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Mapping Virtual Skies

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Max Neupert (de)

Bauhaus-Universität Weimar
Artist
m@maxneupert.de

Satellite Zodiac

Stars are decorations of the night sky. The contemporary cultural framework has always provided a way of interpreting them. This pattern interpretation led to the so called modern (western) constellations. The majority of which depict animals (Aries, Aquila, Taurus, Cancer, Leo, Scorpio, Pisces, Canis Major, Canis Minor, and so forth), followed by Roman, Greek and Babylonian mythological characters (Andromeda, Aquarius, Auriga, Hercules, Pegasus, Perseus, Orion, Virgo and others). The third biggest group of constellations are man-made machines – pieces of technology like the arrow (Sagitta), the triangle (Triangulum), the balance (Libra) and the lyre (Lyra). But there are also more curious ones like a ships keel (Carina), poop deck (Puppis) and its sails (Vela), an air pump (Antlia), a pair of compasses (Circinus), a carpenter's level (Norma), a mariner's octant (Octans), and compass (Pyxis), a eyepiece graticule (Reticulum), a telescope (Telescopium), a pendulum clock (Horologium), a microscope (Microscopium), a chemical furnace (Fornax), a sculptors chisel (Caelum) and a painter's easel (Pictor). Those constellations were given names by the French theologian and scientist Nicolas Louis de Lacaille (1713-1763) during an astronomical expedition to study the southern heavens at the Cape of Good Hope. When Lacaille looked up to the nightly firmament he saw the high-tech equipment of artists, craftsmen, seafarer and scientists of his time. Like a Rorschach test he made his sense of the patterns in the sky according to his conditioning.

If the stars would miraculously rearranged themselves one night – how would we name the new constellations? Wind generator, Pedelec and iPad?

Since a majority of the world's population now lives in cities, starry nights have become increasingly difficult to witness. One would probably have better chances with a tabloid horoscope in the big city. Astrology claims to speak to us but our everyday life is dominated by artificial heavenly bodies. The times have come to an end when stars meant guidance and orientation. Navigation and positioning is the domain of man-made orbital vessels. Guidance systems from missiles to cars use satellites to triangulate their positions. Weather forecasts are based on remote satellite imagery. Communication and television is transmitted over satellite dishes. We know the size of the ozone hole just as well as Iranian nuclear sites from a satellite's perspective. Every day satellites play a part in the modern person's life – yet
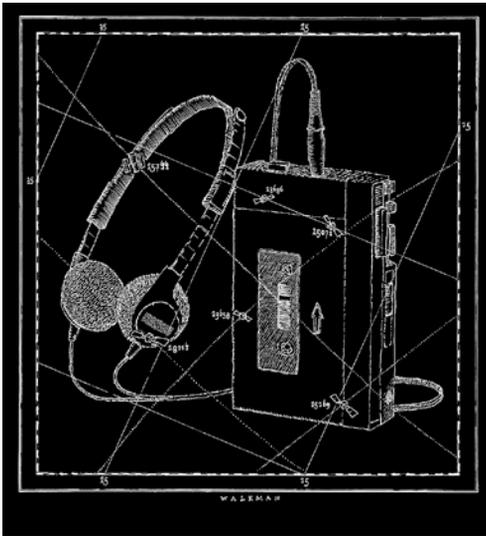
Fig. 1: Satellite constellation

for the most part they stay invisible and their names and constellations remain obscure.

Satellites reflect sunlight to the earth rendering them visible to the eye just shortly after sunset, when their orbital position is still in the sunlight. Just before dawn one can also see the orbiting machines in the heavens above. Most satellites are registered and their orbits are published by government authorities. Some "secret" ones are not, but a small group of amateurs hunt them down in their free-time, calculating the orbits by collecting individual spottings from different times and points around the globe. Figuring out the orbital data makes prediction possible for future passes and subsequently adjustments to the orbit. The enthusiasts exchange their findings through the "See-Sat" e-mail list.

Satellite Zodiac is a taxonomy of satellite constellations to give satellites visibility and meaning. Satellites can either stand still relative to our position or move on asynchronous paths with different speeds depending on their orbital type. The constellations are therefore determined by time and location. They are ephemeral by nature, existing only for fractions of a second. A theory of satellite constellations must allow for those special circumstances of moving objects in different orbital planes.

Satellite Zodiac is an installation where motor controlled laser pointers display the current position of up to 12 moving satellites in our field of view in real time plus the belt of geosynchronous satellites – the satellite milky way. Just like in a planetarium where the star constellations can be displayed, illustrative interpretation of the emerging (satellite-) constellations explain their meaning and reflect our technological contemporary mythology. The C64, iPod, Gameboy, Polaroid and Walkman are among zodiac symbols of satellite constellations.

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Unsigned

Alejandro Duque (CO)
European Graduate School in Switzerland
Artist / Ph.D. Candidate

Luis Bustamante (CO)
Artist / Interaction Designer

We are developing a new manifesto based on the Bogota Declaration of 1976 in which eight equatorial countries claimed sovereignty over the geostationary orbit. The declaration is a somewhat forgotten document about inequalities in technological power, the physics of orbit and its contested spaces. We will try to discover what the geostationary orbit can mean to us and define our own protests, rituals and love songs in relation to it.

We were struck by the way this United Nations document reads like a poem. It is full of fervour, challenging the great powers and at the same time describing the extraordinary architecture of this necklace-like ring of satellites encircling the Earth.

The geostationary orbit is where satellites orbit the Earth at 36 000 km above the equator, such that they appear to be stationary over the Earth below them. If it is thought of as an architecture, as a part of the human-made built environment, then it can be likened to the compelling circles of prehistory, such as Stonehenge in UK and those in Senegambia.

Described as a 'limited natural resource', the most coveted spots in the orbit were taken early on by the United States and the Soviet Union, leaving latecomers to bear the cost of less favourable positions. The signatory countries, Brazil, Colombia, Congo, Equador, Indonesia, Kenya, Uganda and Zaire were drawing attention to the inequality of bay allocations as well as the usefulness of this orbit to their own development needs. The issue has never been ratified, though it has been debated ever since within the United Nations Committee on the Peaceful Uses of Outer Space (COPOUS).

We are working to build up a common voice and stand that strives to raise awareness of this orbit, its political complexities and its poetics. The base and technology for the project is the Dorkbot subwiki of Medellín, Colombia. This lets us collaboratively rewrite and rework the document, in Spanish and English to start with, to allow the meanings to become more fluid and for us to shift perspectives through the language. We anticipate that further language translations will happen through collaborators and that this will

be part of opening up the emotions, metaphors and protest of the document, besides invigorating its distribution. The project is open to participation through the network of the wiki and the networks that emerge through the acts of making work.

Beginning with writing, the new manifesto will extend to song writing, drawing, experimental music and events, exchanged online, on the ground and through space. There is the possibility of transmitting results to the geostationary orbit and beyond via the Goonhilly Satellite Station in Cornwall, UK. Besides this, the geostationary orbit is itself made up mainly of communications satellites (INTELSAT, INMASAT and INTERSPUTNIK) taking internet, mobile phone and TV signals via networks that make the passage of information enigmatic, almost impossible to trace. Our work will unavoidably find ways to travel there.

Laura Plana (es)

Department Image Science
Danube University Krems
lauraplanagracia@hotmail.com

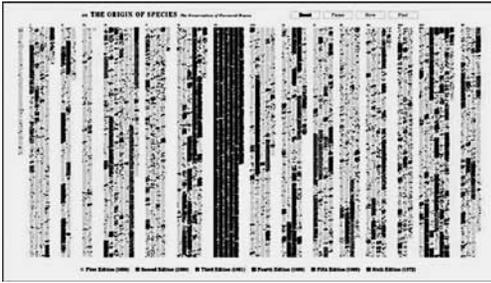# Database Visualizations, Mapping and Cartography

Genealogy of Space. Visual Representation for Knowledge in Art

Art and technology awareness is used in new media as a strategy since 1989, the end of the Cold War. It symbolises the analogue to digital system conversion and the end of industrial mode of production. It also implies the dominion of public social space under surveillance and the impact on landscapes, among others. Cartography is a system of visual representation of knowledge to display in exhibitions of contemporary art solving problems to society under value of ethics. Also it belongs to Genealogy of Space, a categorization initiated by Foucault with panoptic and heterotopia, which continues with non-site, atopia, distopia, utopia, the permanent site of power, TAAZ (Temporal Autonomous Zone and Borders). All physical or non-physical spaces are conceptualized in an embodied/disembodied effect on the subject. Psycogeography is another system of representation giving solutions as heterocronos or real time, an approach to performance. The deconstruction in dada objecthood and the meaning of surrealist images make contemporary cinematic visual era understand what Tarkovsky in this film Stalker synthesizes under the meaning of the cave, a manner of production art in relation to society. Then, art turns into a visual representation of knowledge and its strategies of visualization, representation and displaying are affected by progress, history and evolution. This implies the displacement from the unique vision (the plane earth in modern age) to complex models of visualizing (affected by NASA and aerospace) producing systems as video.art to net.art, that are representing, communicating and informing. The more significant contribution in that field of research is Fredric Jameson dealing with the cognitive map and how about visualizing information under matters of subjectivity and translation of meaning and also the codification and hermetism of the point of view that Buckminster Fuller tries to solve in the Dymaxion map representation. Databases, mapping and cartographies encounter in conceptual art an immediate precedent. Using documents and
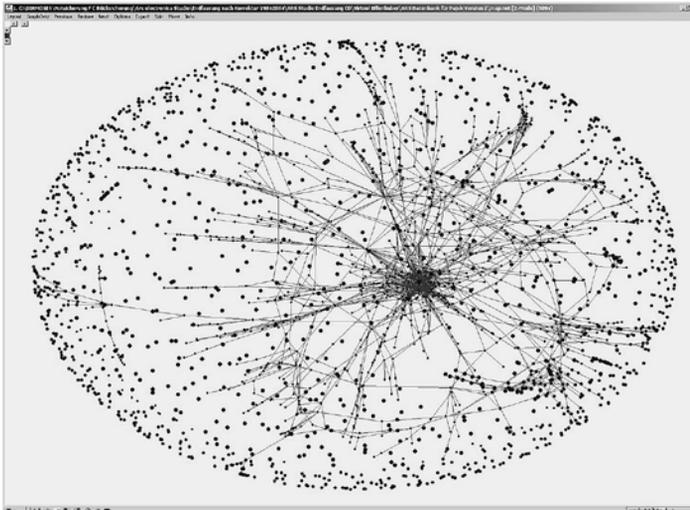
Fig. 1: Database Visualization Photo: Gerhard Dirsomer Ars Electronica Database

art & language aesthetic based in lists, alphabetical order or archives, the 70s conceptual art is based in the relations of art and memory. Nowadays database visualizations are the site of documentation and materialisation of knowledge, based in software and interfaces. In that sense, maps and diagrams are the resulting site depicting data but recognising the incomplete representation on computational machines. As Ascott appoints, in future the connectivity of computers will set up the total intelligence of humanity. On the contrary, media art databases are considered by Alan Turing an impossible ideal representation because of random access to information and the searching determinism in browsers. Webstalker by I/O/D is one of the art alternatives to Google. From Nam June Paik's Random Access (1960) to Josh's On They Rule (2005) databases, nomadic politics and decentralised poetics encounter in post-capitalism a deterritorialized space surviving from system hazard, building the common global village of Lev Manovich. In that database visualization displaying of data, information and knowledge, are more than 600 existing models of database visualizations of information, basically diagrams based in softwares like thesaurus or processing. Gerhard Dirmoser and Ben Fry are working on them. Many types of software (basically based in artistic opensource tools) are being used as a mapping strategy to display an interactive visualization of the cyberspace flows. Based in cybergeography, they are trying to depict the density flux of communication networks, databases and many other networks. Also named and recognized under categorization of mapping the net, they are using clusters, processing and pure data. Some common examples are Antidatamining, Antoni Muntadas, Ethan Miller or Warren Sacks. Mapping the city is based on the counter-map ideology of Fredric Jameson. One of the main points how to act is the surveillance displaying. Many actions using locative media are

Fig. 2: Database Visualization
Photo: Ben Fry On the Origin of Species: The Preservation of Favoured Traces
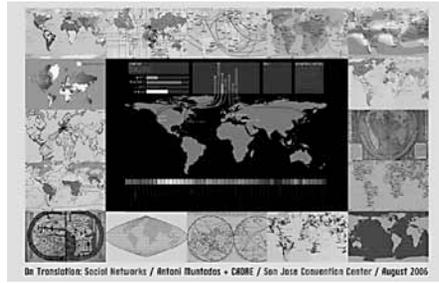
Fig. 3: Mapping the net
Photo: Antoni Muntadas On Translation Social Network

recognised as well as tactical media, although there are some differences between them. Soundscapes are included in that field of research trying to deconstruct the relation within space, time and sound. Artists as Jodi, Stanza, Manu Luksch and medialabs around the world display and research with opensource, mainly, to improve data conditions in public space. These co-existing different strategies to map the city are working with surveillance, traffic, weather and pollution, security and health, among others more abstract as feelings, identity or memory. Also, data displayed in streams is dealing and confronting publicity vs information. From situationism to psycogeography, the contemporary art devices display into the city strategies not to perceive the city as a decorative stage for massive corporation, but such a place of memory, refusing the commodification of non-place and the unifying landscape. Since surveillance has turned into merchandise, other tools to socialise public space (implies strategies in communication, location, weather or transport) are being used for artist to build so called DataCities. The George Orwell Big Brother control and securitizing system is now reality. Landscape implies an understanding of melancholic aesthetics where the ethos of subject turns into a participatory agent in history who reading the memory of landscape turns it into the poetics of the space, field of artists.

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ITCH
**Individual Technology /
Community Hacking**

Jihyun Kim (kr)

Independent Artist
KIMJIHYUNN@gmail.com

Andres Colubri (ar)

Jeju National University
Assistant Professor
andres.colubri@gmail.com

ITCH is

"an unpleasant sensation that causes the desire or reflex to scratch".

This project is a broad artistic exploration of new phenomena originated by mobile communication/computing technologies. It consists of a series of experimental works, research activities, and workshops to investigate the media devices most closely connected to human bodies and its surroundings, and ultimately find new forms of individual expression with them.
In contemporary urban life, people continue to grow increasingly consumer-oriented, forcing our bodies to deal with media screens that provide commer-

Fig. 1: Smartphones have the potential to create new instances for social interaction, but also for deeper isolation. Photo: Andres Colubri

cially and politically stimulated contents while individual subjects disappear along with personal style. Individuality is critical in recreating everyday life within the otherwise closed world of continuously recycled and redundant mass-media imagery. Smartphones, for instance, took the already omnipresent TV/computer screens [Bourriaud, Nicolas, 1998] into the individual place.
From Virilio's pessimistic takes on the effects of technology in our society [Virilio, Paul, 2006] to the utopian techno-fascination [Maes, Pattie and Mis-

try, Pranav, 2009], passing through humorous and/or scientific observations about the "social sacrifices and opportunities to interact with one another lost due to our own self-involvements" with always-available media/communication, we must find the spaces for transgressive uses of these technologies. It is within technology's greater risks for control and isolation where the greater potential for transgression and liberation exists [Galloway, Alexander, 2004].

The goal of ITCH is to provide users (individuals) of mobile devices with tools that would allow them to by-pass the commercially-approved functions of their phones in order to manifest and perform their subjectivity in everyday life. The desire in ITCH is to turn (hack) the mobile screen from a surface for passive consumption of media into an interface for new social interactions.

The following three questions are the guidelines in ITCH.

1) What novel usage paradigms would be possible by taking into account the unique properties of mobile computing devices?

2) Can these new paradigms lead to transgressive uses of mobile devices that expand personal expressive potentials of individuals?

3) Given a community of users who are engaged in such personal appropriations of mobile technologies, can these personal expressions and uses lead to the manifestation of unseen public desires?

Within the framework of these questions, ITCH carries out different projects and some of which are briefly described below.


Fig. 2: Examples of smartphones used/hacked for unintended purposes.
Photo: Left: Hacking iphone's accelerometer (http://www.engadget.com/2007/08/28/iphones-tilt-sensor-hacked/). Right: "A-Life" cell phone performance (http://www.textually.org/textually/archives/2006/12/014390.htm).

Project 1: Visualizing hidden desires

Social researchers are starting to use cellphones and smartphones to study human behavior [Raento, Mika et. al., 2009]. Numerous tools are being created for mobile data acquisition, geo-annotation and sensing, and knowledge mapping [Urban tapestries, http://urbantapestries.net/]. Mobile devices have become an indispensable medium for interpersonal communication. Most people generate an immense amount of data with the daily use of mobile phones, and this data can be processed and visualized in various ways to visualize social patterns of interaction. Can we reveal usually unseen behavioral structures that reflect how deeply mobile technologies are ingrained in our personal lives?
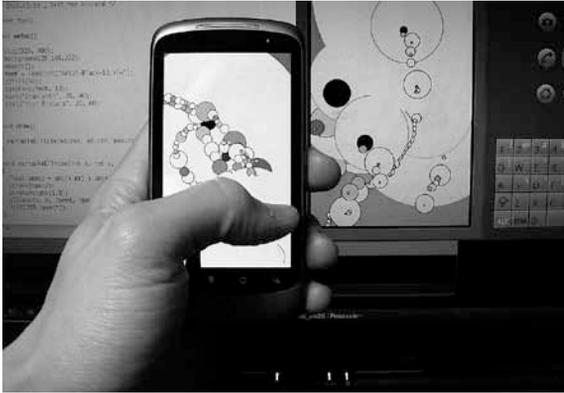
Fig. 3: First prototype of Android-based live drawing performance piece, being developed by the authors as part of the ITCH project. Photo: Andres Colubri

Within this specific context, we are working in the acquisition of mobile phone usage data to visualize unseen public desires of interpersonal interactions, contextualized by time and location. The following themes are of particular interest to us: personal closeness (or lack thereof) as mediated by mobile devices, alienation (from our physical surroundings) by virtue of constant communication, and the interactions that occur at unusual moments or locations (since mobile phones are with us at all times and places). Three different data visualizations are being investigated in order to provide a multidimensional exploration of the social effects of mobile technologies.

Project 2: Hacking smartphones into performance devices

We are currently developing a live drawing performance project that uses touchscreen-based Android smartphones as distributed input devices to generate a drawing collage in real-time. It aims to convert an individual technology into a platform for communal hacking and participative experience in public spaces. The participants will use the touchscreen of their phones to input hand-drawn gestures. The phones will run a client application to communicate with a central server software which will combine in real-time the gestures drawn by each participant into a large scale canvas. The resulting live collage will be projected onto a suitable surface in the space where the performance takes place. Although there are numerous applications on both the iTunes store and the Android market that implement touch-based sketching, there is none yet that turns drawing on a mobile device into a participatory live experience.

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