of the Lightbox. By standing inside the Lightbox a person will be surrounded by imagery that is inverted, refracted and combined through the use of multiple apertures.

The Lightbox was created in partnership with the New Zealand Government's 'AntarcticaNZ', sound designer Servando Berraro and using imagery by Anthony Powell who is a photographer and satellite communications technician working in Antarctica at McMurdo Station. The American National Oceanic and Atmospheric Administration also allowed access to visual and scientific data that was streamed from the POES satellite. (fig.2) The activity of the Aurora Australis could then be relayed every 15 minutes to the Science Gallery at Trinity College, Dublin.



(Fig.2)

The Aurora phenomenon occurs when charged particles riding on solar winds hit the earth's magnetic field. The energy released is able to be seen at both Poles in the form of the Aurora Borealis in the North and the Aurora Australis in the South.

The Lightbox is an example of a structure that could be included in the genre of 'performative installation'. (Kozel 2007, p164) Kozel describes this as falling "somewhere between performance and installation". The performative aspect of the Lightbox is generated by the viewers who move in front of the film that was taken in Antarctica. According to Geczy & Genocchio (2001) installation is an activity that 'activates space'. Bestor (2003) suggests that it 'defines space'. Either way it creates an experience for participants in a museum, gallery or some other (public) space.

Inside the Lightbox, festival goers were both dynamic and passive. They moved between audience and the role of performer simply by entering or leaving the Lightbox structure and being in the space filled with projections of the Aurora. By questioning the role of performer/audience in an installation, we can consider how 'engaging' with an interactive experience can help viewers construct analogies to help them understand conceptual scientific theories.

The Lightbox connected the participants to the phenomenon of the Aurora Australis by creating a space that allowed the audience to interact with the Engaging Artifacts 2009 Oslo www.nordes.org

projected images at first. Then after entering the Lightbox structure, having now gained some 'prior knowledge' from a 'source', Further methodologically sound research, using qualitative data, will allow analysis of the analogies made by the audience. Does creating analogies allow them to gain a deeper understanding of the Antarctic and the Aurora Australis?

Can an Analogical Design Strategy Help to Understand Science?

A sense of mystery and wonder are qualities that were central to the design strategy of the Lightbox. Creating an environment that is somewhat ephemeral, the Lightbox strove to engage with the audience in a manner that was analogous to the mystery and wonder of the Aurora phenomenon.

By making an environment that allows the observer to create their own meaning, through referencing their own experience, then as designers we create a space where the audience can consider the environment that they are currently in and how that is informed by the broader natural environment.

As the audience sat in the darkened Camera Obscura environment they responded to it by commenting to each other about what they were seeing and hearing, using analogies to comprehend the distorted visuals (Fig.3) and sound effects. One exhibition goer commented, "This is like being in a swimming pool at night". His companion responded "Yes, but its more like swimming in murky water at the seaside."



(fig.3)

In Goldschmidt and Hernan's (Hernan & Goldschmidt 1999, p153-175) discussion on the use of analogy, they state, that analogy happens because of the possible relationship between the target (the unknown) and the source (the known). In the Lightbox the analogical response is generated partly because a source or known element is projected into the gallery space. When viewers were asked if they knew of the Northern Lights or the Aurora Borealis they

generally seemed to be aware of it or indeed to have seen it. But they were not aware of the 'Southern Lights' (or Aurora Australis). Some viewers made the connection immediately and sought confirmation, one man asking, "This is like the Aurora Borealis. Do you get it in the Southern Hemisphere?"

People in the Lightbox would often make analogies to help them understand the installation. This challenges us to question how could we develop an experiential approach for further practice-based research into the use of analogy as a tool for communicating scientific knowledge?

Experiencing the Lightbox

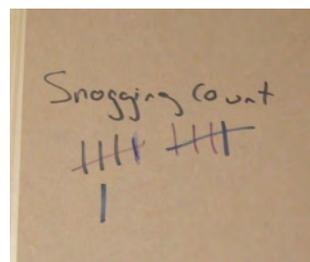
Suzan Kozel discusses both analogy and a phenomenological methodology of reaction to sensory data when she reflects on David Gelernter's 'High-focus, Low focus' work on analogical thinking in computers. "Which can be raw sensory data received immediately from the senses, as well as memories and imaginative constructs." (Kozel 2007,p52) and notes that low focus thought, such as when one is sleepy or inattentive uses metaphor and analogy. (Kozel 2007 ,p52)

The Lightbox is an environment which encourages the audience to enter a state of low focus thought. Not sleepy, however, but perhaps in a state similar to a daydream. By establishing a situation that encourages the use of imaginative constructs, and to make sense of it, then the participant needs to use analogy to understand their experience.

Although limited time was available, the designers collected and noted reflections on the experience of the audience. By reflecting on groups of analogies, for example "This is like being in space" and "This feels like outer space". a preliminary design strategy that will inform further research, through design, into explaining and experiencing scientific theory can be developed.

Interestingly the banana smell of the projection screens was noted very strongly by participants! This suggests that smell is a sense that could be tapped into in further installations. Sue Hill of the Eden Project comments that they are doing experiments "just playing with the idea of scent, perfume and memory and the way it triggers your senses, the triggers are very powerful." [Stone 2002] The designers are particularly interested in investigating how responsive 'triggers', such as smell, could be used to create an analogical bridge that would communicate scientific conceptual theories.

The sense of spatial confusion was an effect that caused participants to run their hands across the surface of the projection screens to find a surface with which to orient themselves. The darkened enclosed space, ambient sound design, dislocating spatial attributes and comfortable seating in the Lightbox encouraged people to linger, often barely talking and holding each other, hugging and indeed kissing! Hence the Lightbox was nicknamed the 'Lovebox' by gallery staff and other exhibitors. They went so far as to keep a tally of couples kissing on the side of the Lightbox. (fig.4)



(fig .4)

Although an informal observation, this indicates that by reflecting on the factors that caused people to feel comfortable enough to be intimate in the Lightbox, then we could construct environments that engage with ideas of intimacy and shared experience and analogy.

Conclusion

The Lightbox project's aim was to engender a sense of wonder in an audience and to act as a space where ideas about optics, light, geology, meteorology and design could be met.

Because there was a dislocation of space in the Lightbox it was possible for the observers to engage in an act as Colridge said of "poetic faith" as they willingly suspend disbelief. It is this ability to suspend disbelief that gives rise to being able to "reconfigure the spatial attributes of one space" and place them into another setting in a way that Kozel notes allows "conceptual revelation". (Kozel 2007, p262)

This preliminary study indicates that analysing methodologically sound qualitative data from an audience will inform future iterations of the Lightbox. Hernan and Goldschmidt (Hernan and Goldschmidt 1999,p154) show that analogy is a technique used to master design understanding. We propose further research projects into how experiences can be designed that explore the similarities between known and unknown (analogy) that can be used to communicate scientific knowledge.

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