

Engaging With Slowness: A Temporal Experience of Climate Change

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ABSTRACT

Slow Technology is an opportunity to create reflective, mesmerizing and tangible experiences of temporality in relation to human perspectives and situated experiences. Hallnas and Redstrom [1] proposed the concepts of 'reflective' and 'time' technology as part of their design philosophy of slowness; this paper focuses on these concepts in reference to a specific time based artwork that explores climate and environmental change. Investigating the experiential context of slow technology and how a combination of an artifact, the aesthetic intentions of the artists and the design of an experience can be combined in order to enable reflective, personal and emotional responses to complex temporal datasets.

Author Keywords

Slowness, temporality, complex datasets, environmental data, climate change, veridical representation

ACM Classification Keywords

H.5.2 [Information interfaces and presentation] User Interfaces - Interaction styles

INTRODUCTION

Climate data is often perceived as too abstract for non-scientific audiences to understand, particularly in relation to environmental and climate change over long time periods [2]. This paper explores how slow technology can enable personal and emotional experiences of historical and global temporality within complex datasets. This is informed by the 'Climate Machine' that made up a part of the larger artwork 'A Conversation Between Trees' [3] (ACBT) by the artist group Active Ingredient, developed in collaboration with a Senior Climate Change Scientist and an Interaction Designer. By focusing on the technology built into the Climate Machine, its aesthetics, the visual metaphors, the tangible experience and the trajectory of the artwork, we investigate how abstract data might be related to more meaningful human scale experiences.

THE ARTWORK

A Conversation Between Trees (ACBT) involved a series of exhibitions in public venues in UK forests. The project connected these forests with the Atlantic Forest around Rio de Janeiro, Brazil. The resulting interactive artwork attempted to reveal unseen aspects of climatic and environmental change on these forest environments, using

live environmental data (temperature, humidity, decibels, light and CO₂ levels) alongside *the Climate Machine* which used recorded scientific data from the Mauna Loa CO₂ series [3]. The *Climate Machine* scorches this data onto rotating circular sheets of recycled paper, to make drawings that are reminiscent of tree rings. The turntable rotates while a heating element moves in and out to burn a circular graph. It moves very slowly to scorch the paper effectively, taking approximately 25 minutes to complete a single drawing. The machine sat between two projected real time visualizations of the UK and Brazilian forests.

Each drawing showing a year's worth of data was then hung up in the gallery. At the end of two weeks a full set of data (representing 1959-2011) and one sheet of forecast data (2010 – 2050) filled the space. The intention for this was to connect the present experience of the forest shown through the visualizations, within a more temporal scientific perspective of climate change.

SLOWNESS AND REFLECTION

The temporal nature of ACBT invited slow reflection through its material form and presence, supporting Hallnas and Redstrom's two basic guidelines for slow technology [1]. Many visitors were observed sitting on benches placed in the gallery, watching the live visualizations and the machine whilst having discussions about CO₂ and climate change. One visitor was observed staying for as long as 80 minutes. An ethnographic study of the visitors recorded similar experiences of reflection. Several of the participants who were interviewed for the study recorded that it was the slow movement of the machine that supported these opportunities for reflection:

"It's quite a mesmerising experience... it's just you are mesmerised by the activity and the tracking that's going on." (Exhibition Visitor, CCANW)

INTERPRETING COMPLEX TEMPORAL DATA

As Friedman and Nathan discuss the challenge of representing slow datasets through multi-lifespan design requires different approaches to information systems [4]. The Climate Machine attempted to address some of these temporal challenges, by representing the slowness of climate change through the aesthetics of the artifact. One participant suggests of the machine:

“because movement is continuous, there is a time magnifying sensation” (Exhibition Visitor, CCANW)

While another participant commented on:

“how it would change over going forward in the future as well as going back into the past and how at times there wasn't that much change over a number of years and there would be great change and then it would slow down.” (Exhibition Visitor, Rufford Country Park)

The visual metaphor of the tree rings was fundamental to this experience:

“It's fascinating cos, I like it cos its measuring C02 but it's like the beginnings of a tree” (Exhibition Visitor, CCANW)

This gave visitors a way to understand the timescales in question. Similarly, visitors were also observed searching through the hanging circular sheets for their birth year, suggesting that by seeking a personal connection to the dates represented they were able to get a sense of the scale of change in terms of their own lifespan. The ways that visitors found meaning in how the data related to their own life-spans, shared metaphors and perspectives suggests that the details of the data were potentially less important to their engagement (and ability to raise questions about climate change) than emotional, personal meaning:

“I felt that this was more measured and let me you know derive other things from it not just to be frightened and put off by it but to actually to think a bit in a different kind of way” (Visitor, CCANW)

TANGIBLE SLOWNESS

Alongside the visual metaphor of the tree rings, the tactile and organic aesthetic of the circles [5] and the burning of the paper created opportunities for understanding the temporal nature of the data, as well as reflection:

“Paper is a very tactile medium and you just want to touch it, because it's so circular its very measured and in order, and I enjoyed researching, seeing into the centre of the circles you know, looking at each one differently, as I learnt a bit more about it.” (Exhibition Visitor, CCANW)

The ‘damage’, the slow process of burning the paper, also supported visitors to situate the data within their own tangible, sensory and aesthetic metaphors:

“it actually physically burns the data, into the rings of paper which, stands as a metaphor for the ages of the trees and also the influence of C02 in the atmosphere” (Exhibition Visitor, Rufford Country Park)

This also appeared to support quite strong emotional responses to the meaning of the data:

“it was a really kind of simple representation of the C02... I thought a really good visual way to see the changes over time... actually a bit shocking, it was really surprising. There's that small circle and then to where we are now, it's all a bit scary isn't it?” (Exhibition Visitor, CCANW)

CONCLUSION

This paper suggests that slow technology can be applied to aid the interpretation of complex data sets that cover large periods of time. In particular we discuss the ways in which technologies can be designed to go beyond visualizing data, and to present it in more experiential ways. By shifting focus away from veridical representation a more human scale perspective is made possible.

One aspect of this is the use of metaphors that relate directly to commonly held concepts of time. For example by relating data through visual metaphor to the lifespan of a tree, visitors were better able to understand the time scales being represented. Similarly, allowing space for people to situate their own lifespan, and therefore experiences, within the depicted timescales. This combined with readily recognizable tangible and mechanical elements, allowed visitors to get a sense of the data's meaning and importance.

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