

What Will Remain of These

Chris Dodge

We all lead a life between two poles: the world of motion and the world of stillness. The dialectic between these two extremes creates a tension that is not easily resolved, as there are two distinct representative aesthetics at work. The world of motion is one of self-possession, short-term goals, achievement, and drive. The person that is stuck in the world of motion is unable to view him/herself within a larger group structure, trapped in a merciless temporal now that urges them forward. Likewise, the world of stillness is made out of passivity, narcissism, indecision, uncertainty, and fear. The person that is stuck in this realm is unable to act, trapped in an endless self-reflection. The former is a quality of transience, the latter is a quality of permanence. It is between these two extremes that we, as humans, exist.

In a way, physical and digital architectures are the results of this duality of the human condition. We create large, permanent structures such as buildings and monuments that are expressions of a group identity that endure over time. The static creation out of steel, stone, and bronze is the ultimate form of permanence, something that forms solid foundations on which society is made. These architectural formations — such as highways, train stations, and churches — regulate how we organize ourselves in our daily rhythms and beliefs. In comparison, computers and digital networks form the consummate expression of transience. With computation comes a rapid and hectic pace as the technological context is always in motion. Life here is quick and ephemeral, a brief but brilliant flash. Death in the digital world is obsolescence [a stillness of progress].

My exhibited work, *What Will Remain of These*, couples the bodily motions of people inside an architectural space with graphical activity and data flow over a local-area TCP/IP network. At first appearance, the installation is a large interconnected kinetic visual sculpture that stretches out over several computer stations. This work explores the possibilities of casting the worlds of motion and stillness into metaphors for the struggle between individual and group identities. We are part of a collective being but it is a small contribution, one that evolves over time. The patterns that we make in our daily lives help form the overall appearance of society, but only if we are persistent. One does not have to be conscious of the process or "engaged" in the emergent group identity, as our contributions to this permanence are on a scale that is not visible to us. Likewise, it is only through a commitment of stillness that we can share experiences between each other and discover the richness and similarities between our lives. Thus this work investigates the notion of engagement with an interactive installation: in both cases the audience belongs to one of these two worlds but not necessarily engaged with the interactive environment. This piece allows for both types of contributions: the frantic disengagement of the installation as well as the contemplative acknowledgement of the system.

We all tend to lead similar and overlapping lives, leading to a collective group identity that emerges through these isolated behaviors. Although, at first glance, these group patterns appear to be chaotic and the individuals remain locked within their own identity, if one gets removed enough from the localized context, it becomes clear that we have little control over what emerges as a collective whole. Then what are the qualities of the collective identity? Or, as the title intimates, what then remains of all of ourselves over the passage of time?

Adaptive Interfaces and the Uncertainty Principle

What is intriguing about interactive VR computer art, to me, is that there is a resurgence of placing the individual egocentrically in the middle of a constructed world, allowing the user to access the data structures through a one-to-one mapping of stimulus and response. Every "right-turn" command by the user elicits a corresponding turn in the virtual environment. Such a direct cause-and-effect relationship, although well researched and implemented in current computer interface design, ironically does not model a "reality" that I have grown familiar with. In my reality, I am constantly amazed at what I see, tempted by the seemingly endless possibilities, and befuddled by that which I cannot comprehend. VR technologies, to me, would appear to be contrary to the historical growth of the modern arts, bringing us back to the imperatives of Renaissance through the placement of the viewer's eye once again at the perspective center of the universe.¹

David Rokeby² and Perry Hoberman³ have elegantly addressed the issues of subjectivity and control in interactive computer media art. I would like to add that we need to reconsider the ideas surrounding the role of interactive artists in face of a computational Postmodernism, where absolutes are no longer to be found, being replaced by ever-shifting surfaces that are subjectively interpreted by each of us. Rather than I, as creator of this work, attempting to construct artificial worlds, this installation autonomously uses the real world to build such a shimmering surface that reflects a quality of our daily behaviors back to us. True reality, not a virtual surrogate, reveals itself incarnate. It is not the user who must learn the rules of the digital environment, but rather it is the algorithm that must adapt to that which it sees. Then I consider this work to be an example of human-centric rather than computer-centric interactive art, forming a revisualization of our humanity. What is told is a meta-narrative that is an exposition of process that a large group of people experiences rather than any one specific story.

In this interactive work, the viewer can attain neither absolute knowledge of nor control over the system, as there are no delineated interactive spaces, no direct interfaces, no globally defined rules that govern the cause-and-effect relationships. Interaction is that of the entire population, to which we make a slight contribution. The significance of the individual viewer is minimized, as he/she becomes a mere statistic in the estimation of the intent of the masses. The more determined the individual is to exert control over the environment, the more he/she becomes manipulated by the system, endlessly repeating the physical gestures over-and-over in order to gain a statistical significance.

Rather than using state-machine algorithms that describe the interactions at a global scale, the work uses a continuous temporal-spatial description of the surveillance region to drive a physically based particle system. Such an algorithmically-based work uses approximately 76,000 autonomous entities per computer [the work is highly parallel and distributed], that execute a highly localized set of rules. The rules for each agent are based on mere Newtonian physics of mass, momentum, and forces [friction included]. As the surveillance system watches the architectural space, it derives a 2D matrix of motion estimates⁴ that describe how people are moving naturally through that space. At each graphical point in the virtual space, there is a vector that is a weighted summation of estimated motion partial derivatives that forms a "virtual" force. This force matrix is the major interactive parameter of the system. As the system develops over time, the particles are subjected to these forces, putting them into motion, coupling the accumulative flow of the people with the overall movement of the particles. Should the motion of a large massive body of viewers be highly correlated with a minimal amount of variance [i.e. people are moving in a similar manner], its influence over the system would begin to dominate. Through the use of these localized rules, there is a

convergence onto a feedback loop, bringing the visual elements as well as the data transmissions between stations into synchronicity with the physical world.

There are no global states in this work, at each instant of the installation it is impossible to predict its current appearance, encouraging viewers to visit the work a multiple number of times. It could be argued that this digital world therefore exhibits a quality of emergent behavior, similar to those described by Renick⁵ and Louis-Philippe Demers⁶. Although everyone who walks into the surveillance region contributes to the 2D array of accumulated forces, it is impossible to de-correlate each individual's contribution as the system of equations is under-constrained, i.e. there are more unknown variables than known values. There can be no global analytical rule that can account for its current state as both the machine and the individual viewer are eternally locked at a highly localized and subjective understanding of the environment. The longer the installation runs, the more ambiguous the role of each person becomes, as we must fight against the historical records of all those before us. Likewise, any control that we attain through the stubborn insistence of repetitive movements, is washed away over time through the people that pass by in the future. As a subtle reminder, this installation warns us that all efforts of control are ultimately futile.

In addition to the motion estimates, the installation derives a numerical description of estimated stillness. If a person stands quietly long enough, engaging the interactive system in a contemplative passivity, his/her stillness measurement increases. Once this measurement increases past a threshold value, the person's image is gradually faded into the interactive environment. However this is not a static data structure, as the image is made out of particles that are actively moving, hinting at some underlying restlessness. When the viewers disengage themselves from the world of stillness, by moving their bodies in any significant manner, their likeness becomes like colored dust that is blown through the whirlwinds that have been created by all of the other people before and after them. This becomes the interaction between the individual, looking for some unique permanence within the system, and the masses that continually undermine these efforts.

Heisenberg's Uncertainty Principle, which I consider to be one of the basic tenets of Postmodernism, states that it is impossible to understand complex minute systems on a global scale because through the process of viewing, the system is fundamentally altered.⁷ Likewise, in this installation, there is no objective location from which one can view the work without altering it. Either by walking in the installation space, even oblivious to the interactive exhibit on hand, or pausing for a moment to watch the colorful flow, their presence is constantly leaving a trace within the mathematical algorithm. In a manner, they have attained a dubious immortality, as the colored pixel that was once their image is eternally retained in the system, floating reconfigured in the data network. Thus there is a comforting acquiescence to the physical laws of conservation of mass [our images] and energy [our bodily motions], leaving an eternal marker of our existence.

1 Waliczky, T., partly taken from a lecture at the WRO97 Biennial Media Art festival, Wroclaw, Poland, 1997

2 Rokeby, D., *Transforming Mirrors, Critical Issues in Electronic Media*, State University of New York Press, 1995

3 Hoberman, P., panel talk, ACM Multimedia 96, Boston 1996

4 Bergen, J., P. Burt, R. Hingorani, S. Peleg, *Multiple Component Image Motion: Motion Estimation*, David Sarnoff Research Center, January 1990

5 Resnick, M., Turtles, Termites, and Traffic Jams: Explorations in Massively Parallel Microworlds, MIT Press, 1994

6 Demers, L.P., B. Vorn, No Man's Land, Ars Electronica Festival 96, SpringerWienNew York 1996

7 Heisenberg, W., Physics and Philosophy: the revolution in modern science, Harper, New York 1958