

Musical viruses for graceful seduction

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ABSTRACT

The +++ *Wearable Player* is a result of the application of the Rights through Making approach in designing wearables. This approach aims at designing systems, whose use empowers people towards the materialization of values (e.g. human rights). The +++ *Wearable Player* system elaborates on the previous project Sound Experience, and introduces the concept of viral music exchange as a motivating factor in the context of social health. This paper describes the morphological genesis, the functional aspects and how they have been implemented in a fully working experienceable prototype. The design process and its outcomes are illustrated, in the framework of the “changing behaviour” design trend.

Author Keywords

Values, changing behaviour, wearables, Rights through Making, music player, interaction design.

ACM Classification Keywords

Design.

General Terms

Design.

INTRODUCTION

The project +++ *Wearable Player*, which is described in this paper, has been designed in the context of the Rights through Making (RtM) research project. RtM explores how design can contribute to a new civilisation. It proposes a vision on how design can change Western thinking towards *pervasive ethics* [7].

RtM adopts a pragmatic approach to design, i.e. the focus is set on the design project [2]. Instead of being related to science or art, the design process within this approach, is seen as a process of interpretation and creating meaning. Design is a reflective dialogue with the material of the design process. RtM supports designers to start from the Making: it is from their skills and by integrating skilful points of view, that designers can contribute to the creation of a new praxis, able to disseminate empathy and autonomy and to contribute to pervasive ethics.

The RtM design approach was developed through a series of workshops. During these workshops, design students and design researcher from several countries were asked to “design products or systems (...) that empower, entice and seduce people to reach the ideals contained in the Universal Declaration of Human Rights, through *to kalon*, a synthesis of beauty and good” (RtM Manifesto) [7]. Participants were asked to materialize the values expressed by a specific article of the Declaration.

THE DESIGN CHALLENGE

Looking at the designs resulting from the application of the RtM approach, it is clear that most of the projects aim at creating awareness. The products and systems they designed do not have the ambition of solving problems related to human rights. They rather put social issues under the spotlight to open a discussion, by playing on empathy and experienceability. Thus, the RtM project promotes actions of sensitisation and communication of societal issues. Would we be taking certain actions, if we were aware of the social repercussions our actions had? Raising awareness and sensitizing through design aims at breaking vicious circles of ignorance, which can have profound consequences in the long run. At the same time it leaves one control over his decision; raising awareness leaves the possibility of choosing. Is knowing that something is “bad” enough to take the “right” decision? Of course not. This is an easy question to answer. Even the words “bad” and “right” sound too naïf and simplistic. Things are rather more complex and complicated than that.

Design can aim higher, not only at raising awareness, but it can even claim the responsibility of seducing people to choose for their own good and the good of others. As designers, we can – even have to - play a role in motivating towards “an ethical choice”, a decision which can improve our life and that of the people around us. Ross (2008) has shown how a product, by having its own (programmed) behaviour, can elicit a certain “reactive” behaviour in a user [4]. It is neither about forcing nor inducing: it is about gracefully eliciting. This question echoes the in vogue theme of “changing behaviour”, which is, for instance, a focal point of discussion, within the domain of health [3]. In this field, prevention is crucial and a bottom-up approach is demanded to sustain a behavioural change of people. Design can seduce people to do enough physical activity; it can gracefully elicit to have deep and healthy social

relationships; it can charm to eat and drink well and in good company and it can fascinate to appreciate quality.

+++ *Wearable Player* is an example of how “graceful seduction” can work. But before we can discuss this example in depth, we need to look at an RtM project that formed the basis for it.

“Sound experience” and privacy

Sound Experience is a concept that resulted from one of the RtM workshops. This project started as a reflection on the right to privacy. How privacy is perceived and handled has changed immensely since this right was formulated in the Universal Declaration of Human Rights in 1948. The designers of *Sound Experience* reflected on this mutation and elaborated the concept of privacy in relation with the concept of control: how privacy can be infringed, how privacy can be controlled by means of music. How privacy intrusions can become opportunities for different subcultures to influence each other and establish a dialogue? *Sound experience* consists of a line of wearable controllers for digital music players. Four examples have been designed; two of them have been realized as experienceable prototypes and two as aesthetical models. Each of them is conceived to be used by a different urban subculture: there is a hood for *hip hoppers*, a scarf for *cool hunters*, a cuff for *emos* and a muff for *fashion victims*. Soundtracks are treated as viruses that can contaminate other soundtracks and prevail over them. These controllers mix the music of one's own music player, with somebody else's in the vicinity. It is then possible to accept the music intrusion or not. By means of music, different people meaningfully get in touch and have the opportunity to learn to appreciate somebody else's tastes and identity.



Figure 1. One of the Sound Experience products: a muff conceived for the Emo subculture.

THE +++ WEARABLE PLAYER SYSTEM

The project +++ *Wearable Player*, is an evolution of *Sound Experience* and was designed by Michele Tittarelli. *Sound Experience*, and especially the concept of viral music offered great sources of inspiration. When an

internationally renowned developer of fitness equipment asked our support in exploring possibilities of motivating people to move more during the day, we saw the chance of further exploring the concept of viral music as a vehicle for changing behaviour. The requirement was to produce a fully operational prototype, ready to be used for validation purposes. In the following paragraphs we illustrate the design's concept and the development process until the realization of the operational prototypes.

The +++ *Wearable Player* concept

+++ *Wearable Player* is a system, where the tangible component is a wearable personal trainer/music player in the shape of an armband or cuff, which works based on a viral principle. The "virus" is somebody else's music, characterized by a specific BPM rate (beats per minute). A goal of physical activity is set on +++ *Wearable Player*, on a customisable Internet homepage, while the +++ *Wearable Player* is connected wirelessly to one's computer. While exercising, +++ *Wearable Player* detects good and bad viruses in the vicinity, i.e., songs that have a BPM that could help to reach one's goal. If it detects a good virus in some nearby music player, the two songs are mixed and one can choose whether to accept the new song or refuse it. If the music is accepted, the song enters in one's library. To accept the music, one gently presses on the soft spot of the armband's central case; to refuse it, one pinches one of the ribbons. These two gestures constitute the only controls of the armband, together with a swiping gesture on the central case, which allows browsing through the available soundtracks.

Musical Viruses for graceful seduction

In the perspective of what we called graceful seduction through a system of products, using music as a virus, exploits three motivational triggers: (1) curiosity of acquiring new music (with a surprise factor included); (2) the possibility of extending one's music library (not through an active research, but in a playful and, in a way “lazy” manner; (3) the opportunity of associating the music with the “kind of” people, in a sort of superficial but effectively visceral way. The first two triggers urge people to get out of their house or office and start training. The third trigger encourages to explore surroundings in a discrete hunt for other users and their music. This may result in inducing people to explore new paths, even extending them. These are only suppositions that need to be tested to be confirmed.

The unity of form, function and interaction

The principle of homeostasis lies at the base of inspiration of the unity between form, function and interaction. The Encyclopaedia Britannica defines homeostasis as “any self-regulating process by which biological systems tend to maintain stability while adjusting to conditions that are optimal for survival (...). The stability attained is actually a dynamic equilibrium, in which continuous change occurs yet relatively uniform conditions prevail” [1].

The formal design of this product comes from the observation of muscles and tendons. They are greatly responsible for our physical balance in standing, walking and performing any dynamic activity; muscles allow us to act on the environment, transform it. To understand how muscles and tendons work in a human body, Michele Tittarelli observed and drew many of them, in different limbs, in distinct positions and from diversified perspectives. Through this process of embodiment it was possible to really understand their physical/mechanical principles, the relationship between shape and function (see figure 2).

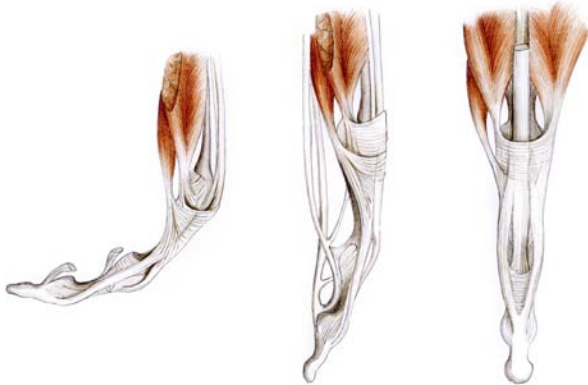


Figure 2. One of the study drawings, to study how muscles are built in human bodies; the image portrays finger tendons in different postures and a first sketch of how this could be synthesised in an armband.

That led to the decision of getting inspired by these fascinating, beautiful dynamic structures to design a sort of flexible exo-tendon-glove to wrap around the fore-arm (see figure 2 and 3). Tittarelli writes: “the point of departure was the body, because to the body we had to arrive”. [5]

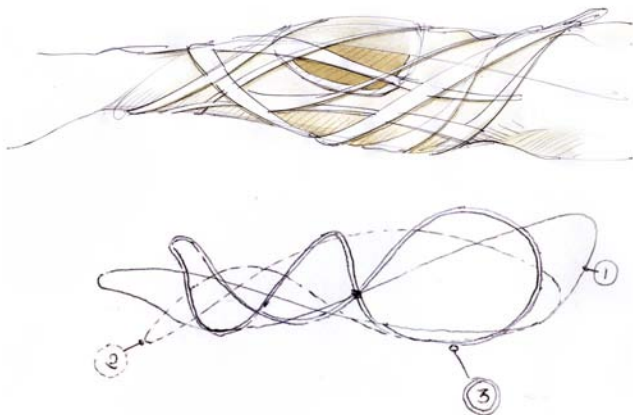


Figure 3. A refinement of the armband concept and a sketch of its possible components.

A rigid shell, also organically shaped, is trapped within the rubber ribbons and contains the electronic components.

The inspiration of natural forms echoes the choice of finding inspiration in biology both in the way devices communicate among them and in the way users interact with their own device. Each soundtrack has its own “code” (BPM) just like biological viruses have theirs (RNA). Every virus acts only if precise circumstances occur and get activated in the hosting body: if the hosting body has favourable conditions, the virus can change, through its code, the part of the body that he has attacked. The same happens with the musical virus: if another user is tracked to have necessity of a higher or lower beat, the virus attacks and the soundtrack passes from the infector to the infected.

Prototyping

Several constructive solutions have been explored. To produce the flexibility and elasticity of the garment, the initial intention was to realise the model in fabric.

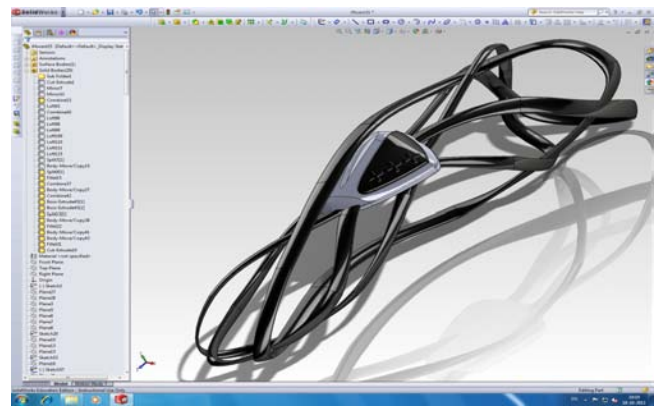


Figure 4. This is a perspective view of the three-dimensional model, build with SolidWorks.

Eventually both components (the flexible ribbons and the hard shell) were realised with rapid prototyping technologies. The 3-dimensional models were made with Solidworks.

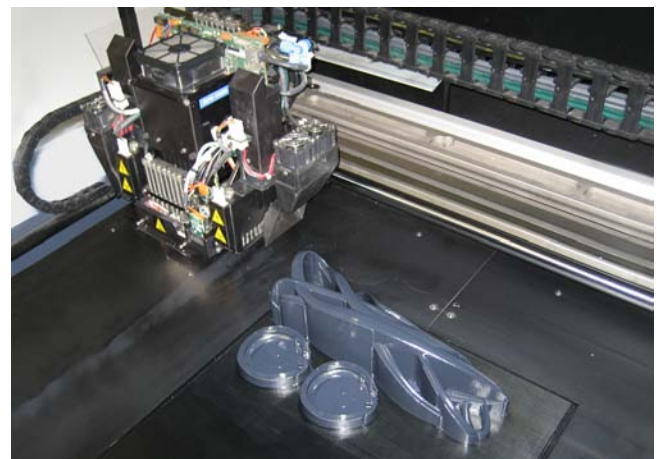


Figure 5. The production of the elastomer ribbons with a 3D printer.

Due to the complexity of the shape, several models have been made, to eventually produce one that could be properly worn.



Figure 6. The three parts of the prototype, right after printing: the rubber armband before finishing and the two shells, which will contain the electronic components.

The electronics of the first models, when we wanted to try out the interaction and fine-tune its details, were realised on a wired Arduino platform. For the final prototype, to respond to the need of a wireless communication between different devices, we switched to a radio technology. Eventually, the electronic components lodged in the shell were: an electronic circuit, an xBee receiver, a potentiometer and a switch. The electronic circuit was formed by a 3-axis accelerometer 3.7V coin battery, 1 xBee module. The electronics in the shell send the interaction movements of the wearer to a computer that processes the audio accordingly.



Figure 7. The shell and the electronic components that it hosts.

The behaviour of the Virus was programmed with Max/MSP. Once a person (the infector) spreads his musical virus, the “hosting” subject hears his soundtrack speeding

up (or slowing down, depending on the stage of the training) and seamlessly fade into the intruder’s soundtrack.

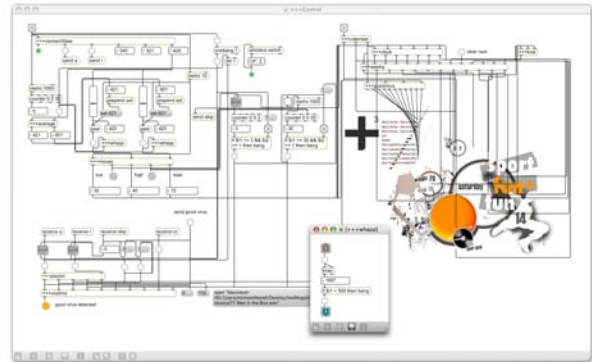


Figure 8. One of the Max/MSP patches, which have been designed to control the viral behaviour of +++ Wearable Player in the prototype.

Eventually 2 prototypes were produced: one fully operational and responding to the aesthetic quality of the project; the other one was a simulation with the computer, which allowed to test the interaction between two users.

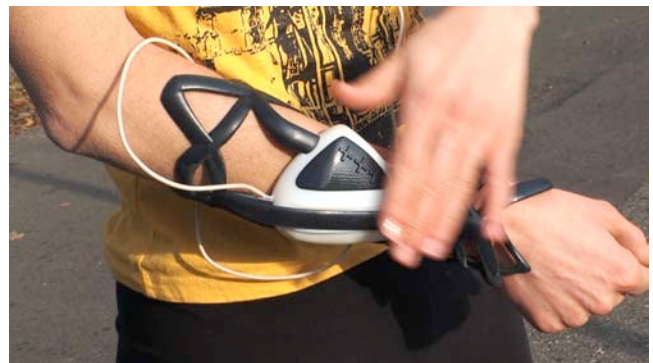


Figure 9. Final prototype: by caressing the soft part of the central shell up and down, one swipes through the music tracks.

REFLECTIONS

Although all premises exist to make this system into an excellent product, the process has not undergone a validating phase yet, nor has been tested by users. This is therefore the next step to face, which can be taken thanks to the completeness of the prototype.

Another critique that can be addressed to this outcome is “why, on earth, another device?”. There is nowadays a drive towards immateriality. Products tend to disappear, leaving place to systems, where tangibility is more and more reduced. From an environmental sustainability point of view, immateriality might make sense: we have to consider thoroughly whether to add another object into an overfilled world, where plastic wastes are building new continents in the oceans. But as human beings, we also have a need to cherish palpable assets. Here another trend comes to support our argument: disposability and rapid

obsolescence of products is coming to an end. In a world in which the trend of constant economical growth is inverting, evidences indicate that we might be re-acquiring the taste of beautiful, lasting objects, which can accompany us for a lifetime, as the old vinyl record players are turning out to be. Could +++ *Wearable Player* be one of those?

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REFERENCES

1. Encyclopaedia Britannica Online:
<http://www.britannica.com/EBchecked/topic/270188/homeostasis>
2. Fällman, D. (2011). The new good: exploring the potential of philosophy of technology to contribute to human-computer interaction. CHI 2011, ACM press.
3. Hummels, C.C.M. (2012). Take the first person perspective to transform together. TEDx Brainport 2012
<http://www.youtube.com/watch?v=GHTx5SCuYgY>
4. Ross, P.R. (2008). Ethics and Aesthetics in Intelligent product and system design. Doctoral Dissertation. Eindhoven University of Technology.
5. Tittarelli, M. (2011) +++ wearable player. Sistema di viral music sharing per il settore wellness. Master Thesis, University of Florence.
6. Trotto, A., Hummels, C.C.M., Levy, P.D. (2012). Developing a design approach, exploring resistance and ambiguity. Proceedings of Kansei Engineering and emotion research KEER 2012 Green Kansei (pp. 586-591). Magong, Taiwan: ISBN 9789860324884.
7. Trotto, A. (2011) Rights through Making, skills for pervasive ethics. <http://itunes.apple.com/us/app/rights-through-making/id484014614?mt=8>