The Hybronaut, An Early Protonaut Of The Future
- on wearable technologies as cultural artifacts

2043
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During the late 20th century and the first decades of the 21st century in the Western world, communication technologies changed fairly rapidly. This change brought about conversions from fixed place telecommunication technologies, such as fixed phone lines, to mobile telecommunication technologies that were based on a combination of wireless cellular networks and traditional phone lines, and later on satellite systems.

Throughout the several preceding decades numerous technical developments were innovated which decreased the size of electronic components. These developments impacted the appearance of various other mobile technologies in addition to mobile phones and PDAs[1]. For example, impacted were portable battery-operated radios and televisions, various mobile audio-players with storage capacity, GPS[2] devices that hooked up to satellites in transmitting geographical position data, and portable small-size computers.

Further, the expansion of the so-called small footprint technologies caused an intense period of research and development into wearable technologies. Small gadgets that were earlier portable gradually disappeared into clothing or were designed to become discreet parts of clothing and/or ergonomically attached to the body. These kinds of wearable technologies were used in many workplaces, especially when remote network access was necessary. Correspondingly, among the techno-believers and techno-supporters at that time, it was fashionable to wear small jewelry-like gadgets or garments embedded within technological components, such as LED-matrixes or toy-like applications, which commonly had only single functional designs. From the commercial sector, the military and the health industry were the main proponents of the wearable technology development during this time frame, resulting in a wide variety of health-monitoring systems and support for healing processes worn on the skin, as well as various military applications that primarily focused on data transmissions between the command centers and remote foot-soldiers.

In short, one could say that the majority of wearable applications and devices developed from the 1990s through to the 2020s were intended to be either functional or fashionable, and in many cases they aimed at being both. The apparent attitude toward technology reveals the expectation that technology needed to be useful and provide a service, and in many instances to be fully integrated in the everyday life (wearable) with a fashionable appearance or design.[3]

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[1] Personal Digital Assistant
[2] General Positioning System
[3] This claim was put forth and supported, for example, in texts by Steve Mann, and Sabine Seymore.

However, a thorough investigation of the field during the latter part of the 20th and the first part of the 21st centuries reveals that there also appeared distinguishable approaches to wearable technologies that would not quite fit into the above mentioned two categories.

These additional works, or projects, were often categorized under the umbrella of 'art' with few occasional exceptions, and they seemed to have emerged primarily as cultural rather than as functional artifacts. These artistic wearables were not mere software programs developed for existing commercial devices, neither were they aiming at further development of the devices nor their functionality. Rather, they seemed to comment on or even ironize society's desires and projections about the nature of technology itself. These works were often cumbersome. For example, they were strongly visual, large in their size, and could possibly have been quite uncomfortable for a long-term use.

It is hardly possible to claim that these kinds of artistic wearables, which clearly were not following a supposed requirement to become more fashionable, nor supporting the presumed claim about disappearance of technology[4], would have had anything to do with the fashion. Art-historian Anne Hollander (1975) claimed the following about what we wear: "[d]ress is a form of visual art, with visible self as its medium. … Dressing is always picture making, with reference to actual pictures that indicate how the clothes are to be perceived."[5] According to Hollander, clothes make not the man but the image of man. If one considers fashion and garments on a body with a tradition of visual culture based on a picture creation, then it seems that these artistic wearables created during the first decade of this century were using a similar type of method by following the traditions of visual arts and picture making. In spite of that, most of the wearable technologies at the time were scrutinized and valued for the functionalities that they offered rather than other messages they possibly conveyed. Fashion as picture making, as claimed by Hollander, is based on an argument that we in the Western world dress according to images that surround us. Fashion is creating an image of the clothes with the body derived from other images surrounding us, images from photography, cinema, advertisements, visual arts and culture in general. According to Hollander, fashion has often imitated or followed images already in existence, for example, styles used by movie stars on screen. The changes in the visual culture affect fashion, as well as vice versa.

One could claim that the practice of designing artistic wearables can be seen as an aspect of picture making within visual culture. But in contrast to the tendency of imitating existing images, like Hollander argues about fashion, these artistic wearables were actually producing novel images. They did not follow the tradition of representation in the visual arts; rather, they presented the public with new vital and live imagery that was aimed at pointing out issues (i.e., comments and/or irony) relating to emerging technologies.

If one analyses these artistic wearables within the arts, one can trace a trajectory of works from history forward, which seem to follow a similar line and which apparently have been ignored by the academic research, as Susan Ryan noted in 2008. According to

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[4] WEISER, M. & BROWN, J. S. (1996) The Coming Age of Calm Technology. Xerox PARC. Mark Weiser predicted that technology will gradually become invisible and disappear into environment and clothing.

[5] HOLLANDER, A. (1975) Seeing Through Clothes, New York, Avon Books.

Ryan "serious art in the form of clothes, presented on the body (as opposed to on a wall, for example), emerged in the 1950s and 1960s alongside the art world's interest in body (body art) and also in time-based art forms, like performance and video. Artists such as Atsuko Tanaka (Electric Dress, 1959) created wearable works that could be worn or "hung." [6] Technological wearable works such as the above-mentioned Japanese artist Tanaka's Electric Dress, or works by Austrian artist Walter Pichler for example, "The Small Room and TV-Helmet" (Portable Living Room) from 1967, can only be understood as cultural products with no apparent or purposeful function. Pichler has said that these two works were meant to be cynical and critically humorous, as they addressed the thematic of television and isolation cells, revealing the isolation in a very overdrawn way.

During the late 1960's Pichler used the term "Prototype" to describe his works. The term, according Pichler suggests a kind of "lab work, a vision, free research or something from which something could later emerge."[7] Pichler and Tanaka are just two examples among several others[8] that have addressed the body and wearability, and some of them additionally addressed technology.

Many of the wearable projects from the early years of 21st century were generally considered as conceptual and/or technical prototypes. The designers were concentrated on testing and inventing new materials and solutions for implementing the hard electronic parts into soft materials. Considerable effort was invested in developing reactive surfaces or alternative displays on garments, which could then be fed by data. While (textile/fashion) designers were primarily working with physical materials and physical computing, the wearable computing field was focused on augmenting reality with digital data through the use of various wearable or mobile devices. Large parts of all the projects were produced as prototypes for various practical solutions.

In contrast, the artistic wearables during this time could be seen as prototypes of a *different* kind. One could say that they were constructed as conceptual prototypes, which were critically investigating the meaning of wearable and mobile technologies. The works were often ironic and rejected purposeful functional approaches; they were "something from which something could later emerge" as Pichler had stated few decades before.

Today in 2043 it has become evident that the (human) body is now achieving a state in which all the rest of the desired physical, cognitive, emotional and visual functions can be embedded under the body's skin. In hindsight, the previously developed wearable technologies that had once focused on functionality as a primary concern, and which were considered necessary at the time, were clearly a temporary phase and is now more or less obsolete. However, the artistic wearables from that time frame, which originally did not serve any clearly specified functions seem to now —*currently* —present us with an intimate perspectives that express the attitudes, fears and desires

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[6] RYAN, S. E. (2008) What is Wearable Technology Art? IN RYAN, S. & LICHTY, P. (Eds.) Intelligent Agent 8.1

[7] BREITWIESER, S. (1998) A conversation with Walter Pichler. IN BREITWIESER, S. (Ed.) Prototypen/Prototypes 1966-69 PICHLER. Vienna, Generali Foundation.

[8] For example artists like: Alfons Schilling, Rebecca Horn, Krzysztof Wodiczko, Stelarc, Lucy Orta, etc.

towards technology of the time. Looking back, these works were not concerned with the idea of improving the human body, but rather they were investigating technology, mobility and wearability as a cultural phenomenon in the society. Many of the works seemed to test out, the current (at the time) possibilities of technologies and their impact on the society and everyday living. Historically, these works naturally differ considerably from what we understand today as artistic or cultural wearables.[9]

My own artistic works, of which many took on an artistic wearable form during the first decade of the 21st century, were primarily focused on investigating few aspects about technology, art and everyday life, hybrid space[10] being one of them, and wearable as an artistic and cultural artifact was another. The topic for several of my works was focused on the idea of actually *wearing* a space.

The beginning of the 21st century was still a time when the physical space and the virtual space were primarily considered, or at least treated, as separate. My interests evolved around ideas to investigate ways to exist in the continuously connected space differently from what the commercial sector offered, which was based on offering useful functions mainly through the use of telecommunication technologies. I was very interested in a concept of the user walking around with a kind of a porthole, or an entrance point, to the virtual space. This made the user exist in the threshold of the two spaces in the hybrid space. At the time I considered the idea of continuous hybrid space as left unnoticed due to the restrictions in the possibilities[11] of its use and the existing functional expectations towards technology.

During those years of working with wearable technologies, I developed a concept of the "Hybronaut". The Hybronaut evolved from the need to have a term, which contains the user and the wearable equipment as a single entity instead of considering them separately. As the name indicates, the Hybronaut is a space traveler roaming in hybrid space and developing alternative ways to use, perceive, and exist in the hybrid space.

My artistic works took a form of quite peculiar-looking wearable devices that were (in the most cases) networked and open for public access via mobile phones or Internet. When a user put on the wearable device s/he became the Hybronaut who was presence simultaneously in a physical environment and also in a virtual space. This "shared presence" and "heightened awareness" about the constant connectedness were

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[9] BELOFF, L. (2035) Early Wearable Art In Retrospective, The 27th Consciousness Reframed conference Proceedings. Pyongyang.

[10] Hybrid space is a concept, which was defined among others by Adriana de Souza e Silva. At the time I was very keen on her definition, which stated that physical and digital spaces merge into hybrid space via their simultaneous social use.
DE SOUZA E SILVA, A. (2006) From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces. Space and Culture, Sage Publications.

[11] For an average user it was possible to access the virtual only via functional devices and tasks, such as mobile phone calls, Internet access via mobile phones, or other portable devices. The hybrid space existed for that moment of executing the task, the other time it was not noticed, although it was continuously available. Towards the end of the first decade various social software applications became very popular, also in mobile devices. This developed further the idea about hybrid space as continuous space, nevertheless the tasks were still mainly purposeful and functional and accessed via typical commercial mobile device.

emphasized in the Hybronaut works. The elements of shared presence and heightened awareness were the "functional" or technical focus in the works, which were not merely aimed at for the users but also intentionally designed in pointing out these issues to the general public. These experiences were achieved through the peculiar shared visuality, which raised curiosity and fostered interaction between the (temporary) user and the general public. In one sense one could say that the Hybronaut was a user turned into a performer who was pointing out to the public his/her private investigations concerning the shifting notions of space, presence, the real and the virtual.

All these concepts were becoming very concrete and obvious with the wearable technologies, although in hindsight, the main stream of the development during the 21st century continued being focused on functional approaches, and paid hardly any attention to wearables as cultural artifacts, which was specifically my interest in them. Standing part from this and offering new directions in theory and practice, the original concept known as The Hybronaut was (and continues to be) presented as a kind of a protonaut of the future who was prototyping the artistic and conceptual approaches to wearables and to hybrid space.