The Curious Apparel: Wearables and The Hybronaut

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Introduction

Our use of technology is generally limited to standard applications and commercial ready-mades, which commonly exhibit a very functional and task-oriented approach to technology. The other viewpoints and possibilities of usage are often left unnoticed due to the ordinary and pre-defined perspectives offered by mobile devices available for consumers.

In my research I investigate wearable artistic experiments that explore concepts related to ubiquitous computing and to the merger of virtual and physical space-hybrid space. These wearable art works offer a different way to experience hybrid space in comparison to more standardized perceptions offered by commercial mobile devices. They aim at directing the focus away from a functionally oriented approach toward one inspired by the technology--in other words, toward a more conceptual approach.

Within my research I have introduced the figure of the Hybronaut; a person coupled with an artistic wearable device. The Hybronaut observes life and explores her existence in hybrid space. By simply focusing on being rather than doing, the Hybronaut refers to the wider phenomenon of technology within our society and in our future.

Connected Space

Many of our everyday practices are already intertwined with concepts of connectivity, mobility, and wireless networks. The virtual is increasingly being mixed with physical space. Still, the virtual and physical spaces are easily perceived as separated entities. The most common example of the merger of physical and virtual space is the extensive use of mobile phones in everyday life. According to a survey carried out in 2000 with young mobile phone users, the most important motivation for mobile phone usage is the simple fact of being "reachable." This also implies the value of belonging to a group, or "a tribe" in the way that Lobet-Maris writes about it.[1]

Various theorists and researchers have scrutinized the so-called hybrid space that emerges from this technological condition. Among others, Timo Kopomaa has written about the concept of a third space, Anthony Townsend about phonespace, and Adriana de Souza e Silva has defined the concept of hybrid space which is formed as a social space including physical and virtual space.

Timo Kopomaa writes that the mobile phone itself, as a communication device, can be interpreted as a kind of virtual space parallel to work and home. A mobile phone with its connections forms a third space for socializing and meeting friends, as well as functioning as a place to withdraw into privacy and safety within the midst of an urban lifestyle. According to Kopomaa, chatting in the third space is a primary function and a major way of expressing one's personality and individual self. The meeting of two people in third space is considered completely private in relation to the surrounding environment: it is one's own personal zone of freedom. The mobile phone is firmly linked to sustaining connectedness. As Kopomaa writes, the mobile phone is not solely a device to keep in touch, but a device for being together.[2]

Anthony Townsend has observed that time is the most important change occurring with new lifestyle opportunities offered by mobile phones. Time is a commodity, which is bought, sold and traded over the phone. Instead of living within a more traditional schedule based on minutes, hours and weeks, individuals now live within a constant stream of negotiations, reconfigurations, and reschedulings. One can be interrupted and can interrupt others at any time. Townsend has defined this as phonespace. According to him, a person living in the phonespace cannot let go of it; it is a primary link to the temporally and spatially fragmented world of personal networks of friends and colleagues, as well as offering constant reconfiguration of schedules and meetings. "It has become their new umbilical cord, pulling the information society's digital infrastructure into their very bodies."[3]

Adriana de Souza e Silva defines a concept of hybrid space in order to re-conceptualize physical spaces through the connectivity of digital mobile media. She writes about hybrid space: "the mix of social practices that occur simultaneously in digital and in physical spaces, together with mobility, creates the concept of hybrid reality."[4] She has focused her research on the use of mobile media devices as social interfaces which reshape space. Obviously, hybrid space is not solely a technological construction. According to de Souza e Silva hybrid space is emerging explicitly as a social space created by social networks and interactions, which are developing simultaneously in physical and digital space. Based on de Souza e Silva's definition, hybrid space inherits properties from both worlds; it grows larger than the sum of its parts.

As mobile phone users we carry individual spaces, as described by Kopomaa and Townsend, with us everywhere. The amplified importance of individual spaces as pockets of privacy within public space is impacting on our developing relationship with our physical surroundings. When large parts of our lives and important events take place within technologically-enabled private spaces, it raises the question as to whether physical surroundings will eventually be converted into a mere backdrop for the alluring individual spaces. Or possibly, as many seem to believe, the era of ubiquitous computing [5] will eventually remove the rigid separation of physical environment and virtual space.[6]

No Return

It has been argued that, when technologies reach a certain momentum, it becomes difficult --often impossible--to undo decisions. The technological momentum appears when technology is no longer an isolated machine. An example is an invention that has matured and become embedded into so many fields and practices that society can no longer voluntarily return to the previous situation without facing a collapse. The only choice is
to continue further on the path. In other words, society, once having experienced technological progress, can no longer go backwards because we have become dependent
upon it.

Currently computers and networks determine many of the daily practices within the developed world, both work-related and recreational. Most of our public services are also relying on computers--from banking to social services. The more recent elaboration of the use of computers and digital technology has been the development of wireless networks and various mobile devices. Everyday life is becoming increasingly tied to these invisible networks. For example, in the western hemisphere it is becoming harder to manage one's everyday life without a mobile phone. It is expected that we all have our own individual phones, and that we are available via them. The return from this situation would mean replacement of public phone services (phone booths), deconstruction of mobile networks (antennas, servers), and re-evaluation of the work culture that has quickly adapted to the usage of mobile phones that offer both more mobility and more control over the employees. In the western world the technological momentum of wireless communication devices, such as mobile phones, have undeniably approached and even reached its point of no return.

Without being aware of the fact, the majority of us are already inhabitants of the hybrid space defined by de Souza e Silva [4] through the use of mobile phones or other connected mobile devices. Even if our mobile phones are always on and we are constantly connected through them, the concept of hybrid space that we share with other connected bodies, and its wider possibilities, are easily left unnoticed. This could be claimed as the result of our standardized attitudes towards technology. Technological devices are often solely scrutinized as to their functionality and usability. Johan Redström writes, "though phenomenological, sociological and other studies have challenged and expanded our understanding of technology, practice still seems to be dominated by an instrumental perspective. Central to our understanding of technology still lies notions of use, the idea that technology is the means for achieving certain ends, often by amplifying the power of our actions."[7] We carry mobile phones with us to be connected and available to others; we possibly read our mails with them, and pay our bills via them.

Mobile devices are commonly considered mainly as tools for these pre-specified tasks. Also, the various possibilities of use, which are offered for us, are often standardized and restricted to defined specific functions. A popular phenomenon of personalization of private phones with unique phone covers, wallpapers, ringing tones, and amulets, is a simple example, which readily creates a false idea of freedom. Though we all can apparently choose from within a wide range of computers, phones, and other commodities, these are all still enveloped within larger technological systems. David Nye writes: "It is easier to select among many telephones than it is to do without one."[8]

In the current situation, hybrid space is only attainable by way of standardized interfaces (for example, mobile phones) with predefined functional possibilities. To be able to function or experience hybrid space differently is out of reach for the average consumer.

Artistic Strategies

The wearable and mobile technologies bring the virtual layer of the world more rigorously into one's physical, bodily presence. These kinds of "personal technologies"[9] are expected to be attached to the body and used in one's everyday life. There no longer exists a separated virtual world as its own entity, but the virtual layer of the world is blending into our physical reality. Like de Souza e Silva has stated, within hybrid space we are communicating and socializing simultaneously within the both layers, virtual and physical. [4] In wearable and mobile technologies the physical reality is as important as the virtual reality.

The development of wearable, small-footprint technologies, and wireless and mobile networks, has impacted on the manifestation of various artistic projects using mobile and wearable devices. One of the earlier wearable works is, for example, K. Wodiczko's *The Mouthpiece (Porte-Parole)* of 1993. It is an instrument that covers the wearer's mouth by a small moni-

tor and loudspeakers. The instrument replaces the immigrant's actual act of speech with an audiovisual broadcast of prerecorded, edited, and electronically perfected statements, questions, answers. Wodiczko writes: "Strangers in their relation to the self and to the non-stranger (as well as to other strangers) need a thing-in-between, an equipment-artifice that will open up discussion and allow them to reveal and to share (communicate) their experiences, identities, visions, and unique strangenesses."[10] According to him the wearer appears as a prophetic storyteller and poetic interrupter of the continuity of established life in public space and the dominant culture.

Recently artists have also begun to expand the notion of hybrid space and its possibilities by exploring the limits and creating customized situations. These kinds of artistic works [11] experiment with new perspectives that oppose the pre-fabricated standard perceptions, which neither offer possibilities for exploring the shifting notions concerning hybrid space, nor address critical notions concerning the ways we use technology.

Machiko Kusahara introduces the concept of "Device Art" as a new approach in understanding Japanese contemporary media art. It is outlined in a following way: "Works of Device Art involve hardware specifically designed to realize a particular concept. The functional and visual design of such hardware, or a device, is an essential part of the artwork. Material and technology are explored and used in an original and innovative manner, as is familiar from the Japanese tradition of respecting tools. The material chosen is important for users to keep in touch with the real world." According to her, artists visualize what technology means to us, and they also help to reveal what is happening inside the black box of technology when information technologies become more invisible and ubiquitous in our daily lives. The devices created by artists can result to become either ironic or playful, as art has no straightforward practical purpose. [12]

The Hybronaut

Hybronaut is a figure, a person, or a body, coupled with a peculiar-looking wearable device. This figure becomes a kind of space traveler, who is equipped to be able to exist within hybrid space and explore its possibilities by producing a non-standardized perspective on this space, and also by pointing to the restricted manners in which we are currently allowed to use hybrid spaces.

The concept of Hybronaut was created to be able to consider a user and a wearable device as a single unit instead of investigating them separately. Ana Viseu introduces a hybrid actor, which is a body coupled with a wearable device. She writes that in augmentation physical actors (bodies) are augmented with, or host, computational devices that participate in the processing of information. This creates new synergies that would be beyond the abilities of each individual actor. "Rather than building self-contained machines, or leaving the body behind, machines and humans are coupled together into a new hybrid actor." [13]

Hybronaut is created within the realm of art as an attempt to pin down (or categorize) an increasing amount of artistic works that appear in the forms of wearable technologies, but do not otherwise follow the typical characteristics of wearable and mobile development.[14] The focus is on works that are wearable or portable, mobile, and networked, either via digital network or with another distinct connection to the surroundings. While being a Hybronaut, the user is not only appearing in a physical environment, but is simultaneously appearing in a virtual sphere. The possibilities for a variety of concretely linked relations are expanded via means of technology. These relations can include persons, environment, nature and other artifacts. The presence of the relations is emphasized in the Hybronaut's equipment with a constant connectedness (and with a constant awareness about the connectedness).

The--often-curious looking--wearable device, which is an essential part of the Hybronaut, raises curiosity through its visual appearance. This fosters interaction and communication with the public. One could claim that the Hybronaut is a user turned into a performer. The Hybronaut carries her own (connected) world with her, pointing out to the public her private investigations concerning both connectedness and our shifting notions of space, presence, the real, and the virtual.

In some way the Hybronaut can be compared to a flâneur [15]. The appearance of the flâneur was influenced by the material circumstances of the city, for example, at the time, the newly developed concept of department stores. In a similar manner the concept of hybrid space and even the figure of the Hybronaut have appeared within the technological development of (commercially enabled) wireless and mobile networks. The flâneur, like the Hybronaut, is a figure on the street, strolling around the city without any specific goal or destination, simply observing life; the only clear difference here is that the Hybronaut is strolling and observing life within a hybrid space while the flâneur was enthralled by emergent urban life within the physical world.

My own research is focused on the meaning of artistic works which, in contrast to the functional approach to technology as a tool, often appear as awkward looking wearable devices and objects offering a more conceptual direction, rather than a strictly useful functionality. They are not designed for, or solely focused on, the user's perspective, in which case they would be designed as an aid for, or an extension of the user, and would often have a sleek or almost invisible

appearance. These artistic devices in question may have an absurd look, and can even be uncomfortable to wear. Their inherent playfulness in relation to technology, as well as their humor and irony combined with their awkward appearance, opposes the existing views and (restricted) possibilities of commercial mobile devices. These kinds of works question our understanding of technology and its meaning for us.

The Works

In my artistic works, the Hybronaut's equipment is constructed from standard technological components and already existent possibilities. However, the way these standard parts are linked together differs from what is usually expected, or possibly even allowed, for normal consumers. By simply focusing on continuous existence via connectedness rather than purposeful functionality, Hybronaut refers to a wider phenomenon of technology within our society and in our future.

Sherry Turkle has written that various objects carry both ideas and passions; they can be emotional and intellectual companions that can provoke new ideas and reflect larger themes.[16] By making a reference to Turkle, I would like to propose to consider Hybronaut to be an evocative object to think with.

HEART-DONOR by Laura Beloff & Erich Berger with Elina Mitrunen (2007) *is a wearable vest addressing our life in hybrid space. You can "wear" the hearts of your own selected network, and observe the presence of these people in physical and virtual space.*

The work takes its point of departure by rejecting the concept of the differentiation of virtual (digital) and physical (real) layers of the world. This work is specifically constructed for hybrid space. The work *Heart-Donor* is a physical instantiation of a concept concerning personal social networks and life in hybrid space.

Laura Beloff and Erich Berger with Elina Mitrunen, *Heart-Donor,* 2007.

It is imagined as one's personal apparel (a vest) for long-term everyday use.

The wearer can make thirty recordings of heartbeats of friends and family as collected personal mementoes in the HD-vest. Each heartbeat will be stored into one of the thirty small lamps embedded on the front of the vest. The lamp will blink in the rhythm of the recorded heartbeat. Additionally each heartbeat is linked with this person's Skype-name (if she has one). The default color of a recorded heartbeat is green, but it will change to beat in red-color when the person (whose heartbeat is stored into the HD-vest) goes online with Skype. The "owner" of the HD-vest can observe her selected social network of people shifting their presence between the physical and the virtual layers of the world wherever she and the people in the network may geographically be. The HD-vest and its wearer reside continuously within hybrid space.

The form and design of the HD-vest is inspired by the traditional life-vest as a reference to the fragility of life. The heartbeat is used as a sign of physical life and presence, which is combined with another sign for a global presence within a technological sphere of the world. The work is not created as a tool or defined as a function aimed at specific tasks. It is created as wearable apparel enabling everyday existence within a hybrid space. One becomes an observer of the hybrid world, the one who simply exists within it.
http://www.realitydisfunction.org/heartdonor/

SEVEN MILE BOOTS by Laura Beloff, Erich Berger, Martin Pichlmair (2003-04) *"Seven mile boots, the magical footwear known from folk tales, enables its owner to travel seven miles with one step. With little effort one can cross the countries, to be present wherever it seems suitable and to become a cosmopolitan flâneur with the world as the street."*

The project *Seven Mile Boots* is a pair of interactive shoes with audio output. When wearing the boots the

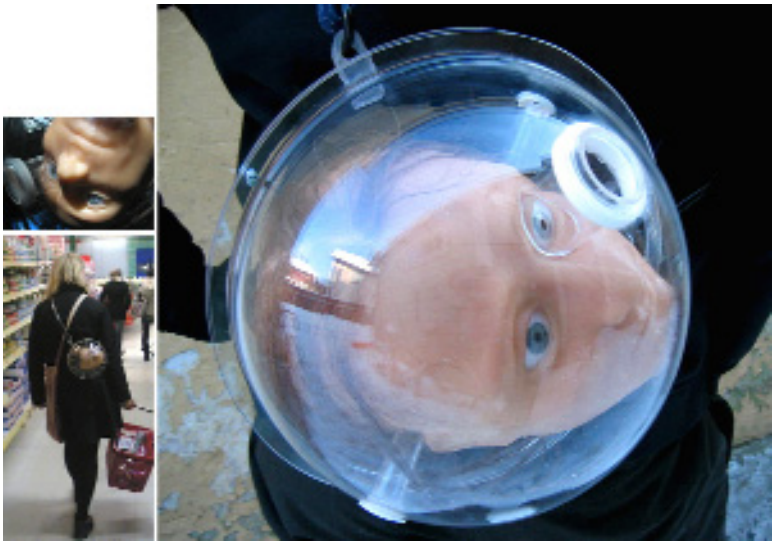
Laura Beloff, Erich Berger, Martin Pichlmair, *Seven-Mile Boots*, 2003-04

user walks around--as a flâneur--simultaneously in the physical world and through the literal world of the Internet. While walking in the physical world one may suddenly encounter a group of people chatting in real time in the virtual world. This encounter is noticed by hearing the chats suddenly coming out as a spoken text from the boots. The user can pass through a group of chatters or she can decide to stop for closer observation.

.The boots join IRC-chat rooms automatically under the name of "sevenmileboots." Every time, while walking, the boots are looking for a new selection of channels from the IRC-servers. The boots are embedded with all the necessary hardware: a computer with wireless network, microprocessor, sensors, amplifiers and loudspeakers. They are ready to function in any location provided with an open wireless network.

Wherever you are with the *Seven Mile Boots*, the physical and the virtual worlds will merge together. The piece is built upon feet and shoes as an interface to move in the text-based "non-space" of the chat rooms. The piece offers a perspective into processes that are an inherent part of our current lifestyle. The artistic focus of the piece, at the time of creation, was in the construction of an open structure which would be filled by real people in real time: real life. This kind of structure creates a possibility-space that pushes the users forward in a search for more substance, with a desire to consume and to experience. http://randomseed.org/sevenmileboots

Laura Beloff, *The Head (Wearable Sculpture)*, 2004-06.



THE HEAD (wearable sculpture) by Laura Beloff (2004-06)
The Head (wearable sculpture) is a piece with process-like, participatory and mobile approach to art practice. It is dealing with a view of contemporary, mobile and technologized society. It is built as a "wearable" object for people to adopt.

One of the main features of *The Head*-sculpture is that it is available for a free public adoption. The person adopting this wearable sculpture becomes responsible for it. It becomes like a second head for them and it should follow its "foster-parent" everywhere s/he may go (or occasionally be placed in a location of their choice).

The Head is connected to the Internet and it has an open public access via mobile phone text messages. *The Head* contains a mobile phone, which is embedded in such a way that the camera of the phone functions as the technological eye of *The Head*-sculpture, and a microphone is embedded into the ear. The general public can access *The Head* by sending a mobile phone text message (SMS). When *The Head* receives the SMS-message it responds by capturing an image and recording a short sound file simultaneously. The captured image together with sound is sent back as a reply to the sender. These images are also automatically uploaded to the public site in Flickr.com. In a similar manner as many of us use Flickr for storing and sharing our photos, *The Head* is doing the same. The dedicated Flickr-site can be thought as the mind of *The Head*-sculpture with continuous accretion of memories. On the site one can see all the observations of *The Head*. It develops to a collective memory. *The Head* will be adopted and carried around by various

Laura Beloff, *Fruit Fly Farm*, 2005-06

individuals and its vision and hearing are triggered by others to collect memories on the way.

Ideally, *The Head*-sculpture should be occasionally adopted by specific public figures; for example, a police officer, a politician, a tourist guide, or a teacher - professional, which generally have "a view" on society. The public access via SMS-messages would naturally remain open for the general public equipped with mobile phones. The piece has no permanent location. It is a nomad living amongst the people, moving from place to place. Simultaneously it is present and accessible at any moment via mobile phone. http://www.realitydisfunction.org/head/

FRUIT FLY FARM by Laura Beloff (2005-06)
The Fruit Fly Farm is a wearable space station designed for fruit flies. The nest for the flies is located in the center of this traveling artificial habitat. The public can observe the nest via captured mobile phone images.

Fruit Fly Farm is a second work (after *The Head*) which uses one of the most common everyday technologies for observations: the mobile phone. While *The Head*-sculpture is observing outwards to the surroundings and the society, the *Fruit Fly Farm* has an entire community under observation. Fruit Fly Farm is embedded with a camera mobile phone, which is observing the nest. The public can access the phone camera by sending a text message, which will trigger the camera to capture an image. The image will be sent back as a reply and also uploaded to a dedicated website where one can see all the uploaded images observing the fly nest. The sent SMS-messages (comments) will be displayed on the website with the image.

Traditionally fruit flies are considered to be a nuisance and a pest. In this piece they are treated as a living community which can be observed by the public. For the "owner" of this wearable *Fruit Fly Farm*, it is a pet that requires responsibility and care taking. The nest is located in the middle of the Ø20cm transparent acrylic ball. The nest capsule contains rotten fruits and needs to be re-filled approximately once a week. The outer ball and the nest capsule are perforated with small holes. The flies are free to fly in and out of the nest.

The audience members are invited to adopt the work

and become responsible for the fly farm. It is designed as a lightweight transparent ball with a custom made easy-to-carry system. http://www.realitydisfunction.org/

TRATTI by Laura Beloff and Martin Pichlmair (2006-08)

Tratti makes funny noises. It is a wearable noise instrument with artistic twist for kids of all ages. The initial inspiration was the idea of using the world as a constantly changing real-time score for the sounds and the notion of children being very loud at certain age-period. *Tratti* records a short sound clip (for example, one's own voice) and continuously transforms it using the surrounding world as a score. *Tratti* also sets up a connection with the universe; the actual satellites passing above *Tratti*'s location will be heard as specified sound-signals.

The current version contains a custom written software for a camera mobile phone, microphone, modified megaphone system with amplifier, and rechargeable batteries, all within a custom-designed wearable device. http://tratti.attacksyour.net/

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[6] M. Weiser and J.S. Brown, *The Coming Age Of Calm Technology* (Xerox Parc: Palo Alto, 1996).
[7] J. Redström, "On Technology As Material In Design," in M. Redström, J. Redström, and R. Maze (eds.), *IT + Textiles* (Edita Publishing Oy., 2005).
[8] D. Nye, *Technology Matters: Questions To Live With* (MIT Press: Cambridge, MA, 2006).
[9] "Personal technologies" is a term advocated by Steve Mann.
[10] Krystof Wodiczko, "Designing For The City Of Strangers," in *Critical Vehicles; Writings, Projects, Interviews* (MIT Press: Cambridge, MA, 1999).
[11] For example, Stephan Schulz's *Tin Drum* (2006) is a wearable physical drumming machine which reads GPS data and translates this into drumming patterns. The artist writes that it is important to combine the virtual layer with a real world intervention in order to create a stronger connection between the two, and to use new technology as a catalyst for social interaction. In this work the user of the device becomes a public performer, functioning as a focus for public attention and as a juncture between the virtual and real layers of public space.
http://www.maybevideodoes.de/sites/tindrum.html
[12] M. Kusahara, "Device Art: A New Approach In Understanding Japanese Contemporary Media Art," in O. Grau (ed.), *MediaArtHistories* (MIT Press: Cambridge, MA, 2007).
[13] A. Viseu, (2001) "Simulation And Augmentation: Issues of Wearable Computers," *Ethics and Information Technology 5*, 1 (2003).
[14] This includes also my own artistic production.
[15] The term flâneur was popularized by the poet Charles Baudelaire and later theorized by Walter Benjamin. Further on it has been written about and used by various scholars.
[16] S. Turkle, "What Makes An Object Evocative?" in S. Turkle (ed.), *Evocative Objects: Things We Think With* (MIT Press: Cambridge, MA, 2007).

TRATTI by Laura Beloff and Martin Pichlmair (2006-08)