chapter 5

Imagining cyberspace
In this chapter, we turn our attention away from geographic and information visualization to consider four other ways in which cyberspace has been visualized and imagined spatially. The four alternative visions of cyberspace have been provided by writers, film makers, artists and architects. These four groups, like the researchers and software technicians we have so far discussed, have been seeking to answer the question “What does cyberspace look like?” These imaginary visualizations and mappings are important creative works in their own right, providing an often critical sphere in which to think about cyberspace and its structure, content and operation. They also have added relevance, however, because they often provide the inspiration and “blueprints” for designers and creators of the maps and spatializations discussed in previous chapters.

In other words they provide a popular imaginal environment in which to question and explore the space–time configuration of cyberspace – a cognitive space in which to think about the geographies of cyberspace. This, as we suggest below, has particularly been the case with fiction. As a consequence, although it might be easy to dismiss the visualizations we discuss in this chapter as “merely art”, it should be recognized that this art often plays a wider role. As such, the influence of these architects, artists, film makers and writers should not be underestimated.

Science fiction visions of cyberspace

Science fiction (sci-fi) writing was undoubtedly an important genre throughout the twentieth century. Its importance lay in its ability to provide inspiration for those engaged in scientific enterprise and its function as a cognitive space in which to think about the consequences of technological development. Science fiction writing that has focussed on cyberspace has performed both of these roles. And just as cyberspace is a transformative technology, changing the way we live our lives, sci-fi that has considered cyberspace has been written within a new genre of science fiction writing – one that subverts its modernist traditions.

Cyberpunk recognized and explored our new post-modern condition through a literary vehicle that is itself decidedly post-modern. Here, we are not concerned with cyberpunk’s exploration of how cyberspace will affect social relations, or how the style of cyberpunk challenged traditional models of sci-fi. Rather, we are concerned with its inspirational qualities and its role as a cognitive space, shaping the way that cyberspace has been conceived and developed.

In order to illustrate our point, we only consider the work of two writers, William Gibson and Neal Stephenson. These two novelists have been particularly influential in shaping the development, visual interface and spatial organization of cyberspace, and in articulating new geographic imaginations of emerging spaces such as the Internet. Indeed, it is now claimed by some that recent developments in both computing and society can be seen as an attempt to put their fictional visions into practice. This is not to say that other writers have not written about cyberspace and its space–time geometries or shaped the public imaginal sphere. Other influential cyberpunk fiction within this genre includes that by George Foy, Bruce Sterling and Tad Williams.
Here, we are interested in Gibson’s vision of the Matrix. His description of it (see boxed quotes) – a networked, Cartesian, visual, navigable dataspace – provided, it has been argued, the “imaginal public sphere” for computer scientists developing Internet and VR technologies. For example, in 1988 John Walker launched the Autodesk (a leading VR developer) “Cyberpunk Initiative”. In a white paper entitled “Through the Looking Glass: Beyond User Interfaces”, he invoked Gibson and proposed a project to produce a “doorway into cyberspace” within 16 months. As a consequence, many social scientists openly turn to Gibson to credit his foresight and acknowledge his influence in shaping the “Information Society”. This is not to say that Gibson provided technical blueprints, but to acknowledge that he provided an initial cognitive space in which to think about cyberspace.

Gibson’s first novel, Neuromancer, was a landmark book. Winner of the Hugo and Nebula awards, it is highly read and cited, in no small part due to the fact that it is the source of the word “cyberspace”. It explored the possibilities of information and communication technologies long before the Internet was fashionable. All the subsequent novels, namely Mona Lisa Overdrive and Count Zero, which complete the “Sprawl” trilogy, Virtual Light, Idoru, and All Tomorrow’s Parties describe a future world that has been reordered through libertarian capitalism and social Darwinism, and reshaped at all spatial scales through the socio-spatial processes of globalization and internationalization. As such, the global economy is dominated by a small number of transnational corporations, countries have fractured into weak nation-states, and society is divided even more than it is at present into the haves and have-nots, with the haves protected in gated communities and the poor left in relatively ungoverned, anarchic and lawless city suburbs. It is a time when knowledge is power, and information services, trade and espionage are major industries, with corporations and individuals linked by a vast computer network called “the Matrix”.

5.1: Cyberspace in the “Sprawl” trilogy

writer: William Gibson.
further information: William Gibson a leph by Manuel Derra; see <http://www.8op.com/gibson/>

Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts … A graphical representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding … Neuromancer (1984, p. 67)

... the infinite reaches of that space that wasn’t space, mankind’s unthinkable complex consensual hallucination, the matrix cyberspace, where the great corporate hotcores burned like neon novas, data so dense you suffered sensory overload if you tried to apprehend more than the merest outline. Count Zero (1986, p. 62)
A cubical holo-display blinked on above the projector: the neon gridlines of cyberspace, ranged with bright shapes, both simple and complex, that represented vast accumulations of stored data. “That’s all your standard big shits. Corporations. Very much a fixed landscape, you might say. Sometimes one of ‘em’ll grow an annex, or you’ll see a takeover and two of them will merge. But you aren’t likely to see a new one, not on that scale. They start small and grow, merge with other small formations…” He reached out to touch another switch. “About four hours ago” – and a plain white vertical column appeared in the exact center of the display – “this popped up. Or in.” The colored cubes, spheres and pyramids had rearranged themselves instantly to allow for the round white upright; it dwarfed them entirely, its upper end cut off smoothly by the vertical limit of the display… “and nobody knows what it is or who it belongs to.”


People jacked in so they could hustle. Put the trodes on and they were out there, all the data in the world stacked up like one big neon city, so you could cruise around and have a kind of grip of it, visually anyway, because if you didn’t, it was too complicated, trying to find your way to a particular piece of data you needed.

Mona Lisa Overdrive (1988, p. 22)

They rose effortlessly through the grid, the data receding below them… The fabric of the matrix seemed to shiver, directly in front of them… Somewhere far away, his hands moving over the unfamiliar keyboard configuration. He held them steady now, while a section of cyberspace blurred, grewmilky.

Count Zero (1986, p. 231)

She spread the elastic headband and settled the trodes across her temples – one of the world’s characteristic human gestures… She touched the power-stud and the bedroom vanished behind a colorless wall of sensory static. Her head filled with a torrent of white noise. Her fingers found a random second stud and she was catapulted through the static-wall, into cluttered vastness, the notional void of cyberspace, the bright grid of the matrix ranged around her like an infinite cage.

Mona Lisa Overdrive (1988, p. 56)

He closed his eyes. Found the ridged face of the power stud. And in the bloodlit dark behind his eyes, silver phosphenes boiling in from the edge of space, hypnagogic images jerking past like film compiled from random frames. Symbols, figures, faces, a blurred, fragmented mandala of visual information.

Neuromancer (1984, pp. 68/69)
He is wearing shiny goggles that wrap halfway around his head; the bows of the goggles have little earphones that are plugged into his outer ears.

The earphones have some built-in noise cancellation features…

The goggles throw a light, smoky haze across his eyes and reflect a distorted wide-angle view of a brilliantly lit boulevard that stretches off into an infinite blackness. This boulevard does not really exist; it is a computer-rendered view of an imaginary place.

*Snow Crash* (1992, p. 20)

It is the Broadway, the Champs Elysées of the Metaverse. It is the brilliantly lit boulevard that can be seen, miniaturized and backward, reflected in the lenses of his goggles. It does not really exist. But right now, millions of people are walking up and down it.

The dimensions of the Street are fixed by a protocol, hammered out by the computer graphics ninja overlords of the Association for Computing Machinery's Global Multimedia Group. The Street seems to be a grand boulevard going all the way around the equator of a black sphere with a radius of a bit more than ten thousand kilometers.

*Snow Crash* (1992, p. 23)

The sky and the ground are black, like a computer screen that hasn't had anything drawn on it yet; it is always nighttime in the Metaverse, and the Street is always garish and brilliant, like Las Vegas freed from the constraints of physics and finance… If you go a couple of hundred kilometers in either direction, the development will taper down to almost nothing, just a thin chain of streetlights casting white pools on the black velvet ground. But Downtown is a dozen Manhattens, embroidered with neon and stacked on top of each other.

*Snow Crash* (1992, p. 26)

Like any place in Reality, the Street is subject to development. Developers can build their own small streets feeding off of the main one. They can build buildings, parks, signs, as well as things that do not exist in Reality, such as vast hovering overhead light shows and special neighborhoods where the rules of three-dimensional spacetime are ignored, and free-combat zones where people can go to hunt and kill each other.

The only difference is that since the Street does not really exist – it's just a computer-graphics protocol written down on a piece of paper somewhere – none of these things is being physically built. They are, rather, pieces of software, made available to the public over the worldwide fiber-optics network.

*Snow Crash* (1992, p. 24)

He is not seeing real people, of course… The people are pieces of software called avatars. They are the audiovisual bodies that people use to communicate with each other in the Metaverse.

*Snow Crash* (1992, pp. 35–6)
Neal Stephenson’s novel *Snow Crash* was an international bestseller. As with Gibson’s “Sprawl” trilogy, it charts a new and future information society. Although sharing some of the same concerns as Gibson (such as the long-term effects of libertarian capitalism), Stephenson envisages a different kind of geography – one of “burbclaves”, a multispace city full of franchises. As with Gibson, information is a key commodity and the key resource is the Metaverse, a giant 3-D online community. Stephenson’s main character, Hiro Protagonist, whilst a pizza delivery man in “real” space, is a main player (hacker) in the Metaverse. The story basically follows Hiro and his attempts to understand and combat Snow Crash – a virus within the Metaverse that flatlines its victims – and the corporation behind its use.

Not only did *Snow Crash* contain many visionary descriptions of an online world, the Metaverse, but it provided an obvious inspiration to many Internet and VR developers. Nowhere is this more evident than in the development of a 3-D virtual world, AlphaWorld, accessible across the Internet by the summer of 1995 (see chapter 4). AlphaWorld is a version of Stephenson’s Metaverse, with the original world designers also adopting the names of the novel’s main characters. Here, life is imitating art in a very literal sense. The significance of this translation from literature to reality should not be underestimated, especially when the product is as popular as AlphaWorld (which has over 800,000 unique visitors at the time of writing).

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*It is a piece of software called, simply, Earth. It is the user interface that CIC uses to keep track of every bit of spatial information that it owns – all the maps, weather data, architectural plans, and satellite surveillance stuff.*

_Snow Crash* (1992, p. 106)

*The room is filled with a three-dimensional constellation of hypercards, hanging weightlessly in the air. It looks like a high-speed photograph of a blizzard in progress. In some places, the hypercards are placed in precise geometric patterns, like atoms in a crystal. In other places, whole stacks of them are clumped together.*

_Snow Crash* (1992, p. 214)

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**5.2: The Metaverse**

*writer:* Neal Stephenson.


*Further information:* Stephenson’s homepage at <http://www.well.com/user/neal/> also <http://www.sffworld.com/authors/s/stephenson_neal/>
Cinematic visions of cyberspace

Most films that have tried to emulate the success of the cyberpunk genre of sci-fi have largely failed to be big box-office draws. Many have also received a critical mauling. This in part has been, until very recently, because of technical limitations, so that even though the films are packed full of special effects they fail at some level of credibility. It has also been due to the poor quality of scripts. Typically, films within this genre have been driven by state-of-the-art special effects, with very limited narratives trying to hold the film together. It should also be noted that the post-modern tendencies of the literary genre fail to translate to the big screen, where they are portrayed within modernist frames of reference. As a consequence, films with multi-million-dollar budgets have failed to attract audiences. It is only relatively recently that the special effects that have been used so effectively in outer-space forms of science fiction since Star Wars (1977) have lived up to their full promise, allowing the potential of cyberspace’s space–time geometries to be explored.

Despite the shortcomings, like its literary counterpart, sci-fi cinema has played an important part in shaping popular interest in cyberspace and virtual reality, and in providing an imaginal environment in which to contemplate the technology itself, its spatial formulation, and its wider social, political and economic implications. In this section, we detail three films in which cyberspace has been visualized, Tron, The Matrix, and Warriors of the Net (an online, non-Hollywood animation). Whilst the quality of the films is variable, their visualizations have shaped how we think about cyberspace. Other films that portray cyberspace include Virtuosity, Hackers, Johnny Mnemonic, Lawnmower Man (2), and eXistenZ.

5.3: Tron

director: Steven Lisberger.
lead actors: Jeff Bridges and Bruce Boxleitner.
date: 1982.
further information: Guy Gordon’s Tron page at <http://www.3gcs.com/tron/>
The Matrix, by Andy and Larry Wachowski, is a stunning action movie and was a major hit in 1999. The film charts the transition of Neo, from computer hacker to rebel warrior, on his discovery that life on Earth is nothing more than an elaborate façade – a false version of the twentieth century created to placate humans while their life essence is “farmed” to fuel the campaign of domination by the controlling “AI” in the “real” world (200 years in the future). Neo is contacted by Morpheus, who leads him into the real world and the fight against the Matrix. Neo is hailed as “The One”, namely the person who will lead the humans to overthrow the machines and reclaim Earth. In order to overcome the Matrix, he has to battle his own doubts and also fight a series of “agents” used by the AI to fight the rebels.

The key representation of cyberspace in the film was the eerie green flowing computer code, culminating in the final battle with the AI agents in the “corridor of code”. These striking images were created by Animal Logic, a special-effects company in Australia.

5.5: The Matrix
Directors: Andy and Larry Wachowski.
Lead actors: Keanu Reeves, Laurence Fishburne and Carrie-Anne Moss.
Date: 1999.
Further information: The Matrix website at <http://www.whatisthematrix.com>
Explaining how the Internet works is a challenging task. How does that Web page get from some distant server onto your browser? How does the data move through the complex mesh of computers, servers and cables? A small team of artists at Ericsson Medialab in Sweden took on the challenge of explaining the inner workings of the Internet by using an animated movie. Entitled *Warriors of the Net*, the film follows an imaginary journey of data packets through different sections of the Internet (dispatch, local area network (LAN), routers, switches, firewalls, and undersea cables), accompanied by a narration. The inner workings of the Internet are represented as a dank Victorian world, with mechanical devices to move data packets physically on conveyor belts and up lifts. The images here are a chronological series of stills from the 14-minute movie.

### 5.6: *Warriors of the Net*

**producer/director:** Tomas Stephansson (Ericsson Medialab, Sweden).

**animation:** Gunilla Elam.

**music/sound:** Niklas Hanberger.

**narration:** Monte Reid.

**aim:** to show in a fun, non-technical way how the Internet works, by following an imaginary journey of data packets.

**date:** 1999.

**further information:** details and also a free download of the full movie at <http://www.warriorsofthe.net>
5.7: Shredder, RIOT and Digital Landfill

artist: Mark Napier (Potatoland.org).
aim: to subvert carefully designed Web pages displayed by conventional browsers.
form: collages of overlapping and jumbled images and text.
technique: created by algorithms from user-specified URLs, in a Java-powered Web interface.
further information: try out all Napier's art work at <http://www.potatoland.org>
Artistic imaginings: subversive surfing and warping the Web

Writers and film makers are not the only people to be exploring cyberspace’s visual qualities. Artists, too, have been using cyberspace as a new medium of expression, and exploring its visual dimensions. Here, we are interested in the latter pursuit: how artists are portraying, visualizing and playing with cyberspace’s form and extent. In particular, we focus on projects that either seek to subvert the Internet’s conventions – especially how Web information is provided to us through browsers such as Netscape Navigator or Internet Explorer – or that seek to provide new ways of visualizing and mapping the Internet’s complexity.

Mark Napier is a leading Net artist who has created an array of “subversive” browsing tools in his gallery/studio Potatoland. His work is unpredictable, disordered and unfinished, but it always provides interesting and interactive views of cyberspace. Here, we consider in brief three of his “anti-browser” projects – Shredder, RIOT and Digital Landfill. Each of these projects fractures the Web, providing raw and random collages of text and images, undermining thoroughly the design pretensions of those who carefully create Web pages. In particular, HTML code that is usually hidden is drawn into full view on screen, and images are stretched and piled upon each other in a chaotic jumble. Napier’s projects recognize that, under the surface rendering presented in a browser, a Web page is a messy bunch of files, some of which are HTML code and scripts, and others are images and graphics. All of these files are sent as a stream of data that the browser software tries faithfully to put together according to the designers’ wishes. Napier’s work illustrates how these files can also be visualized in other ways, subverting their intended meaning and illustrating how information is created to promote certain messages.

Shredder was one of the first of Napier’s art works and it simply shreds a given Web page into constituent parts. These are then “sprayed” onto the screen in a random order, size and position. The example top-left shows the shredded remains of Andy Hudson-Smith’s Online Planning homepage (http://www.onlineplanning.org). The hyperlinks are still clickable so that one can still try to browse as normal, but the design is rendered totally unintelligible. According to Napier on his website, Shredder “appropriates the data of the Web, transforming it into a parallel Web. Content becomes abstraction. Text becomes graphics. Information becomes art.”

RIOT is a more recent and sophisticated project, producing collages of Web randomness. However, rather than concentrate on a single page, RIOT deconstructs images and text from different Web pages and throws them all together. Moreover, it is also multi-user, and so the resulting collage can be seen, shared and extended by other users accessing RIOT at the same time across the Internet. Napier claims that “RIOT dissolves the territorial boundaries on the Web”. Example screenshots far left, middle and bottom, and top-right show the effects RIOT has when turned loose on Web pages of the Queen Mother, cats and the author’s homepages (kitchin.org, cybergeography.org) respectively.

The final Napier art project is called Digital Landfill. It is another collaborative, multi-user work where users can dump their old, unwanted data trash and thereby create a dynamic work of art. The contents of the eponymous digital landfill, and therefore the work of art itself, change constantly as new layers of digital waste accrete. As Napier says: “The artwork, like the Web, is a cumulative group effort. It takes as input all the ‘stuff’ that netizens throw into it. Ultimately the viewers decide what the landfill will look like.” On initiating access to Digital Landfill you can choose to add some new waste or go and view the current state of the landfill. If you choose to add some of your own trash, this can be in the form of unwanted email, text, HTML code, or image URLs. When you view the landfill, you see a slice of it, as shown in the bottom-right screenshot on page 240. The listing of layers down the left-hand side shows the date and title, and these allow you to move up and down through the landfill, viewing different layers.
One aspiration of Net artists has been to warp the accepted norms of Web presentation by subverting the carefully crafted designs of Web content. The results show a new, unseen, and often disordered view of cyberspace. One of the most notable of these “subversive” anti-browsers is called Web Stalker. The presentation is very different from how most users see the Web. For a start, Web Stalker does not render any pictures or graphics. It was developed by a three-person art- and-design collective based in London in 1997. It is minimalist software, stripped down of functionality so that it can be distributed on a single diskette.

On starting Web Stalker, a user is presented with a single, large, black window that fills the screen. The window is completely blank, with no hint of how to use the browser or what it offers in terms of functionality. Onto this empty canvas the user can draw boxes, which are then assigned a certain action or function. The software only provides six functions: Crawler, Map, Stash, Extract, Stream and Dismantle. Function boxes can be of any size and position on the canvas, and they can overlap each other.

For us, the most interesting aspect of Web Stalker is the Map function, on which the creators say “the mapping is dynamic – ‘Map’ is a verb rather than a noun”. Map draws the hyperlink structure surrounding a given URL as delicate circles and lines. These white filaments build up over time to form views of small areas of the Web, similar in appearance to the output from a Spirograph. The images right show snapshots of different Maps of several websites. It is quite hypnotic to watch the images gradually form over several minutes as the Web Stalker crawls through the hyperlinks. They are not designed as practical tools for Web management or navigation (as, say, the examples we surveyed in chapter 3), but they act somewhat as abstract X-rays of the hidden structures of the Web.
The images here show sculptured, structured tendrils of text representing, in an abstract manner, the content of a website. They were created by Ben Fry, whose work on organic information visualization we discuss more fully in chapter 3.

In this instance, his aims are art-like rather than precise information visualization. To create the sculptures, Tendril first reads a Web page and analyzes where that page links to. A branch or tendril-like structure is made from the text content of the Web page, and the same is done for each of the linked pages, with the linked branches attaching themselves to the main system. Over time, the result is a huge branching structure, built from the text contained in a set of connected Web pages.

5.9: Tendril: typographic sculptures from Web content
artist: Ben Fry (Aesthetics & Computation Group, Media Lab, MIT).
aim: to construct sculptures from Web content.
form: spiraling tendril-like sculptures of text.
technique: custom-written code.
date: 2000.
further information: see <http://acg.media.mit.edu/people/fry/tendril/>
Pinpointing where things are on the Web is determined by universal resource locators. These define precise locations, and they are used for navigation via hyperlinks. Links are the foundation of the Web. Linkie, the “Link Machine”, is a visual directory of links that presents them as a random scatter. However, Linkie does not provide any extra information or judgement. Simple white links fill the screen in a chaotic, overlapping barrage of potential connections and then slowly dissolve, to be replaced with a new spatial configuration. Linkie displays a user-entered database of links from which it randomly selects one to display.

The credits for Linkie say “we found the link machine inside a crackerjack box” and it is very much a playful interface to the Web. It is one of the works of D+CON/trol, a semi-monthly online gallery of new media, whose mission is reported as “an experimental exercise in the loss of viewer control over the developing Web medium”. The idea is “to manipulate the viewer response to content that is normally provided through linked visual guideposts to information”. In other words, exploring the Internet through Linkie is designed to show the ways in which how we browse and search cyberspace are guided and shaped by media designers.

Much of our browsing and searching of the Web is directed by the major portals and search engines such as Yahoo!, AltaVista, Lycos and AOL. However, these portals only provide a partial and subjective mapping of the Web, and media artist Andy Deck has sought to confront these issues in his CultureMap work. He describes CultureMap on his website as ‘a visualization of proportion, disproportion, direction, and indirection in the content and no content of the World Wide Web’. Like Linkie, the project is designed to make people think about how they find information and what they find. Deck is a media artist based in New York who has been creating Web-based art since the mid-1990s. He focusses on collaborative drawing spaces, game-like search engines, problematic interfaces and informative art.

CultureMap is an abstract visualization that highlights the daily volume of “hits” that certain portals (for instance altavista.com, alltheweb.com, google.com) report for 32 categories of information, as defined by broad generic keywords such as “shopping”, “travel”, “music”, etc. Users select which categories they are interested in, and these are visualized as brightly colored tiles. The size of the tile in the resulting map is scaled to reflect that day’s average reported “hits”. A user can explore the map by clicking on the tiles to bring up an interactive dialog box offering various functions. These include Fluctuation and Hit Tracker, which let the user see in detail how the volume of “hits” changes over time as either an animated tile map or stock-ticker style of display.

Deck says that CultureMap is “joining abstract design with representation of the information landscape . . . [It] depicts the evolution of Web content in the form of a dynamic composition.” This composition has much in common with some of the information maps we examine in chapter 3, especially ET-Map. However, CultureMap is not designed for practical navigation; it is instead a critical appraisal of information categorization on the Web. As Deck concludes, “Any mapping of the Web’s content is bound to be imprecise. CultureMap does not pretend to reveal any rigorously objective picture of the content of the Web.”

5.10: Linkie – Link Machine (v2)
artists: D+CON/trol – Andre F. Sousa and Devon Bleak (OneTenDesign).
aim: to show a changing directory of user-submitted Web links.
form: a random collage of plain white URLs that pulsate and slowly redraw every few seconds.
further information: see <http://www.decontrol.com/>

5.11: CultureMap
artist: Andy Deck (Artcontext.org), commissioned and displayed by Turbulence.
aim: to show the structure of the Web by measuring the amount of information in different categories, as measured by major search engines.
form: colored tiles representing the different categories, with size related to the volume of information.
technique: automatic, daily sampling of 32 different categories (like shopping, travel or music) from search engines, using keywords.
further information: see <http://www.turbulence.org/Works/cultmap/> see also Andy Deck’s homepage at <http://artcontext.com>
there are currently 1187 links in our database

ADD A LINK  GET LINKS

http://www.ipix.com
http://www.macromedia.com/flash/
http://www.indieplanet.com
http://www.hecodesign.com
http://www.yuco.com
http://www.birdhouse.com
http://www.mp3.com
http://www.planetafesta.com.br
http://www.redcarpet.com
http://www.redpepper.co.uk
http://www.identityguy.com
http://www.requiemfortrendz.com
http://www.amazon.com
http://www.index.fr
http://www.2advanced.com
http://www.clevertitle.com
http://www.requirementsdreams.com
http://www.daim.com
http://www.geschenke.com/img/000000
http://www.hautecoremag.com
http://www.ipix.com
http://america.ick.net
http://www.miicnet.com

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The artists of this work claim that the Natalie Bookchin and Alexei Shulgin Universal Page is “the objective average of all content on the Web merged together as one” and “a pulsating, living monument commemorating no single individual or ideology but, instead, celebrating the global collective known as the World Wide Web”. It looks to all intents and purposes like a page of randomness, a gobbledygook sprawl of text. However, it is derived from scripts that crawl the Web and employ “precise algorithms” to generate “average content”. The system behind the Universal Page works continuously to keep it updated in real time.

5.12: The Universal Page

Artists: Natalie Bookchin and Alexei Shulgin; programming by Alexander Nikolaev.

Aim: to provide an objective summary of the whole Web as a single page

Form: a screen of jumbled text and spaces.

Technique: claims to be based on “precise algorithms”.


Further information: see <http://www.universalpage.org>
The 1:1 project tries to visualize the structure of the Web that is usually hidden from view. It is the structure of IP addresses (looking like, for instance, 200.93.167.214) that computers on the Internet use to route data to each other. Jevbratt’s project reveals this structure by providing five different interfaces to a continuously monitored database of IP addresses of all the Web servers on the Internet. This database was initially developed for another art project at C5 and is maintained automatically using softbots (agent software) that trawl the Internet. The title of the project – 1:1 – makes reference to the famous fictional allegories of mapping at the one-to-one scale by Lewis Carroll and Jorge Luis Borges. Jevbratt on his website says that, using 1:1, “first we encounter a collapse between the map and the interface. But the postphotographic practice of the 1:1 project makes the implosion even more severe. The interface becomes not only the map, but the environment itself”.

The five interfaces of 1:1 are “random”, “excursion”, “petri”, “hierarchical” and “every”. The above image shows a screenshot of the “every” interface. This provides a visualization of every IP address of the Web as a single image. Each IP is represented by a pixel in the image, where the color is determined by the last three numbers in the IP address.

This dense mosaic of multi-colored pixels is reminiscent of an image of interference on a TV set. It provides a snapshot of one dimension of the whole Web on a single screen, where the variable pattern of horizontal striations indicates the different densities of IP address allocation and usage across the total range of possible addresses. The “every” interface is also an image map, so that each pixel is a hotlink to the website that it represents. So it is both a map of, and an interface to, the Web.

In conclusion Jevbratt says (again on his website) of the 1:1 project interfaces that they “are not maps of the Web but are, in some sense, the Web. They are super-realistic and yet function in ways images could not function in any other environment or time. They are a new kind of image of the Web, and they are a new kind of image.”

5.13: 1:1 – “every” interface

artist: Lisa Jevbratt (C5 and The CADRE Institute, San Jose State University, USA).
aim: to map Internet protocol (IP) addresses of the Web at a scale of 1:1 as a new form of interface. This forms the C5 IP database used in five different 1:1 mappings.
form: “every” is one of five different interfaces. It shows every IP address of the Web as single pixels in a large image. The color of each pixel is based on the individual numbers in the IP address.
technique: Softbots search the total IP address space to identify Web server addresses.
further information: see <http://c5corp.com/1to1/index.html>
The Electric Sky map is a piece of art, depicting a constellation motif, that acts as an image map to link a range of different Net art works. As well as providing links to sites, the map also reveals academic and cultural liaisons that existed in 1996. These links were easier to discern then than now, because only a few museums, galleries and other repositories for art had registered their own domain names; instead, many collaborated with a university or with commercial servers, forming nested art aggregates. The map depicts such collaborative networks as constellations, with the primary hub of the network in red. Solid blue lines indicate direct collaborations, while dotted lines indicate indirect links. Jon Ippolito, the artist/curator, states on his website: “As the nighttime sky offered ancient mariners a readymade navigational chart, so The Electric Sky . . . offers modern-day voyagers a map with which to steer their way across the World Wide Web.” Electric Sky is now archived as part of an interactive gallery of artistic Web maps known as the CyberAtlas, curated at the Guggenheim Museum by Jon Ippolito himself.

5.14: Electric Sky
artist: Jon Ippolito assisted by Danny Piderman (CyberAtlas, Guggenheim Museum).
aim: to provide an interactive map of Net art sites.
form: star-chart, where different classes of art site have different styles of star symbol.
technique: simple interactive 2-D image map.
date: spring 1996.
further information: see <http://www.guggenheim.org/cyberatlas/home/index.html>
Imagining the architecture of cyberspace

Like writers, film makers and artists, a number of pioneering architects have begun to explore the actual and potential architecture of cyberspace. In this section we discuss the work of two projects that seek to delimit, and project through new means, the spatial form of cyberspace’s architecture. This work is important because it challenges visualizers of cyberspace to extend their analysis beyond conventional understandings of space and to explore new ways of thinking about how cyberspace might be visually conceived. In both cases, complex algorithms are used to “compose” new architectural forms.

In his 1991 article, Marcos Novak, founding director of the Laboratory for Immersive Environments and the Advanced Design Research Program at the School of Architecture, University of Texas, Austin, argues that cyberspace has a “liquid architecture”:

Liquid architecture is an architecture that breathes, pulses, leaps as one form and lands as another. Liquid architecture is an architecture whose form is contingent on the interests of the beholder; it is an architecture that opens to welcome me and closes to defend me; it is an architecture without doors and hallways, where the next room is always where I need it to be and what I need it to be. Liquid architecture makes liquid cities, cities that change at the shift of a value, where visitors with different backgrounds see different landmarks, where neighborhoods vary with ideas held in common, and evolve as the ideas mature or dissolve.

“Liquid Architectures in Cyberspace” (1991, pp. 251–2)

Here, Novak is arguing that cyberspace has a spatial and architectural form that is dematerialized, dynamic and devoid of the laws of physics; spaces in which the mind can explore free of the body; spaces that are in every way socially constructed, produced and abstract. As such, the architecture of cyberspace only mirrors that of Cartesian logic if that is how we straitjacket it. In his work, over several projects, he has been trying to redefine how we think about cyberspace’s architecture, seeking to push our understanding beyond its Cartesian logic – beyond our own lack of imagination.

In other words, like the artists we have discussed earlier in this chapter, Novak is seeking to subvert how we imagine cyberspace’s form and spatial structure. In order to do this, he has produced a whole series of images that seek to articulate cyberspace’s “liquid” form. Some of these images are displayed as on pages 252–53 and represent some of his more recent work, entitled ie4D. The images are created using algorithms to “compose” architecture and are four orthogonal views of the same space.
GINGA is an acronym for Global Information Network as Genomomorphic Architecture, and this is a project designed to examine the spatial representation of information in cyberspace. It is a 3-D browsing system based on a large collection of digital information, developed by Japanese architect Fumio Matsumoto. Using special algorithmic codes, Web resources are reconfigured by GINGA into one of nine three-dimensional worlds: Nebula, Ring, Network, Forest, Strata, Text, Image, Polyphony, and Cemetery (see opposite) respectively. In Nebula, for example (top-left), information is distributed according to its data identifier, such as its URL or IP address, and those sites that share similar common URLs/IP addresses are clustered together. In Ring, (left, second from top), information is assembled into ring structures, which are grouped according to the type of information. The ring’s diameter is determined by the frequency of update and its width by the volume of data. In Network (large picture), the linkage between nodes is displayed, with the size of link reflecting traffic flow. In Forest (left, third down), a tree directory structure is represented, with sharp-pointed trees containing nested pyramids of directories where their height represents the levels of hierarchy. In Strata (middle column), the chronological order of information is represented. In Text (middle-right), an archive of text information is presented as thin layers. In Image (bottom-left), pictures, maps and photos are arranged in a random floating pattern to create a “labyrinth of memory”. In Polyphony (bottom-middle), sound is converted into visible bits that circle columns representing individual artists, instruments or music types. In Cemetery (bottom-right), dead avatars are stored in an arranged order.

Users can explore each of these nine worlds using avatars, examining how different kinds of information might be most effectively visualized in cyberspace.

5.16: GINGA – nine worlds of cyberspace
architect: Fumio Matsumoto with Shohei Matsukawa (Plannet Architectures, Tokyo).
aim: to examine how different kinds of information architecture might be most effectively visualized in cyberspace.
form: nine different 3-D “worlds”, each employing a different mode of information representation.
technique: VRML modeling and an interactive interface to explore the different kinds of information architecture.
date: 2000.
further information: see <http://www.plannet-arch.com/>