TWINING

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Abstract

We are engaged in the process of exploiting gestural signs and pedestrian postures for the purpose of utilizing additional possibilities through the creation of a new Wearable Electronic Garment, as medium for inscription. Animated, cyber-performers move, deform, and re-arrange themselves, augmenting the dimensions of expressiveness/meaning during performance. The cognitive approach produced by thinking in/out of these bodies will similarly trigger changes in consciousness, affecting content and virtual story telling. Together we explore the interaction of text/gestures as movement—as in dance, human day- to- day postures, and our capacity to embody and generate meaning. Cyber dancers use gestures in order to cybernetically inscribe them. The composed gestures become the source of intention that relates to itself; its communicating environment becomes a visualization of the self-reflexivity of both the dance and consciousness. The dance is between worlds of humans, cyber-humans, and the source language as transforms into the domain of visible thought.

1. Introduction

“Twining”, is a new collaborative work between Professor Yacov Sharir (University of Texas at Austin) and Professor Barbara Layne (Concordia University Montreal) designed to fit as a site-specific work, in an alternative performance interchangeable space, and as an installation. We are seeking to explore the relationships between physical architectural practices, materiality, embodiment, and how they can be exploited both in a physical and in a perceived space.

Methodologies include the human body, a physical human recombinant gestural system, and several interactive systems employing a wearable electronic garment that is subsumed into the personal space of the user/performer, controlled by the user, and has both operational and interactional constancy, i.e. it is always on and always accessible while in performance. Most notably, it is a device that is always with the performer, and into which the performer or the user/audience member can always enter commands (or enter/change text while walking in and around the performance space). The working hypothesis in this case is to generate a vocabulary of direct gestural expression of creative intention that can be recognized, so that improvised or choreographed set of gestures can map the experiential state of each gesture to corresponding system actions. The result will be an expression set, instead of a command set, through which the interactor communicates, rather than controls, the system.

1.1. The electronic garment/wearable

Barbara Layne has been conducting material research in the Textiles Lab of Hexagram, the Institute for Research and Creation in Media Arts and Technology. Her lab has recently developed a flexible LED display in a vest for a performance by Yacov Sharir. The title of the performance, Twining, means “a twisting together, interlacing or interweaving”. The performance will weave together electronic textile technologies with innovative choreographic movement and virtual environments.

In Layne’s studio, textiles are constructed by integrating Light Emitting Diodes (LEDs) and electronic circuitry into the structure of hand woven fabrics. The array of LEDs present changing patterns and scrolling texts, much like an electronic message board. This programmable surface can be made interactive with sensors and other triggers while wireless communications systems allow mobility and facilitate remote interaction. The unusual aspect of these fabrics is that all components are embedded into the cloth while on the loom, and become an integral part of the cloth. The warp and the weft of weaving produce a natural set of x-y coordinates that
function similar to a substrate for circuitry. Flexible wires can easily be woven alongside traditional fibers in a technique known as supplementary warp and weft. If the wires and components were removed, the cloth would lack a strong, stable structure, and the fabric would fall apart. Careful attention has been given to the craft of weaving and electronics that will provide not only a strong circuit but an aesthetically pleasing visual image. Each work requires several hundreds of hours in the hand weaving process and the result is a piece of cloth that appears to have evolved from traditions in hand weaving, jewelry making and electronic engineering. The key to maintaining robust circuits is the development of a wire wrapping technique that allows for both flexibility and strength, clearly the most difficult challenge in this approach.

Cloth is one of the most intimate things that we interact with in our daily lives. This research builds on the ability of cloth to carry cultural content as a meaningful communication of human experience. The woven work takes form in gallery installations and as computer wearable. Previous works include animated vests in which scrolling patterns include designs found in traditional weave structures. The first of this series, *La Grand Pandor*a (2004) refers to a practice of the Parisian fashion design industry of the 17th century. Since there were no magazines to publish the latest fashions, wax dolls in different styles and of different heights were sent to the Provinces. These dolls were named Little Pandora (La Petite) and Big Pandora. In the early production of the LED garments, all programming of texts and patterns were done in Basic language, each LED entered individually by typing in thousands of Zeros and Ones. The *Twining Vest* (2005) is a descendant of *La Grand Pandora*. In the *Twining* version, the LED array has become larger and new technological advancements have been developed including the creation of new software that permits keyboarding input for the text messages. A hardware connector links the computer directly with the Basic Stamp microcontroller without removing it from the garment. The next phase of innovation will be wireless transmissions that can provide communications from a distance. This opens up possibilities for more interactive capabilities for onstage performances. Input could be sent from another performer, or from a controller off-stage, or additional components can be developed to receive text messaging through personal devices controlled by audience members.

An experiment with remote interaction has already been incorporated into the garment, *Black Tunic*. A Bluetooth device carried in a purse is used to communicate with the tunic from a distance of up to 50 feet. The message is a simple On/Off command that can regulate the display of imagery in the LEDs of the vest. The device can be carried by the tunic wearer, or by another person, in which case the fabric becomes “excited” as the two people come close to each other.

In the fabric, *Wall Hanging*, a sonic sensor has been woven into the circuit. This will detect human presence in the environment and respond by displaying different messages in the LED array, depending on the location of the viewer. This “content” of this fabric is dependent on the situation in which it is displayed. For the recent exhibition at the HUB, in Lincolnshire, England (2005), a series of texts and patterns were used to depict aspects of the site of the gallery. A viewer within one meter of the work would trigger a text about Sir Isaac Newton (born in Lincolnshire) and his experiments with light and gravity. Within the two meter range, a list of qualities related to seeds (rare, aromatic, fl oriferous,etc.) referring to the building’s former life as a seed warehouse scroll through the fabric. Other references to site and textile pattern are presented as the participant moves further away from the cloth. One of the unique aspects of this fabric is that it can easily be reprogrammed to reflect different locations and historic events. As the cloth moves to additional situations, it can also retain some of the history of the previous site, much as the way a traditional piece of cloth can pick up the smells, stains or tears relative to a particular place and time. Both the idea of an expansive and open ended content as well as the new technical innovations used in *The Tunic* and the *Wall Hanging* can be adopted within the Twining vest to support new approaches to dance and performance.
1.2. Ideas related to the creative process

In the advanced development phase/stage of this work we are generally not thinking in logical or linear terms. Our lines of thoughts are expanding in many different directions. We seek to fuse the boundaries between the human physical, architectural, technological discourse; with live performance strategies in order to offer an intense improvised performative experience. We are utilizing the character and life of a forever changing text/narrative as the primary source for virtual story telling. This strategy is designed to be experienced within the context of an unfamiliar environment (to the user) that we/they are yet to explore as the work unfolds. Our exploration flutters around subversive multiple sensory wireless wearable garment/system and additional wireless video cameras. Our intentions is to utilize and integrate these digital technologies/devices into the movement/choreographic and design process in an environment used initially in an alternative performance space, but ultimately address site specific locations used on a daily bases by many hundreds of people. All aspects of design and performance related issues are investigated in this given space with particular emphasis placed on issues of real and perceived boundaries.

Our interdisciplinary practice focuses on researching intelligent, self-generative methods, which bring into the choreographic/movement process techniques employed by other art forms. Additionally, we are interested in exploring the potential of interactive technologies that examine performance related issues and how they affect movement and gestures components generated not only in the physical body (computer manufactured cyber body). We have initially identified additional relevant non-dance artistic practices (such as architecture, electronic/interactive music, and captured video information that can be manipulated in real-time). These practices could provide useful *vocabularies*, terminology and concepts which could expand the choreographic process by adding to its available compositional methods without radically altering its initial definition, the use of time, space and dynamics towards the production of meaning.
2. Conclusion

“Twining” means twisting together, interlacing or interweaving. The performance will weave together an electronic textile with cutting edge dance technologies. “Twining”, as it relates to this work is the primary motivating and stimulating factor that feeds the creative process, initial movement ideas and human gestures have been created, extracted, and developed. Computer manufactured animated cyber-human characters are being created, utilizing the source materials as the energy that fuels their action.