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When The Cables Leave, The Interfaces Arrive - immaterial networks and material interfaces

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The last decade has seen the dawn of a technological development towards a wireless networked world. Various mobile interfaces have started to appear like laptop computer, PDA, mobile phone, Blue Berry, etc. The zenith of this development is the full distribution of computation and networks into every aspect of our life. Everything will become an interface, from a cup to a shirt.

Wireless networks and multifarious interfaces will blend invisibly into our everyday life and environment. This emerging infrastructure and its significant impact on our life provides also new conditions for artistic practice.

What kind of art works and art forms are emerging from this situation?

How does this technological development reflect on artistic practice?

The ideas from late 1960's and early 1970's art theory about immateriality seem to be a promising starting point. They are relevant to contemporary artists working with digital technologies. These artists are employing a new set of forms and medias, which are increasingly immaterial. The nature of art and objects, how we relate to and read them has changed.

This paper is an investigation into immateriality versus materiality mainly focusing on mobile art. It is looking at the situation from the viewpoint of an artist –a maker and thinker of things and objects. The text is divided in four sections. The first section introduces few cases, which have been concerned about immateriality in art from the recent 40 years of art history. The second section talks about artistic practices, which are focusing on mobile art and mobile technologies. The third section is about transformation of objects and the text ends with an assumption about the role of the artist.

1. IMMATERIALITY AND THE NET

The following are notable events from the recent art history and an example of an artistic genre based on immaterial medium. They all have addressed the concept of immateriality and systems-oriented thinking within the art field.

1. The text "Dematerialisation of the art object" by Lucy Lippard and John Chandler, which appeared in February 1968 at the Art International.

2. Jack Burnham published two essays "Systems Esthetics", 1968 and "Real Time Systems", 1969.

3. In 1985 Jean-François Lyotard curated an exhibition “Les Immatériaux” (The Immaterials) for The Pompidou Center in Paris.
4. Artistic interventions in the internet, named as “net art” are considered to have begun in the 1994. “Software art” has had a growing attention from late 1990’s up to the present day.

In the text “The Dematerialization of Art” from 1968 Lucy Lippard & John Chandler are addressing the apparent current in the art of the late 60’s and early 70’s, “an ultra-conceptual art that emphasizes the thinking process almost exclusively.” [Lippard(1973)] The idea of dematerialization of art referred to wide variety of practices from artists making maps and instructions to happenings and to writings, system based installations and works on streets. Lippard & Chandler write: “The visual art at the moment seem to hover at a crossroads that may well turn out to be two roads to one place, though they appear to have come from two sources: art as idea and art as action. In the first case, matter is denied, as sensation has been converted into concept; in the second case, matter has been transformed into energy and time-motion.”¹ The concept “dematerialization of art” refers to a change in the emphasis of an art work from formalistic qualities to conceptual aspects. This influential text also proposes that in the future dematerialization may cause the object to become obsolete².

In the essay “System Esthetics” [Burnham(1974b)] Jack Burnham writes: “We are now in transition from an object-oriented to a systems-oriented culture. Here change emanates, not from things, but from the way things are done.” He was interested in works, which operated as systems and the role of the artist in an advanced technological culture. He continues “In systems perspective there are no contrived confines such as the theater proscenium or picture frame. Conceptual focus rather than material limits define the system.” “Where the object almost always has a fixed shape and boundaries, the consistency of a system may be altered in time and space, its behavior determined both by external conditions and its mechanisms of control.” A year later Burnham published another essay “Real Time Systems” [Burnham(1974a)] where he continued analyzing art which functions as a system and art as information processed in real time. He wrote that the major illusion of the art system is that art resides in specific objects, which he argues are material basis for the concept of “the work of art”. In the essay he creates an analogy between the art system and computer system and writes about artists who have begun to give real time information to public, “information with no hardware value, but with software significance for effecting awareness of events in the present.”

In an exhibition “Les Immatériaux” (The Immaterials) in 1985 at the Pompidou Center in Paris curated by Jean-François Lyotard who was aiming at establishing a

¹ Three years later Lippard published a book “Six Years: The dematerialization of the art object 1966-1972”, a short version of the original text was published in the book: The book is a record of artistic works, publications and events from a six year period 1966-1972 which were chosen as examples of the phenomenon. Many of these works are based on information as its concept and material.

² An example art work from the book “Six Years: The dematerialization of the art object 1966-1972” , pp. 117; “1969 Vito Acconci Following piece. Activity, 23 days, varying durations. New York City (“Street works IV,” Architectural League of New York), John Ginson Commissions, Inc 1969. Choosing a person at random, in the street, any location, each day. Following him wherever he goes, however long or far he travels. (The activity ends when he enters a private place –his home, office, etc.)” [Lippard(1973)]

relationship between scientific and artistic modes of thought. The exhibition had two themes: the first one was “general interaction” which dealt with human sciences and liberal arts. According to Lyotard these technologies are forcing us to reconsider the position of the human being in relation to the universe, in relationship to himself, in relationship to his traditional purposes, his recognised abilities and his identity. Lyotard was observing a radical change between humans and their relationship and perception of reality. The second theme of the exhibition was “the immaterials”. In an interview Lyotard explains “...all of the progress that has been accomplished in the sciences, and perhaps in the arts as well, is strictly connected to an ever closer knowledge of what we generally call objects. (Which can also be a question of objects of thought.) And so analysis decomposes these objects and makes us perceive that, finally, there can only be considered to be objects at the level of a human point of view; at their constitution or structural level, they are only a question of complex agglomerates of tiny packets of energy, or of particles that can't possibly be grasped as such. Finally, there's no such thing as matter, and the only thing that exists is energy; we no longer have any such thing as materials, in the old sense of the word that implied an object that offered resistance to any kind of project that attempted to alienate it from its primary finalities.” [Blistène & Lyotard(1985)] The exhibition at the Pompidou Center was structured as a network of artistic, scientific and technological experiments. One of the features in the exhibition was a portable radio guide. Visitors would have their personal device –a kind of walkman (with radio receiver). While they moved through the exhibition different soundtracks of commentaries were broadcasted to the devices based on the location³.

The history of net art places the starting point to 1994 with the creation of works such as the “Electronic Photogallery⁴” by Alexei Shulgin and the telephone intervention “kings X” by Heath Bunting⁵. [wikipedia(2006b)], [Bookchin(2001)] Steve Dietz defines internet art in the following manner: "Internet art projects are art projects for which the Net is both a sufficient and necessary condition of viewing/expressing/participating. Internet art can also happen outside the purely technical structure of the internet, when artists use specific social or cultural traditions from the internet in a project outside of it. Internet art is often, but not always, interactive, participatory and based on multimedia in the broadest sense." [wikipedia(2006c)] The majority of works done between 1994-1998 – during the height of net art – were focusing and experimenting with the medium and structure of the net. Net.artists were questioning the structures and functions of the Internet and by doing it showed that what most users accept to be natural, is actually highly constructed. The main feature which categorizes a work as net art is that the work (or part of it) is inherently build for the net and could not be done with another medium. This meant that to participate in it or to view the work could only be achieved via networked computer terminal. This also meant that it could be viewed from ANY networked terminal whether it was a personal home computer, office computer or terminal in a public space. It was suddenly possible for the public to view an original piece of art whenever they wanted without being restricted by museum or gallery location and opening hours. The 1990's net artists were working outside the institutionalized art discourse.

Software art [wikipedia(2006e)], although being defined as an own genre, can be considered as a relative of net art. They share similarities in their form and function. The

³ As a comparison the first cassette-tape Sony walkman was sold six years earlier in 1979, [wikipedia(2006)]

⁴ <http://sunsite.cs.msu.su/wwwart/hotpics/>

⁵ <http://www.irational.org/cybercafe/xrel.html>

software art works are usually small executable programs or artistic modifications of existing software. Many works are freely available for public to download from the net and to view on their personal computers⁶. It is inherent in the nature of software art –as well as in net art- that one needs only an apparatus for viewing it.

In the recently published book “Curating Immateriality” [Krysa(2006)] various art-critics, curators, writers and few artists reflect on networked art practices and the work of a curator in the age of networked systems.⁷ In the article “Conceptual transformation of art: from dematerialisation of the object to immateriality in networks” Jacob Lillemose argues that the conceptual transformations of art from autonomous object to contextual materiality is developed further by a certain strand of contemporary computer based art, through an involvement with immateriality in digital networks such as Internet and networks emanating from it. “Software and digitized [sic] data are replacing the traditional physical dimensions of artworks. As such, immateriality is evidently a relevant notion, as it quite accurately designates significant and extensive changes in contemporary art.” [Lillemose(2006)] Net art and software are commonly considered to be immaterial. Net art excludes itself from the physical realm of the world and lives in the virtual realm of networks, while software art takes place in the computer and/or in the network. Lillemoses examples of artists are from the area of net activism, artists that use internet as the main medium and tool for their practice which addresses political and social issues. Artists like: Übermorgen, Kingdom of Piracy, irrational.org, etc.

In software art, as well as in net art, the computer terminal functions as an entry point to the virtual, and enables access for viewing the immaterial art works. The development of wireless networks has abolished the limitation of fixed location with computer terminals. The terminals are becoming mobile, they are moving within our physical world. Also artists have begun focusing attention to wireless networks and mobile devices.

2. HAVING PRESENCE

The recent years have witnessed the emergence of mobile and wireless art works in the media arts. Mobile devices, wireless networks and –by now- the familiar concept of a technological presence have enabled the creation of this kind of works⁸. Works using mobile media as a critical artistic medium are not necessarily inventing new functions or features for the devices, but are transforming or using existing possibilities and by doing it they are exposing the characteristics –from useful to possibly harmful- of these devices.

The somewhat blurry definition “mobile art” is commonly used as a reference to works, which are incorporating a mobile device as a part of the work or which are made to be viewed on the screen of a mobile device. The huge variety of works under this category, share usually at least two similarities: they have a technological component incorporated as a vital part and are related to a physical object (either custom-built artifact or mass-produced commercial mobile device).

⁶ A software art repository <http://runme.org/>

⁷ Immateriality and dematerialisation of art has recently caused a fair amount of discussion. The idea of art being less based on objects and material, and increase of immaterial practices has a profound impact on curatorial, institutional and archiving perspectives. For example conference at Tate, UK 2005 <http://www.tate.org.uk/onlineevents/archive/CuratingImmaterialitySystems/>

⁸ By technological presence I refer to devices like mobile phones, which are on and present most of the time in our everyday.

Locative media⁹ is one genre out of many categorized under mobile art or mobile media. Wikipedia defines locative media as “media of communication bound to a location. They are digital media applied to real places and thus triggering real social interactions.” [wikipedia(2006a)] Ben Russell continues that locative media is “A new site for old discussions about the relationship of consciousness to place and other people.” [wikipedia(2006a)] Anne Galloway & Matthew Ward are writing about a parallel between locative media and archeology in their essay “Locative Media as Socialising and Spatialising Practices: Learning from Archaeology (DRAFT)”. “In archaeology -as with locative media- nothing is considered more important than context. When all we have are the fragmented remains of lived experience, how people, places, objects, events, and activities relate in space and time becomes the primary means by which cultural knowledge and experience are (re)produced.” [Galloway & Ward(2005)] Locative media could be thought as “archeology of the presence”. Locative media is inherently about human presence in a geographical location. Locative media is bound to real time from the current users perspective¹⁰. While moving with a GPS (Global Positioning System) enabled device one can follow one's present geographical location as numbers, the current height from the sea level and possibly the temperature of the surrounding environment. If the present location is within a wireless or mobile network this data can be transmitted in real time to Internet or other devices. Locative media is obviously linked to surveillance technologies, as a majority of the available devices can be also used for surveilling. Many of the artistic locative media works are based on tracing a person moving through space and often visualizing the received data (possibly in real-time) on a screen.

Locative media is also related to consciousness about our existence and presence on the planet. While following the changing numbers on a GPS receiver it is a moment of concrete realization of one's existence in a global context, not solely in local geographical location. The understanding of the relation between oneself, location and the globe is aided by a technological device. Anne Galloway & Matthew Ward are saying that locative media practices “are inextricably connected to the research, development and availability of particular material devices, applications and services, as well as to the private and public policies and laws regulating their use.” [Galloway & Ward(2005)]

Lippard & Chandler argued in 1968 that the art object might become obsolete in the future. When looking at locative media practices one could ask whether locative media is holding so tightly on to the concept of geographically defined location because the location – in its traditional meaning – is already on its way to becoming obsolete. While locative media is concerned with the human presence in a geographical location, wearable technologies are focusing on the relationship between human, body and environment.

There does not yet exist a good definition for “wearables”. There are many diverse terms (wearable computer, wearable computing, wearable fashion, wearable technologies, or simply wearables) in use with small flavor differences. Nevertheless they all are referring to the same area of research and development, which focuses on intelligent things developed for “wearing”. These things –which today are constituted of circuits, electronics and smart materials- can be woven into fabric, embedded in a garment or designed to be carried on a body. A fragment from MIT's Wearable Computing FAQ 1997 describes the nature of wearables as following: “By default a

⁹ The creation of the term is attributed to Karlis Kalnins, one of the founders of Locative Media Lab in 2001.

¹⁰ Often the collected real time data is later presented as a constructed map.

wearable is always on and working, sensing, and acting.” [Rhodes(1997)]

When looking at the projects under the category of wearables one can see three different approaches. There are projects coming from the direction of textiles and fashion, which focus mainly on inventing ways to utilize and embed electronics and circuits into textiles and clothing. Secondly there are projects coming from the hardware development side, which focus on inventing new use and functions of wearable computers and technologies. Third category is artistic works, which don't aim necessarily at improved functionality but have various other themes and aims. The first two approaches are using technology as an infrastructure but are not commenting or critically addressing it. While many of the artistic works use the technology as a means to also critically analyze it.

It is a common thought that wearables are extending the user's body. Apparently this idea is coming from the main development direction, which aims at offering the user more and better functions, and intuitive access to them. This direction is not necessarily so clear with artistic projects. The artworks under the various categories (wearables, locative media, mobile art) are usually based on very limited functions. They are often focusing on or employing just a single technological feature. This way the works are able to critically comment or question the various sides of the technological development and the society using these technologies. Without going deeper into the history and origins of wearables, there is one aspect to point out. Wearables are always relating and also emphasizing the material object, whatever it might be –hardware device, intelligent clothing or a custom-built artifact. Art works which are based on mobile media and wireless networks have some kind of physical interface, apart from this the work can be considered as immaterial. The physical interface represents a concrete instance of otherwise immaterial concept or structure. This is especially obvious in works with custom-build interfaces. These kinds of objects can no longer be considered as objects in any traditional sense.

Hans Haacke wrote in 1968: "A "sculpture" that physically reacts to its environment is no longer to be regarded as an object. The range of outside factors affecting it, as well as its own radius of action, reaches beyond the space it materially occupies. It thus merges with the environment in a relationship that is better understood as a "system" of interdependent processes. These processes evolve without the viewer's empathy. He becomes a witness. A system is not imagined, it is real." [Lippard(1973)]

3. PORTHOLES

Objects and art works, which are wirelessly networked, have two parts: physical and immaterial. The immaterial part contains the core and the main structure of the work. It is (usually) software, which cooperates with the physical part. The physical part is the actual public entry point to the work. It also generally marks an entry point to the wireless network. This function of being a marker transforms the physical object into a shell for a porthole, which leads to the virtual. These portholes seem to be continuously getting larger until the physical and the virtual layers merge seamlessly together.¹¹

In the book “Shaping Things” [Sterling(2005)] Bruce Sterling writes about objects, their manufacture, users and about a quest for a sustainable world. He classifies objects based on varying object-human relationships to artifacts, machines, products, gizmos, spimes and biots. Sterling defines gizmos as “highly unstable, user-alterable, baroquely multifeatured objects, commonly programmable, with a brief lifespan. Gizmos offer functionality so plentiful that it is cheaper to import features into the object than it is to

¹¹ I use the term porthole because it points more towards the conceptual than the functional in comparison to the term interface.

simplify it. Gizmos are commonly linked to network service providers; they are not stand-alone objects but interfaces.” This kind of object demands constant maintenance with upgrades and other additional features.

“Spimes are manufactured objects whose informational support is so overwhelmingly extensive and rich that they are regarded as material instantiations of an immaterial system. Spimes begin and end as data. They are designed on screens, fabricated by digital means, and precisely tracked through space and time throughout their earthly sojourn.” Sterling continues defining spimes as uniquely identifiable and: “Eminently data-mineable, spimes are the protagonists of an historical process.” He dates the dawn of spimes to 2004 when US Department of Defence ordered all military supplies to be equipped with RFID (Radio Frequency ID) tags.¹²

Gizmos and spimes share similarities with the objects which I call portholes. They are not stand-alone objects but rather interfaces, they are often networked, unstable, user-alterable (possibly), programmable and in some cases data-mineable. There are also clear points of contact between the various projects coming from locative media and wearable technologies, and with the functions (and tasks) assigned to gizmos and spimes.

Bruce Sterling describes in the chapter “An internet of things”¹³ how every object and every thing in the physical world will become tagged, traceable and readable via RFID tags. “Your arphid [RFID] monitors are hooked into the satellite based Global Positioning System. Then your network become a mobile system of interlinked objects that are traceable across the planet’s surface, from outer space, with one-meter accuracy, around the clock, from pole to pole.” [Sterling(2005)]

The idea of “An internet of things” is reflected in a recently started project called Thinglink by the small design company Aula Design Oy. [thinglink.org(2006)] Currently it is directed towards crafters, artists, designers and producers of unique and often singular things. It is an open database where makers can register their work for free and create labels for their products. The physical object will have a thinglink product-label attached to it. The information (for example keywords or history) that one enters on the website will be publicly accessible, which –according to the owners- will make it easy for other people to find your work. One of the owners Ulla-Maaria Mutanen writes: “A thinglink identifier is based on the idea that many of the things we use in our daily life are quite particular. Perhaps we know their origin (who has made them, when and how) and something about their history or previous use (like with furniture and cars). Some things have more meaning to us than others.”¹⁴

¹² “Radio Frequency Identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is a small object that can be attached to or incorporated into a product, animal, or person. RFID tags contain silicon chips and antennas to enable them to receive and respond to radio-frequency queries from an RFID transceiver. Passive tags require no internal power source, whereas active tags require a power source.” [wikipedia(2006d)]

¹³ “(The Internet of Things) A term first coined by RFID developers in the Auto-ID Center in the late 1990s, it is also sometimes referred to as the Product Internet, T2T (Thing to Thing) network, or the M2M (Machine to Machine) network. In this vision, increasingly large numbers of our everyday objects and gadgets will have some kind of simple communication technology embedded into them, allowing them to be connected to each other within local networks and, ultimately, connected to the wider network of networks – the Internet.” [Kranenburg & Ward(2006)]

¹⁴ In the current status 2006 Thinglink does not yet use RFID tags, but when the author asked

4. TREES AND THE FOREST

Jack Burnham states at the end of his essay *Real Time Systems* 1968: "With increasing aggressiveness, one of the artist's functions, I believe, is to specify how technology uses us." pp. 38 [Burnham(1974a)]

Throughout time the general technological condition has influenced the arts. For example, the concepts of dematerialization and immateriality in arts were developing parallel to the progress with computers and information systems. Net art was born simultaneously with the massive increase of access and usage of Internet. The increasing appearance of portholes, caused by the development of wireless networks, lead to artistic practices like locative media and wearables. The physical appearance of the portholes are necessary at the moment for marking the entry points to otherwise invisible wireless networks, which constitute the virtual layer of the world. To use a metaphor: we have single trees appearing here and there but over time we will have a fully grown forest. Yet it is still somewhat challenging to see the future forest from the trees. Technology can help us to create the trees, but the artist can help us to see the forest.

about it, they said that they are considering it.

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