Ambiguous zones: the intertwining of dance and world in the technological era

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Abstract

This paper analyses the relationship between body and technology in the field of dance by proposing a reflection on the idea of what my collaborator, musician Fernando Iazzetta, and I call 'ambiguous zones'. Grounding my research in semiotics and the embodiment perspective, I discuss the role of technology in dance in the realm of digital culture in order to understand the implications of the establishment of new configurations in which body, dance, music, image and environment are used to challenge the dichotomies between mind/body, natural/artificial and real/virtual.

Keywords
Body
Cognition
movement
real time
immersion
interactivity

Introduction

This essay focuses on the dancing body and technology and introduces a few alternative modes of configuration for dance pieces that are generated *within the boundaries between bodies and new media*. In the research that I have developed since 1996 with my collaborator, musician-scholar Fernando Iazzetta (University of São Paulo, Brazil), we name these interstitial spaces 'ambiguous zones'. We are interested in moving

beyond discussions centered on such dichotomies as real/virtual, natural/artificial and nature/culture. We propose to work toward the edges of these terms in order to productively blur such polarities.

The concept of 'ambiguous zones' understands environment as the place where new information emerges from the relationship among four principal features: the presence of dancers, the creation and interaction of sound and images during the performance, interaction with pre-existent images, and the interaction with the audience.[1]

Grounding our ideas in Semiotics (C.S.Peirce 1931-1935) and Cognitive Science (embodiment perspective), we propose to discuss the role of new media in the dance field, how technology operates as an agent in this new configuration of dance, and what in the end makes the 'ambiguous zone' possible. The embodiment perspective in this essay is derived from ideas of the linguist George Lakoff and his collaborators Mark Johnson and Rafael E. Núñez. This view, also called Embodied Cognition Thesis, is compatible with the ideas of neurobiologist Francisco Varela and neurologist António Damásio, and is opposed to other views of cognition, such as Cognitivism, Computationalism, Connectionism and Cartesian Dualism. Lakoff and Johnson affirm that their theories 'promote a *dialogue* between philosophy and cognitive science and, ideally, they should co-evolve and mutually enrich each other' (1999:552). Their thinking re-examines basic concepts of mind and body and the traditional dualisms of the Western philosophical tradition. This aspect makes their theory relevant today, especially for the context of dance and its relationship to science and technology. Embodiment offers a strong theoretical approach to re-thinking physical performance in the arena of technological media and visual culture.

This theoretical approach challenges the traditional ideas of nature and culture as disconnected instances and admits that human beings are implicated in their own production of objects, arts, thoughts, knowledge, and so forth. Consequently, we believe that the connection between people and their environment (and all the elements therein) occurs through a series of continuous and reciprocal information exchanges. Human beings and technologies are implicated with each other and with the environment. All artefacts developed in the course of human history have always been affected by the way in which conceptual systems operate. This implication changes the perception and

the way that human beings understand and behave in the environment. According to Lakoff and Johnson (1999:22), ‘human concepts are not just reflections of an external reality, but they are crucially shaped by our bodies and brains, specially by our sensorimotor system.’ Concepts and reason are embodied, and ‘our thought is mostly unconscious, but in a different sense of being repressed as Freud coins the term.’ Lakoff and Johnson suggest that ‘it operates beneath the level of cognitive awareness, inaccessible to consciousness and operating too quickly to be focused on’ (1999: 10).

> Our concepts structure what we perceive, how we get around in the world, and how we relate to other people. Our conceptual systems thus play a central role in defining our everyday realities. If we are right in suggesting that our conceptual system is largely metaphorical, then the way we think, what we experience, and what we do everyday is very much a matter of metaphor (1999: 3). Our conceptual system is grounded in, neurally makes use of, and is crucially shaped by, our perceptual motor systems (1999: 555).

In this respect, contemporary dance can be understood as an aesthetic result of its interplay with the world. The structure and organization that underlie this art form is a reflex of the current intensification and complexity of the informational flow. This brings about a reconfiguration of our bodies as we are confronted with different relationships to the surrounding environment. This embodiment of new knowledge generates new forms of dance. The new configuration of dance is permeated by concepts from the realm of visual culture, the context where ‘media become new media’ according to Lev Manovich.

> The two separate historical trajectories finally meet. Media and computer – Daguerre’s daguerreotype and Babbage’s Analytical Engine, the Lumière Cinématographie and Hollerith’s tabulator – merge into one. All existing media are translated into numerical data accessible for the computer. The result: graphics, moving images, sounds, shapes, spaces, and text become computable, that is, simply sets of computer data. In short, media become new media. This meeting changes the identity of both media and the computer itself (Manovich 2001:25).

This technological advent changes not just the devices but also promotes a new configuration of body because the interplay between world and human beings is responsible for the embodiment process. It means that different experiences between person and environment inscribe different embodiments, and that different bodies make different dances. This is not meant in a deterministic way but is due to contingencies and unexpected occurrences emerging from the environment. According to this point of view everybody has a 'technological body' because all of us live in this world and exchange information with culture. We don't need to be cyborgs in a literal sense – creatures half machine and half organism – if we understand 'machine' just as a manufactured artifact, a result of human production rather than adhering to a Cartesian notion of nature and culture as independent and separated worlds. Following the Embodied Cognition Thesis we assume that technological bodies are all of us who take medicines, work with a computer; use an electronic bank, a mobile phone, a palm top or laptop, exchange email with friends or for business, watch a movie, eat a transgenic meal, etc. When we do these things in our daily life, we have specific sensorimotor experiences, and consequently we have specific time and space notions. For this reason we construct specific conceptual systems implicated in this environment and in the way we 'see'[2], manipulate and organize everything there. But, as mentioned before in reference to Lakoff and Johnson, this process is not completely accessible to our conscious awareness and control. Most of our thought is unconscious. António Damásio proposes that 'the unconscious, in the narrow meaning in which the word has been etched in our culture, is only a part of the vast amount of process and contents that remain nonconscious, not known in core or extended consciousness.' He concludes saying: 'amazing, indeed, how little we ever know' (1999:228). We can't avoid this process of interchange with the world; it is a blind, unexpected and continuous process.

These assumptions of embodiment are also found in the semiotics of Charles S. Peirce. His theory rejects thinking as an immaterial perception in the mind and explains all cognition as a bodily, physiological process. For Peirce's Theory of Signs, 'cognition, thought, and even man are semiotic in their essence' (Nöth 1990:41).

> It is that the word or sign which man uses *is* the man himself. For, as the fact that every thought is a sign, taken in conjunction with the fact that life is a chain of thought, proves that man is a sign; so, that every thought is an *external* sign, proves that man is an external sign. That is to say, the man and the external sign are identical, in the same sense in which the words *homo* and *man* are identical. Thus my language is the sum total of myself; for the man is the thought. (Peirce 1868 [1931-58]: 5.314)

The main objective here is to present an understanding of body as a sign, an open system[3] that interchanges (any kind of) information with the world and, consequently, becomes embodied in the living system. Embodiment is a semiotic function in which body and mind are perceptive and expressive of one another.

> Peirce makes clear that every sign, even a prediction of a future event, has a 'physical connection' to the object it represents. (…) In being a special type of 'physical connection' to an object, the sign accommodates all the memory of the past that is needed to be stored in the current state of the system and manipulates it to produce the system's future behavior. (…) Peircean semiotics is the current best way to analyze the mechanisms that produce, store and transmit historical information internally between the system's degree of freedom and manipulate it to produce its future behavior and its output responses. (Katz 1988:147)

Therefore, this process co-evolves and has a co-dependence between the systems – body and technology, dance and visual culture – promoting new configurations. For instance, there are many differences between dance made for a responsive environment and dance made for a traditional stage. When the dancer's body is responsible to trigger sound or image, or both of them, via technological devices, the dancer has a specific awareness of this capacity, and if she has freedom to improvise, her movements could create unexpected events highlighting the interactive processes of the new media. But if the dancer has a fixed choreography this interactivity is curtailed. On the other hand, if the dance piece is created with the new media quality of mutability and interaction, the dancer needs to make decisions in the very moment of each movement. This capacity of the dancer will depend on a specific way of movement training; the traditional ones no longer support this demand. The new training requested for the dance with

technological mediation promotes a new movement configuration. This process changes the body from its implication with the environment. However, the dance transformation does not just happen if a choreographer uses media on stage as an effect or décor. We need to understand the new digital medium in order to perform with it. Hence, if we accept that all techniques are implicated in our culture, then all of them co-evolve and co-depend on ourselves.

> Because new media is created on computers, distributed via computers, and stored and archived on computers, the logic of computer can be expected to significantly influence the traditional cultural logic of media; that is, we may expect that the computer layer will affect the cultural layer. The ways in which the computer models the world, represents data, and allows us to operate on it; the key operations behind all computer programs (such as search, match, sort, and filter); the conventions of HCI[4] – in short, what can be called the computer's ontology, epistemology, and pragmatics – influence the cultural layer of new media, its organization, its emerging genres, its contents. (…) In summary, the computer layer and the culture layer influence each other. (Manovich 2001:46)

My research in the theoretical field as much as in the artistic field is a struggle to rethink and reorganize the body, the movement and the dance that are implicated and contaminated by these two layers, the cultural one and new media one, because we can't separate these systems. Iazzetta and I consider the 'ambiguous zone' a good strategy to investigate these proposals**.** We are interested in the intermediate area between polarities and dualities mentioned before (real/virtual, natural/artificial and nature/culture) and we don't choose one or another side of these dichotomies because it's the in-between, the blurred region, that furthers new discoveries. Proposing this term offers the opportunity to revise the ways in which we understand the biological as well as the technological body. Now both bodies are no longer disconnected. The connective space – the blurred region – of these polarities is a *zone* where we play out *ambiguous* ideas to challenge dichotomies.

Historical Connections

During the 80's, we saw the development of computer systems that were able to generate and process music data in real time. Two circumstances have been crucial for that development: the advent of MIDI protocol and the widespread availability of personal computers. Also, the 3D character animation software called *LifeForms* was developed at Simon Fraser University by the end of that decade. At around the same time, dance was opening new paths for the creation of collaborative works involving choreographers, musicians, video-makers, scholars and technicians.

However, that was not the first time that dance interacted with technology. By the turn of the last century, cinema was growing up, taking its first steps, and some of them with dance. A case in point is the archival footage with modern dance pioneers Ruth St. Dennis and Ted Shawn shot by Thomas Edison. Another example is a film by Edison with Loïe Fuller and Isadora Duncan, a fictional narrative that explored the very idea of the interconnection between dance and film in a metalinguistic way.[5]

I believe that the dance community at that time probably was not open enough to understand this kind of interdisciplinary approach. Apparently, the Cartesian understanding of the body did not allow for much in the way of exchange between dance and new technologies. More recently, in the embodiment perspective body is conceived along with cognition and technical evolution as an interconnected organism. Although many ballets allowed for significant association with other arts, choreography was privileged over sets, props, music, costumes, etc. Ideas of collaboration today are different from those at the turn of the last century as well as from those the 60's. Presently, digital culture has brought about new proposals challenging the rediscovery of movement, perception and dance structure. Dance with technological mediation searches for an organic interactivity in a symbiotic way, in which all elements modify and interchange with each other. It's not a mere question of illustration or décor. However, I think some artists in the contemporary dance and technology field are mistaken in their use of media for dance. They miss the principal point: the body, consequently, the dance. This is why I find the exchange made possible at international laboratories and conferences a good opportunity to move the discussion beyond questions of the sophistication or improvement of software and computational systems in order to focus on the changing configuration of **dance, body and movement** in connection with technology. I prefer to use the term 'dance with technological

mediation' rather than 'dance-technology' because I don't consider our work as an addition of one term plus another, but as a symbiotic process of biological and technological instances.

Ideas about Ambiguous Zones: The Beginning

Iazzetta's and my main concern has been to explore the poetic use of technology in our performances through the creation of 'ambiguous zones.' We have produced many works involving music, dance and image in which the interplay between the concepts of 'liveness', virtual and real time played a significant role. We take the concept of environment to include all the constitutive elements of a performance: the dancers' bodies and their movements, music, sound design, lighting, video projection, the audience, and so on. By 'ambiguous zones' we mean the intermedial regions that are constructed between what is being generated 'live' at the time of the performance and what is the diffusion of previously created material (data). The audience members are always exposed to three types of events: a) the ones produced during the performance by the live dancers and musicians; b) the ones that are produced by the technology chosen for the project; c) and those that have been previously recorded and processed.

In my recent pieces such as *Casa de Nina* (House of Nina, 2004) and *e fezo homem a sua diferença* (And Man Made his Difference, 2005), even the people in the audience are considered part of the environment since we are not using a proscenium stage. We intentionally build environments that allow for physical contact between the spectators and the performers. Our proposition is to move the spectator from his/her condition of passivity to one of active participation. Also, the mixing of different types of material during the performance produce 'ambiguous zones' that take place between what is being generated 'here and now' by the performers (and sometimes also by the audience) and what is just the diffusion of previously produced material. Therefore, in order to produce undefined 'ambiguous zones', in which audience members are sometimes unable to differentiate real time events from pre-recorded ones, we have explored different technologies and interfaces and created interactive spaces.

One example of 'ambiguous zones' is the use of micro-cameras to intensify or enlarge the audience's view as we did in *Corpo Aberto* (Open Body, 2001) and *Pele* (Skin, 2002). In these performances, micro cameras were either attached to the bodies of the performers or installed at strategic spots of the stage to provide a dynamic sight of the performance. The resulting images were then projected on screens that worked as part of the set design giving the audience access to details that otherwise would be indistinguishable. Eventually these images were sent to the computer to be processed before they were projected, creating a counterpoint between the real events which take place on the stage and the modified images. Sometimes the image processing was controlled by the music that was being played in real time. Thus, we could establish a networked relationship in which the dancers provided the basic material for image generation as well as to the development of the music. At the same time, image and sound could be associated in the computer to create a connection between sound, image and movement.

Corpo Aberto was entirely created using the *LifeForms* software. In this piece, we intended to challenge the idea of 'liveness' by confronting the movements of a dancer with the images of avatars created in the *LifeForms* software. With the use of a transparent screen for the image projection and a careful light design, we could blur the audience's perception, putting both the dancer's body and the computer generated images at the same perceptual plane.

Our experience with performances connecting dance, music and technology makes evident that the concept of 'liveness' may not be regarded in opposition to mediation. According to dance and performance theoretician Peggy Phelan, her ontological understanding of 'presentness' implies the absence of mediation technologies:

> Performance implicates the real through the presence of living bodies. In performance art spectatorship there is an element of consumption: there are no left-overs, the gazing spectator must try to take everything in. Without a copy, live performance plunges into visibility – in a mechanically charged present – and disappears into memory, into the realm of invisibility and the unconscious where it eludes regulation and control. (Phelan 1993:148)

For Phelan, the technological world does not value the condition of 'liveness', but takes hold of its 'media' in the process of reproduction, a feature of capitalism.

My theoretical approach, departing from Lakoff and Johnson, prefers to understand human perception as occurring through a process of representations. Representations (signs) invade our perception through our sensorimotor systems to become metaphors that construct our conceptual systems. Thus, even performances without any technological media imply mediation, as a process of representation. In my understanding of semiotics and the embodiment perspective, it is impossible to access the object *per se*, as Phelan's ontology postulates. It is impossible to get to true or absolute realities. It is only possible to access parts of the objects, things, people, dreams, thoughts, etc, because we can access just the sign. In Peirce's definition, sign is something that stands to somebody for something in some respect or capacity, creating an equivalent sign in the mind of that person. A sign is not a substitute of the phenomenon, but a sign 'stands for', and this relation depends on the nature of the person's 'report' (Nöth 1990). Therefore, it is impossible to presume that something 'is' real and 'live' just because it does not have any technological interfaces. Mediation happens all the time and we cannot avoid it. Perception always and under any circumstances depends on the physiological, emotional, social particularities of each person, depends on the condition of the environments and depends on the very observed phenomenon, and these conditions are a kind of mediation. For we create our conceptual systems, according to Lakoff and Johnson, and they depend on the nature of this 'report' that specifies the sign. In other words, virtual and real are just different possibilities of existence, different kinds of signs.

Ambiguous Zone in *Pele*

Pele[6] (Skin) is the follow-up configuration of two previous pieces: the *DRYWET* video-installation and the *Pele, study no.1 drywet* performance. Both were created and produced during my artist-in-residency in the Environments Lab, at Ohio State University, USA, coordinated by Johannes Birringer. For *Pele*, I started with the idea of interface as skin. By interface, I mean the boundaries that divide as much as gather two

or more things. Human skin is the first interface we know. It tells us where our organism begins and where the others end. Life exists in the friction between organism and world, in the continuous interchanges of energy and information between these systems.

My first challenge in *Pele* was to create an 'ambiguous zone' in the very traditional and large space of the Castro Alves Theatre. Thus, I viewed the theatre as a system in Bertalanffy's sense, and searched for ways to promote unexpected interactions between the system and its elements, i.e., between stage and audience as much as between the inside and the outside of the theatre, using telematic processes.

There was a big screen made with elastic strings supporting images from three different places in Salvador (Brazil). Some of them had the performers' presence and others did not. There are three locations filmed in this movie that I labelled as 'people-system' (pedestrian way), 'memory-system' or 'no-place' (out-of-use fortress), and 'mechanical-system' (set and lighting machinery at the ceiling of the stage). This image projection showed the details of these places and sometimes included the dancers' presence. I wanted to see how the environment changed with the presence of the dancers. Sometimes they were moving, sometimes motionless, just standing there.

At audience entrance, there was a performance with two dancers moving inside the big screen with the elastic strings upon which video footage was being projected. They played with the elastic strings blurring the projected images. After a while, audience members were invited to cross the curtain-screens and enter the theatre. It was the only entrance there. Thus, the spectators also transformed the images with their presence as much as the dancers did. During the first scene, the image of the two dancers was transmitted inside the theatre via telematic process.

Inside the theatre, in the aisles between the seats, there were fourteen 29" monitors transmitting images in real time from Campo Grande, the square in front of the theatre. The outside world was thus brought into the 'fictional' realm of the piece. Dance movements and pedestrian life were brought together creating a space that was neither an illusion nor the reality of that place. The piece was set on and offstage.

During the first scene, the concept of ‘ambiguous’ zone was meant to challenge the existence of the dancer body shown partly as an organic body and partly as an image. There were two possible signs, two representations of the body: organic body and synthetic body. Even the organic body is a type of representation because anything and everything can only be perceived through some level of mediation. Social, physiological, psychological and emotional body conditions are interfaces with the world - the environment (light and temperature), as well as the very features of the phenomenon.

The second scene begins with a musician’s hand projected on the upstage screen. At the opposite side, there was a dancer sitting in a chair at the table, two surveillance cameras capturing his image. The one above him was focused on the top of the table. The second one was set on the floor close to the bottom of the table covering the lower area of the proscenium. The images generated by these two cameras were transmitted also to some of the monitors. The dancer bent over and moved his upper body around the top of the table and his movements let the camera above him capture only parts of his body. When he stood up and walked towards the centre of the stage, the camera on the floor also captured only parts of his lower body. A little motion toy was then put on the table and stayed there, walking around, throughout the piece being shown on some monitors. The idea was to bring together life system (pedestrians on the square) and mechanical system (autonomous toy). The life system fuelled discussions about real and fictional worlds while the mechanical system challenged the relation between organic and mechanical movements.

After that, a couple of dancers seated in front of the audience had a talk describing choreography. One described a male dancer’s movements, and the other described a female dancer’s movements. During the description, their image was projected on screen. Another motionless couple was in the centre of stage during this part of the scene, and they left when the first couple finished the description.

(Fig.1)

The description was spoken three times: 1) the couple talked and the dancers were motionless; 2) the man described the male dancer's movements while a female dancer's image was projected, and vice-versa, the woman talked while an image of the male dancer was projected; and 3) they described the movements at the same time as the dancers made the movements.

The dancers needed to describe exactly what happened with the other dancers' bodies while moving, including expressions and body conditions on that day. And these dancers needed to move following the description time. If the dancer who was describing had a deeper breath and delayed to say a word, the other dancer waited to do the movement. If the dancers had any different expression, or changed a little their position or movement, the others had to include this new information in the description. At that moment, the 'dance-tellers' were seated in front of each other and their faces were projected looking at the audience. At the end of this scene, the couple danced without talk and with a sound of a music box.

This third scene was a provocative 'ambiguous zone' to raise the idea of the virtual in dance. Questions arise such as: What is the dance in this case? Is it just in the body's movements, or is it also in the description, or in the image? Is dance description a virtual dance? But if it is the dancer's voice, and we need a body to talk, consequently, the dance description is in the body. Therefore, 'ambiguous zone' brought together many possibilities of dance existences in a completely integrated form.

In the last scene, there were three images projected on the big screen upstage: a scanner image of a womb filled the screen, and two real time images captured by two cameras were projected side by side on the screen and overlapped in part of the background. Hence, one side of the screen showed a 'normal' image projection captured from closed-circuit camera; the other side of the screen showed a manipulated image processed through MAX/Jitter and Isadora software. At that moment, all dancers were moving on stage, and monitors were still transmitting images of the motion toy and of the Campo Grande Square.

Pele was created according to 'ambiguous zone' concepts postulated here. During the creative process, we discussed new media and how it is implicated in the world and also

in the body. Therefore, we tried to create the work considering body transformation promoted by processing technology. Movement wasn't fixed in a rigid choreographic structure because the dancers had to take decisions during the work according to what happened with the group and the technological events. There was neither linear structure nor hierarchic organization. Many occurrences happened simultaneously and with the same value given to them. *Pele* didn't allow an effective interaction between piece and audience, but it tried to stimulate a different point of view from the traditional dance observation.

Ambiguous Zone: Dance 'Proposal Process'

I have been working with dance and technology interaction since 1994. During these years, I could experiment with different computational systems and devices, and verify different interfaces between body and machine. However, before *Pele*, I was not satisfied with my pieces and with artistic works that I was watching in this field. Generally speaking, artists seemed more interested in the technological improvement than in discussing and discovering dance implications in the complexity of the contemporary world. Of course, there are exceptions. An example is the striking work of Kondition Pluriel[7], directed by Marie-Claude Poulin and Martin Kusch.

I considered it necessary to resume old questions to verify my understandings, such as: what does dance-technology mean; what happens to dance that is immersed in digital culture? Hence, I resume old inquiries about body movement, space, time, and audience relationship to search for new concepts to create dance with technological mediation. My concerns were completely implicated with concepts of immersion, interactivity, real time and processing technologies. Pursuing these inquiries, we tried to create dance in synchronicity with the embodiment perspectives by Lakoff and Jonhson, and specifically the notion of the 'conceptual metaphor'.

> Metaphor allows conventional mental imagery from sensorimotor domains to be used for domains of subjective experience… Conceptual metaphors are mappings across conceptual domains that structure our reasoning, our experience, and our everyday language. […] For example, More Is Up, as in 'Prices rose' and 'Stocks plummeted.' In More Is Up, a subjective judgment of quantity is conceptualized

> in terms of the sensorimotor experience of verticality (Lakoff and Johnson 1999: 45; 47).

In the light of these studies and of practical investigations, I've developed a new dance configuration that I call *proposal process*. In the *proposal process***,** body didn't need a pre-program as a choreography – fixed codes in space and time to be followed – and also dance didn't need to be apart from the audience because it's no longer two different spaces. Dancers and spectators are elements of the same systems. On the other hand, the conventional improvisation process doesn't meet my concerns because, in my opinion, improvisation is a very open structure for what I'd like to create. My proposition has been to construct dance as an occurrence with predetermined body metaphors and unstable states. Consequently, *proposal process* creates a dance that could never be repeated exactly as the previous one. That's why I use the term 'occurrences' to speak about dance presentation.

If we understand the relation between change and permanence in the life process – the unstable (biggest rate) and stable rates (minor rates) – it's possible to argue that it could be the same in the performing arts. If we think about ourselves, we can verify that we are the same (stability rate) but we know that biologically, sociologically, psychologically we are changing all the time (instability rate). Of course, each of these fields has a different time to change, but all of them are transformed anyway.

Proposal process suggests that a dance piece has both stable and unstable elements. There is stability because each scene has a specific proposal. This proposal is created through conceptual metaphor. In this way, we don't need to create specific dance movement as a fixed code to be followed; rather, we only have to find the respective body movement of the conceptual metaphor that best expresses what we would like to represent in that part of the piece. Instability does happen because dancers have to make decisions at the moment of the presentation. They need to rely on unexpected (re)actions of the members of the audience as well as of the media system. However, it's not a completely free decision because there are the proposals – conceptual metaphors – that give structure to the piece and direct the dancers' choices, as well as we do everyday; we determine our behaviour according the context, place and situation.

> Just by functioning normally in the world, we automatically and unconsciously acquire and use a vast numbers of such metaphors. Those metaphors are realized in our brains physically and are mostly beyond our control. They are a consequence of the nature of our brains, our bodies, and the world we inhabit. *(*Lakoff and Johnson 1999: 59).

The concepts of *proposal process* are resonant with Cognitive Science theories as well as the contemporary studies of new media and digital cultures that I discussed above. They also have similarities with the concepts of Autonomous Systems Research (ASR) which 'is focused on the structure of any conceivable system that can possibly realise autonomous behaviour' (Emecche 1999: 31). The study of ASR partly builds upon and is continuous with topics in Cybernetics, Artificial Intelligence (classical approach proposed during the 50s and 60s), Cognitive Science and Artificial Life (founded in the late 1980s).

> The idea of autonomous systems originates both in pre-scientific ideas of what constitutes adaptive, intelligent task-solving behaviour in man, animals and machines, and in the early attempts to model and construct systems with seemingly goal-directed behaviour during the early period of cybernetics, information theory and related disciplines (system theory, operation theory, and general engineering science). (Emecche 1999: 31)

My objective with *proposal process* is to prepare the dancer to perform without choreography but with a conceptual metaphor that guides her decision-making during the piece. At every moment, the dancer has to keep the 'proposal' (conceptual metaphor) in mind to choose what to do.

Here, dance space also had to be thought in another way from the conventional. If we understand that everything and everybody is mutually implicated in the environment, it follows that there is inter-dependence of elements in the system. Therefore, why do we still need to keep members of the audience and dancers in two different spaces? Hence, the audience becomes an active participant; they are no longer just an observer. Dance space becomes an environment for everybody and everything. All of them are immersed and interacting with each other in and with the system.

In *e fez o homem a sua diferença*[8] we created three possibilities for seating the audience. The set designer of the group, Igor Souza, and I defined dancers and spectators as follows: 1) members of the audience and dancers were both considered participants; 2) dancers were understood as 'inner agents', because they knew about the work's concepts; 3) members of the audience who were seated on swings were considered 'external agents', because they didn't know the proposals of the piece; 4) members of the audience seated around the space on the first floor were understood as 'inner watchers', as they were closer than the other watchers seated above; and 5) members of the audience seated around the space on the second and third floor were considered 'external watchers', they had a topographic view of the piece.

We understand the term 'watchers' differently from the traditional meaning. According to the theories that support this research, the watcher is also implicated in the system and with the phenomenon she observes. Inner and external elements are in an inter-connected process that has a continuous information flow. Therefore, the piece is created to have different levels of immersive and interactive space where almost everything happens in real time. In regard to the concepts presented here, it's very difficult to use the traditional proscenium stage to create a dance with technological mediation because it doesn't supply the contemporary art demands.

Immersion happens in *e fez o homem a sua diferença* with two big floor projections. Only the 'external watchers' could see the image totality. Others members of the audience could have only a feeling of being there, inside and beside the image. They could see only image fragments. These projections are named 'immersive window.'

(Fig.2).

They were large to give an immersive sensation, and they had movement to give a feeling of motion. For example, there were images of leaves floating on a lake and an image of dropping water that covered the whole space emphasizing the dancers' motion.

There were also smaller images projected upon rectangles that resemble doors. They had the same size of a house door. As they were covered with white string, the image projection had a textured pattern. These smaller projections were named ‘cut windows’ and could be used to complement ‘immersive window’ or also to present different images such as short narratives with the same theme of the piece.

(Fig.3)

Ambiguous zone and *proposal process* are aesthetic reflections on the contemporary world. They are evolutionary marks of the digital culture that reconfigures the relation of human and his environment. They promote a plasticity of carbon media and silicon media, systems transformed by mutual contamination of both. Rather than assuming a limited sense of technology as artefacts or devices of human production, I comprehend the computer as universal information manipulator (Rawlins 1998). In this era of new media the computer manipulates and transcodes any data (images, sounds, texts, graphics, and so on), as pointed out in Manovich’s study.

> The computer is the ultimate artificial information manipulator. Unlike other devices, we can teach it to manipulate any information we can describe clearly enough. So, we can make it to do one thing one day, then something completely different the next. That versatility is what makes it a universal information manipulator (Rawlins 1998:2).

Computer invention is considered here a mark of the evolutionary project of humanity. Before the computer’s concrete existence, computation existed as conceptual ideas of mathematicians such as Charles Babbage and Alan Turing, just to cite two. This conclusion doesn’t reduce the computer’s relevance; rather, it tries to yield a new understanding of cultural process and its implications in our lives. Mathematical ideas were also implicated in culture and contaminated by other information coming from every field (social, political, economical, artistic, and so on). This conclusion confirms what Manovich suggests about the meeting of media and computer to generate the new digital representations. The computerization of media effects a cultural transcoding of

the social field as we read in Mitchell's critique of visual culture. These assessments are combined in neurobiological theories about the 'irreducible nature of conscious experience' (Varela 1998:32). They are a starting point for understanding the link between nervous system and consciousness, and how sensorimotor experience and unconsciousness cognition are responsible for building the human conceptual system (Lakoff and Johnson 1999).

It's important to note that contemporary dance is open to assimilate the new ideas and understandings of this culture which we are referring to as digital culture. Artists don't need to be involved with the 'dance-tech' community to feel and absorb the contemporary (scientific and technological) presuppositons. Maria La Ribot, Gilles Jobin, Jérôme Bell, Xavier Le Roy, Cristian Duarte, just to mention some performers, all create completely different work. Each has their own specific dance aesthetic, but all of them are reflecting contemporary thoughts and concepts.

In short, the principal theoretical points assumed in this article are: a) people are implicated in their environment; b) human perception operates according to the interchange of information between people and the world; c) perceptions condition the way they can 'read' the phenomenon; d) and thus, there is communication between inside and outside of body, and it is unavoidable. Human cognition can be understood as a cultural process. Therefore, technology should be contextualized into its culture, to which the biological body also belongs.

I tried to stress that dance with technological mediation is not an indiscriminate use of devices on a dance stage, but a new way to think, understand and organize artistic aspects of dance (sensible environment, interactive interface, intelligent stage, performance-installation, webdance, videodance, telematic performance, and so forth). The artists, researchers and scholars of dance with technological mediation, in my opinion, can go deeper in this experience by not forgetting the body, the dance movement and the contemporary concepts and thoughts about both of them. We need to re-examine this body that is implicated in the new media era, in the realm of visual culture, to rethink dance, to understand what is going on with this art of the body. We cannot lose this opportunity.

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Notes

[1] Besides the collaboration with Iazzetta, my research is now produced in the context of the Technological Poetics in Dance Research Project (Federal University of Bahia, Brazil). http://www.poeticatecnologica.ufba.br

[2] In the sensorimotor sense, it means not just to look for something or someone, but to use all perceptual systems.

[3] I here refer to the General System Theory by Ludwig Von Bertalanffy, using concepts of this theory postulated by Mario Bunge (1977).

[4] Human-Computer Interface.

[5] *Animated Picture Studio*. Copyright 1903 by American Mutoscope and Biograph Co. Edition à voir. European Label for Arts and Cultural Programmes.

[6] *Pele* was created for a commission I received from Atelier of Brazilian Choreographers. The piece was produced under its auspices.

[7] Kondition Pluriel, based in Montréal, Canada, is a recognized contemporary dance group. Directed by choreographer Marie-Claude Poulin and digital artist Martin Kusch, the group researches and develops performative installations and responsive environments in the field of contemporary dance (http://www.konditionpluriel.org).

[8] Conception by Ivani Santana, created for Contemporary Dance Group, directed by Dulce Aquino, School of Dance, Bahia Federal University. Premiere at Vila Velha Theater, Salvador, Bahia, Brazil, March, 26th to 28th of 2005. The production was supported by the Bahia Cultural Foundation