

Fashions of the Times

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Abstract

This paper discusses ways in which wearable technologies can be used as agents of communication. Furthermore it stresses the necessity of using wearable technology for the initiation of social interactions, the constitution of new ways of participation in the social realm. In doing so it expands the notion of personal space and of how it interfaces with that of an other. Finally, it discusses uses of wearable technologies as aligned with traditional wearable systems (fashion, trends, style) and points to ways that wearable technologies can be utilized as not to exclude themselves from such uses. As a model for the above the paper uses the Interactive Jackets, developed by the author in May 1995, at NYU's Interactive Telecommunications Program.

social interaction -- Interactive Jackets -- physical space

Introduction

Last year Bandai Corp. in Japan released Tamagocchi. Tamagocchi is a virtual pet encased in a plastic egg featuring a mini-LCD screen. The "pet" must be fed, cleaned and played with (through the manipulation of three buttons) in order to maintain a healthy virtual life (which never exceeds ten days). The Tamagocchi, often worn as a pendant, is increasingly popular in Japan. It tapped into a sensitive cultural nerve.

In the past few years we are seeing the need for the development of an Infra Red (IR) communications standard. IR holds, among other things, the ability for wireless communication systems. We should not forget that "IR communication started in Europe, actually in Germany, as far back as 1974. The remote control of TV sets via infrared transmission conquered the world within 10 years. Today, beside TV sets, VCRs and audio equipment, nearly every product of consumer electronics is controlled via IR communication. In addition to this, IR technology has spread to the development of car keys and automobile immobilizing systems." [1] It took more than 20 years from the moment that a technology was made available to wide commercial use to the realization that the same technology can be used as a natural resource for data communication not limited to channel surfing.

How do the above relate to wearable computing systems? My answer is two-fold. First I will discuss the need for uses of wearable computing systems that defy utilitarian computational models. Secondly, I will expound on the ways wearable technologies, as relating to the human body, can bring forth renewed paradigms for the grasping of physical space as an interactional model.

1. Identity -- Handshake

I am stating no novel concept when I discuss human preoccupation with love, finitude and randomness. Each and every great scientific discovery is coupled with fundamental shifts in the understanding of what a human existence is. Gravity, the world is round, relativity, the intense difficulty of creating a truly random sequence. Such scientific understandings soon present themselves in technological instances. Presently, the margin between science and technology is muted. The need for technologies that can be relevant socially as they are technologically, is mobile, acute. In embracing wearable technologies as future realities, technology must be able to interface with fashion, philosophy and human interaction. If it falls short of this it falls short of its present ability, and not an easy one to come by, to tap into a "cultural nerve."

Human agents want to communicate meaningful information. What constitutes meaningful information sometimes rests on the domain of "what we cannot speak about" and "we must pass over to silence." [2] Technology frequently offers that kind of "silence" in as much as it offers alternative paths of communication. Trends such as the Tamagocchi or the remote control should be evoked when developing wearable systems. I strongly believe that wearable technologies today have the ability to create new grids of interaction between people. There is a unique possibility at the present time to engage technology in an outward motion.

What characterizes fashion is a sense of expenditure, and this sense of expenditure can be identified in technology as well. The two can make easy partners. However, fashion is also characterized by the ephemeral and depends on trends. Fashion often uses the whimsical and the transgressive whereas technology rarely does (the Tamagocchis being an exception). In creating wearable computer systems the whimsical and the transgressive

must be considered. To create wearable computer systems that seek to enhance the senses that humans already have, or to allow portability of technologies that people already use, should be one of the domains of development in wearable computer systems. The other domain should be that which uses technology to create new instances of social interaction.

In 1995 I developed two pairs of Interactive Jackets (under the name Pixelpeppy) whose sole function was to seek, and hopefully find, their other. Each jacket contains an infra-red LED which transmits a 40-kHz signal and an infra-red detector (a GP1U52X Sharp receiver module). Both are driven by a micro controller (a Parallax BASIC STAMP I) which is responsible for sending an encoded message. Each jacket has a unique pair, programmed to respond only to the one that transmits the same message. When the wearers of the two jackets are found at a 10 ft. distance from each other, they form a circuit whereby they react to each other by emitting a sound and flashing mini-LEDs. I am now redesigning the jackets and I am using a TSOP1238 photomodule and IR diodes from Temic as to eliminate noise and ensure high performance.

I have presented these jackets on numerous occasions (on one occasion as part of a group show) and I was always surprised at the immediate response they elicited which allows them to go beyond both the realm of fashion or technology. People approach and use them as a way to come closer. The fact that the wearer does not have to "program" the jackets, the beeping sounds they make when they meet (which resemble cricket mating calls) invest them with a unique quality. Initially, when I developed these jackets, I was trying to find ways to present ideas in space and expand human communicational characteristics.

"...the point is not nostalgia or surrender to an image. Its about making ideas visible, without resorting to illustration of theories or acting as footnotes to real life, Pixelpeppy works with this in mind in her effort to create philosophy machines. If we envisage the future as a place where everyone wears silver or white outfits, she does not. Her interactive jackets are black and have a classical cut. Each carries a stamp so when two people wearing them find themselves in the same room these start to bleep. Technology is not about gadgets, it is the short cut one might decide to take to go somewhere faster. Based loosely on the speech of Aristophane's in Plato's Symposium the jackets are about the accident of love in the search of that which is missing in life." [3]

What I am proposing is not that we depend on a pair of jackets to find our missing "other." Instead I am proposing that we look into ways of using technology, human bodies and each other in an aligned manner. My Interactive Jackets hope to bring forth a playful character in random encounters, to accentuate the need for uses of technology that do not "achieve" a utilitarian end. If technology is sometimes blamed with alienating people, of propelling them in a closed circuit where interactions diminish, I propose the use of wearable computer systems

for the initiation of new forms of social encounters and discourse.

With the Tamagocchis there is "[n]o longer a relationship of titillation, these pets are appealing to a much broader audience among both men and women. Caring for tamagocchi, like any pet, requires a platonic devotion which, in its altruism, reaffirms one's own importance; just as religious devotion elsewhere has often emphasized love through selflessness, so does tamagocchi free itself from a love of masochism, jealousy or obsession." [4]

Both the Tamagocchis and the Interactive Jackets use portable environments and technology. They both create a second order of interaction and demand the public's acknowledgment and the creation of a community that supports the interaction.

It seems clear that there is ample room for the development of wearable computer systems that support alternate methods of communication, the possibility of love, and a social awareness of, not only the effects of new technologies but also the commitment in creating new instances of social modes.

2. Waves -- Nature

"The world of information processing is constantly striving to create ever more powerful tools to produce, retrieve, present and transmit information. The hardware and software needed – regardless of how highly sophisticated it may be – has to provide a user-friendly interface. The interface to the user should appear simple, self explanatory, efficient and – of course – wireless. Wireless communication and wireless control of any equipment is the cornerstone of appeal to the user. Infrared (IR) communication is the most cost-efficient approach to provide a cordless user interface. Moreover, it is reliable, short-ranged, already available, and as natural as sun light. It is now accepted that IR communication technology will have a big future in Personal Area Net-works (PANs)." [5]

What makes wearable computational systems so attractive to me is their ability to fuse the lines between exteriority and interiority. The human body reclaims its position in the world and a motion is enabled where the space surrounding bodies is used in its full efficacy.

Ultimately, the idea is to make clothes which are responsive to the world and their owner as much as possible. One should not simply wear clothes, one should use them to communicate with the world and others. By combining ideas with fashion, technology and nature the understanding of what constitutes interactional space is expanded. I believe that technology should be used not only to enhance our basic perceptual apparatus but also to utilize and explore fields of energy which humans have not utilized yet.

"To form clear electrical images, an electric fish must be able not only to interpret its own electric signals, but

also to separate them from signals from other sources, such as other electric fish. It does this, scientists have learned, in the obvious way-by frequency-division multiplexing. Each fish generates signals at a unique frequency and tunes its tuberous receptors to that same frequency." [6]

I would like to think of my Interactive Jackets as partially replicating a system of communication used by fish. Emitting a unique signal that is random but holds the possibility of an accidental encounter is a way to use the space between people for new purposes.

In developing wearable computational systems nature can provide some of the best models. Animal signaling uses electricity, magnetism and sound while humans remain largely oblivious to such fields.

In using IR, electricity and sound as to mimic animal interactions we can expand the understanding of what space is. There is a volume and density in space which humans rarely use. To use these fields is to enlarge the notion of perception. The result can bring forth a renewed understanding both of the physical world and of the human body.

Conclusion

In laying down the ways wearable computers will develop, it is paramount that such systems realize their unique cultural position. Outside their obvious applications, there exists ample room and necessity for the development of applications that reflect current approaches to clothing and future possibilities in the creation of new paradigms.

Current technologies have the ability to reconstitute structural positioning of space, person, communication. In developing any system that involves the human body much thought must be placed on evolving not only practical concerns but also new models of interaction.

In the future we can see such models employed in dance clubs, gyms, routine transactions, public events.

Technology is becoming more and more ubiquitous and it is important to leave room in this process for serendipity, humor and accident. At the same time, by supplying new models of interaction with the world, wearable computers can be used to dispel the notion of technology as alienating and lacking of human characteristics.

[1] TELEFUNKEN Semiconductors, IrDA-Compatible Data Transmission, 1997, page 1.

[2] Ludwig Wittgenstein, *Tractatus Logico-Politicus*, translated by D.F.Pears & B.F. McGuinness, Routledge 1961, London, page 74.

[3] H. Papadopoulos, *Space Odyssey*, catalogue essay, Athens 1995, p. 5.

[4] Xavier Bensky, Usman Haque and Neo-Tokyo Magazine, 1997

[5] TELEFUNKEN Semiconductors, IrDA-Compatible Data Transmission, 1997, page 1.

[6] Ingrid Wickelgren, *Spectrum*, March 1996 IEEE, page 33.