Across time and space: how the networked environment saved the screensaver

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Abstract:

Having come to represent an idle computer, the widespread adoption of broadband network systems and the 'always online' computer has helped reinvent the screensaver and the way it functions. This paper looks at two types of networked screensaver projects – the distributed computing network screensaver, and the more recent widget-style screensaver—and discusses the way that they use data flows to reshape the way that the applications behave and visualise themselves. *Seti@home* and Scott Draves' *Electric Sheep* are compared with That Ltd.'s *Drop Clock* and *Kaze to Desktop*, looking at the different ways that they engage with data flows and notions of computer downtime.

1. Introduction:

The screensaver was a programme initially developed to protect computer displays from screen burn when they weren't being used. Over the last 25 years though they come to represent a type of inactivity, populating office and home computers that have been left dormant: a visualisation of idleness in a world obsessed with productivity. At a time when it was becoming increasingly obsolete due to improvements in computer display technology, the screensaver's embrace of data networks has given it a new sense of purpose and possibility. Computer downtime has now become an opportunity for screensavers to quietly interact with data feeds: dynamically generating forms that respond to the flow of information, or in the case of the Berkeley Open Infrastructure for Network Computing (BOINC), putting millions of PCs to work collectively searching for extraterrestrial life or a cure for cancer.

Drop Clock, released by Tha Ltd. In 2008, is a mesmerising screensaver to watch, partly because of the way it visually brings together two different modes of time: actual time mixing with a highly detailed slow-motion sequence. When the programme is activated it transforms the computer monitor into a clock-face, drawing upon the computer's settings to display the current time of day. The numbers of the clock-face are represented by slow-motion footage of numerals falling into water—an effect not-unlike watching sand trickle through an hour glass, apart from the unique splash and pattern that each falling number creates. The time on the clock ticks over minute by minute, but despite the predictability of each sequence of numbers, the seductive nature of the slow-motion footage keeps the viewer mesmerised. It feels like a good thing to waste time with. Behind the clock-face of *Drop Clock* is a third passage of time that is crucial to any screensaver programme—the period of time since anyone last used the computer—a space that David Reinfurt refers as 'negative time' in his aesthetic genealogy of the screensaver [1]. Throughout this period of inactivity *Drop Clock* re-employs an idle computer monitor as a time-piece, shifting the function of the monitor so it still has the potential for usefulness when it's not being used as a workstation.

2. A brief history of the screensaver

The function and form of screensavers have changed since their arrival on the home PC in the early 1980s. Computer monitors at this time were susceptible to permanent marks left by phosphor burn-in if the same image was displayed on screen for a prolonged period of time: The first screensavers were programmes designed specifically to avoid this 'screen-burn'. Early versions simply blanked the screen after a few minutes of inactivity, or cycled through screens of randomly-generated colours. As the PC grew more sophisticated in its graphic capabilities, so did the screensaver: the blank screen was soon replaced by animations, slide-shows or pieces of generative art made using Beziers or Lissajous curves. The screensaver had begun to develop new potentials, but was almost rendered obsolete by changes in computer-display technology— particularly the move away from CRT monitors towards LCD screens—which eliminated the risk of screen-burn, and therefore made the screensaver redundant, leaving it as more of a visual gimmick than a practical tool.

3. Screensavers and Distributed Computing

The *SETI@home* project helped reinvent the screensaver when it was launched in 1999, turning the screensaver into a front-piece for distributed computing. As networked PCs became more commonplace with the uptake of broadband in the late 1990s, distributed computing was recognized as a viable way of making the most of a PC's downtime: a program is split into small parts and farmed out to available computers on a worldwide network, using their combined processing power to collectively work through mountains of data. Developed by the University of California, Berkeley, *SETI@home* allows over a million participants and their computers to contribute to the search for extra-terrestrial intelligence, with the idle PCs processing data gathered from the Arecibo telescope in Puerto Rico, analysing the radio signals for signs that might indicate life out there in the universe. *SETI@home* is the biggest example of this type of distributed computing, but the Berkeley Open Infrastructure for Network Computing (BOINC) has given rise to many similar applications, using screensaver-activated grid computing to process data relating to a diverse range of issues such as cancer, climate predictions, Sudoku and the search for megaprimes.

SETI@home inspired Scott Draves to create *Electric Sheep*[2]—a screensaver released the same year—that taps into a distributed computing network that creates and renders high quality fractal animations. The title for Draves' project refers to Philip K Dick's novel *Do Androids Dream of Electric Sheep?,* with this screensaver employing sleeping computers to create what Drave refers to as 'sheep': a flock of generated life-forms that are bred and evolve depending on the size and power of the distributed network, and how active a role the screensaver's users choose to take in selecting animations. Where the BOINC screensavers generally use grid computing to process vast amounts of data in the name of scientific research, and tend not to focus so much on the display itself, *Electric Sheep*—being primarily focused on the creation of generative images—returns the screensaver to the graphical playground of earlier times. Besides the sophisticated evolution algorithms and high-quality render farm, where it does suggest new possibilities for the future of the screensaver is in its fostering of a networked community. With a touch of the cursor keys on their keyboard, users of *Electric Sheep* are able to vote for or against the animations that they see, with the data being fed back into the evolutionary algorithm. Like *SETI@home,* contributors and participants feature on the website[3], whilst *Electric Sheep* makes a significant contribution towards community-building by making its code open source, encouraging others to build and develop from *Electric Sheep*'s start point.

4. Smaller data flows

Distributed computing is not the only possibility that a networked environment has brought to the screensaver's occupation of idle computers however. Smaller sets of data can offer as much to the generative nature of the screensaver, providing a flow of inputs that trigger and shape the programme's responses onscreen. Where *Drop Clock*'s use of the computer's time settings was a fixed input, Tha Ltd's 2007 release, *Kaze to Desktop* takes wind speed and directional data from local weather reports. When the screensaver activates it redraws the desktop as if the wind had somehow gotten inside the monitor: windows, icons and tool-bars tumble across the screen with varying degrees of velocity, depending upon the weather conditions. The items left onscreen mid-job become raw material for the animation, while the weather data controls their behaviour. On a quiet day the items might tumble delicately, whilst stormy weather naturally brings a more frenetic energy to the movements. A worker who has gone out for fresh air might return to the screen to find the weather

conditions mirrored inside, while the worker who is too busy to leave the room can still get a taste for what is happening directly outside. Where *SETI@home* is looking intently out into the distant parts of the universe, the charm of *Kaze to Desktop* is that it is so localised—what's being experienced directly outside is also being experienced inside the computer. Where *Electric Sheep* alludes to Dick's android dreams, perhaps some of *Kaze to Desktop* and *SETI@home*'s simple beauty comes from the fact that they more directly refer to the passing of time and our inactivity; creating tumbleweeds determined by how much is or isn't happening inside and outside.

5. Summary

The screensavers from Tha Ltd. have both been developed at a time when widget applications are becoming more prevalent—selecting from a vast number of available data feeds, internal as well as online, to dynamically visualise and respond to information. *SETI@home* has helped redefine the screensaver as a networked application, finding a new purpose through the collective processing of data. *Electric Sheep* took this model and shifted it towards the creation and sharing of new data and new images. The Tha Ltd. projects suggest that, even in small ways, the screensaver can continue to find new uses by responding this constant flow of data that move across the networked world. An idle computer monitor needn't stare blankly when there's so much activity happening right outside the window and out across the universe.

6. References

[1] *Screen.saver*, David Reinfurt, 'Art Lies' magazine, issue 55, Fall 2007 <www.artlies.org>
[2] *The Electric Sheep Screen-Saver: A Case Study in Aesthetic Evolution*, Scott Draves, EvoMUSART 2005, Lausanne, Switzerland
[3] <www.electricsheep.org> and < setiathome.ssl.berkeley.edu>