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Innovative Dance-Technology Educational Practices within *Senses Places*

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Abstract

The project Senses Places has developed an experimental somatic-technological dance approach for dancing in mixed reality mediated through image, avatars and biodata. This paper discusses the interfaces and choreographic methods resulting from the art-technology collaborative process between the main authors, creating participatory performance environments and leading workshops that raise innovative challenges to crossover areas of curriculum design. The aim is to understand its effectiveness for creative trans-disciplinarity educational practices.

Keywords: Art-Technology, Dance-Technology, Somatics, Embodiment, Posthuman corporeality, Human-Machine Interface, System design, Curriculum design, Choreography, Kinesthesia

1. Introduction

Senses Places is moved by the intention to expand the dance-technology activity towards research that is collaborative, participatory, inclusive, trans-disciplinary and cross-cultural, encompassing a post-human embodied condition [1]. This collaborative research created/designed interactive interfacing situations and contexts for inter-

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subjective embodied mediated experiences by following experimental somatic movement dance and performance art based practices. The design of supporting information technology systems is to be treated as the topic of development research [10]. Given the multiple combinations of simultaneous interface systems and the increasing number of nodes/collaborators, a cloud grid system running an OpenSim 3D virtual world connected to a stronger and faster server, is being designed as a fit for purpose system for Senses Places art collective. This ongoing dance-technology project and system was instantiated, tested and developed at artistic events, workshops, and at a residency [2], as well as at conferences and other gatherings [3].

Given the lack of dance production and specially curricula in somatic dance approaches and even less of dance-technology including this approach to embodied mediated interfacing, *Senses Places* endeavors to move dance beyond the aesthetics of visual and musical traditions, and bring the focus back to the very *corporeality*, by including multiple embodied aspects of aesthetic inter-subjective communication, particularly through kinesthesia. Such choreography of mediated empathic experience includes, amongst others, the interaction between biological data and its environmental output and modulation. At the same time we intend to be interpolated by the output responses and be constantly surprised by our reactions and perceptions in action during the engagement.

Modes of accessible deployment through the project continue to develop, by being instantiated at artistic events in site-specific formats, proposing a dance-technology curriculum development [4] and further research results on the application of MUVEs in vocational education was published [5].

We will characterize the dance-tech approach developed for the workshops referring to the success achieved and issues raised, particularly the apparent contrast between somatic embodiment and interfacing involvement.

Basically the goal is to raise body awareness and engagement towards getting more grounded in order to truly expand virtually interacting with/through combined embodied mediations in mixed reality environments. Therefore, there is an attempt to match the principles of embodied practice and interface systems, constantly needing adjustments in their emerging nature.

2. Background

At Fridge gallery (June 2011), Senses Places' vision, set within the previous project, titled *Weathering In/Com Tempo* [6], was instantiated for the first time, creating a mixed reality participatory environment. For 15 days the system was tested by visiting participants, and workshops were offered there, Auckland, and Tokyo. The workshops introduced participants to the embodied mediated interfacing modes through the somatic-technological improvisational dance approach.

The last workshop at the Portugal local chapter of SLACTIONS 2012 was successful in advancing with the approach and dealing with the integration issue. It began with the somatic experience and progressively introduced each of the embodied interfaces and their accumulation, respectively video stream, webcam, Wii remote [15], and biometric device. The guided somatic practice allowed the participants to first experience/sense their bodies' physicality, biological functions and structural organization with the eyes closed. Slowly they opened the eyes and started walking noticing the weight transfer while becoming aware of their relation with the space and other people. This visual expansion continued to encompass the two SL projections on the walls streaming a real-time video of themselves in the room. Watching their screened image in the SL place made the participants react, dealing with their mediation into another image body and place in relation to their physical body. Following, the Webcam interface was introduced, allowing the gestures and body movement in place, closer and faraway to move the avatar. Then, the Wii Remote interfacing, allowed the participants to move the avatar in space, by substituting the punching the arrow keys with up/down and turning gestures with the Wii device and corresponding travel in the physical space.

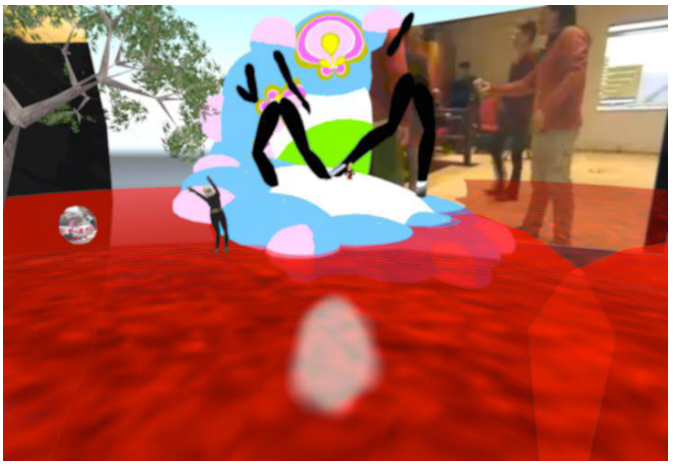

Fig. 1: Workshop participant at Slactions 2012 experimenting the Wii Remote interface seen from video stream at Senses Places site, Koru Island (Second Life) (by Clara Gomes)

Although the Wii Remote interface had the most impact, there was some shyness to try as it directed everyone's attention to the participant interacting with the avatar. This response made us realize that the situation should include 2 devices connected to 2 avatars allowing the focus to be on the different connections through the participants embodied mediations and movement in both places. This inter-subjective engagement is actually how the research has pursued creating mixed reality embodied situations in a fuller integration of post-human corporealities. Finally we demonstrated the biometric interface prototype #1 (designed by Artica), capturing the biosignals in real-time that modulated the sound output (designed by Nick Rotwell).

Overall, it was understood that it was too much information for the amount of time assigned for the workshop, becoming difficult for the participants to encompass all interfaces and to combine them. In particular, the introduction to the technicalities, after the somatic practice and video stream expansion into the SL site, broke the embodied engagement, shifting back to a logical-rational mindset.

Through time the project also crossed activity with the Contact Improvisation practice at the Contact Improvisation Lisbon Jam (CILxJam) sessions and participated at performance art events at Odyssey Gallery, and conferences and festivals in its own site at the Koru Island (owned by WelTec Institute). These participatory performance environments came to include the collaboration of (virtual) performance artists and developers, contributing to emphasize the somatic embodiment aspects of interacting improvising with/through simulations in hybrid contexts. They contributed with their related approaches to somatic dance (Valverde aka Butler2 Evelyn, Ana Moura aka Anisabel, PT), (Jun Makime aka Junkae, Yumi Sagara, Kae Ishimoto aka Kaejun, Yukihiko Yoshida aka Island Habana, JP), avatar virtual dance behavior animation and/or attachments (Cochrane, Valverde, Liz Solo, SaveMe Oh, Kikas Babenko, Fau Ferdinand, Sca Shilova, Isa Seppi aka Janjii Rugani, Clara Gomes aka Lux Nix, and Neylan Aular), mixed reality and real time machinima (Sca Shilova, Cochrane aka Toddles Aeon) biometrics (Artica, PT), responsive sound design (Nick Rotwell/Cassiel, UK), human-robot interaction (Valverde, Moura, PT) MUVEs in educational settings (Cochrane, Keiji Mitsubuchi aka In Ian, Valverde, Yoshida).

3. Somatic-technological improvisation

Senses Places is transgressive and generative for the creative appropriation and playful somatic embodied subversion of common hard-software interface systems for videogame and Second Life® (SL) MUVE, products of a digital global mass consumer and entertainment industry. The quality of the experience is raw, unfinished, unpolished, and emergent for the improvisation of multiple components involved and its participatory nature.

The approach is informed by key schools of practice and thought pertaining to cross-disciplinary fields of research within the arts, humanities, sciences and technology. Amongst the theoretical influences is Katherine Hayles' *posthuman embodiment* (Hayles, 1999) reclaiming the *posthuman* from cybernetics theory of liberal

humanism through the inclusion instead of erasure of the previous paradigm of bodies' analogue presence/absence within the present computer/information paradigm of pattern/randomness. Thomas Hanna's *somatic body (r)evolution* (Hanna, 1970) inclusive optimistic vision for the human evolution in the passage to the twenty first century anticipates the technological dominance with a childish playful somatization of technologies[i]. Susan Foster's *choreographing empathy* is particularly concerned with the new-networked bodies made possible by digital technologies and 'similarly hooked into environments both immediate and distant, this body draws upon a cyber-kinesthesis to rehearse options for making its way in the world.' (Foster, 2011, 125) *Senses Places* is a rehearsal for such a *cyber-kinesthesia.*

The experimental, cross-disciplinary and culturally-critical improvisational dance practice pursued following the somatic-technological vision underpinning *Senses Places* helped us to not only stay grounded in our physical bodies, but to actually grow deeper roots and encompass more conscious integrated states while increasingly expanding virtually through embodied interfacing modes. Through this intertwined practice, we learned new ways of working with the emerging connectivity developed through shared physicality-virtuality between local and remote partners and environments. Understanding the value and implications of neuro-physiological processes, this practice is anchored in principles and techniques of embodiment derived from different somatic practices and forms, strongly orienting our work. Amongst newer to ancient practice and philosophical influencing traditions are Mabel Todd's experiential anatomy-Idiokinesis, kinesthesia, Body-Mind Centering® [13], Release and Alignment, Mathias Alexander, Laban/Bartenieff [14], Authentic Movement®, as well as Yoga, Tai Chi, Reiki, Noh and Kabuki theatre, generating trans-cultural dance hybrids out of Contact Improvisation and Butoh. The project is also inclusive of pedestrian movement and cross-cultural social dance genres like social and club dancing, Hip Hop, ethnic and folk dance.

We identified *rooting, openness*, *witnessing,* and *perceiving as/in action* as the main principles orienting the experimental soma-tech practice [9], addressing them in the work. The facilitation of workshops along with public instantiations at physical-virtual events have been important factors in recognizing these orientations throughout the project's development. In the workshops, we introduce participants to somatic embodiment and improvisation previously explored, facilitating a playful experience of different and combined modes of interaction working with the mediated interfaces step-by-step and their interweaving.

3.1. Rooting

Grounding ourselves to the earth is essential to us as humans and especially as performers, particularly when mediating through interfaces expanding and multiplying our physical bodies virtually. While improvising, the inclusion of virtual mediations leads to a change in our relation to physical reality as we share our concentration with simulations. Although there is a process of adaptation to a new situation, here, a somatic and technological situation, at the core, adaptation is facilitated. For example, engaging in connecting with the floor while spreading into different embodied virtualities enables us to be aware of our physical bodies. The practice of this conscious attention and intention is directed to sensing one's weight by becoming somatic/kinesthetically aware, focusing on breathing to diminish external muscle tension of body parts, following the directions of energy flow, in order to sense our very weight relaxed and connected. Excessive, unconscious body tension prevents us from sensing the weight of our bones and mass (Paxton 2008: 1). The continuous practice of this conscious rooting while interfacing virtually brings to its assimilation, allowing further grounding and flight in both the earth and the virtual. To allow a wide range of challenging embodied experiences, the avatar movements choreographed for the webcam interfacing/combination are particularly organic, deformed and unrealistic, grounding and floating, implying different body parts, tones and systems. Progressively, we began to understand the importance of tuning, of physically focus on grounding as well as giving the avatars related characteristics to engage more somatically while expanding and connecting through mediations.

3.2. Openness

Openness is a key principle in improvisation. It implies an active state of perceptive attention and availability, similar to antennas, receptive and responsive, ready to receive and send information from within (the soma) to others and the environment. Likewise, the intelligent machines' sensory-processing-output systems are programmed to detect and respond to anything within their radar. Dancers and choreographers working in improvisation and particularly, in somatics (proprioception/kinesthesia), design and engage in situations based on variable delimitations of the body's freedom and movement components (energy in space and time) with respect to the inner body, partner(s) and environment(s). We include Contact Improvisation, framed by the ongoing movement interaction based on listening, and following physical contact in the touch and sharing of weight amongst partners as part of this process, here amplified to experience virtual touch.

Fig. 2: Global Underscore 2012 at the SL satellite site (Senses Places) with streams from three physical sites of practice, with Isabel Valverde aka Butler2 Evelyn and Andrew Wilford aka Born Rosca (by Valverde).

As this shows, the improvisational dance state is a highly open, attentive and evolving engagement with our inner body perceptions, others and the environment, virtual and physical. In addition, the challenging possibilities of Web 2.0 communication and interfacing expand improvisation openness to include multiple sources of biological and movement data shared amongst partner(s) to affect avatars and aspects of the environments.

3.3. Witnessing

In *Senses Places,* we also improvise employing the principle of 'witnessing'. While in Authentic Movement®, the practice centers on therapeutic purposes, in dance, the role of self-witnessing is essential for self-awareness directed to creative purposes. This soft, conscious presence, without interfering in what is happening internally, permeating with the external environment and others and following what is actually sensed/perceived, is a key mode that we also adopt when working with interfacial mediations. When witnessing/noticing what happens, particularly when our inner perceptions and engagement are mediating in new combined mediated modes, we are normally in an edgy 'stream of consciousness state', detecting and re-patterning any tendency to become unconscious of aspects of our embodiment. This leads to a deeper and larger scope of sensing and reflected practice during interaction, which encompasses the interconnectivity of our minded bodies' intelligence in action.

3.4. Perceiving as/in action

The encompassing of multiple perceived events as an integrated unity is only possible through an intensive practice of dealing with accumulation, constantly shifting between perceptions whilst keeping connected to all of them. This is the typical youth's computer multitasking mode, only not limited to the logical-rational mind-frame. This leads to an expansion of perceptive capacities while staying open, witnessing and rooted, which in turn results in an increasing complexity of perceptive-expressive relations, that tend to become integrated into the emergence of

even larger complexities. By starting with perceiving as action, a concept from Body-Mind Centering® (Cohen 1993), including somatic interioceptive, propriocetive and exterioceptive perceptions, particularly in situations with different simultaneous interfacings, we are able to move into action with an underlying awareness, and to experience our faceted presence more fully in each moment.

These somatic techniques and methods of improvisational movement practice are our mode of creating, particularly in technologically mediated idioms, adding a random character to the interfacing with set choreography and preprogrammed animation of virtual or physical characters based in a mixed of sourced material. The development of this research practice also implies our morphing with the apparatuses, and vice versa, becoming increasingly grounded while virtually immersed, thus stretching the potential of human experience and cognitive reasoning. Choreographed-designed with growing complexity, the modes of interfacing become an evolving, integrative and amplifying structure. In this regard, the cross-modal creative practice comes to encompass an accumulated interdependency of embodied perceptive awarenesses in action. Through the process of adapting and engaging with the many factors at hand with a perceptive, somatic, open and flexible attitude, our interaction through the interfaces and platforms becomes more integrated and connected unifying whole.

Fig. 3: Physical and virtual participants in CILxJam with Weathering In at Zeitgeist event, Odyssey Contemporary Art and Performance Simulator, Second Life (by K. Yosuke)

Hence, the project's inclusive cross-cultural intertwining focused on somatic-based contemporary dance approaches aims to aesthetically intervene to contribute to open up channels of communication and empathy through our senses and places, opposing the generalized physical body instrumentalization and replacement.

4. The Participatory performance environment

The participatory performance environment events also function as an informal way to introduce the approach, inviting attendants to engage actively if possible with one or more interfaces. Normally we are happy if the participants get to activate the webcam interface, as the video stream mostly works between collaborators. For the InterAct! Showcase of Interactive Virtual Art at SL LEA4, curated by Lory Landay, and installed at IST/Taguspark Campus, Oeiras, PT, from October 2011 to February 2012, we actually created three more channels inviting visitors to also stream themselves into the VR place and interact in this way. But we only had one person actually streaming, or saving the stream. The Wii Remote interface is very effective and with practice enables the articulation between our walk and dancing in the physical and virtual space with/as the avatar. However it only works on Mac OSX [16] 10.6 or lower. Technical issues need to be resolved.

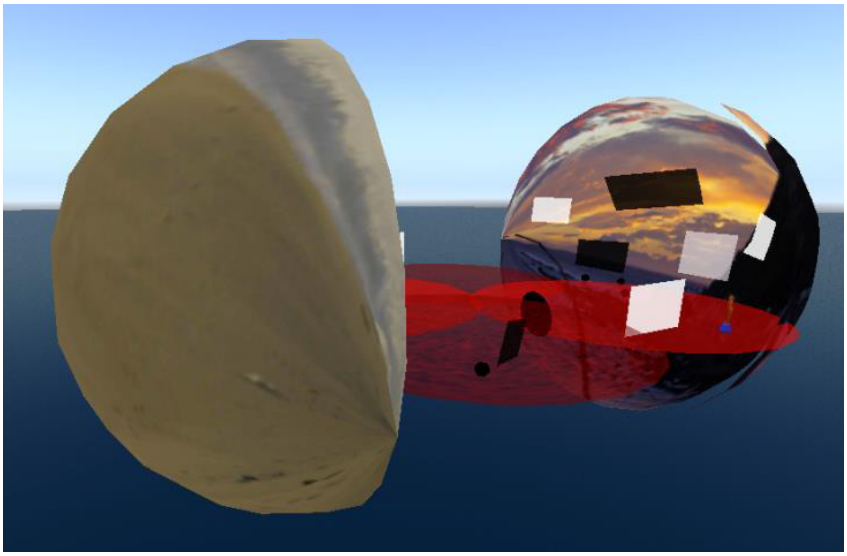

Fig. 4: Senses Places virtual site in Second Life with multiple screens for video stream embodied interfacing (by Valverde).

Through our practice we learn to shift rapidly between the increasing interactive modes, by tracking several elements at once, resulting in their coordination automatization and assimilation. Witnessing our engagement we tackle all the elements while maintaining our physical awareness and interaction in an all-encompassing mode. Amongst the clear perceptive alterations is the awareness of our peripheral vision. By discerning and combining physical-virtual interactive modes in parallel and in interconnected sensory-perceptive, physical-virtual improvisation we incorporate kinaesthesia, touch, weight sharing, seeing and hearing. Whenever one mode gets weaker or lost, we are reminded to recover our focus, acknowledging the resulting integration and constant shift within a multiple, interconnected, physical and mediated embodied experience.

Hayles' figure of 'flickering signifiers' (Hayles 1999) proved to be a key reference for this human-avatar, analogue-digital mediated experience, contributing to our understanding of the multifaceted project by serving in an integrating dimension. Similar to Hayles' concept of computer functions switching at a keyboard click, in our mediated improvisation, we constantly shift and interconnect amongst modes of interfacing, embodiments, environments and languages, channels of communication and perceptive experiences. This continuous flickering practice, this changing attention within our galaxy of in-between body perceptions and connections in action, results in an amplification of awareness and the integration of different channels of experience. As we learn this new amplifying body-mind skill through extended practice, we generate synaptic connections between perceptions and actions, forming new sensory-perceptive-performative behavior patterns. Inherited from body-mind associative improvising, this flickering is actually what allows for a constant adaptation to an encompassing, rich hybrid experience with an increasing number of integrated systems and collaborators.

5. Present Shift: from Second Life to alternatives using a cloud system and hybrids within hybrids

Present research is the design of the new possibilities of cloud systems and alternative 3D MUVEs such as OpenSim[7], but principally, how the work has grown to develop its potential, adding new dance-tech strands in different nodes, including robot Nao (Portugal), ancient avatar poses (Japan), 3D depth sensing devices and biometric devices (New Zealand), animation (The Netherlands) and others. The flexibility provided by cloud services, such a OpenSim[8], on infrastructure, platform and application deployment seems to match requirements of dance technology system. We are working into the creation of a distributed cloud that connects or interconnects Senses Places' collaborators [5].

6. What's next: Summary

With the shift into other virtual world platforms and the opportunity to explore a fit to purpose cloud system that will enable more communication between a larger number of participants, the project can further expand and deepen the soma-tech approach in collaboration with other trans-disciplinary artists and technologists. We want to be able to amplify our awareness and assimilate more embodied interfacings in order to creatively integrate them and allow emergent situations to arise. Efforts are being made in order to organize longer intensive workshops for dance students, and artists, including their creative experimentation with the approach. We also plan to design workshops for computer science students and professionals as well as everyone interested in a creative mixed reality embodied interaction with/through avatars, environments, and bio signals.

The dance technology critical aesthetic theoretic-practical approach and the incremental and exploratory nature of its research also allows for design centered system research. A developmental research is designing a system towards a Senses Places collective artistic experimentation in an ongoing situation feeding back to the increase of possibilities for posthuman embodied connectivity.

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