A digital art web installation as augmentation of a theatrical play

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Abstract

This paper aim is to explore an online interactive multimedia installation that functions as a trans-medial extension of a play's themes on human augmentation and post-humanism. Nowadays we often refer to body, life, nature and emotions through code, text or information. On the other side stereotypes of dichotomies such as body/mind, subject/object, man/machine are progressively dissolving. The aim of this installation is to spark discussion and raise public awareness of the issues involved in digital media use, particularly the ways people configure their sense of selves and in particular their social relations through using digital media.

I. Introduction

Trans-humanism is a cultural and intellectual movement that carries the following descriptive and normative components: the actual and future technologies will make possible to alter our world and our humanity not only enhancing existing capacity but also creating new capacities. Humans tend to do their best to foster and accelerate the creation of such "enhancement" technologies converting the possibility of a future post-human in a reality [1].

Nowadays we often refer to body, life, nature and emotions through code, text or information. On the other side stereotypes of dichotomies such as body/mind, subject/object, man/machine are progressively dissolving [2].

The transhumanist dream is to overcome the human condition thanks to emerging fields of technoscience, such as nanotechnology, biotechnology, information technology and cognitive science, and to create not only an 'enhanced' human but a posthuman freed of any constraints, sickness and death [3].

This project really began when *Override*'s author, Stacey Gregg, encountered an on-line essay: "Empathy in the Time of Technology: How Storytelling is the Key to Empathy" by P.J. Manney [4], Chair of the *World Transhumanist Association*. Upon reading, Stacey Gregg would come across the term "Transhumanist" in "Representations of the post/human" by Elaine L. Graham, which develops ideas first put forward in Donna Haraway's polemic "We Are All Cyborgs Now". Manning's essay warns against the digital replication of worlds we already know, to the detriment of encounters with the 'other', and therefore, to the detriment of empathy:

"Individuals can now select from a vast cyber-sea of media and utterly saturate themselves exclusively with information sources that reinforce their respective worldviews. Each of us can create our own personal, walled media-garden and surround ourselves with comforting, confirming information, shutting out anything that might conflicts with our worldview.

The implications of access to this cyber-sea are social dynamite: for shared knowledge and information is the glue that holds civil society together. It is the stuff that has, historically, caused people to change some of their long-cherished but misanthropic opinions and instead caused them to empathize with others" [5].

This led Stacey Gregg back to Elaine Graham's "Representations of the Post/Human", which begins with a definition of *cyborg*. The collection of essays already feels dated (published 2002), however its categories of faith and phobia toward biomedicine feel particularly live and pertinent.
A cyborg is a being with both biological and artificial parts. Fictional cyborgs frequently pose the question of difference between human and machine as one concerned with morality, free will, and empathy [6].
The aim of the project, used as case study, was to spark discussion and raise public awareness of the issues involved in digital media use, particularly the ways people configure their sense of selves and in particular their social relations through using digital media. The goal of the project was to establish a network of creative exchange between new digital research and its potential for drama in the interface between research and the creative arts - particularly theatre - and in the issue of science and society [7].
An online interactive multimedia installation, titled *Talk to me*, was implemented functioning as a trans-medial extension of the play's themes on human augmentation and post-humanism.

II. The installation

The concept of the installation features a desk with a laptop or desktop computer, a chair and an Internet connection. The user can experience the installation both by viewing the computer monitor and by accepting the invitation of the voice to come to the screen and converse with the avatar.

I. Web Design

The web installation design consists of two macro scenes.
The opening two minutes feature a multimedia scene setting similar in appearance to those of gaming platforms. This will engage the user with basic storytelling. Interconnectedness and technology are the key words representing the main theme of the narrative. The tone is one of simplicity and aesthetic distinctiveness.

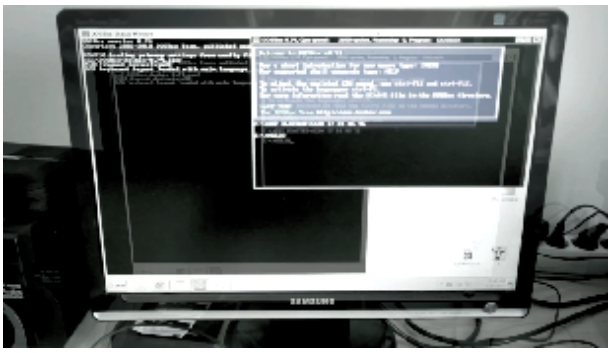

Figure 1: *A screenshot of the first part of the installation.*

After the opening video section, the user reaches a point where he/she is no longer passive but implicated in the narrative: the user is encouraged to converse via a chat box with the play character of *Violet* using Chatbot technology tailored to mimic *Violet*.
Regardless of whether the user chooses to experiment with the chatting, *Violet* will visually disintegrate over the following 3 minutes of the installation. Users who choose not to converse with *Violet* will therefore still have an intriguing aesthetic experience.

Figure 2: *A screenshot of the second part of the installation.*

II. Sound Design

Talk to me is a fixed multimedia artwork, which is deeply rooted in and related to the play *Override*. Theatre is itself a living sound drama. There nothing seems to be tangible, nor is it taken for granted. Theatre is the very opposite of inscribing sounds on a medium that will always remain permanent [8]. For this reason, the hard challenge with sound was to give to the installation user a perceptible clue of that relationship.

The sound design was devised to play a fundamental role in conveying an augmented experience - in terms of atmosphere - of what an audience would experience in the theatre attending the play *Override*. Atmosphere is intended here as the sonic ambience, or background sound, consisting of the sounds of a given location or space, whether distinct or subtle [9]. During the experience of the web installation, sound co-occurs with the moving image and text. Therefore, any understanding of its workings should be viewed in the context of intermedia [10]. This means coexisting media that conform, complement or contrast with one another [11]. The sound design underlying the whole installation has a meaningful and unexpected role, giving the moving image a deeply abstract and conceptual character with a hazy, almost shimmering tint.

The soundscape adds a more comfortable and ordinary atmosphere during the first part of the video and creates a suspended ambience during the second part. Chat typing sounds have been recorded and modified using specific spectral transformation algorithms including spectrum scaling, shifting and spectral resolution techniques (i.e. degrading). Clear typing sounds were used during the first part of the chat in order to make the interaction with the bot more credible; as the video goes on the typing sounds became more and more abstract and unreal. Other electronic sounds were synchronised with *Violet*'s eye movements in order to make her transformation into a cyborg more powerful and in augmenting the user's sensation of her eventual disintegration.

Both diegetic production sounds and processed production sounds are mixed with other sounding materials, which do not necessarily have direct referentiality to the visuals. This is done in order to produce a sound experience strictly interconnected with the narration. In this way, sounds not related to any given source justify their placement within the soundtrack, oscillating between diegetic and extra-diegetic roles and driving the overall aesthetic effect of the artwork towards a disintegration of meaning.

The 1960's saw the start of sound liberated from its original, diegetic, function. The sound design in this work plays on the ambiguity between the sound reality and the sound transformation achieved through *musique concrète* techniques: that is, sounds that appear believable through the phenomenon of synchresis are the same sounds that are often unbelievable in real life. Music composition techniques nowadays play a basic role in sound design, informing the sound work. The practice of artistic elaboration of sound for the moving image provides to music and sound composition new tools such as synchrony, synchresis, empathetic and anempathetic relationships as well as different narrative roles [12]. Following these premises, the soundtrack composed for *Talk to me* allows the installation user to recreate a personal significance across the exploration of the interaction process.

In order to make the whole web installation artwork experience closer to the concepts of artificial intelligence and augmented reality from which it rises, it would be necessary to devise a more complex level of interactivity regarding sound too. Therefore in considering the development of this project, we hope to explore the possibility of generating *intelligent living soundscapes* capable of high-level interactive sound control, through a real-time webcam based system which will allow automatic detection of user's facial gestures [13].

III. Film Design

The installation is preceded by a 2-minute short film which lays out the narratological extension of the *Override* play. The film is narrated by a voiceover, voiced by the playwright Stacey Gregg, which addresses the user, setting up the user's unease with reality. This unease is developed by an initial description of physical reality:

"You come into the building. The door senses you, swings open. You pass your fob across a sensor and enter your home. The room is cool. The hum of air-conditioning. Outside you can hear the faint drone of building works. Machines. An alarm going off."

Yet the voiceover narrative is contrasted with the images, which show an ambiguous first-person point of view: a door swings outward away from the camera, the mise-en-scene of each shot is kept clean, with the lighting mostly in brilliant white, so as to emphasise the aesthetic coolness and surrealness of that reality in simpatico to the doubt in the narrator's voice.

The urgency of this doubt increases as the film progresses:

"You feel like you're losing a grip of yourself. Your *self*. That, like ectoplasm, you ooze on-line, like right now, and you cannot be sure which you is you-you."

At this point, the images in the film similarly move away from physical objects – they become dreamier, hazier and more ambivalent. The user is made increasingly unsure of the reality portrayed in the film, as the voiceover suggests that this is part of the user's dream: "you've been having these dreams." The narrative finally builds up to its final question: "would you talk to me?" In this question lies the invitation for the user to take part in the cyborgian transaction of conversing with the chatbot that follows in the next part of the installation.

III. Interaction consideration

One of the great challenges in interactive design is actually creating real interactions between the artistic idea and the user.

A paradigm of interaction was established within the installation. It consists of a management-type model where the user can communicate something to a system and the system is able to communicate something back, allowing the user to carry on with another task. The code manages not only the feedback but also the significance of each action.

There is a correlation between the richness of interactive systems and the difficulty of creating it: the richer the interaction, the more can go wrong [14]. This is why the web installation is very clean and simple: it gives space to the power of the concept at the basis of the installation.

The classic user interaction model has been adopted: a terminal where a user inputs code commands that are then run and the results reported to the screen as textual typing. The interactive concept was to control the machine via a system of commands that the computer had been pre-programmed to identify. The user should not require a specific introduction to feel comfortable with the interactivity thanks to a very bare interface.

In order to perform the textual interaction, a chatbot has been applied [15]. This serves as a conversational agent: a program designed to simulate an intelligent conversation with a human user via the textual method [16]. The primary aim of such simulation has been to induce the user into thinking that the program's output has been produced by a human [16], [17], [18].

The webservice "Pandorabots" has been used to provide a chatbot. It supports the development and exploitation of chatbots based on an open standard AIML (Artificial Intelligence Markup Language) [19].

"Pandorabots" operates a free website used to build and deploy virtual personalities in the form of human-like chatbots [20]. The chatbot programming consisted of customizing the pre-programmed Pandorabot by changing some of its properties and by providing custom responses with a training interface. This free open-source-based community webservice has been very useful to obtain the character of *Violet*, which was obviously linked to the theatre play.

IV. Programming side

The installation is programmed using HTML5, a *markup* language used for structuring and presenting contents for the World Wide Web and a core technology of the Internet. It is the fifth revision of the HTML standard. In particular, HTML5 adds many new syntactic features such as the new `<video>` element, which allows developers to include video directly within their pages without the need for any plugin-based solution. The main project requirement was to synchronise the video, which runs

in *autoplay*, upon opening the web page, and providing a frame running a chat box. The chat box frame appears after a given time within the installation.

Synchronization within a multimedia context implies the access to the video time stamp, which is permitted thanks to powerful API (Application Programming Interface). This gives to developers control over movie playback through a host of new JavaScript methods and properties. The HTML5 code for the web installation uses as a core aspect the attribute `currentTime`; when this attribute is read, it returns the current playback position in seconds, expressed as a `float`. Setting this attribute helps to directly control, via JavaScript, the chatbot frame show to the specified time index [21].

The code uses *Popcorn.js* HTML5 JavaScript library for integrating the web into the short video movie. *Popcorn.js* is an HTML5 media framework written in JavaScript for filmmakers and web developers to create time-based interactive media on the web. The *Popcorn.js* library provides an easy-to-use API for synchronizing interactive content. It uses the native HTML `VideoElement` properties, methods and events and normalizes them into a simplistic API [22].

All major browsers (Safari, Chrome, Firefox, Opera, Internet Explorer) continue to add new HTML5 features to their latest versions. Obviously, the code provides features in order to manage compatibility with browsers that do not support HTML5 and with browsers that, although supporting HTML5, are not able to handle the tag `<video>`. *Browser detection* and a webpage redirection to an HTML4 version are provided.

There are other compatibility issues related to the video codec. Unfortunately, when it comes to the kind of video that browsers can handle, the scenery is currently fragmented. Although the HTML5 specification clearly defines the new `<video>` element and its associated APIs, it does not mandate any particular video codec that browsers should support as a baseline. Opera and Mozilla Firefox chose to include native support for *webM*, a high-quality open video format for the web that is free for use and distribution without licensing and royalty fees. Safari and Internet Explorer 9, on the other hand, opted for the *H.264* codec, a royalty-encumbered format licensed by an organisation called *MPEG-LA*. Google Chrome included support for both of these formats. IE will support *webM* if it is separately installed on the user's system. Chrome, Opera and Firefox also included support for a royalty-free codec called *Ogg Theora*.

We encoded the video three times to let it work in all current browsers: *webM, H.264, Ogg Theora*. Fortunately, the new `<video>` element allows the programmer to specify different versions of the video: adding alternative `<source>` elements with appropriate type attributes to the video, the browser will choose and download the format that it can display.

The redirection includes a special redirection for mobile devices.

The Mobile device version for this installation was coded with a decision to exclude the audio/video performance. The reason for this is due to recent restrictions on mobile browsers. Currently, browsers on mobile devices optimize video presentations for the smaller screen by playing video using the full screen. Video controls appear when the screen is touched, and the video is scaled to fit the screen in portrait or landscape mode. The *Talk to me* project needs to perform the chat within the webpage, so the team decided to use an embedded still image for the mobile version, allowing mobile users to undertake the web chat.

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