

Hyperpresent Avatars

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Abstract

This paper will discuss two student projects, which were developed during a hybrid course between art/design and computer sciences at Sabancı University; both of which involve the creation of two avatars whose visual attributes are determined by data feeds from ‘Real Life’ sources by following up from Biocca's concept of the Cyborg's Dilemma, we will describe the creative and technological processes which went into the materialization of these two avatars.

Hyperpresence

If the body is the primary communication hardware, then what is its relationship to a medium which is made up of steel, plastic, and silicon given that instead of pulsing blood, pulses of electrons and light animate the computational hardware?

McLuhan long ago pointed out that communication interfaces attach themselves to the body. In the words of McLuhan, “Media are extensions of the senses,” in that the view of the world associated with print is being replaced by a world view associated with electronic media that stresses feelings and emotions [1]. This is a different vision than Licklider's [2] for whom “mancomputer symbiosis” is a subclass of “man-machine systems” in which the human brain is coupled to its machine counterpart. This coupling of one brain to another made sense in the early days of computing when the communication between human and machine was still one of conversation where instead of a mind communication through a body to another body, we have only two disembodied conversations, a sterile coupling of abstract symbol generators. At the close of 20th century however, the development of advanced computer interfaces is characterized by progressive embodiment. Progressive embodiment is the steadily advancing immersion and coupling of the body to an advanced communication interface.

Intelligence augmentation applies itself to the theory that communication technologies can be cognitive prostheses amplifying or assisting cognitive processes or by developing cognitive skills. This leads to the question, of what it means to be virtually embodied, particularly if this state also contributes to intelligence augmentation. In other words, what are the psychological effects of goals of embodiment in virtual environments? What are the psychological effects of embodiment in virtual environments? Most

commonly these are expressed as various forms of ‘presence’, which is described as the perceptual sensation of being in a place other than where you physically are, or a sense of transportation to a ‘place’ created by media [3]. It is the illusion of ‘being there’ in a virtual space.

Compounding the dual concepts of (virtual) environment and (virtual) agent are Mantovani and Riva’s findings which point at the social nature of ‘presence’, challenging the notion that experiencing a simulated environment is merely a matter of perceiving its objective features: Presence (real or simulated) means that individuals perceive themselves, objects, as well as others not only as situated in an external space but as immersed in a socio-cultural web connected through interactions between objects and people [4].

This social aspect of ‘presence’ is further picked up by Biocca, who seems to question the issue both from an externalized as well as an internalized viewpoint, bringing to the fore the notion of self-presence:

“When the user’s body enters the virtual world and inhabits an avatar, a number of changes in self-presence are possible. Self-presence is defined as the effect of virtual environment on the perception of one’s body (i.e., body schema or body image), physiological states, emotional states, perceived traits, and identity. To use a phrase, self-presence refers the effect of the sensory environment on mental models of the self, especially when that model of the self is foregrounded or made salient. As with other forms of presence, designers share the assumption that increases in self-presence are correlated with higher levels of cognitive performance, and, possibly, emotional development. In the words of Socrates, the goal to ‘know thyself’ is a worthy journey. It may be the only journey.” [5]

And it is at this juncture that Biocca formulates a vision, a hypothesis, a wish:

“... it may be possible to develop a medium in which one feels greater “access to the intelligence, intentions, and sensory impressions of another” than is possible in the most intimate face-to-face communication. One aspect of what might be called hyperpresence” (Biocca, 1997) may be possible in the social presence domain as well. Of course, it is hard for us now to imagine a medium that can create greater intimacy than face-to-face communication. But this misses the point of social presence and the very artifice of the body itself. In face-to-face communication the body is used to communicate one’s sensory experiences, observation, and inner states to another. The body is the medium for this transfer. Communication codes such as spoken language and non-verbal codes such as facial expression, posture, touch, and motion are used. But, for example, inner states might be communicated more vividly through the use of sensors that can amplify subtle physiological or nonverbal cues. These can augment the intentional and unintentional cues used in interpersonal communication to assess the emotional states and intentions of others.” [5]

Data Avatars

While Biocca’s deliberations seem to focus on sensor based technologies, there may well be other means of conveying data, which is likely to bring about the communication of inner states, emotional responses and non-verbal clues, including an immediate manifestation of interests and inclinations.

Two avatars which may fulfill such demands, through non-sensor based technologies, were created by two separate groups of students, during different semesters, as course projects for a hybrid art/design and

computation course entitled CS450, co-instructed between two artists and one computer scientists at Sabanci University [6].

Both projects deliberately go against the grain of the prevalent mindsets of metaverse residents which, more often than not, involve a wish for concealment of real life attributes: A study conducted by Brosnan [7], using 126 participants recruited from Second Life, shows that while the physical persona may be predictive to a certain extent in virtual embodiment, nonetheless in many cases significant differences between physical and virtual appearances and identities is to be expected.

This typical behaviorism is being challenged by bringing data from the physical realm into the metaverse: Rather than create avatars which are vessels of concealment, revelations regarding the physical state of the wearer are being sought. Thus, what is aimed for are wearable virtual technologies which allow their users to be represented in a manner in which both their real life and virtual life traits can be visualized simultaneously, by using data imported from the physical to the virtual realm.

The Miró Avatar

The project originates from the desire to integrate an emotional presence into the World Wide Web. In real life, emotions are not communicated consciously; hence the idea of using EEG to collect a person's emotions. However, since EEG data cannot have reliable or interpretable meaning concerning any emotional state, one may only speak of collecting the 'idea' of one's emotions. EEG is used to accumulate an individual's brain signals; signals that occur each moment, unconsciously, in response to the interaction with the immediate environment. Since it was seen to be desirable to interpret these signals as the idea of one's emotional presence in virtual reality, the three dimensional metaverse of Second Life became a natural platform to apply such a metaphor of reality.

The collection of EEG data is done by an open source program, BrainBay, which outputs the biosignal as EDF files. These files are converted to ASCII text files with another open source program, Polyman. The content of these files are integers between -4000 and 4000. The ASCII files are uploaded to a website from which custom made scripts in LSL read the files that contain the EEG data.

The avatar changes according to incoming brain wave. When the avatar is activated the script begins reading data from the server and a change in the shape of the avatar according to the incoming integer values is brought about. Thus the user's brain waves form a virtual manifestation that represents his/her virtual appearance which can also be considered as a metaphor for the representation of one's mind; since, figuratively, what is thus visualized are the person's 'thoughts.'

As far as the creative process is concerned, the visualization of one's emotional presence has been inspired by the idea of the four dimensional painting which Miró proposed in his later years. Thus, the avatar, composed of the various visual elements featured in Miró's paintings, continuously changes its shape and is redrawn, transcending the two and three dimensionality of painting and sculpture. As expected, this representation stands in contradiction to the prevalent tendencies of metaverse and MMORPG players who, will either create accurate physical reflections of themselves by making an avatar corresponding to their actual appearance or conversely by giving the avatar physical traits to which they aspire to in real life, but which are entirely out of their reach in the physical realm.

As a general rule three dimensional virtual spaces tend to be simulations of real spaces and as such they can solely be interacted with and experienced through mental processes which are the visual, auditory, and cognitive stimulations in the brain. So, instead of creating an avatar based on actual physical traits, the output of the project offers to create an alternative visual entity, usable as an avatar, derived from the fact that users cannot have a real physical presence in virtual spaces and the fact that their mental input is the only factor that creates the illusion of presence in a virtual space. Other users can 'see' them, not because they are physically there; but because there is an avatar that is shaped via their thoughts and desires with which one may interact in a manner similar to face-on-face physical interaction. Thus it may be concluded that, in terms of representation, virtual appearance may well rely on the output of unconscious thoughts, which are what is also mirrored in the surrealist approach of Miró's paintings.

The PersonaSkin Avatar

The second project involves an avatar who carries several body attachments which change color saturation values based upon a data feed which is generated from the arts and entertainment section of a facebook user's profile. Although the project was initially intended for real life usage, inspired by an RFID based real life event which tied facebook data to physical bodies, launched in Israel in 2010. However, despite this physical precedent it was decided to first discover the possibilities of identity matching through accessories and outfits in a virtual world. Thus, a metaverse resident who also owns a facebook account can utilize these attachments to project his/her interests to the outside (virtual) world.

According to Swann's self verification theory, during most social interactions there is a general desire for outside evaluations which verify self-views; in other words, a wish to get others to see us in the way in which we see ourselves. Given that Facebook users create their profiles themselves, very much along the lines in which they want to represent themselves, self verification theory has become an important part of this project. The aim is to achieve an understanding as to how persons may choose to introduce themselves in social networks, real and/or virtual, in order to attain states of self verification through identity matching: The avatar is expected to bring them to the notice of persons of similar facebook status, in terms of the frequency of interests presented in the arts and entertainments section thereof.

In terms of technology the data is being taken out of Facebook via php and a Facebook api. Subsequently the data is sent to a server and from there imported into Second Life, where LSL is being used to embed the data into the objects which represent the various categories either by heightened/lessened saturation values or alternatively through different levels of transparencies.

Questions such as age, sex and geographic location appear to become increasingly less relevant in a metaverse environment, where people seem to interact mainly through their ideologies and their creativity which are taken to be standalone attributes which exist independently of the 'real life' persona behind the keyboard. Under such circumstances an avatar of androgynous appearance, whose adornments are created out of his or her areas of interest seems to be particularly apt design strategy. Since some kind of legend is needed to decipher visualization of the incoming data the skin of the dramatic full avatar also serves as a legend. In cases where residents who wish to go for a more conservative appearance, a t-shirt and various colorized male and female skins are also included in the package.

Conclusion

In the brave new world of three dimensional, online virtual worlds yet another aspect of our grappling with embodiment is coming to the fore. This is in accord with the notion of cyborg as an interface which couples the physical body with technology [8], within which three dimensionally embodied avatars can also be characterized as a form of cyborg coupling. For Biocca this coupling underscores what he calls the cyborg's dilemma, which for him is nothing less than a Faustian tradeoff: "Choose technological embodiment to amplify the body, but beware that your body schema and identity may adapt to this cyborg form." [5]

Thus, a germane question would appear to be whether such attire would be powerful enough to provoke change and transformation not only on the virtual agent but extend its influence into the physical realm, bringing forth new modes of presence as well as self-presence not only in three dimensionally embodied online virtual worlds but also in the one which we inhabit with our flesh and blood selves.

Can avatar attire which reveals, rather than conceals a metaverse resident's persona aid in the process of self-presence and (virtual) self verification? Can personal change be brought about through technologies which not only reveal our pixelated flesh, but also reveal the biological and cultural fields which we weave around us? Can social interactions be transformed and enhanced through virtual wearables which reveal our inner beings to those around us? Can novel states of creativity and play, of unique observations breeding new forms of authorship and understanding, come about through virtual candor?

While both avatars address these issues, when it comes to the Facebook avatar a further consideration is the integration of a heavily used 'real life' virtual social media platform (Facebook) into the metaverse as a socialization tool is a prolific area for further study.

This text has attempted to discuss some of the technological and artistic means through which such questions may be posited, through two projects employing such devices for the creation of two data driven avatar costumes.

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References

1. Marshall McLuhan, M. *Understanding Media: The Extensions of Man*. (Toronto: Signet Books, 1964).
2. J. C. R. Licklider, Robert W. Taylor, (1968). The computer as a communication device. *Science & technology*, 76 vol. 2 (1968): 21 - 41.
3. Jonathan Steuer, Defining virtual reality: Dimensions determining telepresence in *Communication in the age of virtual reality*, F. Biocca and M. Levy (eds), (Hillsdale, NJ: Lawrence Erlbaum Associates, 1995), 33-56.

4. Giuseppe Mantovani, Giuseppe Riva, (1999), "Real Presence: How Different Ontologies Generate Different Criteria for Presence, Telepresence, and Virtual Presence," *Presence: Teleoperators & Virtual Environments*; 8 Issue 5 (1999): 540 - 555.
5. Frank Biocca, "The Cyborg's Dilemma: Progressive embodiment in virtual environments," *Human Factors in Information Technology*, 13, (1999): 113-144.
6. Elif Ayiter, Selim Balcisoy, "Transdisciplinary avenues in education," *Computing and Art, Lecture Notes in Computer Science*, Volume 3942, (2006): 80 – 89.
7. G. J. Brosnan, M. Doodson, R. Joiner, R., (2010). "Using 'Second Life' to Support Experiential learning," *PLAT2010: Psychology Learning and Teaching Conference*. Edinburgh, UK, Edinburgh Napier University, 2007.
8. Chris Hables Gray, Heidi Figueroa-Sarriera, Steve Mentor. (eds). *The Cyborg Handbook*. (New York: Routledge, 1995).