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Liquid architectures: Marcos Novak's territory of information

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**LIQUID ARCHITECTURES:
MARCOS NOVAK'S TERRITORY OF INFORMATION**

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The School of Art

by
Camile A. Silva
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TABLE OF CONTENTS

ACKNOWLEDGMENTS	ii
LIST OF FIGURES	iv
ABSTRACT	v
INTRODUCTION	1
The Emergence of Virtual Spaces	2
The Philosophical Foundations	6
THE WORLD OF MARCOS NOVAK	11
Finding His Way into Cyberspace	11
The Context of Multimedia	14
Algorithms: Tools for Creation	20
Three Conceptions of Virtual Spaces	25
The Qualities of Virtual Spaces	27
The Art of Cyberspace	29
THE EVIDENCES OF POSTMODERN PHILOSOPHY	35
The Phenomenologists	35
The Poststructuralists	40
CONCLUSION	46
The “Visionary Architecture”	47
BIBLIOGRAPHY	51
VITA	55

LIST OF FIGURES

1. Model 1 of <i>Eduction: The Alien Within</i>	1
2. Model 2 of <i>Eduction: The Alien Within</i>	11
3. Generic algorithmic composition	20
4. Superimposition, making, and filtering processes	21
5. The merging of algorithmic composition and scanned data	21
6. Further image processing	21
7. Three-dimensional algorithm in cyberspace	21
8. Two algorithmic compositions in cyberspace	22
9. Variation of two algorithmic compositions	22
10. “In-shell” view of a model of “liquid architectures”	23
11. Close-up “in-shell” view of a model of “liquid architectures”	23
12. “Ext-shell” view of a model of “liquid architectures”	23
13. Model 5 of <i>Eduction: The Alien Within</i>	25
14. <i>MathCaveBlockHR</i> (model of “liquid architectures”)	30
15. <i>Voice3=4Maze.Blue</i> (model of “liquid architectures”)	31
16. Model 3 of <i>Eduction: The Alien Within</i>	35
17. Model 4 of <i>Eduction: The Alien Within</i>	46

ABSTRACT

The idea of interactivity between humans and their environment no longer represents the only way of exploring new experiences. Equally *passé* is the idea that information constitutes the means for this interaction. However, this paper presents that the contemporary idea for interaction has embraced new understandings of the content of experience and the structure of space. New electronic technologies and advanced digital media have separated realities from the realm of the body and transformed experiences into a ubiquitous event. The architectural discourse, that once has been largely a discourse of form and style, has finally overcome those limitations and has encountered, in spatial images, the product of a new way of thinking. Marcos Novak emerges, in this context of cybernetics and multimedia, as an innovative creator, whose “liquid architectures” represent a step forward in breaking up with the traditional discourse of physicality. His creations are meant for a virtual domain and information is what structures this new territory for architectural practice.

The words of philosophers and scholars of new media culture are also presented as evidences of an approach to virtual spaces either through aspects of the bodily existence and modes of experience, or through the metaphoric manifestation of codes and symbols, posited by Novak’s structures. This paper confronts those phenomenological and poststructural approaches and states that they also have become outdated. New senses have been attained through the crossbreeding between the reality of the individual and the virtuality of the structure. A strong concept of space then comes forward, where the manifestation of mind in the realm of the body calls for what is to be perceived as real. Architecture is now characterized by the fusion of information, art, and technology.

INTRODUCTION

Fig. 1. Model 1 of *Education: The Alien Within*.

© Novak and Lutyens, in *Arch'it electronic magazine* (28 Dec. 2001).

The progress of new electronic technologies and the advance of digital media have extended artistic and creative domains to virtual reality. The use of multimedia has been responsible for bringing this thinking of architecture outside the mainstream of architectural discourse. Architecture, now, embraces cyberspace.

This thesis concerns the work of Marcos Novak and the postmodern questions that have arisen around his creations for cyberspace. But who has thought of cyberspace as a postmodern invention in the first place? Debates around the mode of experience, the bodily existence, and the metaphoric manifestation of codes and symbols as part of the structure of cyberspace are presented, here, in the light of leading philosophers and scholars of new media culture.

Novak's work is pertinent to this study for its manifestation of new aesthetic forms that enable new forms of behavior. In his view, aesthetic and behaviorist manifestations are intended for a virtual world. He creates, in cyberspace, three-dimensional objects, specifying a scheme for their relations and proportions. A change in the parameters of this scheme results in the

transformation of all objects. Those changes are responsive to the viewer; they depend on the viewer.

Novak mainly considers a type of architecture cut loose from the expectations of logic, perspective, and laws of gravity.¹ He believes that architecture today is actually the product of the convergence of science and art, of technology and art. He uses terms such as “liquid architectures of cyberspace” and “transarchitectures” to address spaces that are conceived specifically for a virtual domain, one that does not exist in a physical world.

The purpose of this thesis, though, is not to question what is simulated in this new virtual world, but to question how those realities are constructed and how they take the individual into account.

The Emergence of Virtual Spaces

Once predicated on qualities such as enclosure, form, and permanence, architectural space is finally getting rid of its physicality and is now giving way to virtual spaces, where digital technology emerges in the form of data and information. Digital media are responsible for creating a new territory where stability and actuality are tempered by this indescribable reality: a reality where variations of visual qualities, internal contents, and social expressions are influencing the creation of new spaces.² However, this is not an imperious assumption. The emergence of new virtual spaces does not always mean the end of physical space. According to

¹ Randall Packer and Ken Jordan, eds., *overture to Multimedia: From Wagner to Virtual Reality* (New York: W.W. Norton & Company, 2001), xiii-xxxi. Randall Packer is a composer and media artist whose focuses are music, performance, digital media, and interdisciplinary arts. He is also the founder of the US Department of Arts and Technology. Ken Jordan is one of the pioneers of web-based media. He is a writer and a digital media consultant living in New York.

² Hani Rashid, “Guggenheim Virtual Museum,” *Domus* 822 (January 2000): 26-31. Hani Rashid is an Adjunct Associate Professor of Architecture at Columbia University. He is also a partner of Asymptote, an architectural design firm based in New York. Rashid and partner Lise Anne Couture have a repertoire of works that include experimental installations, computer-generated environments, building design, and urban planning.

Kathy Rae Huffman, for instance, “a physical place is still a necessary space, but architecture can no longer be bound by static conditions of locally defined place, but as architecture in data space.”³ Architecture in data space then presents us with a new reality: the reality of cyberspace.

This new reality results from principles of collaborative artmaking and communication, where new uses of language, space, and time are required.⁴ Those demands sum up to a state of variability that one calls: event. “Event” then stands for the exchange of information mediated by an interface, a monitor or control screens, that blurs one’s sense of “being in the world,” as Heidegger puts it, and yet to be further discussed. “Elsewhere” begins in one’s world, and, at the same time, this same world represents the “elsewhere” in somebody else’s world. Architecture, then, must deal with this problem of the event. Or, perhaps, using Paul Virilio’s words, architecture must now deal with the advent of “technological space-time.”⁵ Space-time is the “event.” The space of locations is finally replaced by a space of “flow-line process,” as Florian Rötzer would say.⁶ Here, “flow-line” stands literally for “time-space,” or “space-time,” as mentioned earlier. Regardless of the way one thinks about time and space in the present world of digital technology, the fact is that time and space now become apparent by means of

³ Kathy Rae Huffman, “Video and Architecture,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 135-9. Huffman is an Associate Professor of Electronic Art at Rensselaer Polytechnic Institute (RPI), New York, and a specialist in networking and metadesign.

⁴ Huffman, 135-9.

⁵ Paul Virilio, “The Overexposed City,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 276-83. Paul Virilio is an urbanist and philosopher, known for his writings about the military in relation to architecture, culture, and history. He is known for his “war model” of the growth of the modern city and the evolution of human society. He talks about the “logistics of perception,” by means of the use of images and information in war. He also invented the term “dromology,” meaning the logic of speed. For all these assumptions, he became known as the “theorist of speed and time.”

⁶ Florian Rötzer, “Virtual Worlds: Fascinations and Reactions,” *Critical Issues in Electronic Media*, ed. Simon Penny (New York: State University of New York Press, 1995), 119-31. Florian Rötzer is the current chief-editor of the online net culture magazine *Teleopolis*.

information. The point is not when or where this information is processed, but how it travels in virtual reality. Time and space are now inseparable.

In this era of encounter between time and space, architecture becomes the design of the interface, a kind of vehicle of images. Architecture stands for the actual electronic territory where the traversing of images, as sources of information, takes place. According to Virilio, “Information now wins out over the reality of event.”⁷ To this degree, the communication interface is what predicates the formation of cyberspace. The interface between man and machine replaces the reality of buildings and social ground. Social structures have been deeply affected by technological intensity, where the deportation of people and elimination of human confrontation brings social concentration to a post-urban, or transnational world.⁸

Novak, for instance, thinks of this new world of potential workspaces as one to be perceived sensorially. Michael Benedikt puts it: “The interface mediates the sensorial world of humans and the world of digitalized information.”⁹ Thus, cyberspace materializes a new virtual reality that constitutes a new form of human experience. It becomes tangible. And the tangibility of virtual reality results from an interaction between media. Consequently, this interaction connects the senses and the human body to the computer, crossbreeding the real and the simulated. According to Michael Heim, a pioneer in the studies of virtual reality, cyberspace represents a world made up of information produced by our systems that we feedback into our

⁷ Paul Virilio, *The Art of the Motor* (Minneapolis: University of Minnesota Press, 1995), 133-56.

⁸ Virilio, “The Overexposed City,” 276-83. One should think of Internet, or even chatrooms, as an example of space that propagates the elimination of human confrontation.

⁹ Michael Benedikt, ed., “Old Rituals for New Space: Rites of Passage and William Gibson’s Cultural Model of Cyberspace,” *Cyberspace: First Steps* (Cambridge: The MIT Press, 1992), 31-47. Michael Benedikt is a Professor in the School of Architecture at the University of Texas at Austin. His research focuses on innovative theories of architecture, including studies of economic value, of cyberspace and virtual realities, depth and evolution, realism, spatial perception, and generally, the impact of the information age on architecture.

systems.¹⁰ By this feedback loop, he means information, which is the result of the interaction between humans and machines. For this interaction to happen, however, there is a need for interface, since this is where two or more kinds of information come in contact. He goes on: “We find it difficult to become aware of our own internal states without the objective representations of the interface.”¹¹ Interface thus ends up forming a window into cyberspace. And virtual reality ends up using cyberspace to represent physical space. Finally, no matter what it represents, the bottom line is that interface supplies shape and form to our visual imagination.

Now, in observance of Heim’s analogy of William Gibson’s definition of cyberspace, one also finds the idea of limits emerging in the quest of cyberspace. But to enter the issue of limitedness, one must think of space immersively. The act of creating electronic territory and involving the viewer in it as a physical entity presupposes new art and architecture practices. Immersive technology, then, stands for a new kind of interactive multimedia art.

In computer space, one leaves the confinement of the body and emerges in a world of digital sensation. Thus, virtual reality constitutes a new form of human experience. It brings full freedom of body movement to the interface. Places become interchangeable at will, and the body reveals only as much as one mentally wishes to reveal. The detachment of one’s mind and body happens through simulation. In this sense, cyberspace ends up supplanting physical space. The bodily existence—as a simulated one—takes the forefront of personal identity and individuality.¹²

¹⁰ Michael Heim, *The Metaphysics of Virtual Reality* (New York: Oxford University Press, 1993), 73-82. Michael Heim is a Professor of Slavic Languages and Literatures at the University of California, Los Angeles. According to Geert Lovink, Heim has been called the “philosopher of cyberspace.” He also has organized various American congresses about virtual reality.

¹¹ Heim, 73-82.

¹² Heim, 83-108.

Virtuality is also a formation of reality. After all, the bodily presence is restored via simulation; it is not merely represented.

Hence, based on the emergence of cyberspace as space that introduces us with new realities of modes of experience and communication, it is important to consider the two philosophical foundations relevant to the work of Marcos Novak and his territory of information. They are phenomenology and poststructuralism.

Bearing in mind that cyberspace becomes the locus where the intense desire of refigured embodiment takes place, one must agree with Peter Anders' words: "Since bodily sensation is our measure of things, cyberspace then not only extends our personal space, but also our social environment."¹³ The fact that our bodily presence gives us our sense of scale and propriety, as well as it also reveals our cultural dispositions, phenomenology then emerges as the first of the philosophical trends here supporting the question of virtual spaces. Another way of addressing this question would be through the metaphoric manifestation of codes, symbols, and images that also shape those kinds of spaces. Metaphor is then used as a tool for cognition; it is what ultimately grounds common experience. The realism of simulation leading to the metaphor of space, then, illustrates the second distinguished philosophical approach to cyberspace, which is poststructuralism.

The Philosophical Foundations

Because of these two aspects, phenomenology and poststructuralism, the foundations of this study will take into account the words of Martin Heidegger, Maurice Merleau-Ponty, and

¹³ Peter Anders, "Anthropic Cyberspace: Defining Electronic Space from First Principles," *LEONARDO* 34 n.5 (Cambridge: The MIT Press, 2001): 409-16. Peter Anders is an architect, educator, and information design theorist. He has published widely on the architecture of cyberspace and is currently a fellow of the PhD program at CAiiA-STAR, University of Plymouth, UK.

Jacques Derrida as we engage in the quest for experience, bodily existence, and metaphoric structures pertinent to cyberspace.

In “Art and Space,” Martin Heidegger states that the space of lived experience involves openness to the realm of the sensory and to the revelation of the truth.¹⁴ Maurice Merleau-Ponty, in “Eye and Mind,” focuses on the experience of one’s own body and the significance of this body in one’s activities.¹⁵ And finally, there is Jacques Derrida, whose deconstructivist approach to architecture, in his “*Point de Folie – Maintenant L’Architecture*,” works as a metaphor for the limits of space.¹⁶ In this study, the metaphor is liquid.

On the one hand, we have the phenomenologists, Heidegger and Merleau-Ponty, who seem to be concerned with the ontological significance of architecture, where space is not to be perceived as abstract, as a neutral space, but as a space of lived experience. Neil Leach adds: “To privilege the visual is to impoverish the understanding of space.”¹⁷ Therefore, in the age of virtual reality, the corporeality of the body is just as important as the experience of space. This path of

¹⁴ Martin Heidegger, “Art and Space,” *Rethinking Architecture: A Reader in Cultural Theory*, ed. Neil Leach (New York: Routledge, 1997), 121-4. Martin Heidegger was an important philosopher of the twentieth century, whose major contribution is in the areas of phenomenology and ontology. He posited a fundamental relation between the mode of being of objects and humanity and the structure of time. His most important and influential work is *Being and Time*, from 1927.

¹⁵ Maurice Merleau-Ponty, “Eye and Mind,” *Twentieth-Century Theories of Art*, ed. James Thompson (Ontario: Carleton University Press, 1995) 415-24. Maurice Merleau-Ponty was a French philosopher who, along with Jean-Paul Sartre, has frequently been associated with the philosophical movement existentialism. He is also known for having challenged the thinking of dualisms, of subject and object, self and world, through the lived experience of the existential body. One of his most influential writings is *The Phenomenology of Perception*, from 1945.

¹⁶ Jacques Derrida, “*Point de Folie – Maintenant L’Architecture*,” *Rethinking Architecture: A Reader in Cultural Theory*, ed. Neil Leach (New York: Routledge, 1997), 324-36. Jacques Derrida was a French philosopher whose work primarily focused on language. He originated the term “deconstruction” that has been applied to literature, linguistics, philosophy, and architecture as a strategy of analysis. *Speech and Phenomena*, *Of Grammatology*, and *Writing and Difference*, all from 1967, are examples of writings in which he introduced the deconstructive approach to reading texts.

¹⁷ Neil Leach, ed., *Rethinking Architecture: A Reader in Cultural Theory* (New York: Routledge, 1997), 81-160. Neil Leach is Professor of Architectural Theory at the University of Bath, UK. His research mainly focuses on the interface between architectural theory and contemporary debates within continental philosophy and cultural theory. His most recent work is on the impact of digital technologies on architecture.

self-awareness increases one's self-understanding as one deepens one's understanding of computer interaction. Inevitably, cyberspace belongs to the phenomenon of digital interaction. The development of self precedes the development of technology. Video artist Bill Viola describes a similar situation: "we are proceeding from models of the eye and ear to models of thought processes and conceptual structures in the brain."¹⁸ He refers to a world of "idea space," which is a nonlinear information matrix where the only limitation is human imagination. This "idea space" then can be compared to cyberspace, since both imply the existence of some sort of place, a limitless place, characterized by its own architecture and structure, known as data space. Data space, earlier referred to as a territory for "event," is now also seen as a territory of information, where information, entered into a computer's memory, creates a set of parameters, a defining ground or structure. This matrix of structures, or Novak's algorithms, functions as new diagram: a non-linear array of information. The exploration of these territories—the traveling in data space—is what transforms the act of viewing in experience, in sensory experience.¹⁹ For that reason, one concludes that what limits space is not its physical boundaries, but one's sensing capabilities.

On the other hand, there is the medium of cyberspace based on metaphor; one that lets us relay abstract concepts by reference to our common, physical world. This linguistic approach characterizes poststructuralism. Mike Crang suggests that Derrida would have probably thought

¹⁸ Bill Viola, "Will There Be Condominiums in Data Space?" *Multimedia: From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York: W.W. Norton & Company, 2001), 287-98. Bill Viola has been one of the leading video artists on the international scene since 1970s. He uses video to explore the phenomena of perception as a way to achieve self-knowledge. He focuses on human experiences, spiritual traditions, and the unfolding of consciousness. His use of video has helped expand contemporary art in terms of technology, content, and historical reach.

¹⁹ Virilio, *The Art of the Motor*, 133-56.

of spatial metaphors providing a “habitat” for cyberspace.²⁰ After all, cyberspace appears with an apparent solidity when its structure is really unstable, variable. Using Derrida’s term, the architectural metaphor in such an unstable space is “deconstruction.”²¹ And when we realize that cyberspace is really based in metaphor, we can ask, is cyberspace then a deconstructed space? So, if a deconstructivist approach represents an interest in the limits of the space, then the pleasure in the architecture of cyberspace lies in dismantling those limits.²²

The fact is that, today, architecture implies the use of electronic networks where information represents the parameters by which virtual spaces are defined. And Novak’s works are built from these parameters. As Hani Rashid from Asymptote Architecture—a New York-based architecture firm—would say: “Objects, spaces, buildings, and institutions can now be constructed, navigated, comprehended, experienced, and manipulated across a global network. This is the new architecture of liquidity, flux, and mutability predicated on technological advances and fueled by a basic human desire to probe the unknown.”²³

Therefore, architecture sets new paths for the public, where virtual and real merge in a single reality and where its form changes according to one’s preferences or uses. The impact of digital technology in the form of data and information has definitely influenced the ways one now

²⁰ Mike Crang, “Public Space, Urban Space and Electronic Space: Would the Real Cities Please Stand Up?” *Urban Studies*, 37 n.2 (2000): 301-17. Mike Crang is a Lecturer at the University of Durham, UK. His interests lie in the field of cultural geography, more specifically in spatiality and social theory. He also works with the analysis of transformations of space and time through electronic technologies.

²¹ Derrida, 332.

²² Bernard Tschumi, *Architecture and Disjunction* (Cambridge: The MIT Press, 1994), 207-13. Bernard Tschumi is an architect, theorist, and academic. He is currently the Dean of the School of Architecture at Columbia University. His work has reevaluated architecture’s role in the practice of personal and political freedom. He also sees architecture as a tool for questioning its own structure. He combines film and literary theory with architecture, expanding on structuralism and post-structuralism, in order to reexamine architecture’s responsibility in reinforcing unquestioned cultural narratives.

²³ Philip Jodidio, introduction to *Architecture Now!* (Cologne: Taschen, 2001), 8-19. Philip Jodidio studied history and economics at Harvard University. He has also been a Director of the French magazine *Knowledge of Arts* since 1980, where he publishes many of his studies on contemporary architects.

perceives space, form, and movement. Still, according to Asymptote, “Institutional aspects have already begun to be dismantled in terms of traditional views of art as aesthetic, representational, and monumental. The digital possibilities, that now engulf us, compel a rethinking of space, not so much as a new formal enterprise or typology, but rather as a place of unforeseen and unpredictable circumstance, a place of unfolding, and, most importantly, as a place of fluid and endless transition, an architecture of flux.”²⁴ Can “architecture of flux” be compared to “liquid architectures of cyberspace”?

With “liquid architectures,” the idea is to find an architecture that is based on motion; that unites virtual and physical; and that, through the use of information technology, creates spatial configurations that are constantly mutating. This advent in cyberspace has enforced the emergence of a new concept, one that characterizes the fusion of information, art, and architecture. Novak’s idea of cyberspace illustrates this new strong concept of space. Neither phenomenology nor poststructuralism fully describes his work. This thesis is not an attempt to suggest a new theory, but to interrogate those theories that touch upon Novak’s field of research.

²⁴ Rashid, 26-31.

THE WORLD OF MARCOS NOVAK

Fig. 2. Model 2 of *Education: The Alien Within*.

© Novak and Lutyens, in *Arch'it electronic magazine* (28 Dec. 2001).

Cyberspace is liquid. Liquid cyberspace, liquid architecture, liquid cities. Liquid architecture is more than kinetic architecture, robotic architecture, and architecture of fixed parts and variable links. Liquid architecture is an architecture that breathes, pulses, leaps as one form and lands as another. Liquid architecture is an architecture whose form is contingent on the interests of the beholder; it is an architecture that opens to welcome me and closes to defend me; it is an architecture without doors and hallways, where the next room is always where I need it to be and what I need it to be. Liquid architecture makes liquid cities, cities that change at the shift of a value, where visitors with different backgrounds see different landmarks, where neighborhoods vary with ideas held in common, and evolve as ideas mature or dissolve.

Marcos Novak, *Cyberspace: First Steps*.

Finding His Way into Cyberspace

Marcos Novak was born in Venezuela in 1957¹. He moved to Greece at a young age and remained there until the completion of the secondary education. During this period, Novak attained proficiency in classical guitar and, consequently, developed a particular interest for the compositional aspects of music. But it was under the influence of his grandfather—who was a

¹ Marcos Novak, “CV Essay,” at *CENTRIFUGE* website:
http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html, accessed 10/10/2004. All Novak’s biographical notes were drawn from this same essay.

pioneer figure of cinema in Greece—that he discovered the world of the virtual moved along with the real one, since cinema mainly deals with the representation of the real. The pattern quality of music composition and the mechanical aspect of producing and directing films were the reasons he decided to engage in the practice of architecture. In 1980, he received his bachelor’s degree in architecture from Ohio State University and, in 1983, he completed his master’s degree with a thesis on the use of computers as compositional tools. But it was only in 1989 that he initiated his studies for cyberspace as the founding director of the Laboratory For Immersive Virtual Environments and the Advanced Design Research Program at the School of Architecture at the University of Texas at Austin. He is currently an Associate Professor in the Department of Media Arts and Technology, University of California, Santa Barbara, and a Visiting Associate Professor in the Department of Architecture and Urban Design at UCLA. He considers himself a “transarchitect.”² According to his own definition, “transarchitecture” is here presented as:

A new domain extended to include intelligent local, remote, and virtual space as a new continuum; ... the techniques for designing in this new continuum involve conceiving architecture algorithmically, modeling it directly from data via new techniques such as rapid prototyping, building it robotically, inhabiting it interactively, occupying it telepresently, and connecting it seamlessly to virtual space, where a parallel conceptual and poetic structure applies.³

In short, “transarchitecture” is the intersection of information, in the form of algorithms, and the material world, as robotic prototypes. It is the intermingling of architecture and media, the combination of design and machine/computer.

² Marcos Novak, “transArchitectures,” *Telepolis: Magazin Der Netzkultur*, ed. Heise Zeitschriften Verlag (2003), at *CENTRIFUGE* website: http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html, accessed 10/7/2004.

³ Novak, “transArchitectures.”

Novak also originated a new term for a dematerialized architecture in the era of computerization, “liquid architectures of cyberspace.” This results from the combination of a series of observations and relationships between architecture, cyberspace, and virtuality, all conceived for a new and virtual public domain. “Liquid architectures” stand for a non-objective reality, where the composition of space is the object reality and it results from a construct of one’s mind.⁴ Object reality is, in this instance, cyberspace. And in cyberspace, one’s mind directly affects what is to be perceived as real. There is a joining of mind and body, virtual and real. This inseparability is the tool for a constructed reality, one that exists to serve one’s own purposes. The mind controls a simulated body. Consequently, one changes as one’s purposes change. And that is when one becomes liquid, when architecture becomes liquid.⁵ The question of fluidity or liquidity is yet to be further discussed. However, it is important to understand how Novak came to embrace the question of cyberspace.

With Michael Benedikt, a colleague at the University of Texas at Austin, Novak organized “CyberConf: The First International Conference on Cyberspace,” in 1990. It was only then that he decided to create algorithmically generated, evolving, data-driven architectures for information space. His term “liquid architectures” was automatically seen in association with cyberspace. However, “liquid architectures” were not intended to be limited to cyberspace alone. Novak then sought to find a new architecture, indeed new environments, that could be adjusted to a new space, a space for virtual architecture. It seems as if Novak was willing to invent his own

⁴ Marcos Novak, “Liquid Architectures of Cyberspace,” *Cyberspace: First Steps*, ed. Michael Benedikt (Cambridge: The MIT Press, 1992), 225-54.

⁵ Novak, “Liquid Architectures of Cyberspace,” 225-54.

history. For this, he used speculative philosophy and every manner of design with algorithms to launch into art, science, and technology.⁶

The Context of Multimedia

Novak's use of algorithms and speculative philosophy is, here, analyzed in the context of multimedia, since multimedia represents the combination of different formats of delivering information. The formats generally include text, graphics, animation, audio, and video. According to Benedikt's rereading of Novak's "liquid architecture," this new term is, in fact, architecture of information, where there is an introduction to the evolution of legible forms in the context of a user-driven and self-organizing cyberspace system.⁷ For the purpose of this thesis, we will assume that cyberspace concepts emerged and developed alongside the advancement of information technology, which is only possible through the use of multimedia. According to William Gibson, who first coined the term cyberspace in his novel *Neuromancer*, published in 1984, "Multimedia, in my view, is not an invention but an ongoing discovery of how the mind and the universes it imagines (or vice-versa, depending) fit together and interact. Multimedia is where we have always been going."⁸ And so has Marcos Novak.

In the overture to *Multimedia: From Wagner to Virtual Reality*, Randall Packer and Ken Jordan assert that "beginning with [Richard] Wagner, subsequent generations of artists sought, and found, integrated forms and interdisciplinary strategies to express their concern with

⁶ Marcos Novak, "CV Essay."

⁷ Michael Benedikt, ed., introduction to *Cyberspace: First Steps* (Cambridge: The MIT Press, 1992), 1-25.

⁸ William Gibson, "Geeks and Artboys," foreword to *Multimedia: From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York: W.W. Norton & Company, 2001), ix-xii. William Gibson is also the author of *Burning Chrome*, *Count Zero*, *Mona Lisa Overdrive*, and, with Bruce Sterling, *The Difference Engine*.

individual and social consciousness and extreme states of subjective experience.”⁹ The works or words of Richard Wagner, László Moholy-Nagy, Allan Kaprow, Roy Ascott, Myron Krueger, Scott Fisher, William Gibson, and Marcos Novak are, then, introduced as examples of artists/architects who manipulate multimedia in search of new experiences.¹⁰ The idea was that, in order to achieve such experiences, the artist/architect had to experiment with different fields. The integration between forms and interdisciplinary strategies is, then, seen in the interaction between humans and computer. The result of this interaction is what enables the emergence of a new medium, one that operates as a vehicle for transforming consciousness, extending memory, increasing knowledge, amplifying the intellect, and enhancing creativity.¹¹

Katherine Hayles, for instance, identified, in the history of cybernetics, this union of humans and the intelligent machine.¹² She suggests that history presents a shift from a human essence to a posthuman one, and she describes the latter as “an informational-material entity paralleled and reinforced by a corresponding reinterpretation of deep structures of the physical world.”¹³ The idea of the posthuman calls for a computational universe, where everything computes and everything is code. She ultimately refers to a posthuman view of the body

⁹ Randall Packer and Ken Jordan, eds., *overture to Multimedia: From Wagner to Virtual Reality* (New York: W.W. Norton & Company, 2001), xiii-xxxi. Richard Wagner wrote “The Artwork of the Future,” originally published in 1849. Packer and Jordan included one version of Wagner’s essay in the book *Multimedia: From Wagner to Virtual Reality*, called “Outlines of the Artwork of the Future.”

¹⁰ Packer and Jordan, xiii-xxxi. This thesis will follow the same examples given by Packer and Jordan, although they will be mentioned only for their relevance and concerns with human experience.

¹¹ Packer and Jordan, xiii-xxxi.

¹² N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: The University of Chicago Press, 1999) 2. Katherine Hayles is a Professor of English at the University of California, Los Angeles. She teaches and writes on literature and science in the twentieth and twenty-first centuries. She is also the author of *Cosmic Web: Scientific Field Models* and *Literary Strategies in the Twentieth Century*, from 1984.

¹³ Hayles, 11.

existence restored via computer simulation.¹⁴ But where Hayles sees the human essence being shifted by the use of information, Novak sees it also being done to spaces.

The idea of bringing together interdisciplinary studies—seen in the intermingling of humans and machines—is also an attempt to embrace a full range of human experience. Richard Wagner called this unification of all arts *Gesamtkunstwerk*.¹⁵ This full range of experience resembles the initial discussion about cyberspace, where the information produced by the interaction between humans and machine is fed back into the human’s system. According to Hayles, this feedback loop was theorized, in the 1930s and 1940s, as a “flow of information.”¹⁶ Information, control, and communication operate together with cybernetics in order to bring the organic and the mechanical to a synthesis.¹⁷

Later, in the Bauhaus, progressive ideas of integration emerged with László Moholy-Nagy. He saw new human experiences coming out of theater. According to him, human experience was only lived through the synthesis of formal components, such as space, composition, motion, movement, and light.¹⁸

In 1948, with his *A Mathematical Theory of Communication*, Claude Shannon defined a mathematical quantity to prove that the problem of communication is the attempt to reproduce at one point the message found at another point.¹⁹ He then designed a system that operated in the selection of the message that was supposed to travel from one point to another as to

¹⁴ Hayles, 2-3.

¹⁵ Packer and Jordan, xiii-xxxi.

¹⁶ Hayles, 8.

¹⁷ Hayles, 8.

¹⁸ Packer and Jordan, xiii-xxxi.

¹⁹ Claude Elwood Shannon, introduction to *A Mathematical Theory of Communication* (Urbana: University of Illinois Press, 1963), 1. Claude Shannon was the mathematician who laid the foundation of modern information theory while working at Bell Labs in the 1940s.

straighten communication.²⁰ This system configured the birth of information theory. And, in modern information theory, this informational function suggests the probability of eliminating dimensions, materiality, and necessary connections with meaning.²¹ Information then became more important than the materiality of things. Hayles interprets the cultural perception of information and materiality as the living condition of virtuality.²² Shannon's informational function—allied to the state of virtuality of computer simulations—would later directly influence Novak's use of algorithms in experimenting with architectural compositions.

In early 1960s, with his *Happenings*, Allan Kaprow showed deep concern with the integration of the audience and artwork. He developed techniques to incite a creative response from the audience, encouraging them to make their own connections between ideas and events. There was a decentralization of authorship, location, and narrative aspect in the work. In digital media, those elements are united by the viewer/audience. Space and time, as elements of event, are blurred in cyberspace. They are only noticed by means of information, as previously discussed. One now makes use of interactive technology to expand those boundaries of space and time.²³

²⁰ Shannon, 1. The meaning or content of the message was irrelevant. The system was composed by logarithmic measures. Each logarithmic base corresponded to the choice of a unit for measuring information. It is important to point out here that logarithms are different than algorithms, which is what will later influence Novak. Logarithm is the mathematical power to which a base must be raised to equal a given number. For example, the logarithm 16 to the base 2 is 4, since $2^4=16$. As for algorithm, it is basically a logical procedure for solving a mathematical problem. This logical sequence can normally be translated to a computer program.

²¹ Hayles, 18.

²² Hayles, 18.

²³ Allan Kaprow, "Happenings," ed. Randall Packer (1964), at ArtMuseum.net website: <http://www.artmuseum.net/w2vr/timeline/Kaprow.html#top>, accessed 11/28/2004. Allan Kaprow is an American artist and art theorist. He has taught in many institutions, including Rutgers, Pratt Institute, the State University of New York at Stony Brook, and the California Institute of the Arts, as the Associate Dean. He is largely known for having created, in the late 1950s, the artistic movement *Happenings*.

Regarding new experimentations and the role of the audience in the 1950s and 1960s, it is almost inevitable to think of John Cage's influence on artists/architects. He was certainly a strong inspiration for early digital artists, such as Roy Ascott and Myron Krueger. While Ascott experimented with modes of experience and behavior, Myron Krueger showed interest in digitally constructing those experiences.

In the mid-1960s, interactive technology was taken into consideration in the realm of artistic expression. Roy Ascott pointed out that interactivity as computer-based forms of expression would be an emerging issue in the arts for its interdisciplinary values. Through the study of cybernetics, he pioneered in the approach of interactive artworks. For Ascott, art should be responsive to the viewer, rather than fixed and static.²⁴ This interaction between human and computer would eventually result in a profound influence in artmaking, since it would demand collaborative and interactive modes of experience. On the other hand, in early 1970s, Myron Krueger collaborated with artists and engineers to create artworks that responded to the movement and gesture of the viewer through a system of sensing floors, graphic tables, and video cameras.²⁵ This system represents the interface between humans and computer.

Complementing the study of the interface is the study of immersion, which is of extreme relevance to the quest of cyberspace. With the use of interfaces such as a headset, microphone, earphones, and datagloves, full-body gestures are tracked and placed within the virtual

²⁴ Roy Ascott, "Behaviourist Art and the Cybernetic Vision," *Multimedia: From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York: W.W. Norton & Company, 2001), 95-103. Roy Ascott, is a well-known international artist and theorist whose interests are in the field of art and the technology of consciousness. He is the Founding Director of the Planetary Collegium, a Professor of Technoetics at the University of Plymouth, UK, and an Adjunct Professor in the Design/Media Arts Lab at the University of California, Los Angeles.

²⁵ Myron Krueger, "Responsive," ed. Randall Packer (1970), at ArtMuseum.net website: <http://www.artmuseum.net/w2vr/timeline/Krueger.html>, accessed 11/28/2004. Myron Krueger received his PhD in "Computer-Controlled Responsive Environments" from the University of Wisconsin in 1974. Since 1975, he has been taking part in exhibitions, such as Ars Electronica and the Siggraph Art Show. He also published two influential books on Artificial Reality.

environment.²⁶ Experience, then, becomes fully sensorial, since it engages all the senses. This projection of self into a virtual immersive environment is known as "telepresence."²⁷ Recently, "telepresence" has been considered as the transportation of mind to other locations.

In 1964, Marshall McLuhan showed up with the idea that electronic media would eventually transform the nature of human beings.²⁸ He puts in: "all media are active metaphors in their power to translate experience into new forms. The spoken word was the first technology by which man was able to let go of his environment in order to grasp in a new way."²⁹ It was after this idea that he became known for the phrase "the medium is the message."

In 1984, William Gibson created the term "cyberspace." In his novel *Neuromancer*, Gibson used this new term for environments, made possible by the networking of computers, where characters inhabited virtually.³⁰ His notion of an inhabitable or immersive terrain, which exists in the connections between computer networks, is a fluid architectural space that can be expanded endlessly through a kind of discontinuous flood of images. Here is how Gibson describes this terrain:

Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from the banks of every computer in the

²⁶ Packer and Jordan, xiii-xxxi.

²⁷ Scott Fisher, "Telepresence," ed. Randall Packer (1985), at ArtMuseum.net website: <http://www.artmuseum.net/w2vr/timeline/Fisher.html>, accessed 11/28/2004. Scott Fisher is a media artist and interaction designer whose work focuses primarily on interactive environments and technologies of presence. He became widely known for his work in the field of Virtual Reality at NASA.

²⁸ Marshall McLuhan, *Understanding Media: The Extensions of Man* (Cambridge: The MIT Press, 1994), 61. Marshall McLuhan is considered to be the first father and leading prophet of the electronic age. He dedicated his career to understanding the effects of technology and their relation to popular culture. He also wrote *The Mechanical Bride*, first published in 1951.

²⁹ McLuhan, 61.

³⁰ Packer and Jordan, xiii-xxxi. See also William Gibson, *Neuromancer: Remembering Tomorrow* (New York: Ace Books, 1984).

human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding....³¹

And that is the point from which Marcos Novak picks up. Novak took Gibson's description of virtual environments as the starting point for his own theoretical and artistic explorations. The implication of his "liquid architectures in cyberspace" was to shift the notion of space to include new attitudes toward the organization of information. In cyberspace, spaces become programmable; environments become fluid. The architect/artist that designs these immersive fluid environments is, then, transcending the laws of the physical world, such as laws of force and gravity. Viewers no longer respond to the environment. It is the architectural forms, built in cyberspace, that are now responsive to the viewer.

Multimedia is thus identified as the most complete use of the computer's potential for personal expression and individual experience. Still referring to Packer and Jordan's multimedia accounts, we can conclude that, today, multimedia is expressed in Internet art, virtual reality installations, online chat spaces, and networked performances.³² The common aspect among all forms of expression presented is the mutability and variety of manifestations. And once again, I refer to Novak's use of algorithms and speculative philosophy to launch into the quest of cyberspace.

Algorithms: Tools for Creation

Following is a brief description and illustration of how Novak's "liquid architectures" are generated.³³ His compositions are basically created by a generic

Fig. 3. Generic algorithmic composition.
© Novak, in *Cyberspace: First Steps*.

³¹ Gibson, *Neuromancer*, 51.

³² Packer and Jordan, xiii-xxxi.

³³ Novak, "Liquid Architectures of Cyberspace," 252.

algorithm followed by processes of superimposition, masking, and filtering to make this informational creation visible as variations (see figs. 3 and 4). After superimposing information, Novak merges the algorithmic composition with scanned data (see fig. 5). The new image reveals new patterns, new structures of images. With further image processing, he acquires new variations of image (see fig. 6). Then, he maps a three-dimensional algorithmic composition onto cyberspace (see fig. 7). Finally, “liquid architectures” are revealed in two algorithmic compositions: one with variations of information, another as a three-dimensional shape (see fig. 8). In different times and spaces, “liquid architectures” presents new variations (see fig. 9).

Fig. 4. Superimposition, making, and filtering processes.
© Novak, in *Cyberspace: First Steps*.

Fig. 5. The merging of algorithmic composition and scanned data.
© Novak, in *Cyberspace: First Steps*.

Fig. 7. Three-dimensional algorithm in cyberspace.
© Novak, in *Cyberspace: First Steps*.

Fig. 6. Further image processing.
© Novak, in *Cyberspace: First Steps*.

Fig. 8. Two algorithmic compositions in cyberspace.

© Novak, in *Cyberspace: First Steps*.

Fig. 9. Variation of two algorithmic compositions.

© Novak, in *Cyberspace: First Steps*.

However, the variations are not possible without one's interaction, one's immersion into the same cyberspace of "liquid architectures." Novak uses virtual reality technologies never before available to artists or architects to make this happen, again using algorithms. "Dancing With the Virtual Dervish: Worlds in Progress," a multimedia cyberspace project created at the Banff Center For The Arts in 1991, was the first example of a new virtual space created through the same themes of liquid architecture (see figs. 10-12). The project was to join inner and outer worlds, moving into and out of virtual space. With this project, he became the first architect to design architecture specifically intended to be experienced by immersion. He seemed to believe that such a concept would free architecture from the confinements of earlier adopted terms, of biased terms, such as functionality and aesthetics. After all, he wanted architecture to be poetic, to emerge from the fluidity of ideas.³⁴ "Liquid architectures" are then easily associated with cyberspace, immersion, and virtual reality.³⁵ But, according to Novak, those are not the only possible associations.

³⁴ Novak, "CV Essay."

³⁵ Novak, "CV Essay."

Fig. 10. "In-shell" view of a model of "liquid architectures."
© Novak, at *CENTRIFUGE* website.

Fig. 11. Close-up "in-shell" view of a model of "liquid architectures."
© Novak, at *CENTRIFUGE* website.

Fig. 12. "Ext-shell" view of a model of "liquid architectures."
© Novak, at *CENTRIFUGE* website.

"Liquid architectures" have a lot more to do with immersion than with cyberspace, strictly speaking. Immersion has actually been applied to virtual reality rather than cyberspace itself.

Michael Heim identified seven qualities inherent to virtual reality that can also be identified in Novak's work. They are: immersion, full-body immersion, simulation, interaction, artificiality, telepresence, and networked communications.³⁶

Immersion stands for the illusion of being submerged in a virtual world; full-body immersion means that the body's free movements are actually information to be read by the computer; simulation is a set of computer graphics with a degree of realism; interaction means that one interacts with electronic representations of real things; artificiality is a world constructed by men; telepresence means that one is present from a distant location as though it was close up; and, finally, networked communications is the shared construct of virtual worlds.

³⁶ Michael Heim, *The Metaphysics of Virtual Reality* (New York: Oxford University Press, 1993), 109-28.

Approximately ten years after the creation of “Dancing With the Virtual Dervish,” Marcos Novak, in collaboration with Marcos Lutyens—an LA-based new media artist — created “Eduction: The Alien Within.” In this project, the viewer is inducted into a deep state of “hypnotic trance” and introduced into a navigable cyberspace (see fig. 13).³⁷ In this virtual environment, there is an inversion of vectors, an opposition of digital and virtual driving forces, a counter process of what Marialuisa Palumbo identified as “e-mersion” or “eversion” of the virtual into the real.³⁸ A new possibility is thus introduced into this world of constant metamorphosis, one where the navigating viewer interacts at his/her deepest levels of mental activity.³⁹ One’s interaction with these “liquid architectures” is experienced only through navigation. “Liquid architectures” then become the individual’s space of mind.

One’s immersion and external control operate as guidelines to such variations. The set of transformations is what suggests liquidity. To illustrate Novak’s attempt to assign poetic and fluid ideas to architecture, it is important now to refer to his definitions of virtual space described in an interview with Alessandro Ludovico from 2001.

³⁷ Marialuisa Palumbo, “Eduction: Design by Algorithm.” Extended Play (28 Dec. 2001), at *Arch’it electronic magazine*: <http://architettura.supereva.it/extended/20011228/index.htm>, accessed 11/5/2004. Marialuisa Palumbo is an Italian critic in the area of communication, arts, architecture, and new technologies. She has also been writing for the electronic magazine Arch’it. This state of “hypnotic trance” is a term used by Novak to demonstrate the level of hypnotic immersion that the subject and audience go into. This hypnotic immersion is called “induction,” and it is acquired through a set of tests and deepening procedures to make the viewer’s body become extremely rigid. With such procedures, which include the levitation of limbs and catalepsy, the viewer is left in a state of “trance,” where s/he becomes unaware of the environment and is unable to respond to stimuli. The viewer is then introduced, intranced, into a navigable cyberspace enclosed in a sort of flexible structure, in which s/he travels. The viewer is a volunteer.

³⁸ Palumbo, “Eduction: Design by Algorithm.”

³⁹ Palumbo, “Eduction: Design by Algorithm.”

Fig. 13. Model 5 of *Eduction: The Alien Within*.

© Novak and Lutyens, in *Arch'it electronic magazine* (28 Dec. 2001).

Three Conceptions of Virtual Spaces

In the 2001 interview, Novak talks about three conceptions of virtual spaces, all of them attempting to capture the nature of the virtual.⁴⁰ They are: the space of the “Platonic Ideal,” the space of the consciousness, and the technologically constructed information space.

The “Platonic Ideal” has to do with the development of consciousness through formalizing perception and stabilizing experiences. Heim, for instance, uses the example of Plato’s Cave to state this initial philosophical significance of cyberspace. According to Plato, the formalized identities of which one is conscious help one maintain life in a material/solid state.⁴¹ The story of the cave seems appropriate, since it is about a group of people who adjust to illusions of shadows and then make sensory objects embody those illusions/mental images. The objects become the group’s most interesting realities. Later, as they enjoy clear vision of real

⁴⁰ Marcos Novak, “Marcos Novak Interview,” interview by Alessandro Ludovico (Apr. 2001), at *Neural.it electronic magazine*: <http://www.neural.it/english/marcosnovak.htm>, accessed 10/1/2004. Alessandro Ludovico is the editor of *Neural Magazine*, a quarterly Italian electronic magazine on hacktivism, new media art, and electronic music; and he is also a co-founder of Nettime list, and a member since May 1995. Besides Marcos Novak, he has interviewed William Gibson and Geert Lovink, among several others.

⁴¹ Heim, 83-108.

things, they are still tied to the constructed reality. This new reality happens in the mind's eye, which takes us right back to Novak's idea that, in cyberspace, with this joining of real and virtual, mind and body, it is the mind that affects what is to be perceived as real. This is when, in computer space, one leaves the confinement of the body and emerges into a world of digital sensation.

Regarding the space of the consciousness as part of virtual space, it means that we are moving into an "idea space." Once again referring to Bill Viola, "idea space" is a space where the only limitation is one's imagination, one's memory.⁴² Viola also mentions the visual relation between image and architecture that once pertained to the original structural aspect of art.⁴³ Today, one thinks of a relation between memory, spatial movement, and the storage of ideas, all closely related to a world of computerization. If one considers that thoughts and images only exist in the brain, cyberspace then emerges as nothing but an extension of our mental space. It is actually an extension of our consciousness.⁴⁴ According to Peter Anders, the distinction between physical and symbolic is a matter of perception and cognition, rather than a biased polarization of reality and simulation.⁴⁵ Novak seems to be the architect/artist that has been closer to achieving this new reality: the reality of cyberspace.

And finally, we have reached the last of Novak's conceptions of aspects of virtual spaces: the technologically constructed information space, where the production of information results from the involvement, interaction, and interplay of spectator/viewer and space/work. Roy

⁴² Bill Viola, "Will There Be Condominiums in Data Space?," *Multimedia: From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York: W.W. Norton & Company, 2001), 287-98.

⁴³ Viola, 287-98.

⁴⁴ Peter Anders, "Anthropic Cyberspace: Defining Electronic Space from First Principles," *LEONARDO* 34 n.5 (Cambridge: The MIT Press, 2001): 409-16.

⁴⁵ Anders, 409-16.

Ascott, for example, believes that, in a cybernetic world, artists are looking for more than new relationships between artwork and spectator.⁴⁶ They are, in fact, searching for new ways of handling ideas, for new structures that will contain those ideas. The ideas thus represent the flexibility of the structure of images that allows a greater variety of interpretations. The handling of ideas incites a new state of mind that finally takes over from vision. Viewing becomes experience. And experience takes place in a system of communication: a system that is dynamic, fluid. Pierre Lévy calls it a system of motion.⁴⁷ He seems to believe that a virtual world is a repository world of information; it is constantly mutable and it shapes evolving forms of art and communication.⁴⁸ After this, one could not ignore but only relate to Novak's first attempt to define cyberspace as a place where architecture intermingles with digital media and information intersects with the material world. With this attempt, seen in the work "Dancing With the Virtual Dervish," Novak also determined the qualities inherent to virtual spaces: perception and immersion.

The Qualities of Virtual Spaces

Novak believes that the liquid structure of virtual spaces derives from the various potentialities of all possible worlds, where everything relates to everything, according to his own words.⁴⁹ Technology is what makes those possibilities of reality—which are always subjective—somehow stable and structured. However, this structure is never physical. It is

⁴⁶ Roy Ascott, "Behaviourist Art and the Cybernetic Vision," *Multimedia: From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York: W.W. Norton & Company, 2001), 95-103.

⁴⁷ Novak, "Marcos Novak Interview."

⁴⁸ Pierre Lévy, "The Art and Architecture of Cyberspace," *Multimedia: From Wagner to Virtual Reality*, eds. Randall Packer and Ken Jordan (New York: W.W. Norton & Company, 2001), 335-44. Pierre Lévy is a philosopher of contemporary virtual culture and a Professor in the Department of Hypermedia at the University of Paris VIII at Saint-Denis, France. He is interested in the idea of collective intelligence as the product of anthropological manifestations man disposes as instruments that allow the interaction between individuals.

⁴⁹ Novak, "Marcos Novak Interview."

structured consciousness, where all thoughts are thinkable at any time, or in any principle, at any set of conditions.⁵⁰ The structure is variable; it is, once again, liquid.

Considering one of his statements—“In principle, and with proper architectural knowledge, any pattern can be made into a work of architecture, just as any pattern can be made into music”—it is apparent that he likes to portray virtual reality artworks or spaces as “navigable music.”⁵¹ The reason for this comparison between architecture and music is that he uses computer algorithms originally intended for music composition to create his architecture.⁵² This architecture is four-dimensional. It is dematerialized architecture.⁵³ It moves around in space. It changes form. It changes color. And it does all this according to the will of the spectator/viewer. After all, Novak intends to create architecture that is responsive to the viewer. It is as if the structures, or spaces, were playing music. The objects, or the materiality of it, become principles of algorithmic processes.

To think of structure as a sort of principle is to enter into the context of perception, where the motion of liquid architectures is defined by one’s consciousness. In this cyberspace reality, one’s perception has to do with senses, not purely vision. Cyberspace is physical in this sense. The act of consciousness is the act of handling information. Being inside information means that one’s entire body is immersed, not only just one’s fingertips, as Novak points out.⁵⁴ Immersion becomes the cause of physicality in cyberspace. Immersion also represents a state of virtuality, a

⁵⁰ Novak, “Marcos Novak Interview.”

⁵¹ Novak, “Liquid Architectures of Cyberspace,” 225-54.

⁵² Marcos Novak, “Architects or Worldbuilder?: Interview with Marcos Novak,” interview by Knut Mork, *The Write Stuff Interviews* (1995), at ALTX Online Network: <http://www.altx.com/int2/marcos.novak.html>, accessed 10/1/2004. Knut Mork is a Norwegian software engineer, writer, and electronic artist. He has also been a contributing editor of the Alternative-X electronic publishing network.

⁵³ Novak, “Architects or Worldbuilder?: Interview with Marcos Novak.”

⁵⁴ Novak, “Architects or Worldbuilder?: Interview with Marcos Novak.”

phenomenon of consciousness. Peter Weibel would add to this idea by saying: “Consciousness derives from the interrelationship of matter and spirit, as their designated process.”⁵⁵ In this process, real and imaginary objects react to one’s actions. The visual spectrum of the observer and the space of the images seen are intermingled. Consequently, this state of conscious awareness also creates a simulation of one’s own consciousness. The state of virtual reality ends up defining a state of telepresence, since one experiences cyberspace from a different location as if s/he was really there. It is not one’s mind that is transported to a different location, but one’s simulated body. According to Michael Benedikt, this state of virtual reality/telepresence is as close as one can come to entering a synthetic sensorium, to becoming immersed in a remote or artificial world.⁵⁶ The phenomenon of telepresence then becomes the prime component of the experience of cyberspace. And this is when, with mature cyberspaces and virtual technology, reality also becomes perceptual and phenomenal in its physical achievement.⁵⁷ Therefore, one concludes that the “coming-together” of matter and spirit, or mind and body, not only defines the state of virtuality after experiencing immersion, but it also encounters, in this state, new forms of perceiving space. One finds one’s own perception.

The Art of Cyberspace

According to Novak, there is a paradox in the quest of cyberspace, since the creation of this world is the result of the embodiment of the two segments, mind and body.⁵⁸ However, the

⁵⁵ Peter Weibel, “Virtual Worlds: the Emperor’s New Bodies,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 207-23. Peter Weibel is the Chairman and CEO of ZKM, a Centre for Art and Media in Karlsruhe, Germany. He studied literature, medicine, logic, philosophy, and film in Paris and Vienna. He then became a central figure in European media art through his various activities as artist, media theorist, and curator.

⁵⁶ Michael Benedikt, ed., introduction to *Cyberspace: First Steps* (Cambridge: The MIT Press, 1992), 1-25.

⁵⁷ Benedikt, 1-25.

⁵⁸ Novak, “Liquid Architectures of Cyberspace,” 225-54.

mind takes over the physicality of the body. The body is simply an entity in cyberspace, just like space, time, and process. Entities in cyberspace provide several levels of information: information about something, about itself, about the observer, about the surrounding environment, and about global information.⁵⁹ Information thus becomes the medium of this state of mind, of behavior. And in the informational field, behavior is expanded and full of possibilities. The territory of information is reconfigurable because experience is discontinuous.⁶⁰ This is when the use of the term “liquid architectures” emerges and gains its significance. It is important to point out that the word architecture appears in its plural form. In this way Novak intentionally emphasizes the multiplicity of this new conception.⁶¹ “Liquid architectures” stand for a habit, a way of life, thus for an openness to discontinuity.⁶²

In his most influential essay, “Liquid Architectures of Cyberspace,” published in *Cyberspace: First Steps*, in 1992, Novak says that “Cyberspace is architecture.”⁶³ It is an interface, where modulated information space remains external, though one only visualizes/experiences its inner structure. Hence, Novak refers to cyberspace as being intrinsically a space one

Fig. 14. *MathCaveBlockHR* (model of “liquid architectures”).
© Novak, at *CENTRIFUGE* website.

⁵⁹ Novak, “Liquid Architectures of Cyberspace,” 225-54.

⁶⁰ Marcos Novak, “TransTerraForm: Liquid Architectures and the Loss of Inscription,” at *CENTRIFUGE* website: http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html, accessed 10/28/2004.

⁶¹ Novak, “CV Essay.”

⁶² Novak, “TransTerraForm.”

⁶³ Novak, “Liquid Architectures of Cyberspace,” 225-54.

enters. This happens in one's mind (see figs. 14 and 15). To him, cyberspace is architecture, it has architecture, and it contains architecture.⁶⁴ It is architecture in its ability to create sense of depth; it has architecture in its compositional structure; and it contains architecture in its depiction.⁶⁵

Cyberspace ends up being a laboratory for the production of new architectural visions. He plays with the idea of visionary architecture as one that “represents the manifestation of the mind in the realm of the body, but that also attempts to escape the confines of a limiting reality.”⁶⁶

Fig. 15. *Voice3=4Maze.Blue* (model of “liquid architectures”).
© Novak, at *CENTRIFUGE* website.

“Transarchitectures” is another concept created by Novak. It derives from “liquid architectures” and it emphasizes the idea of places becoming alien, of transforming themselves.⁶⁷ It is as if this architecture belongs to a new kind of breed, one pertaining to a virtual environment.

Alien is a term Novak uses to represent the condition of virtuality, in which there are no distinctions between spatial and temporal phenomena.⁶⁸ According to him, the tendency of

⁶⁴ Novak, “Liquid Architectures of Cyberspace,” 225-54.

⁶⁵ Novak, “Liquid Architectures of Cyberspace,” 225-54.

⁶⁶ Novak, “Liquid Architectures of Cyberspace,” 225-54.

⁶⁷ Novak, “CV Essay.”

⁶⁸ Novak, “Marcos Novak Interview.”

virtuality is to transform what one knows as familiar and alien.⁶⁹ Novak combines both and explores the changing qualities of sensory modalities. He calls these “data-driven form” explorations. It means that he uses data from human genomes and scans them in search of patterns that can be transformed into architecture.⁷⁰ Novak transforms those data into form before turning them into behavior. One sees, then one interacts. This is when the familiar and the alien come together. It is the merging of virtual and real. Novak defines it as “digital architecture.”⁷¹

“Digital architecture” is then an architecture that happens inside and outside the computer. It is alive; it responds to the environment and to its viewers. And the way it is designed by architects is not by simply giving it shape, but by designing its principles and rules.⁷² Forms are merely a consequence of how the environment is perceived by its viewers.

Principles and rules, or algorithms, end up bringing to cyberspace a new order of illusion. It results in the abandonment of beauty. Tschumi also believes that, with the advent of event, where space and time are noticed by means of information, there is an abandonment of aesthetic qualities in architectural pleasure. According to Joan Richmond’s rereading of Virilio’s *The Aesthetics of Disappearance*, for instance, aesthetics is related to perception, not beauty.⁷³ And by the

⁶⁹ Novak, “Marcos Novak Interview.”

⁷⁰ Novak, “Marcos Novak Interview.”

⁷¹ Novak, “CV Essay.”

⁷² Novak, “CV Essay.”

⁷³ Joan Richmond, “The Panopticon, Picnolepsy, and Implosion: The Aesthetic of Disappearance and the Picnoleptic-Kairotic Moment,” at University of Texas at Arlington website: <http://www.uta.edu/english/cgb/ baud/simsim/disappearance.html>, accessed 10/25/2004. Joan Richmond is a participant of the Collab-1 Project: CyberWars at the University of Texas at Arlington, where she is working on her PhD in rhetoric and critical theory. She is a full-time instructor at Tarleton State University, Ohio, and her field of research is how Heidegger made Nietzsche accessible to postmodern theorists, such as Derrida, Foucault, Deleuze and Guattari, Lyotard, and Baudrillard.

immersive quality of telepresence, virtual worlds only exist through the quality of perception. The aesthetics of disappearance means that, in cyberspace, perception only exists as the perception of the non-representable.⁷⁴ Representability lies in appearance, not reality. Reality is the non-representable. It is not about the perception of the real/ideal, but that of the simulated, the representable.

Pierre Lévy summarizes: “Rather than distribute a message to recipients who are outside the process of creation and invite them to give meaning to a work of art belatedly, the artist now attempts to construct an environment, a system of communication and production, a collective event that implies its recipients, transforms interpreters into actors, enables interpretation to enter the loop with collective action.”⁷⁵ The artist can here be extended to the architect as well. This collective action is nothing but the confrontation between space and use.

In a virtual domain, space and use are variables. There is a disjunction between those two terms.⁷⁶ According to Bernard Tschumi, the dynamics of those disjunctions is what defines architecture today.⁷⁷ And according to Virilio, disjunction happens in the realm of communication. Since architecture today is informational and about communication, the aesthetics of the construction of cyberspace is a dissimulation in the effects of communication, a dissimulation of transfer and transmission of information.⁷⁸ Architecture thus becomes the structure of relationships, of connections, of associations between information, between new principles. This evolution of concepts depends on the involvement of the spectator. One’s

⁷⁴ Richmond, “The Panopticon, Picnolepsy, and Implosion.”

⁷⁵ Lévy, 335.

⁷⁶ Bernard Tschumi, introduction to *Architecture and Disjunction* (Cambridge: The MIT Press, 1994), 2-23.

⁷⁷ Tschumi, 2-23.

⁷⁸ Paul Virilio, *The Aesthetics of Disappearance* (France: Semiotext(e), 1991), 74.

involvement is what generates information. It is not only about the object, but also about behavior.

The next step in this study brings into focus the postmodern thoughts on cyberspace. Scholars in the field of art and technology, architecture and science, have pointed out various manifestations of virtual reality in cyberspace. However, their approach emerges either from the field of phenomenology or from poststructuralism. The question is whether or not either discipline provides the vocabulary and structure adequate to fully discuss Novak's work.

THE EVIDENCES OF POSTMODERN PHILOSOPHY

Fig. 16. Model 3 of *Eduction: The Alien Within*.

© Novak and Lutyens, in *Arch'it electronic magazine* (28 Dec. 2001).

When we enter cyberspace we will expect to feel the mass of our bodies, the reluctance of our skeleton; but we will choose to control with our eyes, fingertips, lips, and tongues, even genitals.

Marcos Novak, *Cyberspace: First Steps*.

Novak's architectural approach to cyberspace creates new aesthetic forms that enable new forms of action. By analyzing this manifestation of cyberspace in detail, I recognized a poststructural creation in the new aesthetic forms, as well as phenomenological approach to art and space in terms of the new forms of action. Thus, phenomenology and poststructuralism are here identified as the most relevant postmodern thoughts on cyberspace.

The Phenomenologists

Phenomenology is about the actual content of lived experience.¹ The importance of considering it in the study of cyberspace is that it describes the experience belonging to consciousness. There is no concern for the actual, external, existence of objects. The

¹ James M. Thompson, ed., "Existentialism and Phenomenology," *Twentieth-Century Theories of Art* (Ontario: Carleton University Press, 1995), 371-3. James M. Thompson is an Associate Professor of Art History and Philosophy at Carleton University, in Canada. His focus is in aesthetics and theory of criticism.

intermingling of the bodily presence and space of lived experience enables an opening to sensory approach and revelation of a new reality in architecture: the virtual reality of cyberspace.

One unprecedented figure relevant to this phenomenological approach to architecture is Martin Heidegger, because of his idea of human existence as “being-in-the-world.”² To him, the analysis of human behavior should begin with such experience. For this reason, ontology becomes extremely relevant in the study of cyberspace, since it has to do with the experience of things and not with the things as such. This means that one should absorb from cyberspace a new sense of “being” before questioning the nature of the space itself. Heidegger’s “being of beings” is now stretched to a virtual domain. Heidegger, for instance, uses the phenomenon of everydayness to state that one is not a spectator in the world, but one is oneself in the world. This is how he came to the concept of the being of beings. And this is exactly where Heidegger’s term “being-in-the-world” should be revisited.

Considering that the experience of “being” varies from one individual to another, ontology, then, becomes interpretive. In cyberspace one makes a new sense of oneself and of the world around us by learning how one lives in it. Therefore, this new world should be intelligible through its context and through one’s participation. One must think of how one perceives a virtual environment, how one acts in this virtual world, and how one is oneself in this very new world. In the light of this new development of cyberspatial worlds, especially Novak’s creations, shouldn’t one think of “being-in-the-world” as now “being-in-the-virtual-world”?

² David Woodruff Smith, “Phenomenology,” at online Stanford Encyclopedia of Philosophy (2003): <http://plato.stanford.edu/>, accessed 10/17/2004. David W. Smith is a Professor of Philosophy at Stanford University. His area of research is in Phenomenology, Ontology, Philosophy of mind, and Philosophy of language.

Neil Leach believes that, in virtual reality, the corporeality of the body is just as important as the experience of space.³ This corporeality stands for the “being” aspect of the viewer. So, according to Leach, regarding the perception of cyberspace, being and experiencing appear with the same degree of importance. Heidegger, on the other hand, believed that the experience of art and space emerges from out of the experience of place itself, of its locality.⁴ Place is defined by its locality, while space has to do with the individual’s phenomenological awareness.⁵ He states that space is not distinguished by its various places, but by one’s sense of “being.” The corporeality of the body is not as relevant as it is for Leach. However, both share the same opinion that space and being are linked.

Heidegger also believed that the phenomenological essence of space/place depends upon the nature of its boundary. According to him, space is something that has been made room for, something confined within a boundary.⁶ That is, a boundary is not a limiting factor over space; it is actually a point of origin. It is where something begins its physical existence.⁷ In this vein, Kathy Rae Huffman writes: “Network communication and navigation now transcend the political understanding of boundaries and a travel route that can also be understood as the trajectory of movement into experiential trails of electronic memory. The radical shift of understanding towards the idea of media volume is a revised understanding of space.”⁸ It is clear,

³ Neil Leach, ed., *Rethinking Architecture: A Reader in Cultural Theory* (New York: Routledge, 1997), 81-160.

⁴ Martin Heidegger, “Art and Space,” *Rethinking Architecture: A Reader in Cultural Theory*, ed. Neil Leach (New York: Routledge, 1997), 121-4.

⁵ Heidegger, “Art and Space.”

⁶ Martin Heidegger, “Building, Dwelling, Thinking,” *Poetry, Language, Thought* (New York: Harper & Row, 1971), at Pratt Institute website: <http://pratt.edu/~arch543p/readings/Heidegger.html>, accessed 10/28/2004.

⁷ Heidegger, “Building, Dwelling, Thinking.”

⁸ Kathy Rae Huffman, “Video and Architecture,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 135-9.

with this statement, that the nature of boundaries in cyberspace depends on technology. Since computer networks and subsequent technologies seem to eliminate the need for physical presence and introduce the reality of telepresence, the act of consciousness is what ends up directing one's existence in a cybernetic world. Thus, with the use of advanced virtual reality technology, one's physical reality is surpassed by the achievement of perceptual and phenomenal realities.⁹ Today, it is all about individual experience, as much as it is a matter of perspective. What will differentiate one's perception, though, is actually the difference in perspective. The individuality lies in each mind that apprehends a different perspective.

Therefore, the attributes of cyberspace are, to a certain extent, also a manner of being-in-the-world, of perceiving this world. There is no real difference between being-in-the-world and being-in-a-virtual-world, since, in both cases, particular atmospheres incite different responses from different bodies. Consequently, sensing becomes the way of coexisting in cyberspace. After all, coexistence lies in sensible aspects, such as hearing, seeing, and feeling.

Novak affirms that cyberspace is extremely physical.¹⁰ To him, being inside information means that one's entire body is immersed. With his "Dancing with a Virtual Dervish," Novak presents an example of a project in which one individual, through the use of datagloves, has a distinct sense of caressing a lover's body.¹¹ New aspects of physicality and tactility were then experienced through what he called dis/embodiment.¹² This term stands for an alternative state of embodiment in informational media. Without the slash, disembodiment would stand for

⁹ Michael Benedikt, ed., introduction to *Cyberspace: First Steps* (Cambridge: The MIT Press, 1992), 1-25.

¹⁰ Marcos Novak, "Architects or Worldbuilder?: Interview with Marcos Novak," interview by Knut Mork, *The Write Stuff Interviews* (1995), at ALTX Online Network: <http://www.altx.com/int2/marcos.novak.html>, accessed 10/1/2004.

¹¹ Novak, "Architects or Worldbuilder?: Interview with Marcos Novak."

¹² Novak, "Architects or Worldbuilder?: Interview with Marcos Novak."

dissolution, disintegration, whereas with the slash, it means change, transformation, refiguration.¹³ Dis/embodiment is nothing but another term for being-in-a-virtual-world.

Another important phenomenologist known for considering the bodily experience in the field of perception is Maurice Merleau-Ponty. In his *Phenomenology of Perception*, from 1945, Merleau-Ponty defines phenomenology as the method of describing nature through the study of the essence of human experience.¹⁴ To find those essences, he focused on the experience of one's own body and the significance of this body in one's activities. He discovered two essences: perception and consciousness. This differs from Heidegger's approach to phenomenology since Merleau-Ponty strictly addresses one's experience of the body. Merleau-Ponty was interested in the spatiality of the body and in its mobility. The body functions as a potentiality of movement in the perceptual space. It invites one to action. By responding to this invitation one enjoys the space through gearing one's body to the world.¹⁵ Experience then becomes existential.

As a result, in cyberspace the body engages in a sensory investigation, where one performs an action in the environment. Samantha Longoni intelligently sums it up when she says: "It is as if all the sensory properties constituted one, all powers of one, and the body of their action, their synergy, being not only a sufficient but also a necessary condition for the perception of the digital world."¹⁶ The powers of one illustrate the idea of unity, of oneness. The idea of oneness thus becomes an important key notion in perceiving a virtual space in this system of thought.

¹³ Novak, "Architects or Worldbuilder?: Interview with Marcos Novak."

¹⁴ Smith, "Phenomenology."

¹⁵ Samantha Longoni, "A Location Called Cyberspace," in *The Body Is Back: Communication in Cyberspace* (Master's Thesis, Media Communication Studies Program, 1997): <http://www.newschool.edu/mediastudies/sam/ch1b.html>, accessed 10/17/2004. Samantha Longoni is a guest lecturer in MFA Digital Art and Technology at Parsons School of Design, and an on-line instructor of Media Theory for the Media Studies Department at The New School, New York.

¹⁶ Longoni, "A Location Called Cyberspace."

Following this idea, one cannot help but think of Paul Virilio's book *Art of the Motor*, from 1995, in which he refers to Merleau-Ponty's idea of real environments being influenced by networks, by the possibility of reconditioning the real world by a virtual reality. According to Virilio, the cybernetic environment has become a reality. Virilio uses Merleau-Ponty's thoughts on the process of information to conclude that cyberspace is seen as another dimension, a simulated one.¹⁷ Even though simulated, this reality represents a new dimension to the normal dimensions of human activity.¹⁸ The dimension is now informational. It is all about information, about being "on time." Cyberspace actually emerges from the observation that information is only of value if it is delivered fast. It is what Virilio calls "cybernetic space-time."¹⁹ Information thus becomes the last dimension of space/time/matter. And what Merleau-Ponty's phenomenology of perception does, still according to Virilio, is to restrict the use of space to a world of sensory experience. The limits of space are finally overcome by one's use of the senses.

The Poststructuralists

The use of the senses, in cyberspace, is externalized through one's simulated body. And it is through simulation that one deals with the metaphoric representation of space, thus with its liquidity. It is only through simulation that one can overcome the limits of space. Liquidity, or fluidity, is the metaphor used to dismantle those limits. The structure of this metaphorically constructed cyberspace is dismantled such that its spatial configurations constantly change. The

¹⁷ Paul Virilio, *The Art of the Motor* (Minneapolis: University of Minnesota Press, 1995), 135. One passage from Merleau-Ponty extracted from the book, which seems to illustrate the idea of another dimension, is: "Functional thoughts have become a sort of absolutely artificial construct that has human creation deriving from a natural process of information, but this is itself modeled on the man-made machine."

¹⁸ Virilio, *The Art of the Motor*, 138.

¹⁹ Virilio, *The Art of the Motor*, 140.

objective is to find a space where one can experience an architecture that breathes, pulses, and fits the interests of the beholder, as Novak would say.²⁰

Now, regarding the presence of the body in cyberspace, one must agree with Simon Penny and consider it an oversimplification to claim that the body is not present in virtual reality. According to Penny, the body is only partially present in virtual reality, since the sensorial feedback is exclusively visual.²¹ It is imperative then to assume, after this statement, that Penny sees, in virtual reality technology, a replacement of the body with a body image. He says: “In VR [virtual reality], the body is broken into sensor and effector components, a panoptical eye, and a slave body that ‘works’ the representation but is invisible within it.”²² The possibility of being at any place at any time is concrete; it is “real.” The physical movement through space is now replaced by image and information.

Novak coined a new term for this: the “Pantopicon.”²³ Pantopicon derives from pan + topos, and it represents an inversion of Jeremy Bentham’s centripetal eighteenth-century “panopticon”—where one sees everything from one single place at once—to a new situation of the centrifugal “pantopicon,” described by the condition of being in all places at one time.²⁴ Pantopicon now represents the world of decentralization, found in cyberspace, where the notion

²⁰ Marcos Novak, “Liquid Architectures of Cyberspace,” *Cyberspace: First Steps*, ed. Michael Benedikt (Cambridge: The MIT Press, 1992), 225-54.

²¹ Simon Penny, ed., “Consumer Culture and the Technological Imperative: The Artist in Dataspace,” *Critical Issues in Electronic Media* (New York: State University of New York Press, 1995), 47-73. Simon Penny is a Professor of Arts and Engineering in the Claire Trevor School of the Arts and the Henry Samueli School of Engineering, at University of California at Irvine. He is also an artist and theorist in the field of interactive media art, whose art practice consists of interactive and robotic installations.

²² Penny, 69.

²³ Marcos Novak, “TransTerraForm: Liquid Architectures and the Loss of Inscription,” at *CENTRIFUGE* website: http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html, accessed 10/28/2004

²⁴ Novak, “TransTerraForm.” See also Jeremy Bentham, *Works*, IV (Bowring, 1843), 60-4.

of distance—in the realm of space and time—begins to collapse. With this, one’s understanding of territory automatically undergoes fundamental changes.

When the spatial configuration changes, the territory of information then becomes dismantled, displaced. The limits of space are deconstructed. Furthermore, the new technologies used have enabled the disappearance of distances and duration by sending images across the world in real time. According to Florian Rötzer, in cyberspace everything is being manipulated: the world, the people, and the intelligent beings.²⁵ In this manipulation process, one is connecting one’s senses and one’s body to the computer. Just like in Novak’s “Eduction: The Alien Within” project, a crossbreeding of real and virtual takes place.

By manipulating the space, architecture then begins with the collection of information, as Michael Benedikt would say.²⁶ Space then, as an object of information, is meant to be read.²⁷ Consequently, architecture deflects from being an object of physical attractiveness and visual qualities.²⁸ Paul Virilio believes that there is now a new order of illusion, since the object is only assimilated through the sending of information.²⁹ And according to Novak, “Digital technology has brought a dissociation between data, information, form, and appearance.”³⁰

Due to this dissociation of information, the elements of cyberspace, so far identified as space, time, and process, ought to be considered both continuously and discontinuously.³¹ There

²⁵ Florian Rötzer, “Virtual Worlds: Fascinations and Reactions,” *Critical Issues in Electronic Media*, ed. Simon Penny (New York: State University of New York Press, 1995), 119-31.

²⁶ Benedikt, 1-25.

²⁷ Benedikt, 1-25.

²⁸ Paul Virilio, *The Aesthetics of Disappearance* (France: Semiotext(e), 1991), 76.

²⁹ Virilio, *The Aesthetics of Disappearance*, 101.

³⁰ Novak, “Liquid Architectures of Cyberspace,” 225-54.

³¹ Novak, “Liquid Architecture of Cyberspace,” 225-54.

is a disjunction between the use and the form of those elements. According to Tschumi, in architecture—and one can easily say in cyberspace as well—there is no relationship between the concept of space and the experience of space.³² To him, architecture is, by nature, disjoined, dissociated.³³ This nature now generates a new order of illusion, of a process of observing. That is when, in this context of displacement, cyberspace becomes deconstructed. Architecture now displaces context; it produces dislocation. Novak calls it “dematerialized architecture.”³⁴

To introduce this idea of dematerialized architecture, I would like to refer to Tschumi’s rereading of Derrida’s term as a means to illustrate how cyberspaces can be associated with deconstructed spaces. According to Tschumi, in architecture, deconstruction manifests itself through asymmetry, fragmentation, distortion, and the constant debate between form and function.³⁵ Deconstruction then becomes part of a process of dissolving limits of architecture. Space is conceived in a non-linear process of design. For this reason, the work of Novak can easily be compared to a process of deconstructivism in cyberspace. Novak uses algorithms as processes of creating metaphors with which to design new territories. Those metaphors disrupt the linear process of design, thus dissolving the limits of cyberspace.

Here Novak describes this use of algorithms in experimenting with architectural compositions:

Using my interpretation of Dawkins, Shannon’s information theory, the idea of Pareto Optimality from economics, and my own observations about form, I wrote such an algorithm, first for two dimensional designs, then for three. A population of undifferentiated forms would undergo random mutation, be tested against an information-theoretic measure of beauty, which would be its fitness function, and

³² Bernard Tschumi, introduction to *Architecture and Disjunction* (Cambridge: The MIT Press, 1994), 2-23.

³³ Tschumi, 2-23.

³⁴ Novak, “Liquid Architecture of Cyberspace,” 225-54.

³⁵ Tschumi, 207-13.

go on to reproduce or not depending on whether the information content of each individual and of the entire system was increased or not. This was repeated for tens of thousands of cycles. Amazingly, the results came back as recognizable, elegant, even beautiful compositions. As far as I know, these were the first such experiments in architecture.³⁶

Those experiments in architecture, or compositions in cyberspace, are the metaphoric manifestations of fluid spaces. In this territory of information, the use of metaphors is an unavoidable aspect of language to be considered. Poststructuralism is, then, particularly relevant to this study.

In this view, architecture is constantly revealed to be on the verge of acquiring new meanings. By using metaphors, it means that the allusions to the material world end up bringing abstractions to a mutual understanding.³⁷ The lack of materiality in cyberspace is occupied by symbols, by metaphors.³⁸

Those metaphorical allusions, here applied to the understanding of cyberspace, are nothing but a reinterpretation of what Derrida once called deconstructed language. If one thinks of cyberspace as a new space of information, one must consider language as its form of manifestation. How else could information be exchanged if it were not for language? In this new world of information, then, architecture becomes dematerialized. Novak, for instance, uses algorithms as his language. Architecture becomes informational, becomes an algorithmic construction, and, thus, liquid.

Not only does the metaphorical transformation of the physical world into images pertain to the reality of cyberspace, but it also presents a simulation that goes on beyond the interface.

³⁶ Marcos Novak, "CV Essay," at *CENTRIFUGE* website:
http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html, accessed 10/10/2004.

³⁷ Peter Anders, "Anthropic Cyberspace: Defining Electronic Space from First Principles," *LEONARDO* 34 n.5 (Cambridge: The MIT Press, 2001): 409-16.

³⁸ Anders, 409-16.

The interface of simulation allows the play of images between metaphor and the world represented. Therefore, the metaphor of cyberspace is a virtual territory that only exists following a pre-existing code of connectivity, that is, a pre-existing group of images set up in a non-linear structure of communication. This structure is thus the territory of information, where spatial configurations are constantly changing.

Furthermore, it is important to point out that new ways of representation suggest new ways of understanding. After all, virtual spaces are nothing but phenomena of consciousness. It is almost as if virtual worlds provided the soul with new bodies—simulated bodies.³⁹ As Marvin Minsky would say: “in order to communicate [in virtual worlds] one must know how to build structures and activate processes inside another person’s brain.”⁴⁰ The process of viewing then progresses from the metaphysical or psychological act towards a perceptual understanding of physical experience.⁴¹ For this, one must make use of the senses.

In summary, poststructuralists see cyberspace as fragments, as constructed metaphors, while the phenomenologists see unities in it. Novak’s works exemplify both approaches coming together. They represent unity in the joining of mind and body—the oneness quality—to perceive and immerse in cyberspace, and it is fragmented in the construction of the structure of that same space. Therefore, this thesis suggests, after analyzing this manifestation of cyberspace in detail, that Novak seems to be engaging in new processes of creating realities.

³⁹ Peter Weibel, “Virtual Worlds: the Emperor’s New Bodies,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 207-23.

⁴⁰ Marvin Minsky, “The Future Merging of Science, Art, and Psychology,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 229-33. Marvin Minsky is a Professor of Media Arts and Sciences and of Electrical Engineering and Computer Science, at the MIT. His research has led to theoretical and practical advances in artificial intelligence, and cognitive psychology. He was also one of the pioneers of intelligence-based mechanical robotics and telepresence. He designed and built some of the first mechanical hands with tactile sensors, visual scanners, and their software and computer interfaces.

⁴¹ Kathy Rae Huffman, “Video and Architecture,” *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 135-9.

CONCLUSION

Fig. 17. Model 4 of *Education: The Alien Within*.

© Novak and Lutyens, in *Arch'it electronic magazine* (28 Dec. 2001).

Computer network, in short, responds to our deep psychological desire for transcendence—to reach the immaterial, the spiritual—the wish to be out of the body, out of the mind, to exceed the limitations of time and space, a kind of biotechnological theology.

Roy Ascott, *Ars Electronica: Facing the Future*.

The work of Marcos Novak has been presented here as the most accurate example of architecture embracing new technologies to enable the creation of cyberspace. After all, cyberspace is architecture, as Novak insists.¹ With the use of new electronic technologies and digital media, architecture finally broke away from its traditional discourse of physicality. Architecture, which is now tempered by a reality full of variations of visual qualities and internal contents, has also been conceived for a virtual domain.

The work of Novak takes the individual into a cybernetic structure, where humans and intelligent machines are united. Information is what enables this crossbreeding between the

¹ Marcos Novak, “Liquid Architectures of Cyberspace,” *Cyberspace: First Steps*, ed. Michael Benedikt (Cambridge: The MIT Press, 1992), 225-54.

reality of the individual and the virtuality of the structure. His work, then, tries to define the content of experience in this world.

The study of phenomenology, thus, seemed appropriate, since it is actually about the intermingling of the bodily experience and the space of lived experience. And in this state of being, of experiencing the virtual world, one's body is replaced by one's own image of the body. With the outset of information in cyberspace, one finds an infinite possibility of being anywhere at any time through one's own image. Image and information are what ultimately travel through space. However, it is one's senses that control this traveling of image and information.

A junction and disjunction of images, metaphors, and simulations, all contributing to the dismantling of limits, form this territory of ubiquitous experience. And it is upon this dematerialization that architecture becomes liquid. Thus, the study of poststructuralism was inevitable.

Therefore, creating architectures that are liquid means that spaces are being created to supplant the physical world and to introduce new sensations to individuals. Principles of phenomenology and poststructuralism are important for the analysis of this new reality Novak attempts to create. Nevertheless, both disciplines only discuss part of Novak's statements and purposes.

The “Visionary Architecture”

In many ways, Novak assimilates modernist theories in his utopian beliefs. His concern is not restricted to structure alone. According to Andreas Huyssen, “Modernism was characterized by a strong denial of the past because the modernist movement assumed the past to be controlled by a dominant class and its view of the world. This presupposition manifested itself specifically in the realm of architecture as an attempt after World War I and the Russian Revolution to rebuild Europe in the image of the new, and to make architecture an essential part of what was perceived

by the modernists as the renewal of society. Rational design was demanded for a new, rational society.”² The modernist utopia was a fantastic view of an ideal world launched by the use of new technologies. Novak also wants a new world. He never made it clear, though, that this world would be “ideal.”

Now, according to Roy Ascott, this new world is, in fact, a parallel of constructed realities, of universes of discourse.³ Novak’s metaphor for this process of creating realities is “worldmaking.”⁴ The difference between the modernist utopia and Novak’s ambitious attempt of “worldmaking” is that the first still relies on visual and compositional aspects—as formal qualities—to achieve universal and ideal qualities, whereas Novak’s creations establish new ways of perceiving space.

Consequently, one can talk about a constant, intense desire of refigured embodiment, of changing realities.⁵ Virtual reality is seen as a transient, ephemeral construct. So, to construct one’s reality is also to enter the reality of others. In 1994, with his *Understanding Media: The Extensions of Man*, Marshall McLuhan suggested that during the mechanical ages man had extended his body in space.⁶ Today, after more than a century of electric technology, he has

² Andreas Huyssen, "Mapping the Postmodern," *New German Critique* n. 33 (Fall 1984): 5-52. Andreas Huyssen is the Villard Professor of German and Comparative Literature and Director of Columbia University's Center for Comparative Literature and Society.

³ Roy Ascott, "Gesamtdatenwerk: Connectivity, Transformation, and Transcendence," *Ars Electronica: Facing the Future*, eds. Timothy Druckrey with Ars Electronica (Cambridge: The MIT Press, 1999), 86-9.

⁴ Marcos Novak, "TransTerraForm: Liquid Architectures and the Loss of Inscription," at *CENTRIFUGE* website: http://www.mat.ucsb.edu/~marcos/Centrifuge_Site/MainFrameSet.html, accessed 10/28/2004. See also Nelson Goodman, *Ways of Worldmaking* (Indianapolis: Hackett, 1978). Nelson Goodman was an American philosopher who thought of his work as belonging to the mainstream of modern philosophy. He proposed to substitute his own structures of several symbol systems for the structure of the world, the structure of the mind, and the structure of concepts. The symbol systems of the sciences, philosophy, the arts, perception, and everyday discourse thus constitute the “ways of worldmaking.”

⁵ Ascott, 86-9.

⁶ Marshall McLuhan, introduction to *Understanding Media: The Extensions of Man* (Cambridge: The MIT Press, 1994), 1-4.

extended himself into a global embrace, eliminating the order of time and space.⁷ And still according to Ascott, one's perception of space and time is only an aspect of an undivided whole constructed by an infinity of separate realities.⁸ Virtual reality then functions as a medium into those realities and so it represents a step forward, bringing us closer to a social world where the symbolic and the real merge. McLuhan continues: "Rapidly, we approach the final phase of the extensions of man—the technological simulation of consciousness—when the creative process of knowing will be collectively and corporately extended to the whole of human society, much as we have already extended our senses and our nerves by the various media."⁹ He essentially suggests that our responsibility, as social beings, extends to a global level rather than to ourselves alone. Therefore, one can assume that, after information technology, we have become aware of our actions on a global scale, just as we do it in our own limited physical realm.

However, Novak has not shown any concern in this global level. He seems to have been restraining his studies to the manifestations of one's mind in the realm of his/her own body. In this sense, his creations are still very experimental and haven't yet been conceived for an extended medium, such as the Internet. And considering that the Internet, today, stands for a global community, or a place where social interaction, cooperation, and shared responsibility—as McLuhan would say—take place, we can imply that Novak is certainly missing on this step forward.

Consequently, one must conclude that Novak's architectures do nothing but attempt to escape the confines of a limiting reality, where the joining of mind and body dictates what is to be

⁷ McLuhan, 3.

⁸ Ascott, 86-9.

⁹ McLuhan, 1-4.

perceived as real. This is what he calls “visionary architecture.”¹⁰ It means simply that he sees cyberspace as a virtual laboratory, where the production of dematerialized architecture in the form of principles, or algorithms, represents his new architectural visions. As much as it sounds delusional, it also brings a new purpose to architecture. Architecture becomes informational. Novak completes: “Today, we are witnessing a dislocation of architectural terms, such as space and action, form and function; calling attention to the disappearance of functionalist theories and to the normative function of architecture.”¹¹

¹⁰ Marcos Novak, “Liquid Architectures of Cyberspace,” 225-54.

¹¹ Novak, “TransTerraForm.”

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