a means of mutation

During 1997 and 1998 a series of legal and media confrontations were made in the United States and elsewhere. Amongst those involved were Microsoft, Netscape, and the U.S. government Department of Justice. The key focus of contention was whether Microsoft, a company which has a near monopoly on the sale of operating systems for personal computers, had — by bundling its own Web Browser, Internet Explorer, with every copy of its Windows '95/98 OS — effectively blocked Netscape, an ostensible competitor in Browser software[1], from competing in a 'free' market. This confrontation ran concurrently with one between Microsoft and Sun Microsystems, developers of the language Java[2].

The "Browser Wars" involved more than these three relatively tightly constructed and similar actors however. Millions of internet users were implicated in this conflict. The nature of the proprietary software economy meant that for any side, winning the Browser Wars would be a chance to construct the ways in which the most popular section of the internet — the World Wide Web — would be used, and to reap the rewards. The conflict took place in an American court and was marked by the deadeningly tedious super-formalised rituals that mark the abstraction of important decisions away from those in whose name they are made. Though the staging of the conflict was located within the legal and juridical framework of the US it had ramifications wherever software is used.

On connecting to a URL, HTML appears to the user's computer as a stream of data. This data could be formatted for use in any of a wide variety of configurations. As a current, given mediation by some interpretative device, it could even be used as a flowing pattern to determine the behaviour of a device completely unrelated to its purpose. (Work it with tags? Every <HREF> could switch something on, every <P> could switch something off — administration of greater or lesser electric shocks for instance). Most commonly it is fed straight into a Browser.

What are the conditions that produce this particular sort of reception facility? Three fields that are key amongst those currently conjoining to form what is actualised as the Browser: economics, design, and the material. By material is meant the propensities of the various languages, protocols, and data-types of the web.

If we ask, "What produces and reinforces Browsing?" There is no surprise in finding the same word being used to describe recreational shopping, ruminant digestion and the use of the World Wide Web. The Browser Wars form one level of consistency in the assembly of various forms of economy on the web.

Web sites are increasingly written for specific softwares, and some elements of them are unreadable by other packages[3]. You get Netscape sites, Explorer sites, sites that avoid making that split and stay at a level that both could use— and therefore consign the "innovations" of these programs to irrelevance. This situation looks like being considerably compounded with the introduction of customisable (and hence unusable by web-use software not correctly configured) Extensible Mark-up Language tags.

What determines the development of this software? Demand? There is no means for it to be mobilised. Rather more likely, an arms race between the software companies and the development of passivity, gullibility, and curiosity as a culture of use of software.

One form of operation on the net that does have a very tight influence— an ability to make a classical "demand"—on the development of proprietary software for the web is the growth of online shopping and commercial information delivery. For companies on the web this is not just a question of the production and presentation of "content", but a very concrete part of their material infrastructure. For commerce on the web to operate effectively, the spatium of potential operations on the web— that is everything that is described or made potential by the software and the network— needs to be increasingly configured towards this end.

That there are potentially novel forms of economic entity to be invented on the web is indisputable. As ever, crime is providing one of the most exploratory developers. How far these potential economic forms, guided by notions of privacy; pay-per-use; trans- and supra-nationality; etc. will develop in an economic context in which other factors than technical possibility, such as the state, monopolies and so on is open to question. However, one effect of net-commerce is indisputable. Despite the role of web designers in translating the imperative to buy into a post-rave cultural experience, transactions demand contracts, and contracts demand fixed, determinable relationships. The efforts of companies on the web are focused on tying down meaning into message delivery.[4] Whilst some form of communication may occur within this mucal shroud of use-value-put-to-good-use the focal point of the communication will always stay intact. Just click here.

Immaterial labour produces "first and foremost a social relation ...[that] produces not only commodities, but also the capital relation."[5] If this mercantile relationship is also imperative on the immaterial labour being a social and communicative one, the position of web designers is perhaps an archetype, not just for the misjudged and cannibalistic drive for a "creative economy" currently underway in Britain, but also within a situation where a (formal) language — HTML — explicitly rather than implicitly becomes a means of production: at one point vaingloriously touted as, "How To Make Loot".

Web design, considered in its wide definition: by hobbyists, artists, general purpose temps, by specialists, and also in terms of the creation of web sites using software such as Pagemill or Dreamweaver, is precisely a social and communicative practice "whose 'raw material' is subjectivity."[6] This subjectivity is an ensemble of pre-formatted, automated, contingent and "live" actions, schemas, and decisions performed by both softwares, languages and designers. This subjectivity is also productive of further sequences of seeing, knowing and doing.

A key device in the production of web sites is the page metaphor. This has its historical roots in the imaginal descriptions of the Memex and Xanadu systems — but it has its specific history in that Esperanto for computer-based documents, Structured Generalised Mark-up Language and in the need for storage, distribution and retrieval of scientific papers at CERN laboratories. Use of metaphor within computer interface design is intended to enable easy operation of a new system by over-laying it or even confining it within the characteristics of a homely-futuristic device found outside of the computer. A metaphor can take several forms. They include emulators where say, the entire workings of a specific synthesiser are mapped over into a computer where it can be used in its "virtual" form. The computer captures the set of operations of the synthesiser and now the term *emulation* becomes metaphorical. Allowing other modalities of use and imaginal refrain to operate through the machine, the computer now *is* that synthesiser — whilst also doubled into always being more. Metaphors also include items such as the familiar "desktop" or "wastebasket". This is a notorious case of a completely misapplied metaphor. A wastebasket is simply an instruction for the deletion of data. Data does not for instance just sit and rot as things do in an actual wastebasket. That's your backup disk. Actual operations of the computer are radically obscured by this vision of it as some cosy information appliance always seen through the rearview mirror of some imagined universal.[7]

The techniques of page layout were ported over directly from graphic design for paper. This meant that HTML had to be contained as a conduit for channelling direct physical representation — integrity to fonts, spacing, inflections and so on. The actuality of the networks were thus subordinated to the disciplines of graphic design and of Graphical User Interface simply because of their ability to deal with flatness, the screen. (Though there are conflicts between them based around their respective idealisations of functionality). Currently of course this is a situation that is already edging towards collapse as other data types

Matthew Fuller

notes on I/O/D 4: The Web Stalker

make incursions onto, through and beyond the page — but it is a situation that needs to be totalled, and done so consciously and speculatively.

Another metaphor is that of geographical references. Where do you want to go today? This echo of location is presumably designed to suggest to the user that they are not in fact sitting in front of a computer calling up files, but hurtling round an earth embedded into a gigantic trademark with the power of some voracious cosmological force. The World Wide Web is a global medium in the approximately same way that The World Series is a global event. With book design papering over the monitor the real processes of networks can be left to the experts in Computer Science.

It is the technical opportunity of finding other ways of developing and using this stream of data that provides a starting point for I/O/D 4: The Web Stalker. I/O/D is a three-person collective based in London.[8] As an acronym, the name stands for everything it is possible for it to stand for. There are a number of threads that continue through the group's output. A concern in practice with an expanded definition of the techniques/aesthetics of computer interface. Speculative approaches to hooking these up to other formations that can be characterised as political, literary, musical, etc. The production of stand-alone publications/applications that can fit on one high-density disk and are distributed without charge over various networks.

The material context of the web for this group is viewed mainly as an opportunity rather than as a history. As all HTML is received by the computer as a stream of data, there is nothing to force adherence to the design instructions written into it. These instructions are only followed by a device obedient to them.

Once you become unfaithful to page-description, HTML is taken as a semantic mark up rather than physical mark-up language. Its appearance on your screen is as dependent upon the interpreting device you use to receive it as much as its 'original' state. The actual 'commands' in HTML become loci for the negotiation of other potential behaviours or processes.

Several possibilities become apparent. This data stream becomes a phase space, a realm of possibility outside of the browser. It combines with another: there are thousands of other software devices for using the world wide web, waiting in the phase space of code. Since the languages are pre-existing, everything that can possibly be said in them, every program that could possibly be constructed in them is already inherently pre-existent within them. Programming is a question of teasing out the permutations within the dimensions of specific languages or their combinations. That it is never only this opens up programming to its true power—that of synthesis.

Within this phase space, perhaps one thing we are proposing is that one of the most pressing political, technical and aesthetic urgencies of the moment is something that subsumes both the modern struggle for the control of production (that is of energies), and the putative post-modern struggle for the means of promotion (that is of circulation) within the dynamics of something that also goes beyond them and that encompasses the political continuum developing between the gene and the electron that most radically marks our age: the struggle for the means of mutation.

A brief description of the functions of the Web Stalker is necessary as a form of punctuation in this context, but it can of course only really be fully sensed by actual use.[9] Starting from an empty plane of colour, (black is just the default mode — others are chosen using a pop-up menu) the user begins by marqueeing a rectangle. Using a contextual menu, a function is applied to the box. The box, a generic object, is specialised into one of the following functions. For each function put into play, one or more box is created and specialised.

Crawler: The Crawler is the part of the Web Stalker that actually links to the World Wide Web. It is used to start up, and to show the current status of the session. It appears as a window containing a bar split into three. A dot moving across the bar shows what stage the Crawler is at. The first section of the bar shows the progress of the Net connection. Once connection is made and a URL is found, the dot jumps to the next section of the bar. The second section displays the progress of the Web Stalker as it reads through the found HTML document looking for links to other URLs. The third section of the bar monitors the Web Stalker as it logs all the links that it has found so far. Thus, instead of the user being informed that connection to the net is vaguely 'there' by movement on the geographic TV-style icon in the top right hand corner, the user has access to specific information about processes and speeds.

Map: Displays references to individual HTML documents as circles and the links from one to another as lines. The URL of each document can be read by clicking on the circle it is represented by. Once a Web session has been started at the first URL opened by the Crawler, Map moves through all the links from that site, then through the links from those sites, and so on. The mapping is dynamic — 'Map' is a verb rather than a noun.

Dismantle: The Dismantle window is used to work on specific URLs within HTML documents. URLs at this level will be specific resources such as images, email addresses, sound files, downloadable documents, etc. Clicking and dragging a circle into the Dismantle window will display all URLs referenced within the HTML document you have chosen, again in the form of circles and lines.

Stash: The Stash provides a document format that can be used to make records of web use. Saved as an HTML file it can also be read by 'Browsers' and circulated as a separate document. Sites or files are included by dragging and dropping URL circles into a Stash.

HTML Stream: Shows all of the HTML as it is read by the Web Stalker in a separate window. Because as each link is followed by the crawler the HTML appears precisely as a stream, the feed from separate sites is effectively mixed.

Extract: Dragging a URL circle into an extract window strips all the text from a URL. It can be read on screen in this way or saved as a text file.

The Web Stalker performs an inextricably technical, aesthetic and ethical operation on the HTML stream that at once refines it, produces new methods of use, ignores much of the data linked to or embedded within it, and provides a mechanism through which the deeper structure of the web can be explored and used.

This is not to say much. It is immediately obvious that the Stalker is incapable of using images and some of the more complex functions available on the web. These include for instance: gifs, forms, Java, VRML, frames, etc. Some of these are deliberately ignored as a way of trashing the dependence on the page and producing a device that is more suited to the propensities of the network. Some are left out simply because of the conditions of the production of the software — we had to decide what was most important for us to achieve with available resources and time. This is not to say that if methods of accessing this data were to be incorporated into the Stalker that they would have been done so 'on their own terms'. It is likely that at the very least they would have been dismantled, dissected, opened up for use in some way. That it was done anyway is, we hope, an encouragement to those who have the 'wrong' skills and few resources but a hunger to get things done, and a provocation to those who are highly skilled and equipped but never do anything.

Previous work by artists on the web was largely channelled into providing content for web sites. These sites are bound by the conventions enforced by browser-type software. They therefore remain the most

I/O/D 4: Web Stalker
screengrab & sticker

THE
BROWSER
IS
DEAD
LONG LIVE THE
WEB STALKER
http://www.backspace.org/iod
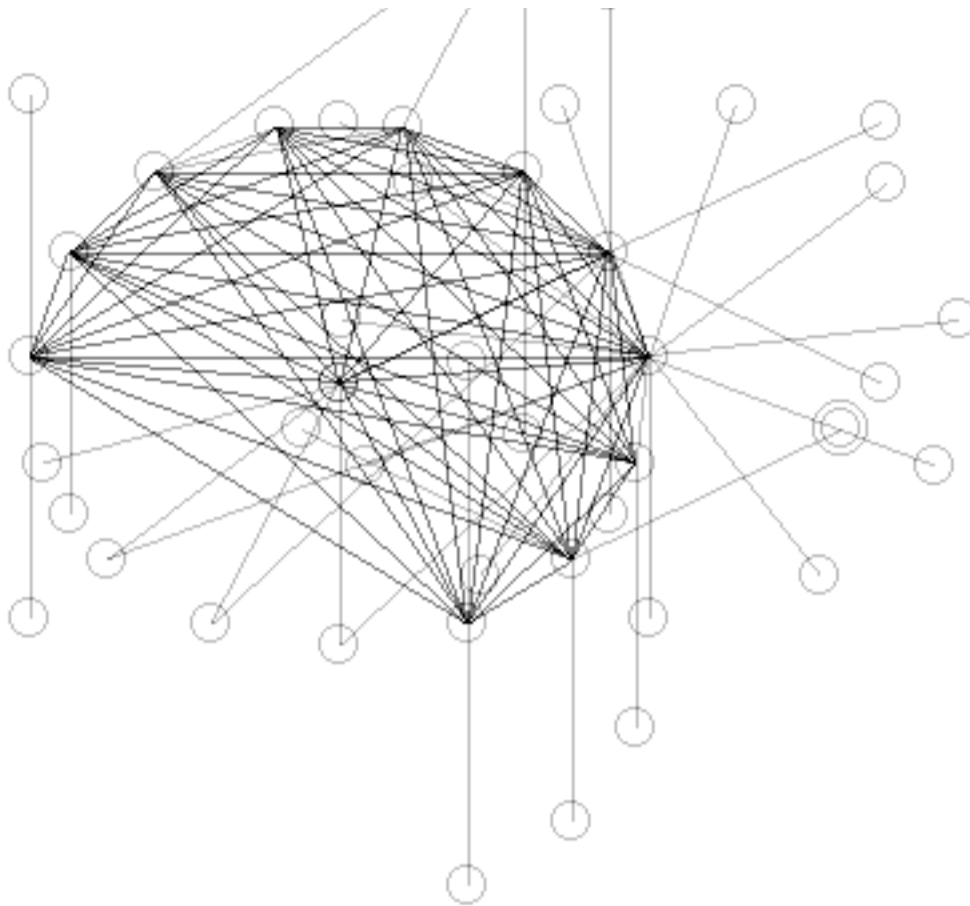
determining aesthetic of this work. The majority of web-based art, *if it deals with its media context at all* can be understood by four brief typologies:

Incoherence (user abuse, ironic dysfunctionality, randomness to mask pointlessness)

Archaeology (media archaeology, emulators of old machines and software, and structuralist materialist approach)

Retro-tooling (integrity to old materials in 'new' media, integrity as kitsch derived from punk/jazz/hip hop, old-style computer graphics, and 'filmic references' - the Futile Style Of London)[10]

Deconstruction (conservative approach to analysing-in-practice the development of multimedia and networks, consistently re-articulating contradiction rather than using it as a launching pad for new techniques of composition).

The project was situated within contemporary art, it is also widely operative outside of it. Most obviously it is at the very least, a piece of software. How can this multiple position be understood by an art-world that is still effectively in thrall to the notion of the autonomy of the object?

Anti-art is always captured by its purposeful self-placement within a subordinate position to that which it simply opposes. Alternately, the deliberate production of non-art is always an option but not necessary in this context. Instead, this project produces a relationship to art that at times works on a basis of infiltration or alliance, and at others simply refuses to be excluded by it and thus threatens to reconfigure entirely what it is part of. The Web Stalker is art. Another possibility therefore emerges. Alongside the categories art, anti-art and non-art, something else spills over: Not-just-art. It can only come into occurrence by being not just itself. It has to be used. Assimilation into possible circuits of distribution and effect in this case means something approaching a media strategy.

> "For modernist intellectuals, cultural capital or distinction in Bourdieu's sense varies inversely with one's contact with the media".[11]

Operating at another level to the Web Stalker's engagement within art were two other forms of media which were integral to the project: Stickers (bearing a slogan and the I/O/D web-address) and Freeware. Both are good contenders for being the lowest, most despised grade of media. That the Web Stalker is Freeware has been essential in developing its engagement with various cultures of computing.

The Stalker is currently being downloaded at a rate of about a thousand copies per week. Responses have ranged from intensely detailed mathematical denunci-ations of the Map and a total affront that anyone should try anything different; to evil glee, and a superb and generous understanding of the project's techniques and ramifications.

Whilst for many, the internet simply *is* what is visible with a browser, at the same time it is apparent that there is a widespread desire for new non-formulaic software. One of the questions that the Stalker poses is how program design is taken forward. Within the limitations of the programming language and those of time, the project achieved what it set out to do. As a model of software development outside of the super-invested proprietary one this speculative and interventional mode of production stands alongside two other notable radical models: that of Free Software[12] and that derived from the science shops, (wherein software is developed by designers and programmers in collaboration with clients for specifically social uses). Unlike these others it is not so likely to find itself becoming a model that is widely adoptable *and* sustainable.

In a sense then, the web stalker works as a kind of "tactical software"[13] but it is also deeply implicated within another kind of tacticity — the developing street knowledge of the nets. This is a sense of the flows, consistencies and dynamics of the nets that is most closely associated with hackers, but that is perhaps immanent in different ways in every user.

Bringing out and developing this culture however demands attention. In some respects this induction of idiosyncratic knowledges of minute effects ensures only that whilst the Browser Wars will never be won, they are never over. So long as there's the software out there working its temporal distortion effects on 'progress'... So long as there's always some nutter out there in the jungle tooled up with some VT100 web viewer, copies of Mosaic, Macweb, whatever.

At the same time we need to nurture our sources of this *ars metropolitani* of the nets. During recent times and most strongly because of the wider effects of specific acts of repression, hacking itself has often become less able to get things going because it has a) been driven more underground, b) been offered more jobs, and c) been less imaginatively willing or able to ally itself with other social currents.

Software forges modalities of experience — sensoriums through which the world is made and known. As a product of 'immaterial labour' software is a social, technical and aesthetic relation that is embodied — and that is at once productive of more relations. That the production of value has moved so firmly into the terrain of immaterial labour, machine embodied intelligence, style as factory, the production of subjectivity, makes the evolution of what was previously sectioned as 'culture' so much more valuable to play for — potentially always as sabotage — but, as a develop-ment of the means of mutation, most compellingly as synthesis.

The Map makes the links between HTML documents. Each URL is a circle, every link is a line. Sites with more lines feeding into them have brighter circles. Filched data coruscating with the simple fact of how many and which sites connect to boredom.com, extreme.net or wherever. (Unless it's been listed on the ignore.txt file customisable and tucked into the back of the Stalker). Every articulation of the figure composing itself on screen is simply each link being followed through. The map spreads out flat in every direction, forging connections rather than faking locations. It is a figuration that is *immutably* live. A 'processual' opening up of the web that whilst it deals at every link with a determinate arrangement has no cut-off point other than infinity. Whilst the Browser just gives you history under the Go menu, the Map swerves past whichever bit of paper is being pressed up to the inside of the screen to govern the next hours of click-through time by developing into the future — picking locks as it goes.

Aggregates are formed from the realm induced by the coherence of every possibility. Syntactics tweaks, examines and customs them according to context. This context is not pre-formatted. It is up for grabs, for remaking. Synthesis determines a context within which it is constitutive and comes into composition within ranges of forces. Everything — every bit, every on or off fact — is understood in terms of its radical coefficiency, against the range of mutation from which it emerged and amongst the potential syntheses with which it remains fecund. It is the production of sensoria that are productive not just of 'worlds' but of the world.

Notes

1 Only an ostensible competitor because the browsers produced by Netscape and Microsoft are so nearly identical that they form, not an economic, but a technical and aesthetic monopoly. It will be interesting to see whether the release of the source code for Netscape Navigator will also produce a release from the conventions of the browser.

2 Again because of its near monopoly over PC Operating Systems Microsoft was able to set the terms—against previously made agreements - on which Java would be developed. It is widely agreed that they—and to some extent, Sun (the developers of Java)—significantly compromised the actual and potential power of the language.

3 for instance the I/O/D shout tag. (See documents on I/O/D site)

4 see for instance the skirmishes around name ownership produced in the net.art hijacking of corporate names by Heath Bunting and Rachel Baker at irrational.org, (http://www.irrational.org) or at the other extreme, the attempts at the technical introduction of a precise indexicality when a brand name is typed into a browser by Centraal (http://www.realnames.com)

5 Maurizio Lazzarato, *Immaterial Labor*, in Michael Hardt and Paul Virno, *Radical Thought in Italy: A Potential Politics*, Minnesota University Press, Minneapolis, 1996, p.142

6 Lazzarato, p.142

7 The device's advantage is in its ease of use—compared for instance to the tiresome delete command in DOS—rather than any 'natural' affiliation with this metaphor.

8 Simon Pope, Colin Green, Matthew Fuller

9 The I/O/D site from which all the group's output, including PC and Macintosh versions of the Web Stalker are available from is provided by Backspace: http://www.backspace.org/iod

10 See FSOL section on I/O/D site

11 Mark Poster, *The Second Media Age*, Polity Press 1997, p.5

12 Free Software Foundation—http://www.fsf.com—The reasons the I/O/D did not in this case follow the FSF model of free software are relatively simple. Whilst as a structure it undoubtedly works and we are supportive of it, it is an economy that demands a developing critical mass to work. This is happening for programmers working with larger computers. With the increasing use of Linux (see Linus Torvald's homepage: <http://www.earthspace.net/~esr/faqs/linus>), it is also happening for Personal Computers which is the scale we are working on. However, there is no comparable economy working for the exchange of Lingo code. This is of course because Director is designed to produce hermetically sealed routines called 'projectors'. If the code for the Stalker was to have been distributed under Copyleft, there would have been no way of enforcing that its use continue to remain open as this is such an easy method of invisble incorporation.

13 see 'The ABC of Tactical Media', Geert Lovink and David Garcia. http://www.waag.org/tmn/