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Coding the Infome: Writing Abstract Reality

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Coding the Infome: Writing Abstract Reality

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Abstract

Because of their specific history, we think of computer languages and code as symbolic abstractions of natural languages, and computers as universal machines manipulating these symbols. However, today every computer exists in relation to the Internet, whether it is connected or not. Every software is potentially a networked software, a building block of the networks we live within and through. Because of this, code is no longer Text, a symbolic representation of reality - it is reality. To write code is to create and manipulate this reality. Within it, artist-programmers are more land-artists than writers, software are more earthworks than narratives, this creates new and fascinating issues in terms of referentiallity and meaning for the coding artist to delve into.

The activity of programming/coding is in effect one of writing, of typing characters, sometimes in an ordinary text editor, and combining them to "words" and the words to "sentences". It is a similar process to that of writing any natural language, with nouns having adjectives describing them and verbs making them act or being acted upon. However, while it is tempting to consider the poetic and literary qualities of coding due to its similarity with "writing", programming is not "writing". To write code is to create reality. It could be likened with the production of artificial DNA, of oligonucleotides Ð a process where "life" is written. Or it could be seen as a more obviously "physical" act of generating and moving around material, an act that has dimensionality, that is non-linear. It is similar to the act of making a sculpture or designing and sewing clothes Ð to start with a material and feel how it folds and falls and cut out two dimensional surfaces that turn into three dimensional shapes by sawing them together in specific way.

The Infome

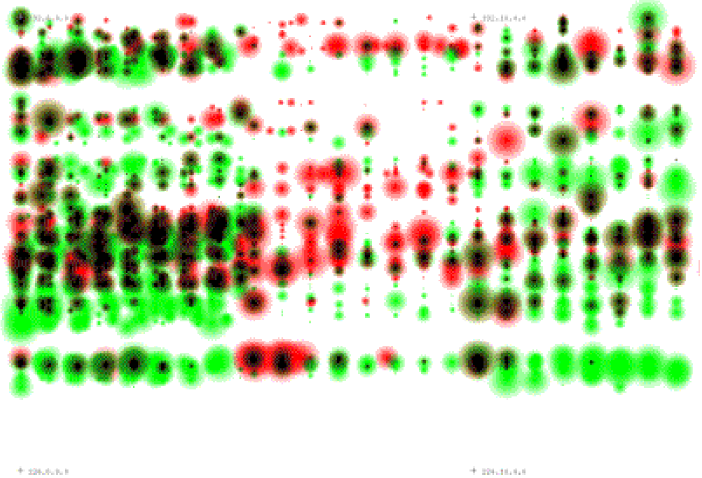
Because of the traditions in which computer languages were developed, they are commonly thought of as symbolic logical abstractions of thoughts and natural languages, and computers as the universal machines manipulating these symbols. The praise for these special machines stems from their ability to simulate any other medium. However the scene has changed dramatically since the first code breaking machines and other early versions of computers. Every computer now exists in relation to a network, whether it is connected or not. Every software is potentially a networked software.

The network of networks, the Internet, is an environment constructed by code Đ languages and protocols. It is written by us yet it is "reality". "Code" is the geology, the determining circumstance dictating the life of the environment. "Coding" is the act of building the environment, to "move" the environment and a way of moving in the environment. And even if this environment is written by us, the whole (the network), made up of the parts, (the layers of languages and protocols, the packets, the viruses, the data) could have reached a level of complexity and richness that makes it interesting to consider it an organism. It now seems fruitful to postulate that computers are no longer interesting because they can simulate reality, but because they transform the written word to reality, a reality whose ontology is to be found in and between "environment" and "organism". Even if the complexity of the network of networks and their data have not yet reached the threshold where the network actually transforms from merely a set of connected nodes to an entity worth describing as a totally new category, form, dimension, by claiming so and solidifying it by giving it a name, a rich and fascinating set of issues and areas of research open up. I propose the term "Infome" to denote this all-encompassing network environment/organism that consists of all computers and code. The term is derived from the word "information" and the suffix "ome", used in biology and genetics to mean the totality of something as in chromosome and genome.

Within the Infome, artist programmers are more land-artists than writers, software are more earthworks than narratives. The "soil" we move, displace and map is not the soil created by geological processes. It is made up of language, communication protocols and written agreements. The mapping and displacement of this "soil" has the potential of inheriting, revealing and questioning the political and economical assumptions that went in to its construction. And, maybe more significantly, this environment/organism is a fundamentally new type of reality where our methods and theories regarding expression, referentiallity, and meaning need to be redefined. This paper briefly points in some directions of inquiry that are of immediate importance and interest for me as an artist working with code.

abstract reality

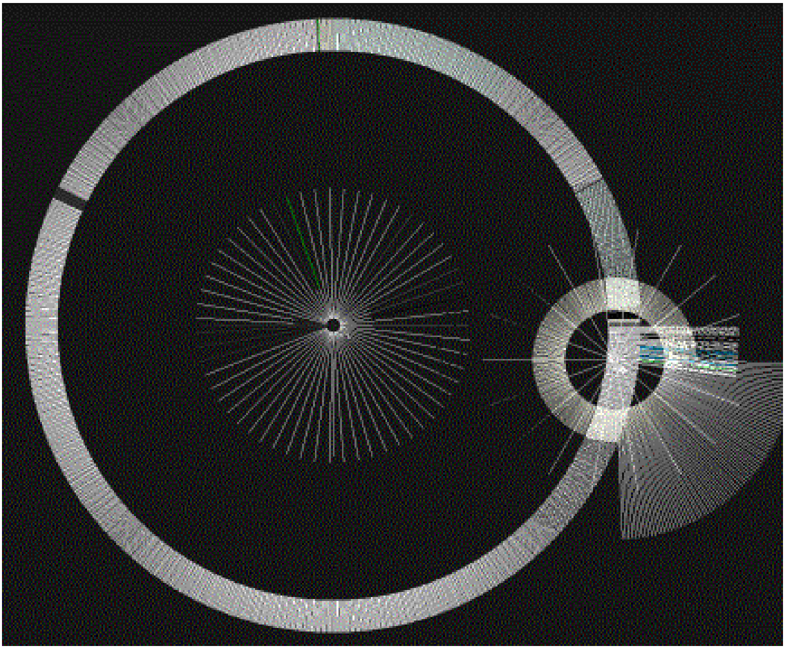
Within the paradigm that views the computer as a manipulator of arbitrary symbols, the dominating mode of the sign is of course the *symbol.* A sign in which the signifier arbitrarily relates to the signified; where culture and convention dictates the meaning of the sign. Within that paradigm, software is seen as non-physical and it is hard to justify the existence of an indexical sign, which connects the signifier and the signified through an actual, causal imprint. However, since the Infome paradigm views the network environment/organism as "reality" and "life", the symbolic representations Ð the binary states, the data, are actual entities, not references to actual entities and they are actually affected by events involving them. Within the Infome paradigm, The dominating mode of the sign is not the symbolic, or the iconographic, but the indexical. This is a fascinating shift resulting in new aesthetic expressions and implications. Images can now simultaneously be reality, since they are part of the Infome, and an imprint of that reality. As if the image produced by a potato stamp was also a potato. This new emphasis on the indexical opens up possibilities within the field of information visualization, which I currently work within. Instead of representing data symbolically by filtering it through known visual forms (such as using it to mimicking aspects of physical reality) data can represent itself by being a slice of the Infome or by rubbing off on something. The visualization is an indexical trace of the reality, an imprint, a frotage, a manipulation of the reality and it is reality.



[Screen Capture1:1 Migration, Jevbratt]

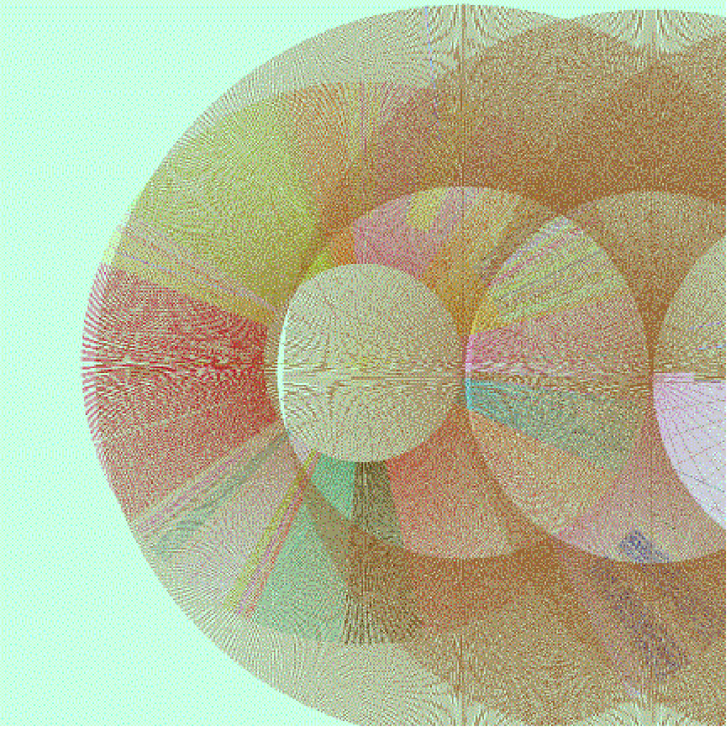
I first started to explore these ideas with the project 1:1 and 1:1(2). 1:1 was originally created in 1999 and it consisted of a database that would eventually contain the addresses of every Web site in the world and interfaces through which to view and use the database. Crawlers were sent out on the Web to determine whether there was a Web site at a specific numerical address. If a site existed, whether it was accessible to the public or not, the address was stored in the database. The crawlers didn't start on the first IP address going to the last; instead they searched selected samples of all the IP numbers, slowly zooming in on the numerical spectrum. Because of the interlaced nature of the search, the database could in itself at any given point be considered a snapshot or portrait of the Web, revealing not a slice but an image of the Web, with increasing resolution.

The initial idea was to continuously search the IP space to eventually have covered the whole spectrum. However, the Web was changing faster than the database was updated and in 2001 it was clear that the database was outdated. *1:1(2)* was a continuation of the project including a second database of addresses generated in 2001 and 2002 and interfaces that show and compare the data from both databases. When the project was first created in 1999, approximately two percent of the spectrum was searched and 186,100 sites were included in the database. The search started in 2001 was searching the same spectrum in order to be able to make comparisons between the Web 199 and 2001.



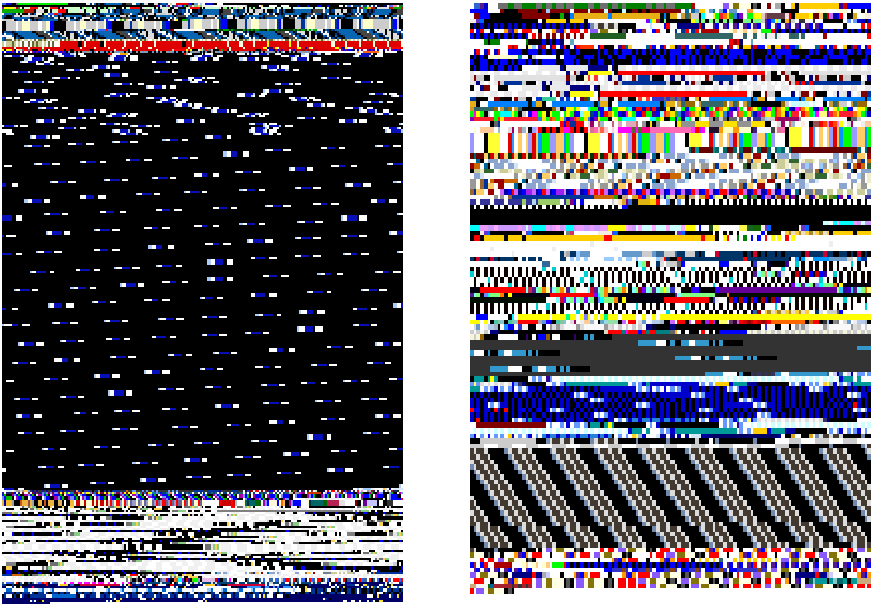
[Mapping the Web Infome, Jevbratt test]

After 1:1 I continued to develop the ideas regarding visualization and the Infome by creating a software, the Infome Imager, to be used by others to create projects which collect data from the web and visualize the data. The initial group of users was a group of artists specifically invited to test and define the software. Among them were Geri Wittig and Lev Manovich which were both using a visualization method provided in the software that is mapping both the movement of the crawler and some data collected by the crawler. With this visualization method, each page visited by the crawler is represented as a line. The first page visited is a pixel in the center of the image. The lines radiating out in a circle around that pixel are the links from that page. The next circle of lines represents the pages that were linked from the pages in the previous circle. Thus each circle represents the distance in clicks away from the starting page. In Manovich's images a de-centering of the line-circles has occurred as a result of a crawler moving in defined patterns not just following every link on each page. Wittig was using the method to display information about how words where used on different clusters of sites. She used colors to indicate the most commonly used and shared words on each page visited. Manovich's approach was more of an aestetization of the crawling activity in itself, viewing the mappings as paintings created in information space by the crawler.



[Mapping The Web Infome, Data Beautiful, Manovich]

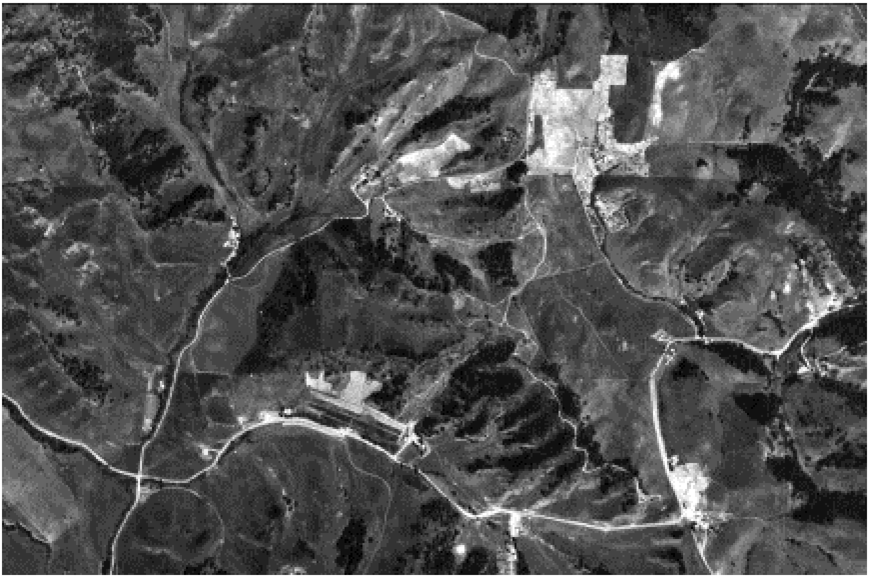
Three other artists: Arijana Kajfes and Jennifer and Kevin McCoy were visualizing the use of color in backgrounds, fonts and tables from the Web pages their crawler visited. Kajfes was starting several crawlers by making them search for each of the names of the cards in the Tarot deck. The images that came out thus visually represents the coloring of the sites listed in response to each search. Each image was turned into a card. The cards where printed and shown as a tarot deck in the exhibition. The McCoys were setting their crawler to collect only blue, white and grey colors to generate a sky image.



[Mapping The Web Infome, Kaijes]

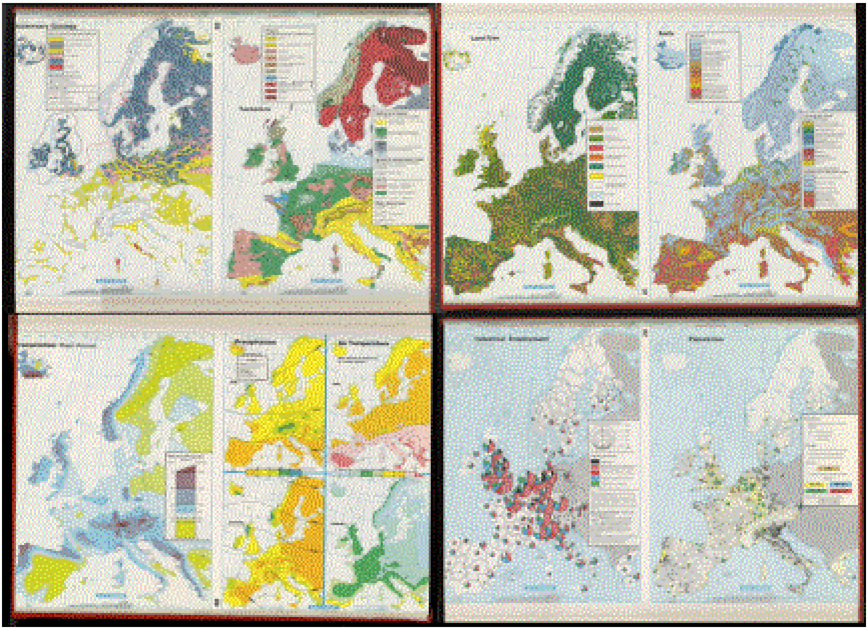
The 1:1 visualizations and the ones produced by the Infome Imager are realistic in that they have a direct correlation to the reality they are mapping. And yet, they are not representations of a reality, they are reality. They are objects for interpretation, not interpretations. They should be experienced, not talk about experience. This is interesting in several ways. On a more basic level it allows the image to teach us something about the data, it allow us to use our vision to think. On another level it makes the visualizations function as art in more interesting ways. Connecting them in various ways to artistic traditions from pre-modern art such, as cave paintings, to abstract expressionism, color-filed and minimalism, to post-structuralist deconstructions of power structures embedded in data. The visual appearance that follows is very "plain". It is strict and "limited" in order to not impose its structure on its possible interpretations and meanings. The visualizations avoid looking like something we seen before or they playfully allude to some recognizable form but yet slips away from it. Viewed from outside the Infome, from where we stand, they are abstract, abstract realism.

protocol geology

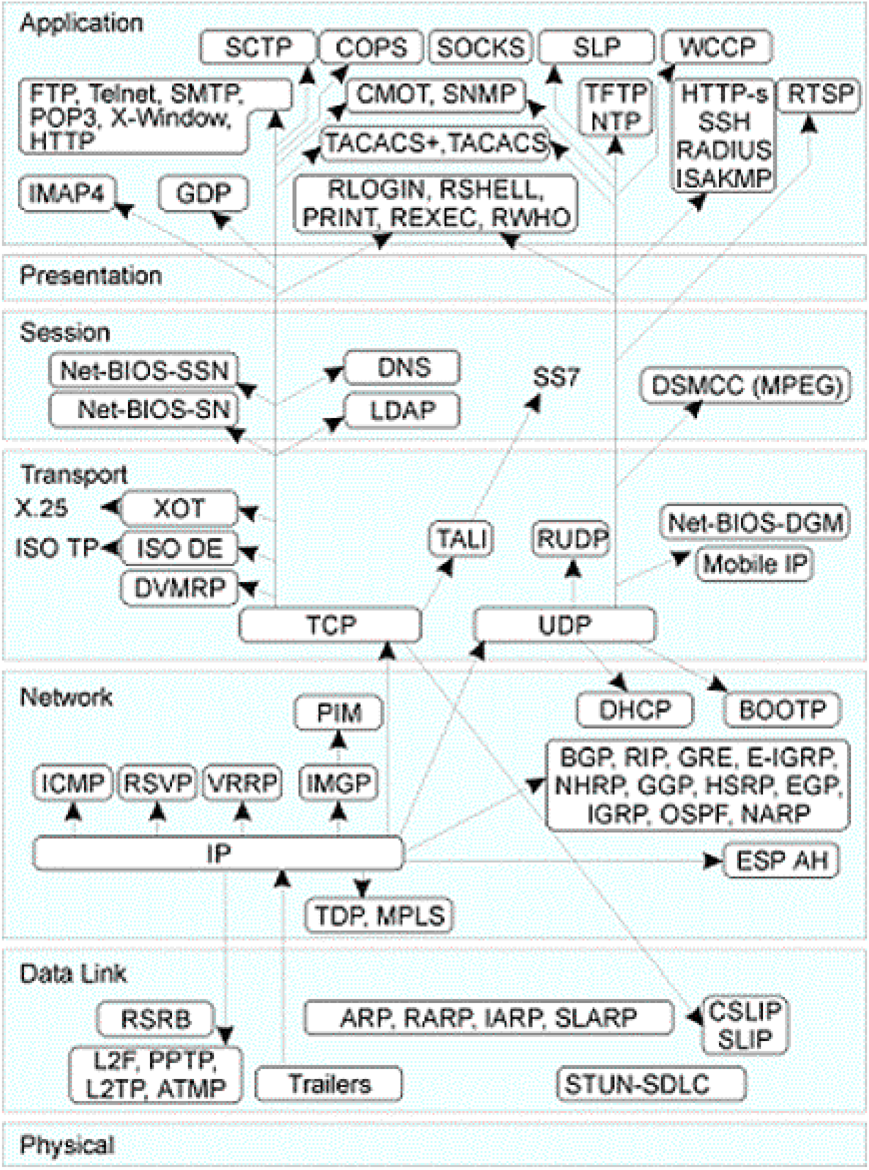


Imagine yourself flying over a landscape, your eyes following the mountain ridges and the crevasses formed by water running down the slopes over millions of years. There are roads crossing the landscape, some of them closely following the creeks and the valleys, some boldly breaking the patterns of the landscape, laid on top of it as if drawn on a map.

There are circular fields, the result of the mechanics of manmade irrigation systems, and oddly shaped fields wedged in between lakes and the mountain slopes. It's a fascinating display of the interplay between nature and culture, showing off the conditions of human life, our histories and philosophies of living and relationship to nature. Open any atlas and you see attempts of mapping this rich connection between geology and anthropology. It allows us to "see" layers of our environment, of how we have responded to the geology and the climate we live in and how we have manipulated nature depending on our current beliefs.



The Infome is made up of layers of protocols and languages. Each functioning as the nature, the conditions, for the next layer, and all of them together forming the conditions, the nature, which we relate to when "spending time in" (for example by navigating the web) or "using" (for example by sending an email or transferring a file) the environment. We as people are expressed in this environment as a collective through how we use it. Just as flying over a landscape reveals our cultures and their histories through the specific placement of roads, the shape of the fields and conglomeration of buildings. However, we - humans - are also expressed in its very construction, in its geology and climate, we wrote its mountains and its rain.



Because the organic, lifelike qualities of the Infome the most interesting way for me to work with and within it is to initially disregard the fact that it is created by us. I choose to examine it from the outside as if one just landed on planet earth trying to figure out of the beings one encounter are intelligent or even alive. To regard the data of the Infome as noise and then head out on a signal hunt. What one finds is how we are expressed as humans in and through the Infome, not what one single human is trying to express.

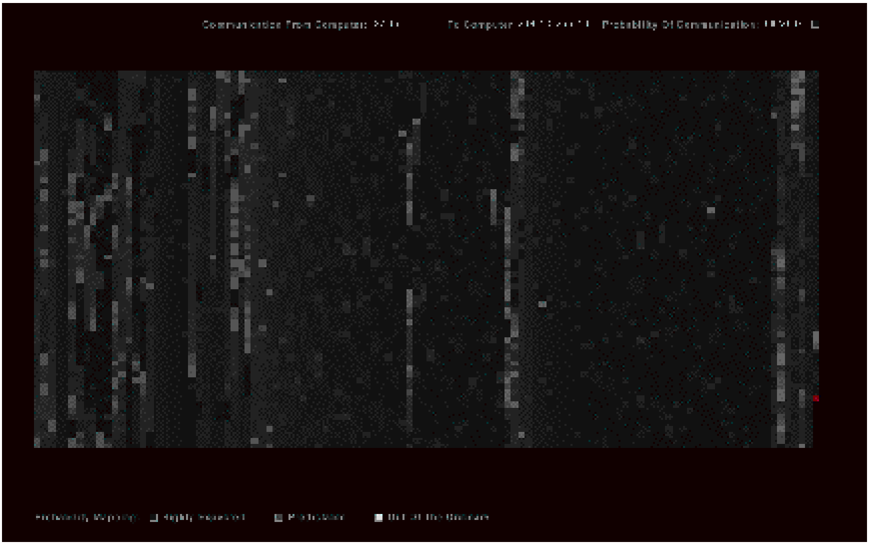
Different coding systems and languages modifies and inserts themselves in different layers of the Infome. Each layer interfaces to its underlying layer by omitting access to details of the previous layer, simplifying and narrowing the construction of objects and actions in the specific reality layer that the code operates within. A layer can interface to its underlying layer in a more or less acknowledging manner. Some of the commonly used Internet languages/software such as *Lingo and Shockwave*, strongly impose a metaphor from an already known discipline such as film editing, while others such as *Perl* allows the underlying layers to peak through by letting the interfacing filter be of a more abstract nature. *Perl* could be likened to the creek finding its way through the lowest points down a valley, creating a meandering waterway, not always efficient to use, while a Java applet could be seen as a constructed canal that sharply cuts through the landscape, offering a fast and reliable connection between two points but missing out on the cultural and geological history of the landscape it traverses. And maybe *Flash* could be seen as the colonialist attempt to create borders in a place that is only known from a map. A place that has not been visited by the parties dividing the land, but is very well known by its inhabitants. Think of the straight borders of Africa the result of the continent being divided by nations with political agendas separate from and insensitive to the issues and struggles pertinent to the tribes that were living on it.

The Internet was created as an open environment, with is protocols and codes readily accessible for anyone interested. The transformation from mere delivery system to a complex environment/organism which we possibly are seeing the start of, is a direct result of that architecture. We have not yet learned how to turn this entity in making into something profitable, so the obvious reaction from market forces is to counteract the transformation. To pretend that it is a delivery system and to produce languages and software tools whose main use is to generate content and containers and vehicles for the content. They counteract the openness of the network by creating proprietary protocols and languages and tools that disregard the "geology" of the environment.

openings

The nature of the Infome, its complexity, its unpredictability and beauty, points us in directions that we usually don't consider when engaging with information technologies. It asks us, with a wink, to wonder if something beyond our comprehension is making itself noticed in the appearances of the Infome.

My project "Out of the Ordinary" (2002) is testing the idea of us finding something unexpected, something that is showing signs of an awareness hidden within the Infome. "Out of the Ordinary" is a network visualization software that measures and maps the probability of communication between computers on the network that the software resides on, and between computers on the network and the Internet. Data travels on the Internet between two computers in packets. The "Out of the Ordinary" client maps the likelihood of a packet being sent between the two communicating computers. Each packet that comes through the network is represented as a square. The color value of the square is determined by the probability of the packet being sent between the two computers. The lower the probability is, the lighter the square is. The result is a grayscale image continuously being created as packets travels trough the network. It doesn't look like anything until slowly something emerges that draws attention to itself, something reveals itself, something that lets us know it has meaning.



Communication From Computer: [illegible] To Computer [illegible] Probability Of Communication: [illegible]

Probability Mapping: ■ Highly Expected ■ [illegible] ■ Out Of The Ordinary

[Out Of The Ordinary, Jevbratt]

The trajectory through history to the computer as a symbolic manipulation machine led us through several more or less explicit mystical traditions and practices. It takes us from the Pythagoreeans (500 BC) with their number mysticism and Plato (400 BC) and his ideal forms. It touches the universal art of Raymod Lull (1200-1300 AD), a model of understanding that anticipated symbolic logic, and the memory art of Giordano Bruno (1500 AD). From there Gottfried Leibnits (1600-1700 AD) got his ideas of a problem solving machine, the calculus, from which Charles Babbage (1800 AD) derived ideas leading to his Analytical Engine and George Boole (1800

AD) his theories of binary logic, both cornerstones in the development of modern day computers. The logic conveyed in all these traditions stems from a belief system where there are concepts and thoughts behind physical "reality", a system of symbols more real than the reality experience by our senses. And this symbolic layer can be manipulated and understood by modifying its symbols. There is a thought entity outside nature, a power that is either in the form of a god, gnosis, a oneness, or in the likeness of a god, as humans.

However, if computers now are the access-points to the Infome, and coding and code are processes and entities in the task for us to experience and manipulate the emergence and reality of a multi-layered environment/organism, the metaphysical is no longer an all-knowing entity outside, dictating the system, but an emergence, an occurrence within it. A scent, a whisper, a path in-between for a shaman to uncover. And what she, or he, finds is not an absolute but a maybe, made of hints, suggestions, openings.