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Entropic Navigation

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Summary

Through this paper the author is interested in developing a taxonomy for systems of navigation that have emerged since digital systems began affecting how we get from one place to the next. The author presents three categories of navigation; Teleological, Emergent and Entropic. Focus is made in particular to the last category; Entropic navigation, and its emergence in social spaces as computer code begins to support the development of tacit forms of knowledge. In closing the author presents a proposition as to what extent the syntax of programming languages has upon extending our understanding of alternative forms of navigation.

Keywords
Entropy, Navigation, Social, Teleological, Emergent.

Introduction

In an attempt to develop a critical and creative space for the development of navigation systems that help those who don't know where they are going or interrupt those who do, the author has developed three categories to differentiate the navigatory nature of a range of research projects. In doing so he also presents an argument for the role of computer code that software developers increasingly hide from the user to make navigation as easy as possible, but in doing so disable users from understanding programming syntax in order to develop alternative destinations and means of getting to them.

Teleological Navigation – You know where you are going.

'Maps, stripped of all elements of fantasy and religious belief, as well as of any sign of the experiences involved in their production, had become abstract and strictly functional systems for the factual ordering of phenomena in space...They defined property rights in land, territorial boundaries, domains of administration and social control, communication routes, etc. with increasing accuracy. They also allowed the whole population of the earth, for the first time in human history, to be located within a single spatial frame.' Harvey (1990)

Power is reliant upon observation, and the ability to see ahead of ones self is essential if you what to reach your destination. Whether it be through constructing international protocols for mapping and time keeping, to installing a fear of being 'late for the school bell', the English have been socially engineered to read maps, plan journeys, organise their day and navigate their lives with a

high level of precision as ‘the activities and the interactions of all its participants are orchestrated to a symphony of buzzers, bells, timetables, schedules and deadlines’ Adams (1995). In either case it has made us a good workforce to support the aspirations of many organisations that aspire to ‘move forward’ and ‘progress’.

Knowing exactly where you are going and how to get there, is a common enough aspiration for all of us, particularly on short-term occasions such as searching the web for a specific product. However applying it to long-term situations usually demands the exploitation of other spaces along the way, as we move toward our goal. Effectively exercised through the activities of many groups across history from the European colonists to multi-national companies, teleological navigation must be prepared to ignore whatever stone it overturns in order to its destination.

Teleological navigation is evidently a characteristic of a modern world, and is nothing ‘new’ to point out to the reader, however the author has begun with it in order to set the stage for two apparently different forms navigation which relate to a generation of people who perhaps aren’t so sure where they want to go, and are comfortable in that knowledge.

Emergent Navigation – You have a good idea where you’re going but not how you’ll get there

‘How is it that people…so accept this display that they come in perpetual flows of crowds? So much so that the rhythms of their passing diminish or increase but link up and never disappear (even at night)!’ Lefebvre (1996)

Consumerism is a complex system that has a large impact upon our understanding of space, this is certainly the case people in England and most parts of Western Europe, since spending time shopping and being in and around shopping environments occupies a significant amount of our time. At an early age we develop sophisticated understandings for how malls, supermarkets, pedestrianised streets, shops and shop windows operate.

The navigation that we use when we are shopping seems to fall in to the three crude categories presented through this essay; at times we know exactly what we want and shop to these ends, other times we have an idea of what we want, but don’t know where to get it from, and lastly we increasingly find ourselves in a shopping environment not knowing where we are going or what we want, hoping that the experience will provide us with enlightenment.

The most vivid model of the three that the authors experience of shopping fits, is the second, in which he finds his destination and journey emerging as he explores options, reassesses his aims and develops what computer scientists call an adaptive model for achieving his objectives.

In finding a theoretical framework to support an argument for the classification of emergent navigation systems the author references ‘Social Navigation’, a term introduced by Dourish and Chalmers in 1994 when exploring the apparent movement of users on the internet as they become influenced by others.

‘In social navigation, movement from one item to another is provoked as an artefact of the activity of another or a group of others. So, moving “towards” a cluster of other people, or selecting objects because others have been examining them would both be examples of social navigation.’ Dourish and Chalmers (1994)

As the internet enabled disparate and invisible communities to connect, a significant amount of research became interested in the social and spatial paradoxes that occur as languages, interfaces and interactivity is developed to enable them to affect each other.

Munro et al (1999) extend the term to describe collaborative and collectively organised systems such as on-line voting, scoring and public review guides used by internet retailers such as Amazon. Social Navigation instantly acknowledges the presence of participants in an environment and their importance in defining it.

In describing the application of Social Navigation systems to an on-line grocery store, Höök relocates us back into space that has properties akin to those in actuality.

'First of all, we would assume that other people would 'be around' in the store. Instead of imagining a 'dead' information space, we now see before us a lively space where (in some way) the user can see other shoppers moving about, can consult or instruct specialist agents and 'talk to' the personnel of the grocery store. These are examples of direct Social Navigation.' Höök (1999).

Located between a continuum of the ordered (teleological navigation) and the disordered (entropic navigation), emergent navigation offers a vista upon networks that recognise their complexity and opportunity for social definition, but still retains a purpose of direction. An important aspect as to why shopping environments are still able to make the sale even if what you bought was a surprise to you.

Entropic Navigation – You haven't a clue when or where you're going

'The virtuality of the space of computing, and of inscription more generally, is transforming at least in part how we understand what it is to be in space (and time).' Grosz (2001)

The idea of a navigation that is not only emergent but chaotic, with out apparent end and in fact dismantles any sense of order as the journey begins is not so unusual. In fact the investments people make in to chaotic or random systems are both regular and consistent parts of their lives. From lottery tickets than offer a fourteen million to one chance of winning to following junk email leads that take you to unexpected hyper links.

Consuming and collecting music is not traditionally an entropic activity, in fact it was always about the ownership of an organised series of repeatable linear tracks, that we recognised from the radio and became part of an archive. The majority of music shoppers know exactly what they want because they have heard it elsewhere, and want to explore it further or replay it until they have ironed out all of the unfamiliarity.

One audio artist that uses sound in an emergent form and perhaps in an entropic manner is Janek Schaefer, from his Triphonic Gramophone that featured three stylus' for the same deck, to the WOW record in which the spiral groove is repositioned off centre on the vinyl surface to invoke a pronounced fluctuating wow sound as the tone arm sweeps from side to side on the turntable.

Whilst these works certainly demonstrated a multi-linear dimension to audio playback the new work ‘Skate’ seems to encapsulate a disordered form of music that has no end and a perpetual unfamiliarity.

‘Taking the anti-skate function of a record player as its beginning the [Skate] concept breaks down the nature of the record as a continuous terrain by cutting only small isolated arcs of texture/sound into the record. I do this by forcing sound backwards through a modified wind up 78 player [to become the 'Gramophone Lathe'] so the needle cuts instead of plays the disc. During playback the stylus becomes free to roam either where it likes across this surface or as it's user determines’ Schaefer (2002). The intervention into the traditional printing process of vinyl generates an opportunity to stand outside of a predictive narrative and provides us not with a single track of sound that we may follow, but a never ending random sound track that neither the author or listener knows where it will go.

Fig 1. Skate

The Random Lift Button – Sorry I’m late, the lift kept choosing a different floor

Central to all of the author’s research is capitalism’s conversion of time and space into economic currencies. From land ownership that has shaped our society, to the domination of the clock through schooling and into the workplace we are forced to equate our time and space against profit. However, with the advent of digital media technologies, the familiar relationship between time and space is becoming distorted, and more interestingly adaptable, allowing us to question these economic pressures.

The Random Lift Button project was conceived as an opportunity to exemplify further the role of space at the mercy of time. Certainly in large commercial buildings lifts are implemented to squash space and enable people to move more quickly from one work activity to the next. Lifts become a temporal slippage in the experience of a building as a whole, we skip space and avoid people, places and the opportunity to see the ‘whole’. Indeed corridors and stairwells are recognised as the most important social spaces within businesses and many more negotiations and affairs occur between office spaces than within them. Just like in hypertext our choice of destination is provided to us with the minimum of ‘journeying’.

It is this temporal problem that interests the author most about lifts and the chance to explore not the travel or the journey but the lack of one; the lost space, being in the hypertext moment and offering alternatives to allow us to reconcile the lifts economic efficiency.

It embodies the notion that not knowing where you wanted to go, and relishing the uncertainty of the navigation is a valuable human disposition and important act. The random lift button would place us

directly in the centre of a non-linear moment, its outcomes uncertain and unpredictable. A sensation that would be both rewarding and entropic. Random Lift Buttons are currently being installed in a new building at Portland Place at the University of Plymouth, UK.

Computer code as medium for extending our navigation skills

Literally entropic in its function, the Random Lift button presents us with an opportunity to recognise the role that computer code can have in informing our understanding of navigation. In fact depending upon how we interact with computer code, routines and programmes, we find ourselves travelling according to the three models of navigation; in developing code that will produce a predetermined outcome we are navigating teleologically, in exploring and experimenting with code we solve predefined problems using unusual and emergent navigation, and of course in practising the previous we often arrive at very unexpected places, sometimes useful, other times useless and inoperable; entropic navigation.

In developing the Production Room; four columns of VRML which the reader of an internationally distributed magazine was encouraged to type by hand into simpletext before being able to see the architectural space developed for exhibition, the author referenced a support industry that emerged during the eighties to help home users understand their computer in the form of computer magazines that contained columns of code. Readers were encouraged to type the code by hand into their ZX Spectrums before pressing 'run' to see and experience what the programmer had intended; a game, utility or crude application. Whilst nurturing the growth of what turned into a huge industry, the same magazines were educating a generation to program and understand code. Through the *actions* of copying printed lines of basic and *reflecting* upon what happened when run was pressed, users learnt to program. Modifying the routines, adapting the syntax and eventually writing their own software, exemplifies a personal development through action and reflection.

This process of action and reflection is present in many forms of navigation as we find are way through places, reading maps, asking for directions and following signs. Using code as a medium to parallel social activity is helpful is identifying the alternative models of navigation that we adopt to get around. However computer code is only useful to identify alternative models if the code is visible and useable, something that in a culture of black box technology and graphic user interfaces, is no longer available for home users or school kids to play with, and is restricted to computer scientists and software developers.

In closing the author hopes to have presented three formative ideas that refer to the way in which digital technologies have extended the complexity with which we carry out our social and personal lives; two new models for understanding our desires for navigation that do not adhere to the teleological production of space and capital, and the third a request to retain access to computer code to encourage users to navigate in emergent and entropic ways to reveal alternative digital spaces.

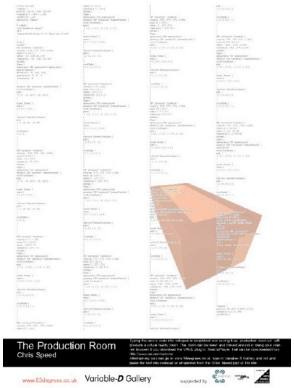

Fig 2. The Production Room. Appeared in Flux Magazine Oct 2001.

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Chris Speed is currently a Senior Lecturer and Researcher in Interactive Media at the University of Plymouth. He joined the CAiiA-STAR group in September 1996 after working in the New Media Department of Marshall Cavendish in the capacity as Art Editor, and was involved in the direction and production of multimedia titles such as Images of War, Science Lab and Murder in Mind.

His research manifests itself as conference papers, book contributions, artworks and industrial commissions. Recent conferences presentations include ISEA2000, Paris and Habitus: a sense of place, Perth. He won a British Telecom prize for the development of an interface for the representation of communities on the internet which was presented at the Community of the Future conference in Siena in 1999. Book contributions include Temporal Navigation in *Emergent Futures, Art, Interactivity and New Media* (Institucio Alfons al Magnanim, 2000), Looking at the Looking Clock in *Problems of Participation and Connection* (University of Amsterdam, 2001). Recent exhibitions include co-curating and editing V01D: digital architectures exhibition and book, (Plymouth Arts Centre 2001), a video commission in Summer 2001 for FACT which has since been shown at the Edinburgh Film Festival and Ars Electronica. Speed completed a solo VRML show at the Variable-D gallery, distributed in Flux magazine and a new digital short will appear on the American arts DVD 'Toc' in Summer 2002.

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