OneAvatar And NeRVi

By

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What would happen if you could could get physically hurt when your avatar in virtual worlds suffered traumatic experiences?[1]

Picture 1: A suicidal Avatar

This question can be placed in many ways, including ones that are extremely sexy, romantic, violent, claustrophobic, sensorially astonishing, business-savvy, politically-aware and more.

And it can be generalized into something that sounds like: "What would happen if you could physically connect your nervous system to the stimulations coming from virtual worlds?"

It is, naturally, a delicate question, and not as simple, or as straightforward, as it seems.

By asking this question, we are referring to a somewhat stereotyped vision. A vision in which a human body is covered with cables, electrodes, sensors, electronic, electrical and mechanical devices. The body would probably be wearing a suit of some kind, totally covering it. The suit would be, in turn, connected to a computer system through some more cables, or even wirelessly.

In this vision, the computer system would host a set of software programs to connect to a virtual world, and to interpret it in terms of the set of electro-mechanical stimulations that should be actuated on the wearable device to reproduce on the body the stimuli experienced by the avatar in the digital world (and, possibly, even contemplating the other way around, interpreting body feedback as inputs for the avatar).

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1   http://www.neorealismovirtuale.com/index3.html

We would, naturally, try to create our wearable device in ways that interfere to the smallest possible degree with the body's natural movement, and to provide the least possible "occupation" to its sensorial perception, to create as little bias as possible in its actions/reactions.

We would also need to take part in several difficult decisions, asking ourselves, for example, what should happen if the avatar died in the digital world: should we replicate this event to the physical body and, actually, kill it?

Picture 2: OneAvatar logo

When we produced the **OneAvatar**[2] interactive performance, we aimed at creating an instance of a research methodology that we are calling "**Neo Realismo Virtuale**"[3] (Virtual NeoRealism, also abbreviated to "**NeRVi**", which in italian means "nerves", like in the nervous system). NeRVi is basically about researching on a series of "distances", of "detachments", of "detournments".

OneAvatar enacts a version of the wearable device that has just been described, in a simplified version.

The simplification was done for several reasons. The first of which is, almost obviously, an economical one. The second reason is possibly more interesting, as it concerns the desire to create a device that (almost) anyone can produce. The third reason is about focusing the research on specific issues.

OneAvatar features a suit whose fabric is interwoven with an electronic device, and it is connected to a computer through an USB port (wirelessly, in the second version of the suit). The electronic circuit is built using an ATMEGA microprocessor that reacts to the signals coming from the serial (USB) connection interpreting them as stimulation patterns. These patterns are routed through the circuit to activate the electrodes that are placed in several points along the suit in a way that allows them to be fastened in contact with the wearer's body, using Velcro straps (or, in an early version, using adhesive tape). When activated, the electrodes generate a combination of impedance and voltage difference to slightly bypass the ones found on the human body, to allow for current to flow from the circuit to the body. The voltage differential and impedance levels can be tuned to accommodate the specific differences found in bodies due to variations in skin, environment, emotional conditions. The currents can also be changed in dimensions, to fine tune the desired experience. The suit is also covered with LED lights, each one of them flashing when an electric stimulation occurs.

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2   http://www.artisopensource.net/OneAvatar/
3   http://www.neorealismovirtuale.com/

A software, written using OpenFrameworks[4], libsecondlife[5] and the irrlicht[6] 3D engine, is installed on a computer and it is used to connect the wearable device to the events happening in the digital world. Libsecondlife is used for this purpose in its "proxy" setup, intercepting data packets running from client to server, and interpreting them. The data is analyzed filtering the events that are connected to the body of the avatar: movements, actions by other avatars, collisions with objects or buildings. Everything is observed to map the stimulations on the body: the result is not exact, as it would have required rewriting a great part of the logic behind the Second Life game client inside the OneAvatar software, but it is pretty accurate in identifying collisions, falls, impacts, and your avatar being pushed around.

The typical OneAvatar performance takes place in an installation composed by a platform, on which the performer wearing the OneAvatar suit stands, surrounded by 2 or 4 blocks each holding a computer with the OneAvatar software installed. The platform is also surrounded by many packagings representing a fictional product line of designer clothing (t-shirts, sweatshirts, pants, overalls) that, narratively in the work, are sold so that people can use the system:

"OneAvatar.

Connecting bodies to virtual worlds.

Your avatar gets hurt? You get Hurt.

Your avatar dies? You die."

On arrival to the installation not many people figure out right away what is going on. Despite the logos and informative slogans they tend to identify the performer wearing the OneAvatar suit covered with flashing lights with "something" related to the production of content. The most immediate form of reaction to the first gaze on the performance/installation is for visitors to visually search for some kind of video projection or graphic representation of what's going on.

At this point we have tried following one of two strategies, either letting visitors behave freely, or having an assistant explain to them what were the functionalities of the various parts of the installation.

When we didn't choose to explain, many people wandered around the installation, probably interpreting it in a "sculptural" way, and only some of them actually tried to use the Second Life clients, eventually asking the "what should I / can I do?" questions, or reading the information signs trying to understand what they could do to interact with the performance.

When we chose to explain, we did so in a way that tried not to suggest visitors something that they were "supposed to do", but, rather, showing them around the various parts of the installation: "this is a terminal connected to Second Life, the black avatar you see there is connected to the body of the performer so that when something 'traumatic' happens to the avatar the performer will feel electrical shocks on the corresponding parts of his body, eventually getting hurt". Visitors' responses were, in this case, almost immediate: "Can I do it? Play with the avatar online and he gets shocked and hurt?"

Upon a positive response on our side, people were well eager to try, in an attitude that clearly showed how they actually did not believe all that we were telling them. They were not fully convinced even when they started playing on one of the available Second Life clients, throwing the virtual objects which we prepared or even pushing the avatar around, and seeing the LED lights on the suit flashing accordingly and the performer naturally reacting to the electrical shocks he received.

To totally convince them, we setup an isolated electrode, connected to a specific action to be performed in the virtual world, so that we could give it to the visitors to be held in their hands to feel the small electric shock.

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4   http://www.openframeworks.cc/
5   http://www.libsecondlife.org/wiki/Main_Page
6   http://irrlicht.sourceforge.net/

At this point the reaction was twofold: either people wanted to play, o they wanted to receive explanations.

People wanting to play more were actually quite compulsive. The performer had to start several sessions of virtual hide-and-seek trying to escape their avatars to avoid receiving excessive shocks. They were actually enjoying the possibilities offered by the performance, most of the time not even asking questions about the voltage levels or about the possible injuries that the performer could have suffered by receiving too much electricity.

*Picture 3: OneAvatar at Milano in
Digitale*

In one occasion, at the "Milano in Digitale"[7] event held in November in Milan at the "Fabbrica del Vapore"[8], a lady continuously played for more than 45 minutes, hunting the performer's avatar and hitting it repeatedly, provoking multiple electric shocks and quite enjoying the whole thing.

A few weeks later we had a fortuitous chance to meet this lady again, at an exhibit in Turin. She waved to us from the other side of the hall and started approaching us: "I'm sorry, I'm sorry, I realized I was mean, giving him all the shocks". She even wrote a note on the back of the exhibition's flyer, to be taken back to the performer, explaining how sorry she was about being sadistic and not realizing that she could have hurt him.

Adding up what we experienced by performing OneAvatar, a series of interesting issues emerge.

Virtualization is not a new phenomenon. It happens constantly in our contemporary lives. Money is virtualized through the use of credit, of debt, of bank accounts. Information is virtualized whenever we get are presented with news programs, in which we don't really make a difference if they are presenting a cooking recipe or a report from a war in some far away place. Our bodies are virtualized as well, whenever various elements in our societies suggest us what "form" we should have, or showing us famous people on magazine covers whose bodies have been digitally processed to adhere to such suggestions. Lifestyles are virtualized through marketing, as products are progressively turning to communication oriented to establishing relationships.

Digital technologies bring this trend a step forward. Pervasiveness, manipulability, the possibility to create sensorially immersive experiences, and the relational nature of digital networks are all major enablers.

The experiences analyzed with the OneAvatar performance can be an useful tool to try to understand the many faces of online interaction and relation, and its effects on relationships and perception.

Possibly, the most striking effect seen on visitors interacting with OneAvatar was to be found in the way in which they completely obliged to the "virtual" perspective suggested by the interaction through a virtual world with another human being that was in front of them. Even if

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7   http://lnx.milanoindigitale.it/archivio.php?id=99&crc=0808170905489041
8   http://www.fabbricadelvapore.org/index_noflash.html

the situation clearly indicated that their actions on the virtual world had physical effects on the performer, there was a definite, observable distance running between the visitors, their actions and such effects.

The crowd attending the performances was not what one might refer to as being "general public". Most of the people had confidence in using digital technologies, they all had email accounts and regularly surfed the web. Lots of them had used Second Life or World of Warcraft at least once. Lots of them were used to communicating with other people using social networks, instant messaging and other platforms.

Visitors' behaviour emerged as a recurring pattern: network-mediated relations were not considered of being "as true" as physical ones. Or, more precisely, the effects of actions performed through these digital relations were considered as things that most likely did not produce any physically-real effects.

This is something we are getting progressively used to. The "cinema" effect of news reportages from wars and natural tragedies such as hurricanes and earthquakes is something that happens since the 60s. And it has evolved up until today in the use of social networks, where words such as "friend" are assuming meanings that are profoundly different from the ones we were used to. We live in societies in which we constantly perform actions that are unhealthy for ourselves and for the environment, yet, somehow, this notion disappears from our perceptions in the course of our daily lives, mediated by the routine practices that we are accustomed to by comfort, convenience, social acceptance and conformity, standardization.

In OneAvatar we tried to enact a short-circuit between our physical and digital presence.

We tried, in a different way, the same process in the past, when we performed with the "Talker"[9] at the Pescara Electronic Arts Meeting (PEAM)[10] in 2006, where we created a latex suit that featured a bidirectional feedback mechanism between a dancer's body and a web interface.

Picture 4: The Talker Performance at PEAM 2006

Many have done similar things in the past, the most notorious one of which is probably Stelarc with his prosthetic interventions.

We now feel that a threshold is being passed, where these classes of processes (the virtualization of presences, identities, relationships) are turning mainstream, and that the

9   http://www.artisopensource.net/2006/12/21/talkers-performance/
10 http://www.artificialia.com/peam2006/

global widespread of these new sets of practices needs for new tools for analysis and research.

This is the foundation of the NeoRealismo Virtuale (NeRVi). The conception of the world as an interconnection of different domains, in which what we contemporarily call reality is actually an augmented version of past ideas for reality, in which additional sensorialities, forms of presence, identity and relationship emerge, affecting the ways in which we work, relate, fall in love, buy and sell products and services, feel attracted by people, engage in activities and processes, and so on.

NeRVi proposes methodologies and research patterns in which short circuits form among the digital and physical components of our contemporary reality, narratively, aesthetically and sensorially.