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Landscapes of ephemeral embrace : a painter's exploration of immersive virtual space as a medium for transforming perception

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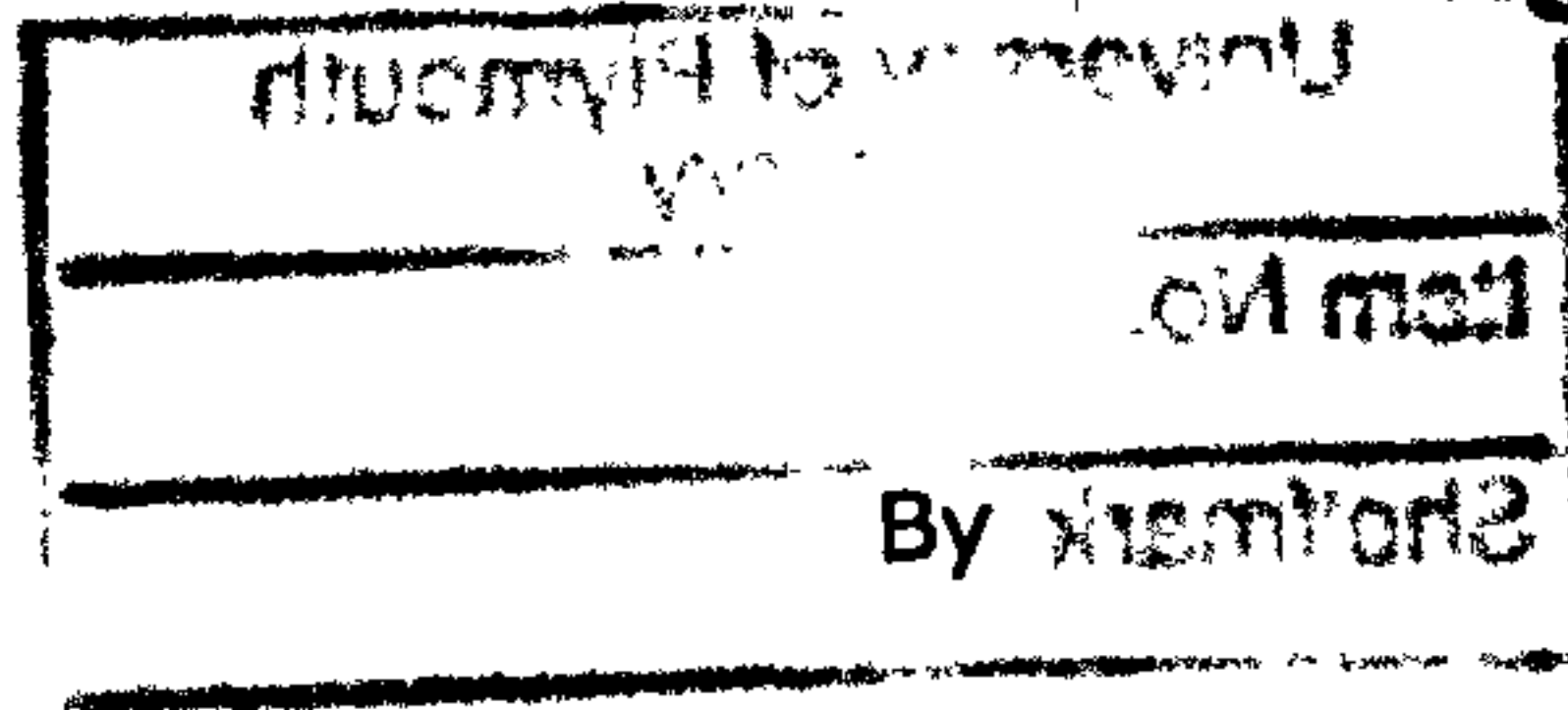
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Landscapes of Ephemeral Embrace

A Painter's Exploration of Immersive Virtual Space

As a Medium for Transforming Perception



Charlotte Adèle Davies

A thesis submitted to the University of Plymouth
in partial fulfillment for the degree of

DOCTOR OF PHILOSOPHY

Department of Computing
Faculty of Technology

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Abstract

The following text has been written to illuminate the research embodied in *Ephémère*, a fully-immersive virtual environment which integrates stereoscopic 3D computer-generated images and spatialized 3D sound, with a user interface based on breathing, balance, and gaze. This artwork was begun when I entered the doctoral program at CAiiA (Centre of Advanced Inquiry into the Interactive Arts) in 1997, and was completed in 1998.

The work *Ephémère* is grounded in a very personal vision, developed over more than 25 years of artistic practice, including, most significantly, painting. *Ephémère* follows on its predecessor *Osmose*, and as such, is a continuation of my efforts to: (i) explore and communicate my sensibility of what it means to be embodied, here now, in the living flowing world; and (ii) use the medium of immersive virtual space to do so, necessarily subverting its culturally-biased conventions to achieve this goal.

The contents of this text are most clearly indicated by its title: *Landscapes of Ephemeral Embrace: A Painter's Exploration of the Medium of Immersive Virtual Space for Transforming Perception*. And further, by its chapter headings: (I) *Context: Rethinking Technology in the "Reign of King Logos"*; (II) *Defining Terms: Key Concepts and Concerns in the Work*; (III) *Origins of the Work in Prior Artistic Practice: Emergence of Key Concerns and Strategies*; (IV) *First Explorations in Immersive Virtual Space: Osmose*; (V) *Continuing Explorations in Immersive Virtual Space: Ephémère*; and (VI) *Strategies and Their Implications in the Immersive Experience*. In this text, I have focused my discussion on artistic intent, rather than on whether I have been successful, for this can only be evaluated with the passing of time.

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Acknowledgments

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Author's Declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other university award. The author was, however, awarded an Honorary Doctorate of Fine Arts from the University of Victoria, British Columbia, Canada, in 2002.

The research embodied in the following text and in the artwork *Ephémère* was conceived by the author. The working relationship between the author and other individuals involved in the research is explained in the text.

During the course of research, the author published numerous papers related to the research, and has exhibited the final artwork *Ephémère* at museums in Canada, the United States and Australia. The author also presented her work through lectures at various institutions and conferences. In addition, during the course of research the artist was a Visiting Artist at the Emily Carr Institute of Art and Design, Vancouver, B.C., Canada (2001-2002) and a Visiting Scholar at the Centre for Design Visualization, University of California at Berkeley (2000-2002).

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- **"Virtual Space."** Space: In Science, Art and Society [Darwin College Lecture Series]. Eds. François Penz, Gregory Radick, and Robert Howell. Cambridge, England: Cambridge UP, 2004. pp. 69-104, illus.
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- **"Landscape, Earth, Body, Being, Space and Time in the Immersive Virtual Environments Osmose and Ephémère."** Women, Art, and Technology. Ed. J. Malloy. Cambridge, Mass.: MIT Press, 2003.
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- 2003-2004, *Ephémère and Osmose, transfigure*, Australian Centre for the Moving Image (ACMI), Melbourne, Australia.
- 2002, *Ephémère and Osmose, BEAP: Biennale of Electronic Arts*, John Curtin Gallery. Perth, Australia.
- 2001, *Ephémère and Osmose, 010101: Art in Technological Times*, San Francisco Museum of Modern Art, San Francisco, CA, USA. Publication.
- 1998, *Ephémère, Ephémère*, (solo exhibition) National Gallery of Canada, Ottawa, Canada. Publication.

Lectures:

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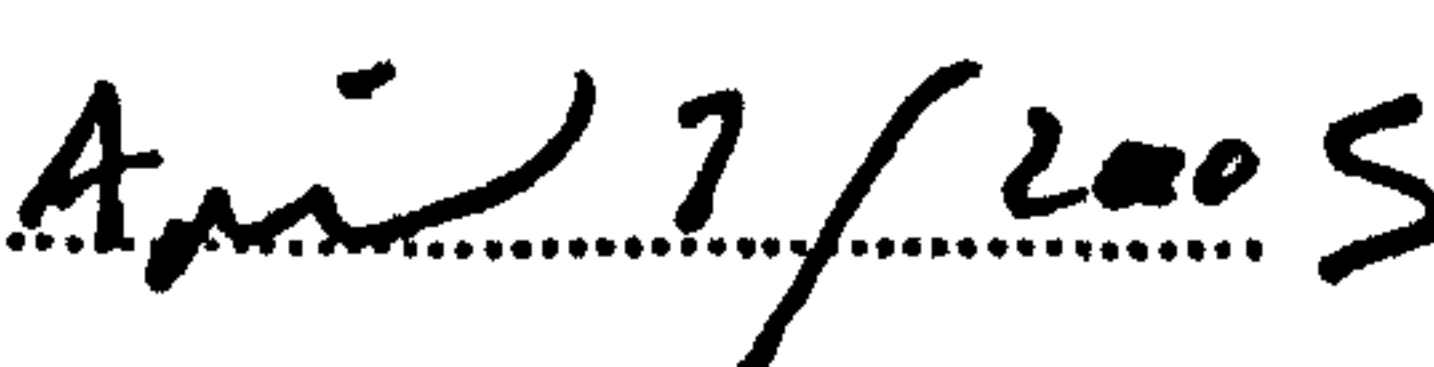
- Invited Speaker. Distinguished Visitors Lecture Series, School of Art and Design, University of Michigan. Ann Arbor, Michigan, USA.
- Invited Lecturer. Centre for Digital Arts and Experimental Media, University of Washington. Seattle, Washington.
- Invited Lecturer. Southern California Institute of Architecture. Los Angeles, CA, USA.
- Invited Lecturer. "Gender, Subjectivity, Embodiment, and the Transformation of Cinematic Practice in Contemporary New Media Art: Exploring the Interactive Work of Char Davies, Toni Dove, and Zoe Beloff." International Conference at the University of Montreal, Québec, Canada. 2003
- Invited Speaker. "Rethinking VR: Key Concepts and Concerns." *VSMM 2003 (Ninth International Conference on Virtual Systems and Multimedia)* Montreal, Québec, Canada.

2003

- Speaker. *Consciousness Reframed, International CAiiA Research Conference, (Centre for the Advanced Inquiry into the Arts)*. University of Wales College, Newport, Wales, UK.
- Keynote Speaker. "The Digital Surface." Tate Britain. London, UK.
- Invited Lecturer. *Plogsterth Visual and Performing Arts Series*. Indiana University/Purdue University, Fort Wayne, Indiana, USA.

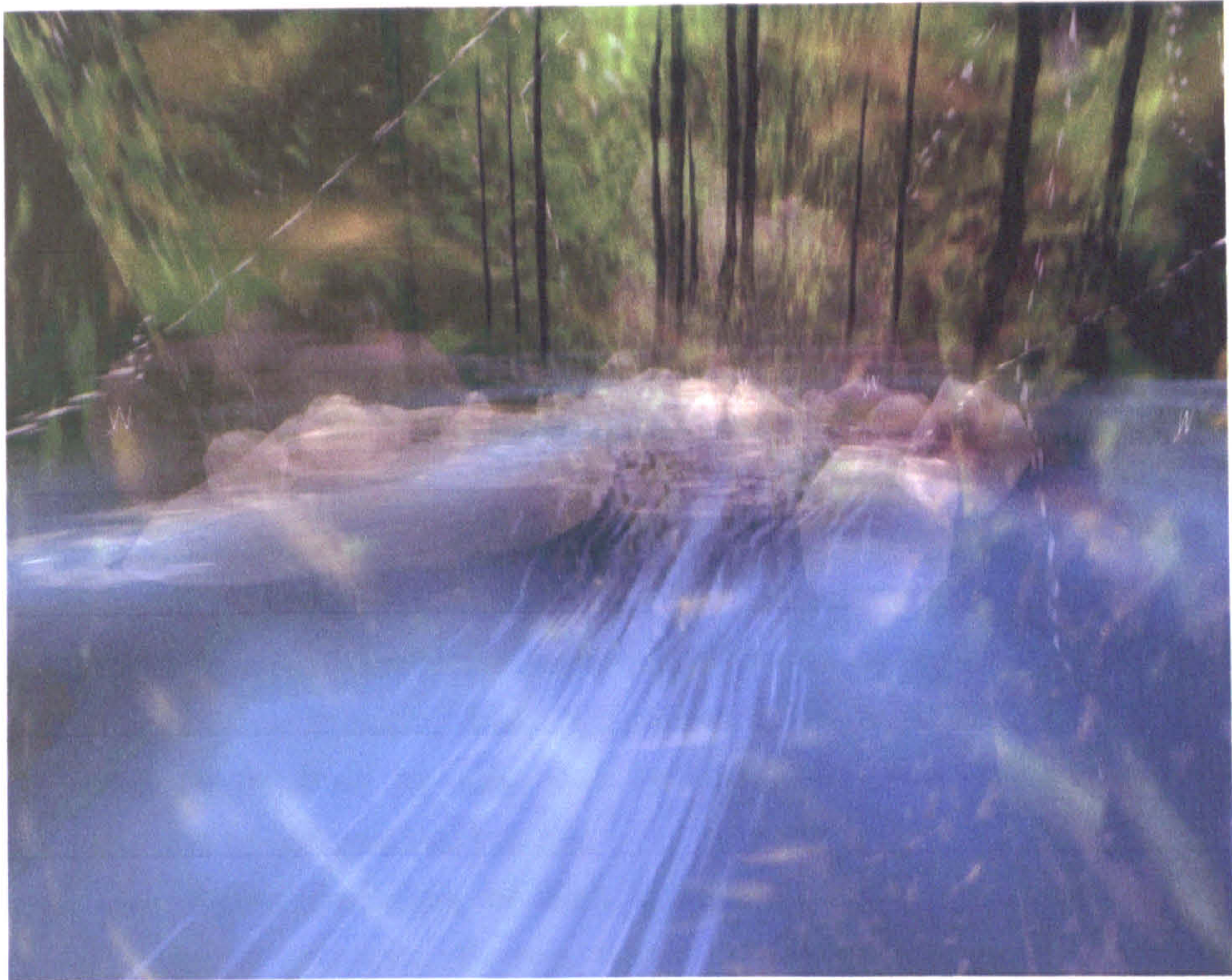
- Invited Lecturer. "Space, Time and Beyond." *5th Biennial International Symposium of Science, Technics & Aesthetics*. Lucerne, Switzerland.
 - Invited Lecturer. *Hochschule für Gestaltung und Kunst Luzern*. Lucerne, Switzerland.
- 2002
- Regent's Lecturer. Centre for Design and Media Arts, University of California at Los Angeles, CA, USA.
 - Invited Lecturer. Centre for Art and Technology, Emily Carr Institute of Art and Design, Vancouver BC, Canada.
- 2001
- Invited Panelist. "From Document to Event - What Will Remain?" *ARS Electronica*, Linz, Austria.
 - Invited Speaker. "Be There Here: Art & Virtual Reality." *SFMOMA Media Arts Council Event* (co-presented by IN/SITE), San Francisco Museum of Modern Art, CA, USA.
 - Invited Speaker. "Virtual Space." *Space: 16th Annual Darwin College Lecture Series 2001*, University of Cambridge, Cambridge, UK.
- 2000
- Invited Speaker. "Perceptions of Space, Time and Sound." *Attraction-Distraction: Perceptual Conditions of Media Art*, Stanford University, San Jose, CA, USA.
 - Invited Speaker. *Visual Arts Faculty Lecture*. Bennington College, Bennington, Vermont, USA.
 - Invited Speaker. "How Real Should We Get?" *Living Architectures: Designing for Immersion and Interaction*, Banff New Media Institute, Banff, Alberta, Canada.
 - Invited Speaker. "Growing Things: The Cultures of Nano Tech, Bio Tech, and Eco Tech Meat Art." Banff New Media Institute, Banff, Alberta, Canada.
 - Invited Speaker. "Creativity, Spirituality and Computing Technologies." *Silicon Valley Conference*. San Jose, California, USA.
 - Invited Speaker. "Slip-sliding Between the Virtual and the Real: Re-presenting Nature in Immersive VR Environments." *Virtual Places - PlaNetwork Conference*. San Francisco, CA, USA.
 - Invited Speaker. "Char Davies - Immersive Virtual Artist." *Design & Visualization Public Lectures*. Center for Design Visualization, University of California, Berkeley, CA, USA.
- 1999
- Keynote Address. *Flashpoint 99 Architecture and Design Conference*. University of New South Wales, Sydney, Australia.
 - Guest Speaker. Queensland University of Technology, Brisbane, Australia.
- 1998
- Invited Speaker. "Osmose and Ephémère." *Media Art Symposium Stockholm (MASS) '98*. Stockholm, Sweden.
 - Invited Speaker. "Landscape, Earth, Body, Being, Space and Time in the Immersive Virtual Environments Osmose and Ephémère." *Emergent Futures: Art in the Post Biological Era*. Valencia, Spain.
 - Invited Speaker. "Landscape, Earth, Body, Being, Space and Time in the Immersive Virtual Environments Osmose and Ephémère." *FutureFusion: Application Realities for the Virtual Age, Fourth International Conference on Virtual Systems and MultiMedia (VSMM)*. Gifu, Japan.
 - Invited Speaker. "Ephémère." *Second International CAiiA Research Conference, Centre for Advanced Inquiry into the Interactive Arts (CAiiA)*. University of Wales College, Newport, Wales.
 - Artist Lecture. "Ephémère and Osmose: Landscape, Earth, Body, and Time in Immersive Virtual Space." National Gallery of Canada, Ottawa, Ontario, Canada.
 - Invited Speaker and Workshop Participant. "Being in Virtual Space." *Science and The Spiritual Quest (Computing)*. Centre of Theology and the Natural Sciences, Berkeley, CA, USA.
- 1997
- Invited Speaker. "Virtual Communities Virtual Worlds." *New Media Minds Forum*, San Francisco, CA, USA.
 - Invited Speaker. "Changing Space: VR as an Arena of Being." *Beyond Shelter: The Future of Architecture, The Graham Foundation*. Chicago, IL, USA.
 - Invited Speaker. "VR as Poiesis: Evolution of the Artist's Work." *8th International Symposium on Electronic Art*. School of the Institute of Chicago, Chicago, IL, USA.
 - Invited Speaker. "VR as Polesis: Seeking Virtual Ground." *Consciousness Reframed: Art & Consciousness in the Post-Biological Era*. 1st International CAiiA Research Conference, Centre for Advanced Inquiry into the Interactive Arts, University of Wales College, Newport, Wales.
 - Guest. "Conversation with Char Davies and Peter Ride." *Barbican Arts Centre*. London, UK.
 - Invited Speaker. "Osmose." *Restructuring Space-Sensing the Future*. Arthouse, Dublin, Ireland.
 - Invited Speaker. "Paradoxes of Being in Immersive Virtual Space: An Artist's Approach to Virtual Reality." *Mary Anne Beckett-Baxter Memorial Lecture Series*. Faculty of Fine Arts, Concordia University, Montreal, QC, Canada.

Signed.....

Date.....

Landscapes of Ephemeral Embrace

A Painter's Exploration of Immersive Virtual Space As a Medium for Transforming Perception



Forest Stream, Ephémère

Digital image of 3-D virtual environment captured in real-time through HMD
during live immersive performance, 1998

***The real voyage of discovery consists not in seeking new landscapes,
but in having new eyes.***

Marcel Proust,
Remembrance of Things Past

Prologue

@ REVERIE: As these words are woven on a laptop screen, intermingled among them - invisible, inaudible to you the reader - are the billowing swells of an autumn wind cascading through tree boughs, flashes of sienna and crimson leaf wildly adrift, and the thud of ripened apples plummeting to earth. I write in a snug log cabin on a Quebec mountainside, immersed in an operatic flux of seasonal transformation: This enduring yet ever-changing *flux*, this flow - what I call "nature" - is the fuel that feeds my work. And this particular landscape, this *place* - a specific intertwining of time and space with its myriad of striving beings - has become my muse, an elusive otherness I seek to approach and understand. I am not talking of some Edenic fallacy here: On the contrary, this land is not pristine by any means, having been cleared in centuries past, logged and re-logged, mined for copper, ploughed and grazed; its meadows rooted with alien species, and its native people, wolves and cougars chased out long ago. Living in the context of such legacy, I am actively working to restore and preserve its biological diversity, so that this land might continue to support a flourishing of life long after I am gone.

Most significantly, in the process of "caring" for this place, it has become *numinous*, and as luminously present in my mind as in actuality. Here, in quiet solitude, the habitually-conceived boundaries between self and world, interior and exterior, human and nature have become porous: this enveloping horizon, these forests and fields, boulders and streams, life flowings and ebbings, bloomings and witherings, flow through me. And, as I wander among their physical manifestations, they in turn appear in my virtual environments like apparitions, in a haunting reciprocity, a *slip-sliding*, between the virtual and the real. Indeed, *Ephémère*, the work behind this narrative, *is* this land - perceived and bodily *lived* by me, then re-interpreted and manifested (the so-called "external" internalized and re-externalized) as art.

As I write now in the tranquillity of dusk, a moon is rising over the ridge and deer are stealthily venturing into the orchards. In this velvet envelope of evening, my sense of sight diminishes and my hearing soon takes over: through the cabin's open windows, I can hear, beyond its electronic murmuring, the rising pulsing shriek of tree frogs and crickets, and in deeper tones, a lowing of owls in the forest mixed with the sonic tread of a trans-Atlantic jet. Meanwhile, my canine companion, a Tibetan Mastiff named Mystic, keeps watch outside, his nose and ears and eyes attentively attune to this vast array of goings-on, to the living presences and absences beyond my ken. He is wholly, keenly, *present*, fully immersed in the midst of it all, while I am apart, gazing at a laptop screen, making words, about making work, about ... being present in what I have to come to understand as the presencing of the present... as he is always: I envy him his full participation - which I, as a modernized human, am denied.

In this context, my work is but an avenue to overcome my habitual estrangement, using the paradoxical medium of immersive virtual space to manifest what I imagine and intuitively sense, beyond the filter of my culture's dualistic and objectifying worldview. As an artist, my work is my way of seeking out the world around me with fresh vision, fueled by a longing to dwell more fully in life's presence, to be held more closely in its ephemeral embrace...

Introduction

This doctoral thesis is founded on the artwork *Ephémère*, a fully-immersive, interactive virtual environment which integrates stereoscopic 3D computer-generated images and spatialized 3D sound with a user interface based on breathing and balance as well as gaze. Originally constructed with custom and Softimage software on a high-end Silicon Graphics Onyx computer, the work was completed in 1998, and reengineered to run on a PC in 2001. As of the time of this writing, *Ephémère* has been exhibited at the National Gallery of Canada (1998), the San Francisco Museum of Modern Art (2001), the Curtin Art Gallery in Perth, Australia (2002), and the Australian Centre for the Moving Image (ACMI) Melbourne (2003-04).

My creative role, as artist, in the making of *Ephémère* can perhaps be described through a filmmaking analogy, as producer, writer, director, and art director: but this analogy is inadequate, since the artwork *Ephémère* arises out of a very personal vision developed through more than 25 years of artistic practice. (I ultimately became the project's executive producer as well, setting up my company Immersence in order to undertake its completion, when corporate support was withdrawn in late 1997.) As in filmmaking however, a large-scale work such as *Ephémère* necessitates drawing on the skills of others: These individuals, who had previously worked under my direction on the virtual environment *Osmose*, were Georges Mauro (3D graphics and animation), John Harrison (custom VR programming), Dorota Blaszcak (3-D Interactive sound design and programming), and Rick Bidlack (sound composition and programming). A discussion of our working relationship can be found in Chapters IV and V. Additionally, technical descriptions of the programming and sound written by John, Dorota and Rick are included in the Appendix.

Before proceeding further, I want to draw attention to the way in which this text is written, i.e., its authorial voice, which is more subjective (and, at times, conversational) than that usually associated with doctoral theses. There is a reason for this, which I would like to make clear now, at the beginning. In the early stages of this thesis-writing process, the nerves in my hands and arms were irreparably damaged: This condition – identified as repetitive stress injury, adverse neural tension, thoracic outlet syndrome, or occupational overuse syndrome, depending on the country of definition – prevents me from typing on a keyboard ever again. It has also, at various times, drastically limited my ability to read, since turning pages is also manually repetitive. Accordingly, out of necessity my approach to the creation of this text had to be radically altered.

Even as the practical research and construction of *Ephémère* continued (since I was directing a team and did not work directly on a computer myself), I had to abandon my theoretical research for several years, because I could neither manually read nor write. During this time I sought medical treatment and stayed away from computers altogether. Eventually, I learned to "write" using voice recognition software, a process which, while time-consuming, enabled me to return to writing – although in a part-time way, because the process of sitting in front of computer caused considerable pain and required that I take breaks of three or four months at a time. Not surprisingly, it has taken longer than anticipated to complete this thesis. Because of this frustrating situation, I nearly withdrew from the doctoral program altogether.

Ultimately however, with my advisers' support, I necessarily decided to change the focus of this text: Whereas I had originally intended to write theoretically in order to contextualize my work within the fields of phenomenology, geo-philosophy and environmental theory, instead I began to write (or rather speak) more personally, locating *Ephémère* in the context of more than twenty years of my own artistic practice. This accounts for the three chapters in the middle of the thesis which have a more autobiographical tone, including the verbally transcribed *Ephémère* "working notes" (which otherwise might have been relegated to the Appendix). More recently, my hands improved to the extent that I was able to begin reading again, and (while continuing to use voice recognition software since typing is out of the question) I was able to begin writing more theoretically, as originally planned. Such writing accounts for the first two chapters in this text as well as the last chapter and my concluding remarks. The integration of these two approaches, one more subjective, the other more theoretical, explains the extended length of this thesis.

Additionally, the very act of *speaking* rather than manually writing has altered the voice of this text dramatically. This is because the spoken word, composed aloud from phrase to phrase with breathing in between, contains an embodied rhythm and a cadence – a lyricism – that is all its own. (This rhythm also affects the grammar, particularly, for example, my use of more frequent commas, inserted when I am pausing to inhale.) Through such rhythm (made even slower by having to clearly enunciate and often repeat each word aloud), the speaker's emotion is amplified as well. This altered voice has accordingly influenced the written style and content of this text, which has become a *spoken narrative*, which integrates theory with practice, intellect with passion. As such, perhaps it is most fitting that this text has a subjective feel, in that a primary intention of my art-practice has been to approach digital technology as medium for exploring and communicating *subjective* experience: Furthermore, given that my virtual environments are known for their affirmation of embodiment, particularly through an interface which relies on breathing, it is also fitting that this text has been composed, not conventionally by hand and eye, but through voice which is, essentially, personal expression via the body's breath.

With that said, I want to point out that this doctoral thesis was originally conceived as a supplementary text to the research manifested in the artwork *Ephémère*. And, as an immersive virtual environment, *Ephémère* is meant to be experienced bodily, in situ, like a swimmer experiences the sea. Just as the sensations of being wet and buoyant can only be known to the swimmer swimming, so the qualities of *Ephémère* can only fully be understood through subjective experience, by effectively (virtually) being immersed within its spatio-temporality. As such, *Ephémère* is intended as a mode of access – not to virtual space – but (most paradoxically) to a perception of one's own being through the technologized medium of *virtual place*...

The text which follows begins with an introductory look at the technology associated with immersive virtual space. In the first chapter, *Context: Rethinking Technology in the "Reign of King Logos"*, I draw attention to the cultural biases in conventional design metaphors used in 3D computer graphics and interactive media, linking them to the technology's origins in the Western/scientific/military/industrial complex and dualist Cartesian worldview. More significantly, in this chapter, I emphasize the need for developing alternative approaches to this technology in order to subvert its biases and communicate other sensibilities. In doing so, I draw on several of Heidegger's concepts, such as *techne* as *poiesis*, nature as *physis* (as *poiesis*), and meditative

thinking as "releasement" (*Gelassenheit*), all of which I will refer to throughout this text. In this context, I also introduce the potential of art-making as a means of transforming perception and questioning conventional technological thinking and its "enframing" of the world.

In the second chapter, *Defining Terms: Key Concepts and Concerns in the Work*, I elucidate my central concerns, beginning with defining virtual-reality, Immersion and the medium of Immersive virtual space itself. Here, I emphasize the need for reaffirming the presence of the subjectively-inhabited physical body in virtual space; and discuss the particular, paradoxical capacity of this medium for transforming perception. Next, because the content of my work references landscape and nature, I define what I mean by "landscape", not only in context of artistic representation, but also as subjectively-experienced actual "place" and "place-making" in terms of dialogue between artist and a particular landscape; and in context of my virtual environments, as *virtual place*. I then examine the problematic meaning of the word "nature", providing a historical perspective on its changing definitions, and explaining my own understanding of nature as flux and becoming. In this context, I further discuss the potential of Immersive virtual environments for transforming our habitual perceptions, particularly in terms of nature. Finally, in the last section of this chapter, I introduce several concepts related to experiential alternatives to the subject/object dichotomy of Cartesian dualism: I do so by drawing on my own personal experience, as well as traditions such as Zen Buddhism and phenomenology in regards to expansive awareness and the interfusion of interior and exterior spatialities, including Merleau-Ponty's concept of "intertwining" of perceiver and perceived. Taken as a whole, the concepts discussed in this chapter are intended to provide the reader with a thorough grounding in the concepts and concerns which underlie my research, as expressed in the title of this text, *Landscapes of Ephemeral Embrace: A Painter's Exploration of Immersive Virtual Space As a Medium for Transforming Perception*.

In the third chapter, *Origins of the Work in Prior Artistic Practice: Emergence of Key Concerns and Strategies*, I explain how my current work in Immersive virtual space is based on prior artistic research across a range of media, most significantly painting. Accordingly, this chapter begins with a discussion of the painter's "encounter with the world" to use a phrase by Merleau-Ponty, in terms of painterly efforts to go beyond dulled, habituated perception in order to see *freshly*. In this context, I also discuss the embodied nature of painterly vision, and explain how exploration of my own extreme myopia has influenced not only my artistic concerns, but also my strategic approach to painting and later, Immersive virtual space. In this chapter's second section, I provide a chronological overview of how the concerns and strategies central to my current work evolved through the practice of painting between 1978 and 1987. This includes my desire to dissolve boundaries and go beyond surface through semi-transparency, and to develop ambiguity in order to evoke rather than illustrate; as well as my increasing emphasis on the subjective, embodied experience of space as all-enveloping, as a spherical expanse the perceiver is within. Also discussed is the emergence of particular "recurring elements" in my work, related to both content and technique, all of which reappear later in *Ephémère*. This includes my developing interest in representing temporality, in terms of presenting the world as flux and flow; and my desire to "interlace" space and thereby collapse Cartesian dualities between interior, exterior, self and world. In this chapter, I also explain how ultimately the limitations of painting (in terms of its rectangular and static planar surface) compelled me to abandon it and seek out 3-D digital technology as a

more effective means of artistic exploration. In the third part of this chapter, I describe my subsequent attempts to transcend the picture plane through 3-D digital imaging technology, explaining briefly my involvement with building the software company Softimage in order to gain access to the technology I sought. I then introduce a series of 3-D digital still images, the transitional *Interior Bodies Series*, focusing not only on technique but on the content of these images as antecedent to *Ephémère*. This chapter concludes with a brief discussion of the paradox of making two-dimensional images with 3-D imaging software, and how this limitation compelled me to seek out yet another medium (i.e., immersive virtual space) in order to continue my work.

The fourth chapter, *First Explorations in Immersive Virtual Space: Osmose*, includes my earliest conceptualization of the medium, as written in the *Osmose* "white paper" where I laid out my primary concerns and envisioned content and strategies for an immersive virtual environment in 1993-1994. Thereafter, I describe the making of this work, including its research context and my creative process while working with a team – all of which is relevant to my later discussion of *Ephémère* because the context, process and individuals remain the same. In this context, I also include chronological excerpts of the *Osmose* working notes and accompanying charts and illustrations. (This too is relevant to *Ephémère*, because much of what I had wanted to accomplish in *Osmose*, in terms of content and interaction, was left aside for future work.) I then go on to describe *Osmose* in terms of its final content, spatial structure, interface, visual sensibility and sound; and narrate an immersive experience within its realms, ending with a brief description of the physical installation. Lastly, I discuss the limitations of *Osmose*, in terms of what I envisioned for the following work which became *Ephémère*. (The reader should note that I have deliberately placed such discussion in the main body of this text rather than relegate it to the Appendix, because the *Osmose* research is foundational to *Ephémère*; and as such, I cannot separate these works except chronologically. Indeed, *Ephémère* is effectively *Osmose* part II, for much of what I had originally intended for *Osmose* was necessarily postponed. The reader should therefore reflect upon the description of my original intentions for *Osmose* accordingly, noting that many of them reappear in relation to *Ephémère* in the following chapter.)

The fifth chapter, *Continuing Explorations in Immersive Virtual Space: Ephémère*, deals specifically with the making of *Ephémère*, building on the *Osmose* research which preceded it. This chapter does not contain a long list of intentions for this work as these were already established in the aforementioned *Osmose* white paper. Instead, this chapter focuses on the research and development of *Ephémère*, using the detailed working notes I kept at the time. (Originally written by hand, these notes, which I transcribed in their entirety using voice recognition software, run over 50,000 words.) For the sake of keeping this doctoral text to a manageable length, I have only included those notes related to concepts and strategies successfully manifested in *Ephémère*. (References to additional ideas have been put aside for future exploration). The value of these notes, and the charts and sketches which accompany them, is that they reveal – written as they are in the immediacy of creation – the evolution of both my ideas and our explorations as they unfolded over the extended process of making the work. In this chapter I also go on to describe the completed work, in terms of its spatio-temporal structure, visuals, sound and so on, narrating an immersive exploration through its realms.

In the sixth chapter, *Strategies and Their Implications in the Immersive Experience*, I revisit many of my original concerns in the context of discussing specific strategies used in

Ephémère. I do so in the context of discussing my intentions and their experiential implications, rather than achieved results, as I do not believe it is the role of the artist to evaluate the ultimate effectiveness of her work. Such discussion includes our deliberate use of a stereoscopic head-mounted display (HMD) with wide field-of-view and low-resolution to enable a solitary and "cloistered" experience of full-body immersion in all-enveloping (as in 360x360-degree spherical) space. In this context, I also explain the importance of three-dimensionally localized sound as a means of intensifying spatial experience. Next, I explain the significance of a user interface based on breath and balance, as a means of grounding the immersive experience in the participant's own subjective body; and, in context of *Ephémère*, our integration of this interface with gaze or "focused attention" as a means of evoking response from elements within *Ephémère* which are reciprocally attentive to the immersant's behaviour. In this context, I discuss my intent to shift the immersant's attitude and behaviour from an action-oriented "doing" to a more contemplative state of "being" in terms of "letting-be" or "releasement" (*Gelassenheit*). I then go on to examine the implications of using semi-transparency combined with transformation, to metaphorically present nature (as *physis*) as a multiplicity of comings into being and passings away; and also "de-objectify" the virtual realm, collapsing subject/object, interior/exterior. Here, I also explain my use of ambiguity to evoke open-ended meaning and implicate the participant's imagination more fully in the work. I then go on to describe the physical installation of *Ephémère* itself, in terms of my strategies for presenting the subjective experience of immersion as public performance, by casting a shadow-silhouette of the immersant's body, and projecting real-time visuals and sounds from the immersant's point-of-view. In the final section of this chapter, I describe the immersive experience itself, including patterns of behaviour and response among immersants, while drawing on psychological research into perceptual/cognitive "deautomatization". In this context, I examine the capacity of immersive virtual space for serving – when its conventions are subverted – as a medium for dehabituating, and thereby possibly, transforming perception. In essence, this discussion returns me to the beginning, in terms of my original intention, as expressed more than a decade ago, to draw attention to what I consider to be the overlooked potential of this medium, as a *techne* of *poiesis*, for enabling a questioning of habitual technologized thinking and returning attention to our embodied *being* in the world.

I have not written a conclusion to this text, because there is none. As Merleau-Ponty says: 'The painter [herself] is a person at work who each morning finds in the shape of things the same questioning and the same call [she] never stops responding to. In [her] eyes, [her] work is never completed; it is always in progress....'¹

The reader should note that I have included footnotes that sometimes contain my own additional comments or extended quotations; the purpose of these footnotes is to provide further background and illumination to the main text. I have chosen to place these at the bottom of each page rather than as end-notes, so that they are more accessible to the interested reader. Lastly, I want to point out that in this text, I have deliberately not entered into discussion with what others have written about my own work: a bibliography of such essays and reviews is included in the Appendix.

¹ Maurice Merleau-Ponty, "Indirect Language and the Voices of Silence", 95.

I

Context:

Rethinking Technology in the "Reign of King Logos"

In view of the grim prospect of the twenty-first century, we are compelled to ask how critics of culture, philosophers, and artists will deal with technologies. How do they resist or act?

. . . in a world where the notion of space has been completely changed through electronic simultaneity, where the computer appears to go faster than the human brain, or where "virtual reality" replaces "reality", how do philosophy, critical theory, or artistic practices deal with those shifts?

Verena Andermatt Conley,
Rethinking Technology

As an artist working with "virtual reality", I am necessarily engaged in the process of formulating a response to Verena Conley's queries through my own ongoing practice. This narrative text regarding the Immersive virtual environment *Ephémère* is my most recent, yet only partial, answer.

As will hopefully become apparent in the chapters which follow, my work in this field is fueled by two agendas, both of which are interwoven to the point where they cannot be separated. My first agenda involves my lifelong artistic quest: namely to explore and express my own experience of being sentient and embodied in this world, *here now*. It was the desire to achieve this more effectively that led me to abandon painting nearly 15 years ago and seek access to the emerging technology of 3-D digital imaging. To this end, in 1987 I became a founding director of a startup software company, Softimage, which arguably went on to become the world's leading developer of 3-D computer animation software. My ensuing experience as insider in that industry led to my awareness of a deep cultural bias in the technology towards reinforcing certain values, based on the traditional Western worldview. With this awareness came an increasing conceptual discomfort that such values did not reflect my own sensibilities. In turn, my unease led to the conviction – and thus, the second agenda or task in my work – that it was essential that the technology be subverted to convey an alternative.

In the following pages, I will introduce the context within which I make my work, in terms of the culturally-biased conventions in 3-D computer imaging techniques. I also discuss several critical perspectives on cyberspace and virtual-reality. I close this section by discussing the need to *rethink* technology, drawing particularly on Heidegger's concept of *techne* as *poiesis* in order to contextualize my own conceptual approach and artistic practice.

1. VR as a Reinforcement of the Cartesian Worldview

As progeny of the western-scientific-military-industrial-patriarchal paradigm, the technology associated with so-called virtual reality is anything but neutral. The origins of 3-D computer imaging, cyberspace and virtual-reality lie deep within the Western philosophical and scientific tradition, whose emphasis on a transcendent reality and whose privileging of mind over body, male over female, and human over "nature", has arguably contributed to an historic devaluation and objectification of the body, women, and animals, and to the ongoing plunder of the natural environment as a resource for profit and human consumption.¹ As Richard Coyne writes in *Designing Information Technology in the Postmodern Age: from Methods Metaphor*, "From a Heideggerian standpoint, the computer is caught up a series of developments dating back to Plato and Aristotle" whereby technology's "essence" is "our will to control, manipulate, manufacture, dissect, reduce, and 'enframe'."²

Given such origins, it should not be surprising if most of the conventional design metaphors (representational *and* interactive) used in virtual-reality and other digital constructions uphold the techno-scientific paradigm, identified by Henri Lefebvre, in *The Production of Space*, as the reign of King Logos: "King Logos is guarded on one hand by the Eye – the eye of God, of the Father, of the Master or Boss, which answers to the primacy of the visual realm with its images and its graphic dimension – and on the other hand by the phallic (military and the heroic) principle, which belongs, as one of its chief properties, to abstract space."³ This view is also expressed by feminist philosophers such as Luce Irigaray, who argue that our culture's privileged status of vision not only constitutes the foundation of Western metaphysics but also a masculine subjectivity.⁴ The metaphors associated with digital imaging technology not only reflect the values of this paradigm but, by default, *reinforce* them.

The cultural bias in 3-D digital imaging techniques

In this context for example, the relentless striving for mimetic representation in 3-D digital imaging (which I became well aware of in a software company whose success depended on anticipating such demands) can be read as a reinforcement of Lefebvre's supremacy of the Eye. Also known as photorealism, objective realism, visual realism, and naturalism, the valorization of such mimeticism not only reflects a belief that more detail is somehow better, it also supports the assumption that the world around us can be described through mathematics, through numerical information.⁵

¹ There is a large body of literature which supports this premise. See for example: Morris Berman, *Coming to Our Senses: Body and Spirit in the Hidden History of the West*; Evelyn F. Keller, *Reflections on Gender and Science*; Caroline Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution*; Val Plumwood, *Feminism and the Mastery of Nature*; Londa Schiebinger, *Nature's Body: Gender in the Making of Modern Science*; and V. Shiva, *Biopiracy: The Plunder of Nature and Knowledge*.

² Richard Coyne, in *Designing Information Technology in the Postmodern Age: From Method to Metaphor*, 270. See my footnote #50 in this chapter for more on this.

³ Henri Lefebvre, *The Production of Space*, 408.

⁴ Luce Irigaray, in Heidi Tikka, "Vision & Dominance: A Critical Look Into Interactive Systems".

⁵ Coyne writes that this "data-oriented" understanding of perception (which assumes that more input to the senses is required in order to "effect a sense of the real") is the approach privileged by most VR researchers – in comparison to a less favoured "constructivist" approach whereby it is thought that realism is *not* to be strived for through "better and more complete sensory input".

The urge towards mimeticism is usually accompanied by a second convention, that of depicting reality as an aggregate of separate objects (what I call the "hard-edged-objects-in-empty-space syndrome") which equally reinforces a Cartesian worldview. This is *not* the same as the mimeticism described above, since even 3D digital images which do not mimic natural appearances but are instead "unrealistic" or abstract, are nevertheless most often represented by hard-edged polygonal models. This convention, in which everything appears separate and space is a void, is a literal expression (and reinforcement) of a dualist worldview. Surprisingly, the implication of this remains unquestioned by nearly every artist and theorist in the field, even though its inherent conservatism can undermine all claims to innovative content.

Conventional 3-D computer graphic techniques based on xyz Cartesian coordinates also reflect a particular concept of space, which Roger Jones in *Physics as Metaphor* describes as a compound metaphor embodying all our concepts and experiences of separation and isolation. According to Jones, the laws of perspective and geometry are a "codified summary of our normal experience of alienation, unique identity and un-relatedness", all of which have been "abstracted, externalized, and synthesized into the cold, empty void we call space".⁶ As Coyne writes, this is Cartesian space, space as "pure extension", "a container without bounds, an infinity of possible positions for random things": it is also "the homogeneous space of relativity and quantum theory, pure mathematical abstraction".⁷ Such space is *not* the intimately lived space of our embodied perceptual experience.

In addition to their foundation in Cartesian space, 3-D digital imaging technologies also rely on artificial perspective (known equally as linear, one-point or Renaissance perspective, or even Cartesian perspectivalism), whereby three-dimensional space is seen to recede to a single vanishing point.⁸ Such representation of space is not based on the subjective experience of the human body,

Coyne also suggests that VR research privileges a "correspondence" view of representation based on the notion that "geometry and numbers provide the basic underpinnings of the world", which underlies research efforts (which I was very familiar with at Softimage) to develop more accurate simulations of perspective as well as various model, lighting and camera properties including colour, texture, surface and edge quality, haze, focus, motion blur and so on. For such researchers, he suggests, the goal will only be reached when it is no longer possible to distinguish between a computer image and "the real thing": Accordingly, he writes, "if virtual reality works, it will vindicate one aspect of Cartesianism – the reduction of space to number". Coyne also explains that the *other* view of representation – i.e., the constructivist, in which "the appreciation of 'realism' has to be learned" and representation is considered to be a cultural construct – is far less privileged in VR research. Here the quest is not necessarily for realism, and the computer, he suggests, "can serve as a medium, like any other..." 181-187. Seen in these terms, my own approach could be considered to fall within the constructivist mode of representation.

⁶ Roger Jones, *Physics as Metaphor*, 61.

⁷ Coyne, 172.

⁸ The difference between Euclidean and Cartesian space is explained by Michael Benedict, in *Cyberspace: First Steps*, as follows: The geometrization of space by ancient Greeks such as Pythagorus and Euclid was "algebraized" (transcribed into analytic form) by Descartes. By linking geometry and algebra through the Cartesian coordinate system, physical space could now be encoded by a trio of numbers. 20.

As David Summers further explains, in *Real Spaces: World Art History and the Rise of Western Modernism*, the significance of coordinate three-dimensional space is "not, as Alberti argued, its proportional relation to the human body ... but rather that the whole visible world is physical, measurable and therefore subject to a certain kind of analysis and representation. This means that the world is subject to one or another measure, and, at a more basic level, the human body, as objective, falls under the same measure (or measures) as the rest of the visible world. Perspective, its internal ambiguities notwithstanding, thus implies that the visible world may be regarded as a notional isometric spatial matrix, any point in which is precisely relatable to any other point. As

our corporeal vision, but rather is a "scopic regime"⁹ that has ostensibly succeeded in becoming the "reigning model of modernity" as Martin Jay describes it, because it expresses the so-called natural experience of sight "valorized by the scientific worldview".¹⁰ Cartesian perspectivalism has been thoroughly critiqued, as Hal Foster writes in the introduction to *Vision and Visuality*, by scholars ranging from Panofsky (who pointed out its conventionality), Heidegger (its "complicity with a subject willed to mastery"), Merleau-Ponty (the "bodiliness of sight"), Lacan ("the psychic cost of the gaze") and Fanon ("its colonialist import").¹¹ It has also been denounced, as Jay explains, as the "privileging of an ahistorical, disinterested, disembodied subject entirely outside the world it claims to know only from afar", a questionable "assumption of a transcendental subjectivity characteristic of a universalist humanism", ignoring our "embeddedness in what Merleau-Ponty liked to call the flesh of the world".¹² Nevertheless, this system continues to be used in 3-D digital imaging by artists and designers alike, with few exceptions.

notional, this matrix is infinite". 527. Furthermore, Summers suggests, Aristotle's concept of the cosmos, as a "great concentric and finite place" with the earth at the center, was negated by the formulation of what Summers' calls "*metaoptical space*, an infinite and therefore centre-less three-dimensional extension within which changes were described, not in terms of the old places and ends, but in terms of the action and interaction of *forces*", a new conception of space, time and force, "which was to become basic to modern technology..." 555. He further explains that "...metaopticality, abstract as it might seem in itself, became the common basis for the institutionalization not only of accurate seeing, but of innumerable new operations and skills within a newly common system, completed as the world of the co-ordinate space of Descartes and the absolute space of Newton, the space which, even if supplanted by the newer physics of relativity, is still the space of modern technology, of computation, prediction and control..." 561. In this context, "the metaoptical grid, the Newtonian space of classical physics, has been not so much superseded as localized, to become the space of technological and institutional prediction and control rather than the space of nature". 24.

According to Summers, "one-point perspective is an abstraction from actual vision in being monocular, and may be regarded as schematic, geometric and conceptual, that is as more or less literally rational, as showing ratios (if from a "point" of view)..." 544. As he further explains in his discussion of "metaopticality" (555-565), when the apex of an angle of vision is regarded as a "pure, notational point", then the "locus of the subject (and the geometry of vision) is extraphysical, notational and abstract". 559.

For interested readers, histories of perspective in Western art include: Hubert Damisch, *The Origin of Perspective*; David Hockney, *Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters*; Martin Kemp, *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat*; Erwin Panofsky, *Perspective as Symbolic Form*; and John White, *The Birth and Rebirth of Pictorial Space*. More recent essays in the context of this discussion include Martin Jay, "Scopic Regimes of Modernity"; and Kay Veltman, "Electronic Media: The Rebirth of Perspective and the Fragmentation of Illusion".

⁹ Christian Metz, *The Imaginary Signifier: Psychoanalysis and the Cinema*, in Martin Jay, "Scopic Regimes of Modernity", 3.

¹⁰ Martin Jay, "Scopic Regimes of Modernity", 5.

¹¹ Hal Foster, preface to *Vision and Visuality*, xiv.

¹² Jay, 10. As Neil Everden writes in *The Natural Alien* (drawing on the ideas of Hans Jonas, in "The Nobility of Sight: a Study in the Phenomenology of the Senses", *The Phenomenon of Life*, New York: Delta 1966), "When we think of reality, it is the evidence of vision that we embrace. Sight, with its simultaneity, neutralization, and distance constitutes a unique influence on the way we think. The fact that all is given simultaneously and in mutual proportion allows us to make objective comparisons. It would seem, then, that our cherished achievement, objectivity, may not be a discovery or a consequence of logical thought so much as the outcome of our reliance on one mode of access to the world. It is only because of this distortion in the ratio of sensory influence that we find ourselves in the world that we do. Vision permits us the luxurious delusion of being neutral observers with the ability to manipulate a distant environment. The gain is objectivity, but the loss is any notion of interrelation between the elements of the visual field.... In a sense, then, the revolution in thinking which we associate with Descartes and others might, with some justification, be regarded not as an intellectual breakthrough but as a deliberate perceptual distortion. As we

So far, I have been speaking only about the conventions in 3-D digital imaging techniques, in terms of still or animated images. When it comes to extending such techniques to include interactivity, there are other conventions as well, equally value-laden and biased towards a particular worldview. Regina Cornwell, for example, writes that in games, interactivity has become "a metaphor for power invested in the individual through skill, speed, efficiency, and control".¹³ Similarly, Heidi Tikka writes that conventional approaches to interactivity not only privilege the male gaze, but also, the decorporealized "punctual, penetrating" gestures of a phallogocentric culture.¹⁴ While this is very apparent in games where the user prowls about shooting guns at virtual enemies (such as those being developed by the US military to attract and identify recruits), most recently, in Texas, hunters are developing a click-and-shoot website which will enable anyone, for a fee, to log on and kill live animals remotely.¹⁵ In general, most interface techniques used in interactive artworks also rely on hand-held devices which encourage users to "do this to that" in order to *make* something happen, a very linear approach to interactivity which further supports dominating and controlling behaviour.

All of the techniques described above, whether representational or interactive, reinforce a deeply-biased approach to the world, reflecting man's stance as "master" of all he surveys.¹⁶ As I have written earlier, this should not be surprising given the technology's origins in Western science and the military, and in an anthropocentric and dualistic philosophical tradition which has effectively reduced the world to "standing-reserve" for human use, to borrow Martin Heidegger's phrase.¹⁷ Indeed, the conventionally-designed virtual environment – where the human subject is reduced to an isolated, disembodied and omnipotent view-point manipulating objects in empty space – could be considered the epitome of Cartesian desire.¹⁸ In its presentation of everything in the field-of-

come to think only with the eyes, so to speak, a different world unfolds, a world which, as it turns out, is much more amenable to manipulation and control than was the older construction from a balance of senses." 84.

¹³ Regina Cornwell, "From the Analytical Engine to Lady Ada's Art", 49.

¹⁴ Heidi Tikka, "Vision & Dominance: A Critical Look Into Interactive Systems". She explains, "In most cases the user commands the system with a pointing tool. We point our way through information space penetrating into the depths of data. The pointing tool links vision and gesture together in a way that bears resemblance to the Cartesian perception of space. The vision-gesture is separated from the physical and sensory apparatus and abstracted to a point in which the perceiving body has lost its corporeality and become a punctual, penetrating object, whose location is designated as a definite coordinate point. As Luce Irigaray has remarked, in a phallogocentric culture, truth and origin can only be accessed through a symbolic act of penetration. ... The pointing tool reproduces the act of penetration in information space." (page numbers unavailable)

¹⁵ *National Post*, (Canada) Nov. 18th, 2004 (Vol.7, no.21) See live-shot.com, which is the current website of the developers. This abhorrent "virtual hunting" project may not succeed, as Texas wildlife officials, animal rights groups and hunting associations are lobbying to make it illegal.

¹⁶ The reader should note that, with the exception of this single sentence, I have deliberately substituted the female pronoun (i.e., *her* and *she*) for the male throughout the remainder of my text. The reason is that nearly all of the texts I have quoted employ the male pronoun by traditional default, a practice which – even though it may seem innocuous because it is invisible to male readers – reminds me, and no doubt many other women, of our historical exclusion. Therefore, in order to compensate for this innate bias, rather than use the clumsy "he or her", "he or she" approach, I have chosen to use the female pronoun throughout my own text.

¹⁷ Martin Heidegger. "The Question Concerning Technology", 17.

¹⁸ As George Steiner explains in *Martin Heidegger*, "For Descartes, truth is determined and validated by certainty. Certainty, in turn, is located in the *ego*. The self becomes the hub of reality and relates to the world outside itself in an exploratory, necessarily exploitative, way. As knower and user, the *ego* is predator." 31.

view to the user, "[cocooning] a person as an isolated subject within a field of sensations", virtual-reality has been described by Coyne as a "literal enactment of the Cartesian ontology".¹⁹

Critical perspectives on cyberspace and virtual-reality

Before moving on to the possibility of *rethinking* such technology, I want to very briefly present some critical perspectives on cyberspace and VR.²⁰ According to Robert Markley, in his Introduction to *Virtual Realities and Their Discontents*, technology never escapes politics, and the very usefulness of the fiction of cyberspace is that it "allows its proponents to imagine an androcentric reality in which a threatening, messy or recalcitrant (and invariably feminized) nature never intrudes".²¹ In this same context he writes, virtual realities "conserve and incorporate rather than overthrow the assumptions and values of a traditional, logocentric humanism, the Platonist division of the world into the physical and metaphysical in which ideal forms are valued over material content".²² In doing so, such technologies reinscribe "oppositions of mind/body, spirit/matter, form/substance and male/female that have structured Western metaphysics since Plato".²³ It is

Others, who I draw on in my text, write similarly: "Both objectivity and subjectivity are metaphors within the Cartesian master metaphor of subject versus object" (Coyne, 271): "In Cartesianism, the human mind is viewed as an island of awareness afloat in a vast sea of insensate matter" (Drew Leder, *The Absent Body*, 8); and "Inevitably, each individual ego [is] like a lonely but well-fortified island floating on a sea of dead matter" (Keiji Nishitani, *Religion and Nothingness*, 11.)

As Neil Everden explains, in *The Natural Alien*, "For what Cartesian dualism amounts to is a description of the continuum of being in just two categories: thinking matter and extended matter – or, more colloquially, 'us' and 'it'. Everything in between is not simply ignored but defined as impossible. No degree of intermingling is allowed: there is only the self and the other, never self-and-other, or extended self, of a field of care... In accepting this dualism we agree to remain ignorant of our degree of involvement and interrelatedness. The consequences are well-known to philosophers, although many choose to disregard them. Heidegger cannot, of course, for it is this diminished understanding of Being that constitutes his starting point. And his discussion, like that of most phenomenologists, is in large part a detailed rejection of Descartes. Indeed, this must be the starting-point of anyone who challenges for notion of total separation and who asserts a belief in literal interrelatedness". 76.

¹⁹ Coyne, 189. Coyne also proposed this in his 1994 essay, "Heidegger & Virtual Reality: The Implications of Heidegger's Thinking for Computer Representations". *Leonardo*, 27 (1) Boston: MIT Press.

²⁰ In the past fifteen years, many others have criticized the cultural biases in 3D digital imaging technology and virtual-reality, including (to name a very few) Frances Dyson, Carol Gigliotti, Katherine Hayles, Beverly Jones, Margaret Morse, Simon Penny, Vivian Sobchack, Zoe Sophia, Nell Tenhaaf and Richard Wright. Some of their earliest essays include: (1990) Beverly Jones, "Computer Graphics: Effects of Origins"; (1991) Vivian Sobchack, "New Age Mutant Ninja Turtles"; (1992) Zoe Sophia, "Virtual Corporeality: A Feminist View"; Nell Tenhaaf, "Of Monitors and Men and Other Unsolved Feminist Mysteries: Video Technology and the Feminine"; (1993) Carol Gigliotti, *Aesthetics of a Virtual World: Ethical Issues in Interactive Technological Design*; Katherine Hayles, "The Seductions of Cyberspace"; (1994) Margaret Morse, "Enthralling Spaces: The Aesthetics of Virtual Environments"; and Simon Penny, "Virtual Reality in the Completion of the Enlightenment". In the early '90s, I was also referring to the cultural biases in digital technology in statements written to accompany digital images I was making at the time: such statements (excerpts of which are included as footnotes in Chapter III) were published, among other places, in the *Prix Ars Electronica Compendia*, 1991 and 1993.

²¹ Robert Markley, "Introduction: History, Theory, and Virtual Reality", in *Virtual Realities and Their Discontents*, 4.

²² *Ibid.*, 7. Markley suggests that in its quest for a "transcendent formal integrity", cyberspace could be considered analogous to the mathematical models of superstring theory, whereby "it asserts the existence of a fundamental reality of form underlying our mundane existence, a reality sanctified by the elegant formalism of a mathematics that we must accept, finally, because it offers us a world more aesthetically pleasing, more beautiful, than the one we inhabit." 8.

²³ *Ibid.*, 2.

only by "understanding virtual technologies within the histories that cyberspace seeks to deny or transcend" he emphasizes, that it will be possible to imagine a "different kind of 'real'." ²⁴

From another perspective, Ziauddin Sardar, in "Cyberspace as the Darker Side of the West" describes cyberspace as a reflection of the "deepest desires, aspirations, experiential yearning and spiritual Angst of Western man."²⁵ It is, he writes, "resolutely being designed as a new market and it is an emphatic product of the culture, worldview and technology of Western civilization."²⁶ Similarly, he sees virtual-reality as a product of the "collective consciousness of Western culture [with] roots in the military, space program, computer industry, science-fiction, the arts, cyberpunk and computer hacker culture."²⁷ "Those who have made cyberspace inevitable" he writes (and he characterizes these as primarily white, American or European, and male²⁸), "have shaped its datascape with their subconscious perceptions and prejudices, conscious fantasies and fears - all of them pulled out from the dark well of colonial projections".²⁹

In regards to the relation of cyberspace to the environmental movement, Sardar and Ravetz introduce Nigel Clark's essay "Earthing the Ether: The Alternating Currents of Ecology and Cyberculture" by suggesting that "prophets on both sides convey a vision of some pure and unmediated reality, 'out there' either in a landscape where the observer is absent in spite of his presence, or where the technology of illusion has become totally transparent and the fantasy is unadulterated."³⁰ In this context, Clark writes that for those enthralled by data processing and communication, "the possibility of traversing fields of pure information takes on a similar significance to the immersion in pristine nature in the ecological worldview".³¹ However, as he explains, for those who valorize contact with organic nature, "the growing tendency to cybernetically model the external world [can] only be construed as a further degree of severance of humankind from the natural world, with binary code appearing as the ultimate medium for the reduction of nature into abstract, quantifiable and interchangeable units."³²

²⁴ Ibid., 10.

²⁵ Ziauddin Sardar, "Cyberspace as the Darker Side of the West", 16.

²⁶ Ibid., 16-17.

²⁷ Ibid., 34.

²⁸ Ibid., 24.

²⁹ Ibid., 38. In a damning critique, Sardar goes on to explain that cyberspace is "particularly geared toward the erasure of all non-Western histories". (19.) "In the postmodern world" he writes, "where things have systematically become monuments, nature has been transformed into 'reserve', and knowledge is giving way to information and data, it is only a matter of time before Other people and their cultures become 'models', so many zeros and ones in cyberspace, exotic examples for scholars, voyeurs and other interested parties to load on their machines and look at". (Ibid.) For Sardar, "Cyberspace is a giant step forward towards museumization of the world: where anything remotely different from Western culture will exist only in digital form". 19.

³⁰ Sardar and Jerome Ravetz, "Introduction: Reaping the Technological Whirlwind", *Cyberfutures: Culture and Politics on the Information Superhighway*, 8.

³¹ Nigel Clark, "Earthing the Ether: The Alternating Currents of Ecology and Cyberculture", 90.

³² Ibid. Clark goes on to suggest that "with cyberculture acknowledging the total fabrication of its chosen realm, and ecology unregenerately committed to the 'real', the two discursive formations seem bound by mutual inversion". 93. As he explains it, the idea of a "limitless, fully immersive cyberspace", like the very notion of a pristine wilderness, serves to "separate in from out, ideal world from fallen imperfect world", and in each case, "the privileged zone is the sanctuary of the essential, of pure form, of the way things should be in everyday life, but are not." 93-94. Because "untrammelled nature" is seen to exist "before and outside representation", it is taken "as the repository of immutable truth", and so, Clark pointedly insists, is the "equally mythic formation of cyberspace". 94.

The fantasy of transcending the material realm

Before ending my discussion here, I want to move on to one last theme in critiques of virtual technologies, which is the desire to leave the material realm behind. As Richard Coyne writes in *Technomanticism: Digital Narrative, Holism and the Romance of the Real*, cyberspace narratives, with their notions of "unity, ecstasis, and disembodiment" and emphasis on "lifting anchor from the constraints of a material world", stem from the Platonic and Neoplatonic tradition.³³ Technoromanticism, he explains, draws on the legacy of Plato's concept of reality in which the sensible material world (that which is apprehended through the bodily senses) is considered to be unreal and ephemeral, in comparison to a "supradivine" realm of immutable ideas or forms which exists beyond appearances.³⁴ For Plato, Coyne suggests, "the realm of the real is the unity, the world of Being opposed to the world of flux and becoming".³⁵ I will return to these notions again, for returning attention to the world's immanent flux and becoming, and equally our place *within* it, is what I am trying to accomplish through my art.

Regarding the cultural urge towards disembodiment, Henri Lefebvre writes that the Western philosophic tradition has actively participated in the "great process of metaphorization that has abandoned the body", and in doing so, it has effectively denied the body.³⁶ According to Margaret Wertheim, in *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet*, the cultural projection of desire for liberation from the body onto cyberspace represents a return to the medieval concept of Christian heaven, and as such, is a thousand-year-old continuation of the West's fusion of religious ideals with technology.³⁷ In comparison to non-Western cultures which have traditionally sought to "enhance body awareness by directing the mind towards the body" through such activities as Tai Chi or yoga, Sardar believes that Western man has "sought liberation from the body by dissolving into the machine", seeking union with "the only thing he sees as redemptive: technology" - in an effort to escape his "utter loneliness and inability to relate to nature or other cultures, even his own society".³⁸

Katherine Hayles, in "The Seductions of Cyberspace", writes that not since the Middle Ages has the fantasy of leaving the body behind been so widely dispersed through society, and never has it been so linked with existing technologies: The "conjunction with technology is crucial" she emphasizes, explaining that "In its contemporary formulation, the point is not merely to leave the body but to reconstitute it as a technical object under human control".³⁹ While some may insist that the organic body is an outmoded metaphor and that the sooner we ditch the carbon the better off we'll be - a view which according to Hayles "so perfectly reinscribes the assumptions of Cartesian subjectivity that it is startling to see it still circulating at the end of the 20th century..."⁴⁰ - such views are arguably symptomatic of an almost pathological denial, not only of our materiality and mortality, but of our dependency on the biological matrix of the Earth. In this context, Hayles suggests, such "erasure" of the body, by denying our dependence as physical bodies on the air we

³³ Richard Coyne, *Technomanticism: Digital Narrative, Holism and the Romance of the Real*, 63.

³⁴ *Ibid.*, 50.

³⁵ *Ibid.*, 51.

³⁶ Lefebvre, 407-408.

³⁷ Margaret Wertheim, *Pearly Gates of Cyberspace: A History of Space from Dante to the Internet*.

³⁸ Sardar, 36.

³⁹ N. Katherine Hayles, "The Seductions of Cyberspace", 173.

⁴⁰ Hayles, "Narratives of Artificial Life", 158.

breathe and the water we drink, ignores environmental issues and thereby precipitates the very mortality it denies.⁴¹ As she further explains, "The fantasy that escape is possible authorizes people to believe that they will be among the chosen few, that we will not have to continue to live with the messes we have created".⁴² In certain contexts, she emphasizes, this notion of leaving the body behind equates to a belief that "if the problems won't go away from us, perhaps we can go away from the problems": "Is it necessary to insist" she asks, "that nothing could be further from the truth?"⁴³

2. The Challenge: Rethinking Technology

I first wrote about the implications of virtual-reality technology in 1991 in a published statement⁴⁴ in which I decried its reinforcement of objectifying attitudes towards the world, and raised the challenge of using the technology alternatively. Because of this text's relevancy, I am including it below in its entirety.

DAVIES (1991): There was a pre-Columbian culture in South America that educated its priests by keeping them in a cave from birth.⁴⁵ For nearly a decade the children lived in darkness and silence, contemplating interior realities. They were then released into the light of day and the flowing reality of "nature" with its myriad of life forms. This experience must have given them a profound reverence for life – not exactly Plato's allegory. Western culture, on the other hand, has denied its embeddedness in nature for centuries, valuing mind over body, and humans (Western, white, male) over every living creature, categorizing the world as a collection of objects to be subjugated for human use. With such a worldview, it is not surprising that we have made a mess.

And now, just as more of us were hoping the Cartesian paradigm was on its last gasp, "virtual reality" has appeared. It beckons us further, in lemming-like flight, from the visceral reality of our bodies and our interdependency with nature. It tantalizes us with even more power and control than we have as a species already. It offers us "escape" from an increasingly desecrated planet into the clean orderly world of our minds. This is not surprising, given the origins of the technology: specifically, the military with its urge for domination and power, and the space industry with its quest to leave the planet Earth for untrampled virgin territory.

Regardless of the phrase "virtual reality" and all it infers, the inclusive three-dimensional environments of virtual reality are not a reality at all, but (only) a representation of human knowledge. If we create a "model" of a bird to fly around in virtual space, the most this bird can ever be, even with millions of polygons and ultra-sophisticated programming, is the sum of our (very limited) knowledge about birds: it has no Otherness, no mysterious being, no autonomous life. What concerns me most is that one day our culture may consider the simulated bird (which obeys our command) to be enough, and perhaps even superior to the real entity. In doing so, we will be impoverishing ourselves, trading mystery for certainty

⁴¹ Comment by Hayles during conference presentation, Banff Centre of the Arts, Canada, 1994.

⁴² Hayles, "The Seductions of Cyberspace", 183.

⁴³ Ibid.

⁴⁴ Char Davies, "Virtual Nature", 16.

⁴⁵ See descriptions of the Kogi people in Columbia by Alan Ereira, *The Elder Brothers*; and Wade Davis, *One River: Explorations and Discoveries in the Amazon Rain Forest*.

and living beings for symbols. We may well become oblivious to the plunder going on around us, as we construct a disembodied, de-sacralized world in "man's" own image.

Given the dominant values of our society, it is important to remain wary of virtual-reality, measuring its potential uses (benefits in communication, education, design, medicine...) against its probable uses and the attitudes these may foster. The technology associated with virtual-reality is not value free: inherent in three-dimensional computer graphic tools are a host of conventions such as objective realism, linear perspective, and Cartesian space, all of which tend to reinforce the western scientific/mechanistic/dualistic worldview. I have been constructing images in virtual three-dimensional space for several years now. For me, the challenge of working with this technology involves subverting its conventions and the ideology behind them in order to make works that can act as *antidotes*, reaffirming our organic participation *in*, rather than our separation from, the world.

In this text, written while I was working with 3-D computer-generated imagery but not yet with immersive virtual environments, I raised the challenge of using VR alternatively, as an *antidote*, in terms of reaffirming our participation as subjects *within* the world rather than reinforcing our conquest of it. As an artist, I was calling for a rethinking of the technology, and, inseparable from that rethinking, a reconsideration of our traditional assumptions about our own being *in* the world.

The essence of technology

In the preface to her anthology *Rethinking Technologies*, Verena Conley writes that "Technology is a mode of thinking, a special kind of technics that literally applies its own rules to itself and then becomes a self-fulfilling prophecy."⁴⁶ The "surging" of instrumental technology, she explains, can be dated historically: It is linked to the second scientific revolution at the end of the Renaissance and as such coincides with a Heideggerian *techne* or means, that flattened the three-dimensional world into a two-dimensional diagram; instituted a separation of subject and object; and inaugurated the quest of "the rational, self-possessed subject that soon expands and colonizes."⁴⁷ In brief, she writes that instrumental technology is "one with the 'Western project'" which is "now ubiquitous and has become synonymous with ideology."⁴⁸ This stance, she says, historically led the West to develop "a *techne* in the sense of an instrumentality that takes over, arrests, or enframes what it desires to manipulate or contain."⁴⁹ Richard Coyne has similarly described (as I have quoted earlier in this chapter) technology's "essence" as our "will to control, manipulate, manufacture, dissect, reduce, and 'enframe'", a situation he traces back to a series of developments beginning with Plato and Aristotle, whereby Aristotelian logic reduced "reason to a *manipulation, a technology*".⁵⁰

⁴⁶ Verena Conley, preface to *Rethinking Technologies*, xi.

⁴⁷ Ibid., x.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Coyne, in *Designing Information Technology in the Postmodern Age*, 270. Coyne writes that for many critical theorists the understanding of "reason" bifurcated around the fourth century B.C. (around the time of Socrates, Plato and Aristotle) whereby "*technological reason*" dominated and marginalized "pretechnological" reason, to the point where "Western societies are now irredeemably technological". 53. As he further explains, "We are in the grip of technology, as shown in the way we use language, structure our institutions, favour theory, and even oppose such questions as 'Who is in control?' Computers are merely a recent manifestation of a human will to dominate and to see

To understand what is meant by "enframing", I will go directly to Heidegger's questioning of technology itself. According to Heidegger, the word "technology" is from the Greek *technikon* meaning "that which belongs to *techne*", associated with both the skillful activities of the craftsman, and with the arts.⁵¹ *Techne*, Heidegger explains, "belongs to bringing-forth, to *poiesis*",⁵² which for the Greeks, and specifically for Plato whom Heidegger quotes, means bringing that which is not yet present into presencing.⁵³ Such bringing-forth can take place through "handcraft manufacture" or through the "artistic and poetical bringing into appearance and concrete imagery".⁵⁴ There is also another kind of bringing-forth into presencing, considered by the Greeks to be *poiesis* in the highest sense: this is *physis*.⁵⁵ As Heidegger explains it, *physis* is a bringing-forth in the sense of an "arising of something from out of itself", as in "the bursting open belonging to bringing-forth, e.g., the bursting of a blossom into bloom, in itself".⁵⁶ Heidegger goes on to explain that such bringing-forth comes to pass only so far as "something concealed comes into unconcealment"; and "this coming" takes place within what he calls "revealing",⁵⁷ or *aletheia* or truth.⁵⁸

everything technologically, in terms of causes, control, and domination". 53-54. Coyne further writes, "Put simply, pretechnological, or pre-Socratic, thought understands truth as residing in the tensions, resolutions, clashes, and play between opposites. Truth and understanding are also indeterminate. Pre-Socratic thinking is often termed 'dialectical' [whereby] truth emerges or is disclosed through the interaction between opposites, as in a dialogue between two people". 54. Coyne explains that the pretechnological, dialectical view of reason is often set against "*technological rationality*" (associated with the formal logic advanced by Aristotle) which includes the imposition of any metanarrative or metaphysical system. 54-55. (This includes Coyne suggests, rationalism and logocentric quests for ground, origin, or substrate, among which he places "holistic theses, including chaos theory, the Gaia hypothesis, complex-theory and theories of self organizing systems. 104.)

Respect for the pre-Socratic, pretechnological way of thinking, according to Coyne, has surfaced in the German mystical tradition beginning with Meister Eckhart (1260-1331) and passing through Hegel, Marx, Nietzsche, Dewey and Heidegger, into recent postmodern thought such as Derrida and other de-constructionists: it can also be found in certain aspects of Eastern thought, all of which falls outside of Aristotelian logic. 56. Skipping over Coyne's in-depth examination of such developments, I want to emphasize his supposition that *technological rationality* as scientific and philosophical thinking (i.e. as thinking which "has imposed a totalizing, metaphysical orientation to everything") is related to the notion of *techne* as *enframing*, whereby everything is viewed as potential to be used and exploited: in these terms, *technological enframing* can be seen as a "fall from pre-Socratic thought." 66-68.

⁵¹ Heidegger, "The Question Concerning Technology", 12-13. Heidegger also examines technology in the context of modern science in "The Age of the World Picture" which I have not taken the time to examine here.

⁵² Ibid., 13.

⁵³ Ibid., 10.

⁵⁴ Ibid.

⁵⁵ Ibid. Note that "*physis*" is spelled differently by different authors. So as not to confuse the reader, I shall make all spellings in all texts consistent with the spelling used in Heidegger's "The Question concerning Technology" translated by William Lovitt.

⁵⁶ Ibid. Heidegger explains that "[that] which presences ... from of old has been named *physis*". ("Science and Reflection", 174.) David Michael Levin, in *The Opening of Vision: Nihilism and the Postmodern Situation*, describes *physis* as "...an overwhelming power, a luminous eruption of living energy inexhaustibly appearing and bringing beings into the light..." and, "...life itself, living space, a nature in which life can flourish..." 102.

⁵⁷ Ibid., 11-12. As the translator of QCT, William Lovitt explains here, the verb *entbergen* (to reveal) connotes an opening out from protective concealing, a harboring forth. He suggests that for Heidegger, it is only as "protected and preserved - and that means as enclosed and secure - that anything is set free to endure, to continue as that which it is, i.e., to be." 11.

⁵⁸ According to Neil Evernden, for Heidegger "*aletheia*" means *truth*, but not truth as we now mean it, "not as correctness or as an impression matching an original, but as a *revelation of inwardness*." 71.

Within this domain of revealing belongs instrumentality, a fundamental characteristic of technology: However, even if technology as revealing holds for the techniques of the craftsman and the artist, for Heidegger, it does *not* pertain to "modern machine-powered technology".⁵⁹ What then, for Heidegger, is the essence of modern technology? "It too is a revealing" he answers, but "the revealing that holds sway throughout modern technology does not unfold into a bringing-forth in the sense of *poiesis*": rather, "the revealing that rules in modern technology is a challenging".⁶⁰ Such challenging-forth, whereby everything is ordered to stand by as "standing-reserve" for human use is called *Enframing*.⁶¹ This, Heidegger emphasizes, is the "essence of modern technology", whereby everything, "the real everywhere", becomes standing-reserve (i.e., a resource for manipulation and exploitation).⁶² The extreme danger in such enframing, he warns, is that everything including even man himself becomes standing-reserve. In this way, Heidegger writes, "the impression comes to prevail that *everything man encounters exists only insofar as it is his construct*"; and this illusion gives rise to one final delusion whereby "it seems as though man everywhere and always *encounters only himself*."⁶³

Such enframing, Heidegger explains, does not just endanger man in "his relationship to himself and to everything that is", it also "banishes him into that kind of revealing which is an ordering"; and wherever this ordering holds sway, "it drives out every other possibility of revealing", and above all, "conceals that revealing which, in the sense of *poiesis*, lets what presences come forth into appearance".⁶⁴ (In other words, enframing prevents things from disclosing themselves of *their own accord*, rather than being ordered through man's challenging). "Thus" Heidegger writes, "the challenging Enframing not only conceals a former way of revealing, bringing-forth, but it conceals revealing itself..."⁶⁵ "What is dangerous" he concludes, "is not technology", but rather its "essence", in terms of an Enframing which "threatens man with a possibility that it could be denied to him to enter into a more original revealing and hence to experience the call of a more primal truth."⁶⁶

So where do we go from here? Heidegger himself suggests that, in a certain way, the "essence" of technology is ambiguous, and such ambiguity points to the mystery of all of revealing.⁶⁷ On the one hand he explains, technology as enframing, as a challenging and ordering, blocks our every view of revealing and so radically endangers our relation to it; on the other hand he suggests, "when we look into the ambiguous essence of technology", when we look into the

⁵⁹ Heidegger, "The Question Concerning Technology", 13.

⁶⁰ Ibid., 14. Here Lovitt defines *herausfordern* (to challenge) as also meaning "to call forth or some into action, to demand positively, to provoke." The verb might be rendered very literally, he suggests, as "to demand out hither".

⁶¹ Ibid., 17-19. As explained by Lovitt, "The rule of such a way of revealing is seen when man becomes a subject, when out of his consciousness he assumes dominion over everything outside himself, when he represents and objectifies, and, in objectifying, begins to take control over everything. It comes to its fulfillment when, as this increasingly the case in our time, things are not even regarded as objects, because their only important quality has become their readiness for use. Today all things are being swept together into a vast network in which their only meaning lies in their being available to serve some of end that will itself also be directed toward getting everything under control." xxix.

⁶² Ibid., 24.

⁶³ Ibid., 27. Emphasis mine.

⁶⁴ Ibid. Emphasis mine.

⁶⁵ Ibid.

⁶⁶ Ibid., 28.

⁶⁷ Ibid., 33.

danger, through careful reflection we might rediscover a "primarily granted revealing", a revealing that even in the technological age might show itself...⁶⁸

In this context, I now want to turn back to Conley, who suggests that it may be possible to rethink technologies in terms other than enframing.⁶⁹ "Indeed", she writes, "ecological imbalances have shown that technology does not just master nature", and certain technologies can reveal "the very uncertainties of human thought."⁷⁰ Accordingly, for Conley, technology does not only alter human subjectivities, but can decenter humans' anthropocentric position in the world. Therefore, she suggests, rather than "simply lamenting the loss of humanness through technology", we should *rethink* the issue "in the wake of a becoming technological of the world."⁷¹ To do so, she explains, it is necessary to go *through*, and also *beyond*, Heidegger's thinking (in terms of domination of nature and loss of humanness through technology) to an exploration of technology's transformation of subjectivities.⁷² We should not ignore or simplify technologies she writes, but rather we now need to "emphasize the necessity of thinking the subject not only in its relation with other subjects, but also *in*, and with, the astonishing complexities of, the world".⁷³

Further to Conley's questions as quoted at the beginning of this chapter, she also asks: "How do we exit from a simple dialectic and enter into a changing world, yet in such a way that *becoming* remains a term reserved to humans *and/in* the world?"⁷⁴ And, "What form of technics will help displace or resist the devastating effects of instrumental technology that has led to a retrievable loss of species habitat?"⁷⁵ Even more specifically in the context of my discussion, she asks, "What openings are available to us, what critical and artistic projects...?"⁷⁶ In this context, Katherine Hayles also questions – while warning that feminist efforts to reinterpret virtual technologies in a field dominated by "militaristic values and male high-tech culture" are not secure from reappropriation⁷⁷ – whether is it even possible for artists to subvert the tools and conventions associated with virtual reality without being co-opted by its technological imperative...⁷⁸

Techne as poiesis

In response, I want to return to Heidegger's concluding remarks in "The Question Concerning Technology" where he reminds us that there was a time when it was not "technology alone that bore the name *techne*".⁷⁹ Here, he is referring to the fine arts, also known as *techne* to the Greeks because they too involved a bringing-forth into presencing, as *poiesis*, as I have mentioned in the previous section.⁸⁰ In this context, Heidegger asks whether the fine arts and poetry, in their capacity for "*poetic* revealing", might help reveal the danger we have been placed in by instrumental technology through its concealing of all other (non-technological) revealing: In doing

⁶⁸ Ibid., 34.

⁶⁹ Conley, preface to *Re-thinking Technologies* x-xi.

⁷⁰ Ibid., xi.

⁷¹ Ibid., ix.

⁷² Ibid., xiii.

⁷³ Conley, "Eco-subjects", 89.

⁷⁴ Conley, preface to *Re-thinking Technologies*, xi.

⁷⁵ Conley, "Eco-subjects", 80.

⁷⁶ Conley, preface to *Re-thinking Technologies*, xiii.

⁷⁷ Hayles, "Embodied Virtuality: or How to Put Bodies Back Into the Picture", 15.

⁷⁸ Ibid.

⁷⁹ Heidegger, "The Question Concerning Technology", 34.

⁸⁰ Ibid.

so, he affirms that an "essential reflection upon technology and decisive confrontation with it must happen in a realm that is, on the one hand, akin to the essence of technology and, on the other, fundamentally different from it".⁸¹ This realm, Heidegger suggests, is the arts, *techne* as *poiesis*: But only, he qualifies, if such arts involve a *questioning*, of the very revealing into presencing of Being itself.⁸² Heidegger also refers to the possibility of a "restorative surmounting" of enframing, but only if man first takes up dwelling in the space "proper to his essence", and *questions* not what we shall do, but rather, how must we think?⁸³ Only when we realize "the coming to presence of technology lights up as Enframing, [will] we discern how, in the ordering of the standing-reserve, the truth of Being remains denied as world".⁸⁴ "Only then", Heidegger insists, will we notice that "all mere willing and doing in the mode of ordering steadfastly persist in injurious neglect".⁸⁵

As Richard Coyne explains, for Heidegger "the antidote to the enframing of technology is not revolution but adopting a new attitude",⁸⁶ whereby instead of seeing everything in technological terms⁸⁷ we learn to "encounter things - in their essence and in their mystery".⁸⁸ This involves cultivating an attitude of "letting-be" as in "releasement" (*Gelassenheit*) towards the world, a concept Heidegger borrowed from the mystical philosopher Eckhart, whereby the poet "lets Being reveal itself" as in the blooming of the rose....⁸⁹ Here, the rose in its blooming (arising out of itself into presencing, coming into being of its own accord, through *physis*) is approached *not* as an "object" to be manipulated for human gain, but rather out of respect for its "grounding in itself" and its own mysterious processes of being and becoming.⁹⁰ (Such *letting be* - as in approaching the world with *tact* - is described by Verena Conley as the first step towards developing an ecological rapport.⁹¹)

This attitude of "releasement" (*Gelassenheit*)⁹² in terms of a releasement not *from* but rather *toward* things - and grounded not in human willing but in an "openness" to what is given - is described by Ingrid Scheibler as related to Heidegger's description of "meditative thinking", as a kind of thinking referring *beyond* human subjectivity in terms of determining the existence

⁸¹ Ibid., 35.

⁸² Ibid.

⁸³ Heidegger, "The Turning", 39-40.

⁸⁴ Ibid., 48.

⁸⁵ Ibid.

⁸⁶ Coyne, *Designing Information Technology in the Postmodern Age*, 85.

⁸⁷ Ibid. As Coyne describes it most briefly, by being enframed in the technological age, "we see everything in technological terms, as having causes, as a potential to be exploited, and explicable by unified theories...." 127. Coyne also explains that for Heidegger, modern technology "brings about a covering over of Being in favor of a focusing on beings. In other words, thanks to technological thinking dating back to Plato, we have lost sight of what it means to be. We now focus on simple entities, objects as causally related, and human thought as a matter of manipulating propositions according to causal laws. In the pre-Socratic mode of thinking, to which Heidegger wishes us to return, we let things be in their essence. That is to say, we allow things to be different in unique ways, to fit their context, to be their own causes." 287.

⁸⁸ Ibid., 144.

⁸⁹ Ibid., 85. Emphasis mine.

⁹⁰ Ibid., 66.

⁹¹ Conley, "Eco-Subjects", 79. Conley is referring here to Cixous's concept of a "feminine mode of exchanging" which allows the self to be altered through its "tactful *écoute*" of the world. I am assuming here that the word "*écoute*" means *listening*.

⁹² Heidegger defines this term in *Discourse on Thinking [Gelassenheit]*, 54; and uses it throughout the essay within, "Conversation on a Country Path about Thinking".

(unconcealment) of the real.⁹³ For Heidegger, Scheibler suggests, the notion of releasement involves a kind of waiting in gratitude⁹⁴ which contrasts sharply with the traditional calculative-technological attitude towards the world as human construct and manipulable resource or standing-reserve.⁹⁵ Scheibler further characterizes such meditative thinking as a *shift of awareness* from an "awareness of a world of objects to an awareness of the field of awareness".⁹⁶ This concept, as explained by John Anderson, involves a shift of attention from the objects of "our ordinary understanding" to "an awareness of the *field* within which these objects are, an awareness of the *horizon* rather than of the objects."⁹⁷

Furthermore, as Scheibler explains, rather than seeing the world in terms of the modern ethos (through human subjectivism and its correlate, a conception of the real based on an ethos of mastery and domination stemming from its objectification⁹⁸), Heidegger's "meditative thinking" involves an attitude of being "open" to what lies beyond the horizon of human vision.⁹⁹ (I will be referring again to the horizon, in terms of the subjective experience of being enveloped, in the next chapter in context of landscape). As Heidegger writes in "Conversation on a Country Path", "We say look into the horizon. Therefore the field of vision is something open, but its openness is not due to our looking. ... What is evident of the horizon, then, is but the side of an openness which surrounds us". I interpret his words here as meaning, it is this *openness* (rather than the appearances of objects within the view the horizon encircles) "which comes to meet us".¹⁰⁰ For Scheibler, such "openness" (Being as *die Gegnet*; that-which-regions) is that in which "the horizon of consciousness is set":¹⁰¹ Most importantly, she emphasizes, such openness/Being is not autonomous nor does it exist only through its relation to humans; rather it is "the *ground* of the opening of human being onto the world", and as such exists in a *relation of mutuality*.¹⁰²

⁹³ Ingrid Scheibler, "Heidegger and the Rhetoric of Submission: Technology and Passivity", 126-127. Scheibler draws on John Anderson's introductory discussion in "Discourse on Thinking" to make her observations.

⁹⁴ Ibid., 128

⁹⁵ Ibid., 116.

⁹⁶ Ibid., 128-129.

⁹⁷ John M. Anderson, Introduction to Heidegger's *Discourse on Thinking*, 24. Emphasis mine. In regard to the non-calculative, meditative kind of thinking which Heidegger is referring to, Anderson writes the following: "To begin to comprehend what is involved in this kind of thinking, we may observe, somewhat negatively, that it does not represent, that it does not construct a world of objects. By contrast to representative thinking, it is thinking which allows content to emerge within awareness, thinking which is open to content. Now thinking which constructs a world of objects understands these objects; but meditative thinking begins with an awareness of the field within which these objects are, an awareness of the horizon rather than of the objects of ordinary understanding. Meditative thinking begins with an awareness of this kind, and so it begins with content which is given to it, the field of awareness itself". 24.

⁹⁸ Scheibler, 116.

⁹⁹ Ibid., 128-129.

¹⁰⁰ Heidegger, "Conversation on a Country Path", 64-65.

¹⁰¹ Scheibler, "Heidegger and the Rhetoric of Submission", 129.

¹⁰² Ibid., 129-130. Scheibler points to Arne Naess, *Ecology, Community and Lifestyle: Outline of an Ecosophy* (47-49) for his clarification of the difference between a *relational* rather than *subjective* relationship between human beings and the world. As Scheibler explains in context of the ontological question, "If the tree falls in the forest, and no one is in the forest, does the tree's falling make a sound? ... Following Heidegger, we are incited to think more carefully about the relation between the existence of (the sound of) the tree that is falling and the degree to which this is (or *should* be) conceived as dependent upon human existence. We are led to question more deeply the extent to which the real "exists" in relation to both the facticity of our human existence, that we take part in its existence, and that we also apprehend the real, and construct in part on a

As such – in comparison with the calculative-technological mode of thinking whereby humans stand at the center of the world and all else is exploited as object¹⁰³ – this alternative attitude, of *Gelassenheit* with its "letting-be", its wonder at the very mystery of the *presencing* of Being itself,¹⁰⁴ links back to Heidegger's concept of *poiesis*. (*Poiesis* as a bringing-forth into presencing, both as *techne* in terms of a "poetic revealing" through poetic/artistic bringing-forth, and in nature, as *physis*, an "arising of something from out of itself".) Speaking from my own experience, I would suggest that when such presencing (whether manifesting through a rose in its blooming, a pebble or even a simple cup) is attended to by the poet or the painter – with wonder and astonishment¹⁰⁵ before the very fact of its existence – and poetic language is employed to express this to others, there is a doubling of *poiesis*. In this instance, *techne* is being employed, not to manipulate or control, but as *poiesis*, to metaphorically *reveal* the *revealing*.

As the Heideggerian scholar George Steiner¹⁰⁶ explains – in comparison to the Cartesian self as knower and user, as *predator*, whereby the human person and self-consciousness is the center, the "assessor" of existence – for Heidegger, "man is only a privileged listener and respondent to existence".¹⁰⁷ Accordingly, for Heidegger, the "vital relation to otherness" is not one of "grasping and pragmatic use" as it is in Cartesian rationalism, but rather it is a "relation of audition".¹⁰⁸ This relation, Steiner explains, involves trying "to listen to the voice of Being", doing so through a relation of "extreme responsibility, custodianship, [and] answerability to and for".¹⁰⁹ For Heidegger, Steiner writes, the carriers and trustees of such answerability are the thinker and the poet; and this is because of their openness to language and "their capacity to *be spoken* rather to speak".¹¹⁰ In comparison to Platonic or Cartesian concepts of realism, suggests Steiner, for Heidegger the artist's work is a literal "drawing up to the light from the well of being".¹¹¹ As Heidegger writes near the

basis of this apprehension." 130. This question, as Scheibler explains in her footnote 70 (p.139), is in keeping with the Kantian separation of the *Ding-an-sich/Ding-an-mich* (*an sich*, in itself, *an mich*, for me). As such, she writes "We must begin to learn to conceive our relation to nature not just in terms of its referral back to the subjective"; and points out that this question is receiving attention in recent examinations of the concept of nature, especially in terms of environmental ethics.

¹⁰³ Ibid., 131.

¹⁰⁴ Ibid., 132-133.

¹⁰⁵ George Steiner, *Martin Heidegger*, 27.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid., 31-32.

¹⁰⁸ Ibid., 32.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ Ibid., 135. Steiner's full text reads as follows. "In the great work of art, hiddenness and exhibition – the absence of the object itself and the intense presence via the artist's representation – are in internal conflict. The work of art shows us that 'truth happens in the guise of the primordial struggle [referring back to the pre-Socratic thinker Heraclitus who I will refer to in the next chapter] between 'clearance' and concealment'. And once again, the heart of Heidegger's meaning – with its brilliant refutation of the Platonic derogation of artistic *mimesis* as a mendacious, secondhand form – lodges in a play on words. Art is *Stiftung*, which term signifies an instauration or foundation (as of a temple), a bestowal upon. This instauration comes of the artist's *Schopfung*, or 'creation'. But if *schöpfen* means "to create," it means also, and for Heidegger more authentically, 'to draw from a well'. Thus the artist's work is a literal 'drawing up to light from the well of being', which well is sunk in the guardian earth. The charged nothingness from which Being springs ('the wellspring') lodges in the hidden deeps. To create is to bring to light, but in a way which is a consecration (a *Stiftung*), because what is brought to light is also to be guarded – as man guards or ought to guard the earth from which he draws sustenance and on which he builds. The fount and meaning of true art is *'die schaffende Bewahrung der Wahrheit'* ('the creative custodianship of the truth'). Art is not,

conclusion to "The Origin of the Work of Art", "The nature of art is poetry. The nature of poetry, in turn, is the founding of truth. ... The setting-into-work of truth thrusts up the unfamiliar and extraordinary and at the same time thrusts down the ordinary and what we believe to be such."¹¹²

According to Scheibler, by focusing on the metaphoric (or what she says Heidegger explicitly calls the *poetic*) force of language, Heidegger is urging us to think through "its power to challenge habitual signification and, hence, habitual modes of representation".¹¹³ Similarly, Coyne writes that poetic, or metaphoric, language has the potential to change our way of looking at things.¹¹⁴ In this context, he quotes Paul Ricoeur who has written, "What is changed by poetic language is our way of dwelling in the world. From poetry we receive a *new way of being in the world, of orientating ourselves in this world.*"¹¹⁵ As Coyne explains it, according to Ricoeur, the purpose of poetic, metaphorical language is not didactic communication but "to *shatter and to increase our sense of reality* by shattering and increasing our language".¹¹⁶ For Coyne, this can also apply to technology as a means of "establishing difference and thereby establishing a sense of dwelling, if we let it".¹¹⁷ In this context Coyne points out that technology also functions as metaphor: Accordingly, he suggests, "We need not succumb to technological enframing but, by attending to it in a particular way, we can exploit technology as a source of upheaval that intensifies our sense of dwelling".¹¹⁸ Here, he writes, "technology is not a means of amplifying or extending our powers but, through its ability to alienate, paradoxically provides a means of jarring us into realizing where our home really lies".¹¹⁹

As a former painter – particularly one who spent many years contemplating the very being of simple objects – I come to this issue another way. Accordingly, I would like to take the liberty to revisit Coyne's statement and rephrase it somewhat differently, in relation to my own approach to the technology associated with virtual-reality, or as I prefer call it, Immersive virtual space. Instead I would say that, through its capacity to enable an *undoing* of our habitual perceptions (recalling Ricoeur's "shattering"), such technology can (when and only when its conventional metaphors are subverted) paradoxically provide a means of perceiving *outside* such habitual perceptions, thereby enabling us to see *freshly* for a little while, remembering where-we-are, among all this, here now....

I first read Heidegger's essay "The Question Concerning Technology" in 1989, when I was caught up in building a software company and only beginning to explore digital imaging technology for my own purposes. Since then, my artistic research has been based on the belief that it is not only

as in Plato or Cartesian realism, an imitation of the real. *It is the more real.* And Heidegger's penetration of this paradox leaves traditional aesthetics far behind". 135-136.

¹¹² Heidegger, "The Origin of the Work of Art", in *Poetry, Language, Thought*, 75.

¹¹³ Scheibler, 124.

¹¹⁴ Coyne, *Designing Information Technology in the Postmodern Age*, 299-300. Coyne's statements here are written in conclusion to his in-depth discussion of metaphor in the context of designing information technology.

¹¹⁵ Ibid., 300. Emphasis mine. Coyne quotes Paul Ricoeur from *The Ricoeur Reader*, 82.

¹¹⁶ Ibid. The notion of shattering our language in order to shatter and increase our sense of reality becomes particularly important when, as suggested by Arran Gare in *Postmodernism and the Environmental Crisis*, languages deriving from the Aryan language "cannot but lead people to misunderstand reality because these languages privilege nouns" and, as argued by Nietzsche, are therefore useless for expressing "becoming". (Gare, 109.)

¹¹⁷ Coyne, 300.

¹¹⁸ Ibid.

¹¹⁹ Ibid.

possible, but absolutely necessary, to approach such technology by subverting or at least circumventing, its conventional design metaphors: Essential to such subversion, however, is redirecting it as an expressive (and experiential) medium.

With this intent, I have discarded the technology's default mode of mimetic representation and objective realism, replacing it with figuration based on semi-transparency and ambiguity in order to destabilize habitually dualistic notions about subject, objects and space. And in the context of VR, I have shunned conventional approaches to interaction in favour of a user interface which not only grounds experience of virtuality in the participant's own body, but rewards perceptually sensitive, contemplative behaviour. Through such strategies, I have sought to demonstrate that rather than reinforcing the status quo, this technology can be used alternatively, as a means of *questioning* what we take for granted, and thereby, paradoxically returning us "to ground".

As such, I have approached the medium of immersive virtual space as a "spatio-temporal arena" for manifesting an artist's vision (or construct) of an alternatively-perceived reality – imagined not as a transcendent realm of Platonic form or numerical information – but Immanent, all around, if only we could see through the cultural filter, the Enframing, that blinds (and binds) us. In this context, the intent of my artworks is to facilitate experiences whereby hitherto oppositional categories of subject/object, mind/body, solid form/empty space, might possibly be perceived as osmotically intermingling and intertwined; and whereby poetic evocations of the world as *physis* (as nature) might be experienced as a myriad of becomings and passings away, among which the perceiving self is not separate but inextricably bound. By facilitating *bodily* experiences that potentially enable an "undoing" of habituated and conventional assumptions, my goal is to use this technology (subverting, redirecting, or even *turning* it, in Heidegger's sense if I may be so bold) to facilitate a temporary release *from* the constraints of a technologically-objectifying worldview.

And in doing so, most ambitiously, my goal is to explore the capacity of this medium to paradoxically enable – for one solitary, cloistered, and deeply-breathing Immersant at a time – a redirecting, turning, or even "releasement" *towards* the immediate sensations of his or her own embodied being, thereby providing an opportunity (albeit not always taken) for wonderment at the very mystery of the presencing of Being itself. As Samuel Coleridge has written, "*Hast thou ever raised thy mind to the consideration of EXISTENCE, in and by itself, as the mere act of existing? Hast thou ever said to thyself, thoughtfully, IT IS!*"¹²⁰ In this context, my work is intended as a "lighted lamp in a dark corner" so to speak, drawing attention to what I consider to be the overlooked potential of this medium, as a *techne* of *poiesis*, for enabling an experiential yet philosophical questioning of our embodied being *in, and of, the world*, for considering the very mystery of the "isness" that all this *is*...

¹²⁰ Samuel Taylor Coleridge, "The Friend", quoted in Steiner, *Martin Heidegger*, 157; and in Everden, *The Natural Alien*, 71. This passage reads in full: "Hast thou ever raised thy mind to the consideration of EXISTENCE, in and by itself, as the mere act of existing? Hast thou ever said to thyself, thoughtfully, IT IS! Heedless in that moment, whether it were a man before thee, or a flower, or a grain of sand? Without reference, in short, to this or that particular mode or form of existence? If thou hast indeed attained to this, thou will have felt the presence of a mystery, which must have thy fixed by spirit in awe and wonder".

II

Defining Terms:

Key Concepts & Concerns

*What I am trying to translate to you is more mysterious;
it is entwined in the very roots of being,
in the impalpable source of sensations.*

J. Gasquet, *Cezanne*,
quoted by Merleau-Ponty, "Eye and Mind"

1. From a Painterly Perspective

I came to 3-D digital imaging technology in the mid 80's as a painter, with a decade of professional art practice behind me. The practice of painting has hugely influenced my conceptualization and strategic approach towards the medium of immersive virtual space: It was through painting that I first explored my emerging concerns related to subjectivity, embodied perception and enveloping flowing "nature"; through painting that my strategies and techniques for doing so first evolved; and, because of painting's apparent limitations in terms of conveying these concerns that I abandoned it in 1987 for the newly emerging technology of 3-D digital imaging. Subsequently, it was the desire to articulate these concerns more effectively that led to my determination to work with the medium of immersive virtual space and push VR technology in directions other than those for which it was conventionally intended. I thus approached immersive virtual space not as a technologist or as a theorist, but as a practicing artist, a *painter*, most interested in how I could use the medium and its associated tools to say what I wanted to say.

Even now, more than a decade after I first began to imagine what I might accomplish, the underlying motivation behind my work continues to be "painterly" (as in poetic), in terms of a desire to communicate what it is, how it feels, to be *in* the world as an embodied and mortal subject, and how it might be possible to conceive/perceive such "beingness" freshly, i.e., without the filter of a Cartesian worldview. This desire differentiates my research from that of many other artists in this field, whose works are aimed at investigating the technology in terms of its historical antecedents or sociological implications. In my work, the technology is not my central concern, but rather the necessary means to an end, in terms of its capacity for facilitating (as I have explained in the previous chapter) particular spatio-temporal experiences which might return our attention from that which distracts us (including cyberspace) to a questioning of our own being in the world. Thus I have come to this medium and employ it in my artistic practice *not* because the technology itself

particularly interests me, but *out of necessity*: By this I mean if I could say what I need to say without using this technology, by using only words, or paint, or even ploughed earth, I would do so.

My envisioning of the medium of Immersive virtual space, my definitions of what it is and what it *could* be, are very specific. In order to more clearly convey this vision, I want to lay down some groundwork by defining certain concepts and thematic concerns which are central to my research. In my work and, indeed, in my entire conceptualization of the form, the desire to articulate my concerns has proceeded and driven my exploration of the medium. Thus, in the context of this narrative about the research surrounding *Ephémère*, I cannot separate discussion of the form (the development of certain techniques and strategies) from the work's intended content (the particular kinds of experiences which these techniques are intended to facilitate or enable). Therefore, in the pages that follow, I will discuss both.

2. Defining the Medium of Immersive Virtual Space

Before proceeding further, I want to point out that I tend to avoid using the catchall phrase "virtual reality", although I do use "VR" when referring to the technology, and "virtual" when referring to the constructed space which the technology enables. In context of such space, I am of course speaking metaphorically, because there is no actual space there at all, but rather only the subjective sensorial experience of being in such space, a paradox enabled through the technology involved.¹ In addition, in relation to my own work, I always qualify the term "virtual" with the word "immersive", using the phrase "immersive virtual space" to signify the medium itself, and "immersive virtual environments" to refer to specific artistic constructions such as *Osmose* and *Ephémère*. I also use the word "immersant" to refer to the individual undergoing the immersive experience. (I coined this word 10 years ago as a more nuanced alternative to "user" or "inter-actor", and it is now being adopted by others in the field.²) Occasionally I use "immersivity" and "immersence" to describe the experience of being immersed in virtual space.

I also want to clarify that when I describe Immersive virtual space as a "medium",³ I use the phrase in several different ways, which reflect both my painterly background and my experiences as a scuba diver. Thus, when using the word "medium", I am referring to Immersive virtual space as an *expressive form*, such as painting or film, employed to communicate particular ideas or content; and simultaneously, I am referring to its *experiential effect*, whereby an Immersive virtual environment can be experienced *as if* it were an all-encompassing, body-

¹ For an explanation of the technical underpinnings of Immersion in virtual space, see Meridith Bricken "Virtual Worlds: No Interface to Design" in Benedict's *Cyberspace, First Steps*; or Roy Kalawsky's *The Science of Virtual Reality and Virtual Environments: a Technical, Scientific and Engineering Reference on Virtual Environments*.

² Several years ago, I discovered that the word "immersant" had been appropriated and copyrighted as the name of a networking company. While my legal challenging of their rights was unsuccessful, when the company went bankrupt I was able to reclaim the word so that it cannot be commercially exploited.

³ Here it might be useful to distinguish between technology, medium, technique, form, and style. David Summers, in *Real Spaces: World Art History and the Rise of Western Modernism*, defines these terms as follows: *technology*, the available means for transformation; *medium*, the means selected and developed from available technology; *technique*, local skills associated with the broader technology; *form (format)*, conditions of presentation; and *style*, evidence of an individual hand ("In formalist terms, the autographic character of works of art constitutes much of their 'expressive' character, recording and conveying the artists 'vision'". 69.)

enveloping medium like water or air. As I have already explained, it is the artistic enabling or facilitating of this phenomenological effect, that is, the subjective experience of being immersed, that I am most interested in, rather than the technology itself.

The "virtual"

The meaning of the phrase "virtual reality" was originally intended to signify a computer-generated three-dimensional world achieved through use of a stereoscopic head-mounted display and various interface devices.⁴ Since then, virtual-reality has been variously described as: "an immersive and interactive experience of a world generated by the computer" placing the user "inside data itself, in a three-dimensional space projected by digitally encoded information";⁵ "sensory information and feedback [presented by computer technology] to give the convincing illusion that the technology user is immersed in an artificial world – a world that exists only inside the computer";⁶ and, "pertaining to convincing the participant that he or she is actually in another place, by substituting the normal sensory input received by the participant with information produced by a computer...."⁷

"Virtual reality" is currently defined in the *Shorter OED* as "the generation by computer software of an image or environment that appears real to the senses", a broadened interpretation which reflects the term's increasing misappropriation to signify everything from "cyberspace" to digitized special effects in films and the nightly news. Even the author of an engineering textbook, Roy Kalawsky, admits that virtual-reality is an unfortunate term, pointing out that there are as many definitions for the word as there are people in the field, a situation even more confused by all the terms associated with it, such as immersive and non-immersive virtual environments, visually-coupled systems, artificial reality, cyberspace, virtual presence, telepresence, and desktop virtual reality.⁸ In "Cyberspace, Virtuality and the Text", Marie-Laure Ryan points out that even though "virtual" and "cyberspace" have different cultural origins, they have now become almost interchangeable to the point where in popular imagination, computers "take us into cyberspace", and cyberspace is "a virtual reality".⁹ For Ryan, the metonymic extension of the word "virtual" to describe "all computer-mediated

⁴ Michael Heim, in "The Design of Virtual Reality", writes that Jaron Lanier's term "virtual reality" (which followed Myron Krueger's "artificial reality" from a decade before) was originally shunned by researchers who preferred the phrases "virtual environments", "synthetic environments", etc.

As Scott Fisher writes in the paper "Virtual Interface Environments", written while he was still at NASA Ames Research Center in the late '80s, "The [virtual environment display system] provides a multisensory, interactive display environment in which a user can virtually explore a 360-degree synthesized or remotely sensed environment and can viscerally interact with its components. Our objective has been to develop a new kind of interface that would be very closely matched to human sensory and cognitive capabilities. The effect of immersing one's sensoria in even the crudest prototypes of these interfaces has led many who have experienced it to refer to the experience as a kind of *virtual reality*. We prefer to use the term *virtual environment* to emphasize the ability to completely immerse the subject in a simulated space with its attendant realities." 425.

⁵ Ryan, "Cyberspace, Virtuality and the Text", 80.

⁶ Coyne, *Designing Information Technology in the Postmodern Age*, 179.

⁷ Michael Heim, *The Metaphysics of Virtual Reality*, 160.

⁸ Kalawsky, *The Science of Virtual Reality and Virtual Environments: a Technical, Scientific and Engineering Reference on Virtual Environments*, 7.

⁹ Marie-Laure Ryan, "Cyberspace, Virtuality and the Text", 78. In her essay, Ryan examines numerous definitions of cyberspace from William Gibson's first coining of the word in *Neuromancer* (1981) to the many authors included in Benedikt's *Cyberspace: First Steps*. For example, Benedikt describes cyberspace as a "globally networked, computer-sustained, computer-accessed, computer-generated, multi dimensional, artificial, or 'virtual' reality" (122), which can be envisaged as a "coherent and global virtual world independent of how it is accessed and navigated". 130.

activities and all aspects of electronic cultures" has the effect of threatening "a weakening, or even loss, of semantic substance".¹⁰ Accordingly, she emphasizes the need to disentangle cyberspace from virtual-reality, and in doing so, she differentiates between VR as a technology, virtual realities as creations of the imagination, and philosophical concepts of virtuality.¹¹

In this context, Ryan explains that contemporary uses of "virtual" go back to pre-technological definitions, whereby the classical meaning of "virtual" was *potentiality* (as in Aristotle's distinction between potential and actual existence, evidenced by the presence of the oak tree in an acorn¹²). According to Ryan, by the 18th and 19th centuries, the virtual's *dialectical* relation with the actual had turned into a *binary opposition* to the real, whereby the virtual came to mean "the fictive and the non-existent".¹³ Modern uses of "virtual" she writes, continued to make use of the idea of "fake and illusion inherent to the mirror image".¹⁴ Thus, she explains, the term "virtual" came to encapsulate two distinct concepts: the "largely *negative* idea of the fake, illusory, non-existent" and the "overwhelmingly *positive* idea of the potential, which connotes productivity, openness, and diversity".¹⁵ These features, Ryan suggests, correlate to the two central aspects of the VR experience, of immersion and interactivity: it is through immersion she writes, "that the VR user experiences the 'fake', immaterial world projected by the computer"; and it is through interactivity, that the user "actualizes one of the many possible worlds contained *in potentia* in the simulated system".¹⁶ This may explain why VR technology has not "fared as well" with postmodern theory Ryan explains, because "its self-enclosed world, ideal of immersive participation, [and] metaphysics of (tele)presence ... clash with most of the ideas put forward by contemporary literary criticism".¹⁷

While postmodern scholars have obsessed with simulacra and technologies of reproduction as an "assimilation of the virtual to the fake",¹⁸ Ryan suggests that the more positively considered notion of virtual-as-potential can be found in interactivity as a means of *actualization*. (In the context of VR, as Mark Poster puts it, it is not so much about "being within a world but also acting upon it to change it": accordingly, "VR enables, and indeed requires, the individual to participate in constructing the world, as s/he experiences it, rendering it distinct from reading a fixed text".¹⁹) As Ryan points out, the notion of the virtual-as-potential has been much developed by Pierre Levy, who in *Becoming*

Richard Coyne, in *Designing Information Technology in the Postmodern Age*, describes cyberspace as the "environment created by computerized communications networks" (147), including the telephone system and the Internet, and incorporating the activities of "telephone conversations, data transfer, electronic mail, computerized financial transactions, ATM transactions, online information services, video-conferencing, the new mass media, virtual reality and so on". 150.

¹⁰ Ibid., 88.

¹¹ Ibid., 78.

¹² Ibid., 88.

¹³ Ibid., 88-89.

¹⁴ Ibid., 89.

¹⁵ Ibid., 89. Emphasis mine.

¹⁶ Ibid., 89.

¹⁷ Ibid., 105.

¹⁸ Ibid., 90. As an example, Ryan cites Baudrillard's recent work whereby VR has displaced Disneyland as an "allegory of the addiction of late 20th-century culture for the hyperreal" (critically examined by Mark Poster in "Theorizing Virtual Reality: Baudrillard and Derrida"). In this context, Ryan writes that "opposition of the virtual-as-fake to an implicitly authentic real" has led to two different kind of reactions: either "a rejection of the fake, leading to a backlash against electronic culture"; or else "skepticism regarding the concept of real life and alleged authenticity". 90. Ryan goes on to explore the notion of virtual as potential in context of the "open text" in postmodern theory, a subject which lies outside the scope of my discussion.

¹⁹ Mark Poster, "Theorizing Virtual Reality: Baudrillard and Derrida", 48.

Virtual: Reality in the Digital Age, reiterates that just as "the tree is virtually present in the seed" the virtual "tends toward actualization".²⁰ For Levy, the virtual is "a fecund and powerful mode of being that expands the process of creation [opening] up the future", one which involves a process of *transformation* from real or actual *toward* the virtual, rather than the other way around.²¹

As an artist engaged in the actual construction of virtual environments involving immersion and interactivity, I am most interested in the virtual's actualizing, potentializing or transformational qualities in relation to *becoming*, as in the meanings of *poiesis* discussed in the last chapter. As such, my interest is in "bringing-forth" – first as *techne*, in terms of a poetical manifesting into appearance; secondly as *physis*, as the arising of something from out of itself, suggestive of the emergent life-force in nature; and thirdly, in reference to Heidegger's suggestion that it is through "poetic revealing" or questioning, that we can reflect on the situation we have been placed in by an instrumentalizing *techne*. Perhaps this is why, in his epilogue to *Becoming Virtual*, Levy suggests that "In the end, what is important is ... an artistic sensibility in order to grasp these differences, these shifts...."²²

Speaking of shifts, as a visual artist whose formation was grounded in painting, I now want to turn to yet another definition of the virtual: that of David Summers in *Real Spaces: World Art History and the Rise of Western Modernism*. According to Summers, "Virtuality is rooted in the capacity to see three dimensions in two, and in the conditional availability of surfaces upon which this capacity may be brought into play".²³ This term, he writes, was "chosen well before 'virtual reality' became current, [and] refers to images on surfaces that have the 'virtue' or positive force of forms in real space".²⁴ While the Latin *virtus* is from *vir* ("man"), suggesting a possible relation between *vir* and *vis* ("force" or "vigour"), *virere* ("to become green") and *vigere* (to flourish) – the connection being generative force (recalling Levy) – Summers emphasizes that "virtual forms possess a certain force in having the effect of what they are not in fact".²⁵ Images are virtual, he explains, "when they have the force or effect, but not the physical substance, of what they show, and in our experience of their apparently having this force or effect, virtual images are

²⁰ Pierre Levy, *Becoming Virtual: Reality in the Digital Age*, 23.

²¹ *Ibid.*, 16-17.

²² Levy, 185, 186.

²³ Summers, *Real Spaces: World Art History and the Rise of Western Modernism*. 431. Summers' glossary definition of virtual/virtuality is: "Virtual space is an apparent third dimension on a two-dimensional surface; virtuality refers to this effect of three-dimensionality, and to the cluster of devices by which is achieved". 687. He also writes that "Real space is the space we find ourselves sharing with other people and things; virtual space is space represented on a surface, space we 'seem to see'". 43. He goes on to explain that, "In fact, space can only be represented visually as virtual, but at the same time we always encounter a virtual space in a real space." (*Ibid.*) And, whereas sculpture and architecture are arts of real space, painting is a principal art of *virtual space*: We may look at a frescoed wall or a sheet of paper or canvas, and seem to look "into" its surface where we may see an apparent three-dimensional reality, but a virtual space is always an *image on a surface*, and virtual spaces are always *representations* of space. (*Ibid.*)

²⁴ *Ibid.*, 431.

²⁵ *Ibid.* In this context, Summers further explains, "Since they are on surfaces, virtual forms must raise issues of facing, but also of completion and dependence, description and ratio. The virtual forms must also raise the issue of double distance. Virtual forms and spaces are for observers in one way or another presumed to be viewers or seers; they seem to describe the visual in terms of the surface of a format, which in turn is always in a determinate social space". The meaning of the phrase "double distance" is described by Summers in his glossary, as alluding to represented space and the culturally specific social space that the represented space is within (684): I will return to this notion of double distance in Chapter VI.

completed".²⁶ Furthermore, he explains, "When we look from real space into a virtual space, we see an apparent space (and time) necessarily different from that in which we are standing; at the same time, as we recognize and complete virtual space and forms, they may become *as if* our visual experience, to the greater or lesser denial of our real spatial situation. This reflection of the virtual into the real is only partially countered by the idea that what we are seeing is fiction".²⁷ As a former painter whose very reason for abandoning painting was the paradoxical desire to transcend the surface (what I call the "painterly picture plane" in Chapter III) and enable my audience to seemingly enter into a virtual space on the other side, I find Summers' insights very useful, and if space permitted I would examine his thoughts further in the context of virtual environments.

At present however, I want to turn to his comments on the cultural suspicion of the virtual as illusion, already alluded to by Ryan. While virtual images, Summers writes, "may be said to have reality on completion and recognition", and while we are inclined "in some sense to *believe virtual images in the first instance* ... virtual reality is immediately "subject to doubt and verification".²⁸ In modern times, he explains, "the beginning of aesthetic distance is the insistence that it is 'only a play'" – but this is a double-edged posture he suggests, because "just as those who confuse the fictive and the real must be made aware of the difference between them, we also learn to take the appropriate posture of distance, and to insulate ourselves from the evident, to see illusion as 'art'".²⁹ However, whereas in the theater (and in the literary domain as well³⁰) we all willingly suspend disbelief, Summers writes that "In a major strain of the Western critical tradition, stemming principally from Plato, illusionistic skill has provoked reactions very much like deep distrust.... We may be filled with admiration when we are "taken in' by art, but we may also sense duplicity, that art has made the false, meretricious or non-existent seemed true".³¹

"Immersive"

I now want to clarify what I mean by "immersive". This is essential, because not only does my use of this term lie at the heart of my approach to "immersive virtual space", but my interpretation differs from how it is currently being employed in the field. For example, I often find myself having to qualify the medium with which I work as *full-body* immersive virtual space, because the word "immersive" is increasingly being used to refer to *any* viewing experience that involves a visual display wider than a standard rectangular frame.

Unlike most others in the field today, I strongly believe that sensations of full-body spatial immersion are most effectively enabled through a head-mounted display (HMD) which combines stereoscopic visual depth with an *extremely* wide field-of-view, i.e., at least 110-degrees rather than the 40-degrees now commonly available. Not only does the all-surrounding spatial effect afforded by such a device facilitate a much fuller experience of immersion (by this I mean not only horizontally as in a 180 or even 360-degree panorama, but rather *spherically*, 360x360-degrees, an experience which is further enhanced by three-dimensionally spatialized sound), but the fact that

²⁶ Ibid., 340.

²⁷ Ibid., 431.

²⁸ Ibid., 432.

²⁹ Ibid., 433.

³⁰ Ryan, 89.

³¹ Summers, 104.

the wearer is thereby "cloistered" from external distractions also intensifies the experience. (Further discussion of HMDs, in context of my reasons for using them, can be found in Chapter VI.)

Now however, the word "immersive" is associated not only with relatively narrow field-of-view HMDs but also with panoramic, semicircular or even circular screens and domes, as well as the back-projected cube-shaped rooms known as CAVES.³² Admittedly, such display technologies enable unencumbered and multi-person involvement which is useful and even necessary for many practical applications: However, from my perspective as an artist, the fact that they enable the participant to see her own body and the floor beneath, as well as extraneous physical elements, including other people, serves to uphold a certain intellectual or aesthetic *distance* from the images being displayed. Such distance, referred to earlier by Summers, reinforces the separation between perceiver and perceived, and in doing so negates the very effect that interests me, which involves facilitating the collapse, or at least confusion, of culturally-proscribed boundaries between self and world. This concept is one I will return to repeatedly throughout this text.

The word "immerse" is described in the *Shorter OED* as: a) to dip, plunge, or submerge in a liquid; and b) to involve deeply, to become absorbed in a particular activity or condition. In the context of my work, I use the word primarily in terms of its first meaning, which implies *submersion in a viscous medium* like water, even though the second meaning, of cognitive absorption, is equally relevant. Most significantly, I emphasize the quality of being spatially encompassed as in being *sensuously enveloped*, as if by a lover or sea water or even the air itself pressing upon the skin. ("Envelop": to enclose, contain, surround, and *touch* on all sides; and "encompass": to encircle, surround).³³

In this context, it might be useful to consider Coyne's examination of Heidegger's meaning of being *in* the world. There are two meanings of "in", Coyne writes (which recall the double meaning of *to be immersed in*, above): the first of which is *Inclusion*, "as though we, or objects, are located within a container"; the second of which is *Involvement*, "as in 'being in a good mood' [whereby] we are engaged with something". According to Coyne's interpretation of Heidegger, the word's etymology shows that "this latter meaning of 'in' is more primordial than the former", as in "to reside" or "dwell", a meaning which, he suggests, is "all but forgotten and consequently difficult to explain, but which we would do well to revive".³⁴ Coyne additionally points out that, "In a deep (ontological) sense, we are in *the world*".³⁵ The sense of this, he explains, is captured through

³² CAVE means Cave Automatic Virtual Environment.

³³ My conceptualization of space sensuously enveloping the skin is founded on my own embodied experience, particularly in terms of my myopic vision which will be discussed in the next chapter and the phenomenon of scuba diving which I discuss in Chapter VI. While I have not pursued this, philosophical explorations of skin by Luce Irigaray and others have interesting implications. For example, Tikka, in "Vision and Dominance: A Critical Look Into Interactive Systems", writes that "If inter-face mirrors the face of the masculine culture, it is the skin underneath that we should turn to in the search of the feminine. ... Skin serves here as the metaphoric substance that enables us to speak about the feminine that does not yield to representation, and [enables us to] imagine how an intermediary surface in the field of the feminine might work. The skin wraps body into a porous and breathing surface through which a variety of exchange takes place." Such understanding of the skin can be linked to ecological notions of permeability of boundaries which I discuss later in this chapter, and, as I also discuss in the same section, Merleau-Ponty's concept of the "intertwining" whereby he describes, for example, the sensible as "the union ... of the 'inside' with the 'outside', the contact in thickness of self with self..." (VI, 268)

³⁴ Coyne, *Designing Information Technology in the Postmodern Age*, 166

³⁵ *Ibid.*, 167.

Heidegger's hyphenated term "being-in-the-world" from *Being and Time*: "This is", Coyne writes, "the 'in' of involvement with *no presumption of differentiation* between entity and environment";³⁶ whereby "the world is not a spatial container", and "we do not need to be placed in the world", because "*we are already in it*".³⁷

For my particular purposes however, it is not only attentional involvement³⁸ which is key to immersion, (as being *in*) but equally, the experience of being *spatially enveloped*. To my mind, this is *not* the same as being in a space which is thought of as empty, as a container for objects, but rather (going back to the *OED's* meaning of *immerse*, "to be submerged in a liquid") it is an experience of space as full and enveloping in the sense of lying *close* upon the skin. (As for Coyne's crucial comment on Heidegger's notion of being *in* the world as meaning involvement without presumption of difference between self/entity and environment, I will return to this later in this Chapter, under the section titled *Landscapes of Ephemeral Embrace*). My emphasis on this all-surrounding quality of immersion is not without reason: for *surrounding* suggests there is something, *someone*, being surrounded, that there is a *perceiving subject* within. The implication of this on my part is a deliberately shifted focus – from the notion of space as void, as container, and isotropic expanse – to space as it is subjectively experienced, as it is lived and inhabited, whereby the abstraction of *space* is transformed into *place*.³⁹ And being in place suggests having a *body*.

³⁶ Ibid. Emphasis mine.

³⁷ Ibid., 168. Emphasis mine. I will be referring to *being, in, and world* often throughout my text. The reader should note that I use Heidegger's phrase "being-in-the-world" with careful deliberation as an artist who has an intuitive feel for its meaning rather than as a scholar who has analyzed all of Heidegger's texts. I emphasize this because Coyne cautions, "At a superficial level, the language of Heidegger's phenomenology, particularly his notion of 'being-in-the-world' has a seductive ring to people interested in total-immersion environments". He goes on to explain that the main difference between "cyberspace enthusiasts" and Heidegger's phenomenology is "the formers' enchantment with the notion of information", which Coyne believes "has to be abandoned in order to appropriate Heidegger's rich concepts of world". 165. With this, I wholeheartedly agree. As Coyne further explains, in regards to Heidegger's concept of being-in-the-world as an involvement without "presumption of differentiation between entity and environment": "According to Heidegger, this conception of world has been passed over by the philosophical tradition [as well as in contemporary concepts of cyberspace as world, Coyne adds]... Being-in-the-world is not some strange ephemeral concept. It is just the reverse. Once it has been pointed out, it is obvious as a viable account of everyday experience. It implicates the most ordinary aspects of day-to-day living..." 167.

³⁸ This recalls Poster's earlier comment about VR being not so much about being within a world but participating, i.e., acting upon it in order to *change* it. In contrast, I would like to remind the reader of Coyne's comment, quoted in the previous chapter, about the poetic attitude of "letting be" as in "*releasement*" (*Gelassenheit*) as an alternative to conventional technological thinking which seeks to manipulate and control. I have touched on this briefly in the previous chapter, when mentioning my strategy of deliberately avoiding hand-based interface devices which, by default, reinforce the participant's habitual desire to "to-do-this-to-that", in favor of a hands-free interface based on breathing and balance which encourages a much more receptive and contemplative state in most participants. I will return to this issue in Chapter VI, when discussing interface strategies.

³⁹ The meanings of *space* and *place* have been the topic of many studies, too numerous to list here. For example, according to Edward S. Casey, in "Body, Self, and Landscape: A Geo-philosophical Inquiry into the Place-World", *space* and *place* are two different orders of reality: *Space*, he writes, is the name for "that most encompassing reality that allows for things to be located within it"; *place* on the other hand, is the "immediate ambience of my lived body and its history". 404. Elsewhere, Casey writes (*The Fate of Place: a Philosophical History*): "The here and the there, body and space, realism and transcendentalism all meet finally – or rather, begin with – in *place*." 228.

Yi-Fu Tuan, who also has made numerous studies on this topic, writes in *Space and Place: the Perspective of Experience*, that "'Space' is an abstract term for a complex set of ideas ... if we look for fundamental principles of spatial organization we find them in two kinds of facts: the posture and structure of the human body, and the relations (whether close or distant) between human beings.

Accordingly, Maurice Merleau-Ponty, in "Eye and Mind", writes that space conceived from an *embodied* perspective is no longer what it is in Descartes' *Dioptric* ("a network of relations between objects such as would be seen by a witness to my vision or by a geometer looking over it and reconstructing it from the outside"): rather, such space begins *from* the perceiving subject, "starting from me as the zero point or degree zero of its spatiality".⁴⁰ Accordingly, Merleau-Ponty writes: "I do not see [space] according to its exterior envelope; I live it from the *inside*; I am *immersed in it*": "After all", he concludes, "the world is *all around* me, not in front of me."⁴¹ Seen in these terms, to be fully immersed in the world is to relinquish intellectual distance, relinquish the frontal gaze – giving up one's stance as a disinterested subject surveying a world of objects ostensibly separate from one's self – and instead, inhabit the world as a corporeal subject, as a *lived* body among other subjectively-lived bodies, from the *inside*.⁴² For reasons I will discuss in the section that follows, I believe that the medium of immersive virtual space is particularly suited to exploring this terrain.

The medium of immersive virtual space

As I have written elsewhere,⁴³ I think of the medium of immersive virtual space as a spatio-temporal visual-aural arena, wherein mental models or abstract constructs of the world can be manifested virtually in three dimensions (actually four, including time), and then be kinesthetically explored by others through full-body⁴⁴ immersion and real-time interaction. (Again, I want to remind the reader that I am speaking in terms of metaphor here, because the experience of virtual spatiality is, of course, based on paradox: in reality, there is no *actual* space there, but rather a *real* perceptual experience of space resulting from various technologically-enabled visual, aural and kinesthetic effects. Thus, embodied subjectivity plays a central role from the very start.)

In this context, immersive virtual environments can be characterized by their virtuality, immersivity (combining subjective involvement *and* body-enveloping spatiality) and temporality; as

Man, out of his intimate experience with his body and other people, organizes space so that it conforms with and caters to his biological needs and social relations." 34.

Richard Coyne, in *Designing Information Technology in the Postmodern Age*, also provides an in-depth examination of *space*, and *place* in the context of cyberspace. 152-158.

⁴⁰ Merleau-Ponty, "Eye and Mind", 178.

⁴¹ *Ibid.*, emphasis mine.

⁴² In his definition of space in the *Phenomenology of Perception*, Merleau-Ponty writes the following: "Space is not the setting (real or logical) in which things are arranged, but the means whereby the position of things becomes possible. This means that instead of imagining it as a sort of ether in which all things float, or conceiving it abstractly as a characteristic that they have in common, we must think of it as the universal power enabling them to be connected. Therefore, either I do not reflect, but live among things and vaguely regard space at one moment as the setting for things, at another as their common attribute – or else I do reflect: I catch space at its source, and now think the relationships which underlie this word, realizing then that *they live only through the medium of the subject* who traces out and sustains them; and pass from spatialized to spatializing space". 243-244. Emphasis mine.

⁴³ See, for example, my 1995 essay, "Osmose: Notes on Being in Immersive Virtual Space".

⁴⁴ Again, I want to remind the reader that I am speaking of full body immersion here in the sense of the enabling of an experiential effect of being enveloped in a 360x360-degree spherical spatiality, involving the synesthetically-entwined bodily senses of sight and hearing, as well as a proprioceptive and kinesthetic sense of space. I am *not* however referring to the full body in context of *all* the bodily senses such as taste, smell or touch. In this context, Heidi Tikka's warning is relevant: "Only in a culture in which visuality dominates, it is possible to assign a reality status to a visual representation in which some sound effects may enhance a non-tactile, tasteless and senseless world." (Tikka, "Vision and Dominance: A Critical Look Into Interactive Systems") Discussion of the implications of this, however, lies outside the scope of my present discussion.

well as kinesthetic interactivity whereby various elements related to composition and content are relatively dependent on the participant. No other means of artistic expression allows this: While some of these characteristics may be common to preceding media, when combined in the medium of virtual space, their configuration dramatically expands expressive *and* experiential possibilities.

For example, described most simply,⁴⁵ while the pre-cinematic painted panorama of the 19th century attempted to encompass the viewer in horizontally 360-degree space, it did not transcend the two-dimensional and static picture plane, or the frame. And whereas the invention of film extended the static quality of painting (and photography) into the flow of time, and even suggested spatial depth through the camera's motile exploration (as well as other effects beyond the scope of this discussion), cinema has conventionally relied (at least until now) on a predetermined structure limited by temporal linearity. In comparison, the technology associated with Immersive virtual environments effectively transcends the two-dimensional and static picture plane, going beyond the frontally-oriented rectangular frame associated with the pictorial space of painting and film, to seemingly deposit the viewer in a three-dimensional space on the other side, within a *spherically-enveloping* architectonic (and aural) space, characterized by constantly transforming spatial depths which the viewer can navigate in real time, from the *inside*.

In addition, the medium's unique capacity for enabling symbolic constructs to be manifested *virtually* as three-dimensionally extended form (which has hitherto only been associated with the physical material world) differentiates Immersive virtual space from traditional three-dimensional media as well. For whereas the three-dimensional forms associated with sculpture and even live performance are physical (having material substance), in a virtual environment, such forms, even though three-dimensionally extended *as if* in the real and actual world, are ultimately immaterial or rather de-materialized. Such environments may thus serve as spatio-temporal arenas of experience wherein the various compositional elements and the Immersant's behaviour among them are seemingly unlimited by physical laws of actual reality (at least in the case of my work, whereby all surfaces are semi-transparent, and the Immersant is able to not only see through them but float *through* them as well).

Furthermore, unlike in painting or film whereby the pictorial composition (along with its "framing") and content is artistically predetermined, in an Immersive virtual environment the artist surrenders control to the Immersant's motile intentionality or lack thereof: Thus, even while a virtual environment's visual and aural elements may be pre-constructed to potentially appear under certain conditions, their specific appearances and behaviours may be Immersant-dependent. (I'm speaking only in terms of my own work here, not about environments with procedurally-programmed artificial-life characteristics.⁴⁶) The viewer, now active participant, can not only navigate into the depths and

⁴⁵ It is not my intention here to provide a history of the various optical devices such as the panorama, diorama, and stereoscope as antecedents to VR, as this has already been accomplished by others. Such studies include Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the 19th Century*; as well as Erkki Huhtamo, "From Kaleidoscomaniac to Cybernerd: Notes toward an Archeology of Media". More recently, Oliver Grau's *Virtual Art: From Illusion to Immersion* provides an in-depth examination of the technological antecedents which he believes are specific to virtual-reality.

⁴⁶ As such, the programming of so-called artificial life lies outside the scope of my discussion. However, from a similarly cautious attitude as I expressed intuitively in the 1991 artist statement included in the previous chapter, Katherine Hayles has critiqued some of the assumptions underlying such constructions in her essay "Narratives of Artificial Life".

breadths of the environment (thereby constantly altering the composition of the visual field), but she can also interact (or as I much prefer to say, *inter-relate*) with the various visual and aural elements within the work, thereby affecting the work's content and temporal unfolding (as both virtual-as-potential and *poiesis* in terms of bringing-forth). As a result, the work never remains the same, but is open-ended in possibility: accordingly, every individual experience of the work is unique and unrepeatable. Furthermore, without the participant's involvement through immersion, the work does not fully exist. Ultimately, its content depends on a *live collaboration* (as in "real time") between the artistically-constructed work as a *field of possibility* (whereby, at least in my case, the artist has laboured to evoke a particularly themed yet open context of possible meanings), and the Immersant, whose role has been transformed from that of passive observer on the "outside" to an active performer "inside" the work. (I will return to discussion of the "open" work and the notion of performance in Chapter VI.)

Particularly intriguing to me as a former painter is how, in a fully immersive virtual environment, the Immersant can, *in effect*, cross over the picture plane, beyond the pictorial surface with its static and predetermined (and framed) composition, and seemingly enter the spherical spatio-temporal construct of the artist's world, becoming bodily immersed within its flows, navigating among its various visual and aural elements and affecting their behaviours. As will become apparent in the following chapter, it was my desire to cross over that painterly picture plane and bring my audience into an envisioned enveloping space "on the other side" which first fueled my desire to abandon the medium of painting for that of 3-D computer-generated images and eventually, immersive VR. From a painter's perspective, the medium of immersive virtual space not only expands the actual-2D/imagined-3D visual space of painting described by Summers, into a spherical, temporal, and responsive spatiality, but in doing so, it expands the viewer's experience from the purely visual (as seen from *without*) to a visual, aural, proprioceptive and kinesthetic experience⁴⁷ whereby the participant is *bodily* involved in affecting the artwork from *within* its domain.

In terms of experiential effect, immersive virtual space can thus be described as richly paradoxical: not only can it be experienced as an artificially constructed *symbolic* space, but simultaneously, most paradoxically, it is often experienced as an *actual* space – because it *feels* real in the sense of being three-dimensionally extended and subjectively, spherically all-surrounding, with stereoscopic navigable spatial depths which may potentially open, or *reveal* themselves, to the Immersant's exploration. In such an environment, the Immersant is able to seemingly move about and explore at will, encompassed by a seeming infinitude of possibilities (depending on the limits of the actual work) as if she "really is" in an actual place.⁴⁸ Many of the individuals who have been

⁴⁷ Here, "proprioceptive" and "kinesthetic" are entwined, for by "proprioceptive" I am referring to *interior* body sensations regarding body position and movement; whereby "kinesthesia", as described by the Shorter OED, refers to the faculty of being *aware* of bodily position and movement by means of various sensations from nerves (proprioceptors) *within* the muscles, joints, etc.

⁴⁸ These comments are made of course with the acknowledgement that immersive virtual environments such as *Osmose* and *Ephémère*, because they are artworks and therefore human constructions, are most definitely *lacking* the mysterious otherness of actual living beings that dwell in an actual place (unless such place is totally artificial and manmade such as, say, a shopping mall, but even then, its surfaces and plumbing are seething with bacterial life etc.) sometimes hiding, sometimes self-revealing, but always doing so, when given the choice, out of their *own* accord. This recalls the qualities of actual living places as *physis*, as a multitude of potential arisings into presence out of their own accord (as in Heidegger's bursting of a blossom into bloom) in comparison to the challenging-forth by humans through technological enframing.

Immersed in *Osmose* and *Ephémère*, for example, have exclaimed afterwards that they *felt* that they were in a real place, even while rationally *knowing* they were not, leaving them with an inexplicable and unrequited longing to return there, even if they did not know where "there" was.

Such *paradox*, such *slippage* of boundaries, between the virtual and the actual, *between mental concept and bodily percept* – whereby, at least in the case of my own work, the medium's immateriality can be bodily experienced as coexistent with an apparently real three-dimensionality of form; whereby it is possible to seemingly float among semi-transparent entities and pass *through* them as well (and mutually, experience them passing through one's own self, thereby experientially dissolving the notion of the subject-self as closed and separate) as if one were disembodied while simultaneously *grounded* in the body's rhythmic breath – tends to create perceptual and thereby cognitive *confusion*. In my opinion, the very capacity to enable this experience – whereby culturally-inherited, habitually-perceived oppositions and boundaries may come into question, and thus be temporarily *undone*; and, as a result, the participant's attention may be *redirected* to the sensations of her own existential being in the absence of such habitual "framing" – is the source of the medium's most singular and paradoxical power. And it is this potential which most interests me.

Reaffirming subjective embodiment in immersive virtual space

I now want to turn my attention to the subjectively-lived *body*. It is impossible to speak of immersive virtual space, or even the experience of actual physical space, without speaking of the body, for the very experience of being spatially-enveloped depends on having a centre of being, and for us, as incarnate beings, this is the body: *It is only through the subjectively lived body that we can access the world*. My concerns with the body in immersive virtual environments therefore lie not with its representation as a visual icon (which, by its very objectification, reinforces the Cartesian notion of the body as object and thereby negates the subversion of dualism I am trying to achieve) or even its various physically outward movements, but rather how the immersant's own *interior, embodied, sense of self* becomes the ground or medium of the experience.

Philosophers in the phenomenological tradition, including Husserl, Heidegger, Bachelard and particularly Merleau-Ponty, have long emphasized the centrality of subjective embodiment in perception. Considered from this perspective, the body is not just an object in the world (as it is in the Cartesian view) but rather *is the very medium through which our world comes into being*.⁴⁹ As described by Stanton Garner, the phenomenological approach has a "twin perspective on the world" as both perceived *and* inhabited with an emphasis on embodied subjectivity:⁵⁰ As such, he writes, phenomenology seeks to: a) "*redirect* attention from the world as it is conceived by the abstracting, 'scientific' gaze (the objective world) to the world as it appears or discloses itself to the perceiving subject (the phenomenal world)"; b) to pursue the world as it is "given to consciousness in direct experience"; and c) *return* perception to the "fullness of its encounter with its environment".⁵¹

⁴⁹ Drew Leder, *The Absent Body*, 4.

⁵⁰ Stanton Garner, *Bodied Spaces: Phenomenology in Performance in Contemporary Drama*, 3. Emphasis mine. I will return to Garner's comments in context of performance theory, when discussing for my strategies for the physical installation of *Ephémère*, in Chapter VI.

⁵¹ *Ibid.*, 2. Emphasis mine.

For Merleau-Ponty, Western science "manipulates things and gives up living in them";⁵² and is a kind of thinking "which looks on from above",⁵³ whose "fundamental bias is to treat everything as though it were an object-in-general – as though it meant nothing to us and yet was predestined for our own use".⁵⁴ Alternatively, he urges, scientific thinking needs to *return* to the "there is" which underlies science itself, to "the site, the soil of the sensible and opened world"⁵⁵ such as it is in our life and for our body – not that possible body which we may legitimately think of as an information machine, but that actual body that I call mine...⁵⁶ (Furthermore, he emphasizes – and I will return to this later – "*associated bodies* must be brought forward along with my body – the 'others,' not merely as my congeners, as the zoologist says, but the others who haunt me and whom I haunt; the 'others' along *with* whom I haunt a single, present and actual Being..."⁵⁷) Beneath so-called "objective space" in which the body finds its place, Merleau-Ponty writes that subjective experience discloses a more "primitive spatiality of which experience is merely the outer covering and which merges with the body's very being."⁵⁸ "To be a body" he explains, "is to be tied to certain world...; our body is not primarily *in* space: it is of it."⁵⁹

Such statements are echoed by Drew Leder, in *The Absent Body*, where he explains that the *lived* body is "first and foremost not a located thing but a *path of access*, a being-in-the-world".⁶⁰ Rather than being only a physical object, essentially no different than any other example of the general class of physical things (as Cartesianism treats the body) he explains, the very concept of the "lived body" (*lieb* in German) reveals the "deeper significance of corporeality as a generative principle".⁶¹ In this context, he suggests that the notion of the *lived body* might offer an alternative to the cognitive habits of dualism which are so entrenched in our culture: "If the body as

⁵² Merleau-Ponty, "Eye and Mind", 159.

⁵³ Ibid., 160.

⁵⁴ Ibid. 159.

⁵⁵ Merleau-Ponty describes phenomenology as a "philosophy for which the world is always 'already there' before reflection begins – as 'an unalienable presence'; and all its efforts are concentrated upon re-achieving a direct and primitive contact with the world." *Phenomenology of Perception*, vii.

As Steve Odin writes in *Process Metaphysics and Hua-Yen Buddhism: a Critical Study of Cumulative Penetration Vs. Interpenetration*, the term "phenomenological" may be understood through Heidegger's etymological analysis of the word as a composite of two ancient Greek terms, *phainomenon* and *logos*. *Phainomenon* or "that which shows itself" was traced by Heidegger to the archaic Greek verb roots *phy* meaning to emerge, unfold, exfoliate, blossom, open-up or presence-forth, as well as *pha* and *phos* meaning to shine, below, radiate, illumine or light up. Whereas *logos* indicates in certain usages, "letting something be seen". Thus, "phenomenology" comes to mean: letting-be that which shows itself to shine, below, radiate or come-to-presence through co-emergent blossoming into unhidden appearance or non-concealed openness in the horizon of disclosure. 34. (Odin cites Heidegger, "Being and Time: Introduction" in *Basic Writings*, 73-82.)

⁵⁶ Ibid., 160.

⁵⁷ Ibid.

⁵⁸ Merleau-Ponty, *Phenomenology of Perception*, 148.

⁵⁹ Ibid.

⁶⁰ Drew Leder, *The Absent Body*, 21. Emphasis mine. Leder's exploration of the body in context of a phenomenological critique of Cartesianism has been very helpful to the development of my own understanding over the past decade or so: according to my notes, I first read Leder in 1991 while constructing the 3D digital still images described in the next chapter, and then again in 1993 while conceptualizing *Osmose*. I will return to his insights at various points throughout this text, including in the final section of this chapter in terms of his discussions of both the Neo-Confucian concept of forming "one-body with the world" and Merleau-Ponty's "intertwining" of perceiver and perceived; as well as through references to his comments in the *Osmose* working notes excerpted in Chapter IV; and in context of discussing my strategy of using breathing-as-interface in *Osmose* and *Ephémère* in Chapter VI.

⁶¹ Ibid., 5.

lived structure is a locus of experience, than one need not ascribe this capability to the decorporealized mind. The self is viewed as an integrated being".⁶² (I will return to Leder's ideas later in this chapter.)

Similarly, the geo-philosopher Edward Casey, in "Body, Self, and Landscape: A Geo-philosophical Inquiry into the Place-World", writes that the experiential mode, the vehicle, of "being-in-place" is the body:⁶³ "There may well be space and location in the absence of an embodied self" he explains, "but in the presence of place, there can be no subject other than a corporeal subject capable of possessing habitus, undertaking habitation, and bearing the idiolocality of place itself".⁶⁴ This, he emphasizes, is a "concrete self of the hearth, not a disembodied occupant of the cosmos".⁶⁵ Speaking of cosmos, the mythologist Joseph Campbell has described the corporeal body as the psycho-physiological origin of *all* human imagery: Myths and dreams, he writes, are "motivated from a single psycho-physiological source - namely, the human imagination moved by the conflicting urgencies of the organs (including the brain) of the human body, of which the anatomy has remained pretty much the same since c. 40,000 B.C."⁶⁶

Even though the centrality of our corporeality as living beings seems obvious, nevertheless the fantasy of using technology to abandon the body remains widespread, as suggested in Chapter I. As Katherine Hayles writes in "Embodied Virtuality: Or How to Put Bodies Back into the Picture", we are often told that cyberspace is a "disembodied medium": to the contrary she emphasizes, we are *never* disembodied, even in virtual space.⁶⁷ In this context she asks: "If it is obvious that we can see, hear, feel, and interact with virtual worlds only because we are embodied, why is there so much noise about the perception of cyberspace as a disembodied medium?"⁶⁸ Hayles suggests that the answer lies in how constructions of virtuality are constituted, whereby the illusion of disembodiment is created by maintaining "a sharp boundary between the body and the image that appears on screen, ignoring the technical and sensory interfaces connecting one with another".⁶⁹ She goes on to explain that the screen image is treated as "constituting a world opening up behind

⁶² Ibid.

⁶³ Casey, "Body, Self, and Landscape: A Geo-philosophical Inquiry into the Place-World", 413.

⁶⁴ Ibid., 416.

⁶⁵ Ibid.

⁶⁶ Joseph Campbell, *The Inner Reaches of Outer Space: Metaphor as Myth and as Religion*, 12.

⁶⁷ Hayles, "Embodied Virtuality: Or How to Put Bodies Back into the Picture", 1. Hayles' full statement reads as follows: "Cyberspace, we are often told, is a *disembodied* medium. Testimonies to this effect are everywhere, from William Gibson's fictional representation of the "bodyless exultation of cyberspace" to John Perry Barlow's description on his virtual reality experience as his 'my everything has been amputated'. In a sense, these testimonies are correct; the body remains in front of the screen rather than within it. In another sense, however they are deeply misleading, for they obscure the crucial role that the body plays in constructing cyberspace. In fact we are never disembodied. As anyone who designs VR stimulations knows, the specificities of our embodiments matter in all kinds of ways, from determining the precise configurations of a VR interface to influencing the speed with which we can read a CRT screen. Far from being left behind when we enter cyberspace, our bodies are no less actively involved in the construction of actuality than in the construction of real life." 1.

Similarly, Coyne has written in *Technoromanticism* that "Ironically, in cyberspace narratives the out-of-body experience is appropriated through technological means, which inevitably require connections to the body, and a complex material computer infrastructure, though here the phenomenon of connecting to a computer is thought to transcend the mere materiality of being a body connected to a machine." 65.

⁶⁸ Ibid., 1-2.

⁶⁹ Ibid., 2. Emphasis mine.

the screen" functioning as an "alternative universe that our subjectivities can inhabit".⁷⁰ Most significantly, she suggests, this approach to the medium results in the *erasure* of awareness of the "very perceptual processes that brought this 'world' into being".⁷¹

In comparison, in my own work I have specifically and deliberately attempted to *reaffirm* the role of the subjectively-inhabited body in Immersive virtual space, for I believe that it is only *through* the body, and specifically through body-centered interfaces that we can fully explore the medium's potential. Accordingly, I have incorporated the Immersant's breath and balance – along with the internal proprioceptive aspects of using such processes to seemingly "stay float" – as a means of navigational interaction in my virtual environments. Furthermore, I have done so in such a way that the Immersant's body (even while standing her ground, remaining in one place) is encouraged to be fluid and flexible, through inhaling, exhaling, balancing, bending, crouching and gesturing around her own *interior* body-core, almost as if engaging in a body-aware activity such as Tai Chi. It is impossible to experience immersion in these works without using one's own body: In every respect, one's living breathing body, one's lively perceiving self, *is* the work's experiential ground. (For further discussion of the implications of this embodying interface, see Chapter VI.)

Immersive virtual space as a means of transforming perception

In *The Poetics of Space*, Gaston Bachelard writes, "By changing space, by leaving the space of one's usual sensibilities, one enters into communication with a space that is psychically innovating": In doing so, he explains "we do not change place, we change *our nature*".⁷² In this statement, Bachelard was describing the psychologically transformative potential of physical space. More specifically, he was referring to immense open places like the desert, the plains and the deep sea, which, because they are *unfamiliar*, because they are *unlike* the environments to which most of us are habitually accustomed in our everyday lives, can be psychically invigorating. (See my discussion of the deep sea in this context, in Chapter VI, under *Diving as metaphor*.)

My approach to the medium of Immersive virtual space is based on the conviction that it can potentially facilitate the same kind of perceptual effect, serving as an experiential site for "changing space" in the sense meant by Bachelard. Whereas familiarity (habituation) with our everyday environment can lull us into complacency as if on perceptual autopilot, immersion in a virtual environment which is deliberately designed to be unfamiliar can facilitate a renewing or refreshing of perception. Such refreshing involves a directing of attention away from our mental preoccupations (and corresponding attentional *absence* from the world) *back* to the more immediate sensations of our own embodied presence *in* the world. (Such redirection and returning of attention is described by Gamer earlier as the goal of phenomenology.)

I cannot emphasize enough however, that such potential for transformation exists *only* to the extent that a virtual environment is designed to be *different*, that it is designed to be *unlike* the world of our usual perceptions. When designed in ways that reflect our habitual assumptions of a Cartesian opposition of subject and object and related manipulating and controlling behaviour, such

⁷⁰ Ibid.

⁷¹ Ibid. Hayles goes on to explain that the tautology that makes this illusion so compelling is that people *want* this alternate world to exist so that the body can be left behind, and people *know* the body can be left behind because this alternate world exists.

⁷² Gaston Bachelard, *The Poetics of Space*, 206. Emphasis mine.

environments (*regardless* of innovative content) forego their transformative potential and by default, reinforce the status quo.

In *Through the Vanishing Point: Space in Painting and Poetry*, Marshall McLuhan writes that "one of the peculiarities of art is to serve as an anti-environment, a probe that makes the environment visible".⁷³ Stating that the role of the artist is to "open the door of perception to people otherwise numbed in a non-perceivable situation", McLuhan emphasizes that this function of art is betrayed if the artist "merely repeats the bias of the culture instead of readjusting it".⁷⁴ Accordingly, it is *only* when virtual environments are constructed in ways that circumvent or subvert the technology's conventional design metaphors regarding representation and interaction (e.g., objective realism and artificial perspective, and all tendencies towards disembodiment, transcendence, and the will to master and control) that the medium of immersive virtual space can be used to convey alternative sensibilities and interpretations of being in the world. To use the medium otherwise (with the exception of its many practical and didactic applications) is to miss its potential as a perceptually and philosophically *invigorating* tool.

My work thus involves more than "crossing over" the picture plane into so-called virtual space and supposedly bringing an audience in there with me: it necessitates rethinking and re-approaching the technology itself. In this context, I am interested in the medium's capacity for facilitating a *questioning* in the sense meant not only by Heidegger but also by Bachelard – as an undoing (or shattering) of our habitual perceptions of the world, our biased assumptions, our conventional behaviour, even if only temporarily. I approach immersive virtual space as a means of de-stabilizing or dissolving the boundaries between subject, object, interior, exterior, mind and body, self and other, all of which have been rigorously defended by the Cartesian worldview. At the same time, I approach this medium as a site for poetically presenting what I envision might lie behind the static and solid surface appearances of the world as we have culturally constructed it – not however as a transcendent Platonic order of eternal forms, or an underlying mathematical reality, or even an interpretation of optical sensation⁷⁵ – but rather as an immanent reality of fluxing and flowing in which there is no separation between perceiver and perceived, and no differentiation between entity and environment. As already explained in Chapter I, my goal is to subvert this technology, using it to *redirect* attention, as much as may be possible, to reconsidering our place here now, in the living dying world *freshly*.

⁷³ Marshall McLuhan, *Through the Vanishing Point: Space in Painting and Poetry*, 252.

⁷⁴ *Ibid.*, 241.

⁷⁵ The reader should note that in speaking of designing virtual environments *unlike* our usual perceptions (whereby we normally see the world around us as an aggregate of solid separate objects in empty space, hence the illusionism, objective realism or photorealism, and the separate-objects-in-empty-space-syndrome that, by default, characterizes most conventional 3-D digital imaging), I am *not* referring to representation of optical sensations as attempted by some of the Impressionist painters (although the work of Monet was inspirational in my earlier painting career, as I will explain in a footnoted comment in the next chapter); nor the Platonic ideal of Postimpressionism, but rather something altogether different. If I was pressed to suggest a precedent in Western painting, I would be tempted to suggest the late works of Turner – for as Jonathan Crary writes, "...Turner's work can be said to be sublime: his painting is concerned with experience that transcends its possible representations, with the insufficiency of any object to his concept". Crary, "Visionary Abstraction", 143.

As I have so far defined it, the medium of Immersive virtual space harbors a unique convergence, a paradoxical interlacing of spatialities - actual and potential, real and virtual, pictorial and architectonic, mental and physical, solitary and social - which can be artistically-constructed, bodily inhabited and publicly performed. In this context, I would say that Immersive virtual space, as a medium which moves beyond the mere presentation of *images* to the enabling of body-enveloping spatio-temporal *experiences*, is a new kind of artistic working space.

In saying this, I want to emphasize that I do not envision the medium in utopian terms, nor do I believe my desire to facilitate Immersion in an image space on the other side of the picture plane is without precedent. As Oliver Grau writes in *Virtual Art: from Illusion to Immersion*, there is a long tradition of constructing spaces of illusion, from the frescoes of Pompeii, baroque ceiling paintings, painted panoramas between 1787 to 1895, and Monet's panoramic water lilies, to the evolution of various filmic devices including the Stereopticon, Cineorama, Omnimax theatres, and so on.⁷⁶ In this context, as Grau says, Immersive virtual environments can be considered as but the most recent manifestation of the "illusionist desire" to be wholly-encompassed by the artwork, to be totally merged within its representation. (I should point out that while Grau discusses my work at length in his book, it is not my intention here, or anywhere else in my text, to engage in others' opinions about my work: Interested readers will find such a bibliography in the Appendix.)

While this new medium, Grau writes, reactivates the "mechanism of suggestion" that has been present historically in all new media of illusion,⁷⁷ virtual-reality poses another issue: The more fully a participant becomes involved, both interactively and emotionally, in such environments, "the less the computer-generated world appears as a construction", and the more it becomes "construed as a personal experience".⁷⁸ Accordingly, the ability to maintain critical detachment, to objectify the work becomes nearly impossible.⁷⁹ As the "illusionary symbiosis of observer and work" increases (as the interface becomes more intuitive, and accordingly, rather than posing as an obstacle in-between, seems to vanish), the more "psychological detachment, and distance from the work" disappears: when this happens, Grau suggests, the work is longer be perceived as an "autonomous aesthetic object". As a result, he warns, "a fragile, core element of art comes under threat: the observer's act of distancing that is a prerequisite for any critical reflection".⁸⁰ Such critical detachment, he reminds us, is "a decisive hallmark of modern thought that has always played a role in experiences of and reflections on art".⁸¹ (The insistence on such detachment also reflects our culture's deep distrust of illusion, as pointed out by Summers,⁸² going all the way back to Plato.⁸³)

⁷⁶ Oliver Grau's *Virtual Art: from Illusion to Immersion* is an in-depth examination of the technological antecedents to virtual-reality. In addition to Grau's own translated essay, "Into the Belly of the Image: Historical Aspects of Virtual Reality", other historical analyses include: Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the 19th Century*; and *Suspensions of Perception: Attention, Spectacle, and Modern Culture*; and Erkki Huhtamo, "From Kaleidoscomaniac to Cybernerd: Notes toward an Archeology of Media". For histories of the panorama see: Stephan Oettermann, *The Panorama: History of a Mass Medium*; and Barry Comment, *The Painted Panorama*.

⁷⁷ Grau, 200.

⁷⁸ Ibid.

⁷⁹ Ibid., 202.

⁸⁰ Ibid.

⁸¹ Ibid.

⁸² Summers points out that "The Western critical history of arts of illusion such as painting and theater has been preoccupied over the centuries with a deep distrust, not simply of images, but of

As an historian considering the medium's sociological implications, Grau also suggests that the urge to construct such experiential "totality" may ultimately have a politically coercive effect. "Increasingly powerful computers", he writes, "increase the suggestive potential of virtuality, which, particularly through the ideology of a 'natural interface', is beginning to unfold its full psychological and manipulative influence".⁸⁴ Accordingly, he emphasizes, "Against the backdrop of virtual reality's illusionism, which targets all the senses for illusion, the dissolution of the interface is a political issue".⁸⁵ As much as I agree with Grau's warning regarding the future impact of virtual-reality technologies, nevertheless I must question whether the very notion of maintaining critical distance, with its implied supposition of objectivity on the part of the observer, is but a reinforcement of a dualist worldview. I say this as an artist who is compelled, and my ideas driven, by the very desire to *collapse* such distance; whereby the strategies I have used in my environments are specifically intended to *dissolve* boundaries between perceiver and perceived. (While this may well complicate the conventional aesthetic experience between observer and artwork, I do not have time to examine such implications here.)

3. Defining "Landscape" in Context of the Work

First of all, I want to explain that I am deliberately using the word "landscape" rather than "environment" or "space" for the title of this text, *Landscapes of Ephemeral Embrace*. As such, my use of the word "landscape" is intended to refer both to the content *and* the medium of my work. Thus, by "landscape", I am referring specifically to the phenomenal world experienced in situ by an embodied subject, as an actual locality of *place* with an encircling horizon which the subject can be bodily *within*. And, I am simultaneously referring to the artful reconstruction or re-presentation of such landscape as a virtual environment which can also (paradoxically, because of its immersive quality) be experienced by an embodied subject, in situ, as place, *even if* it is virtual. In both instances, I am speaking of the *subjective perceptual experience of place*, not as de-contextualized abstract space but as space which can be immediately, sensorially apprehended: *not* only through vision, but more importantly, experienced as *all around*, through hearing and the more general proprioceptive sensation of feeling spatially encompassed, as explained when defining "immersion" earlier in this chapter. (Other senses such as smell and taste are beyond the scope of the present discussion; and direct touch, as in "handling", is something I have chosen to avoid for reasons explained in chapter VI, in context of the user interface.)

'art' and virtuality in general. Solidly within these traditions, much of the rhetoric of modernism has been a moralizing rejection of both images and illusion." 433.

⁸³ The reader should note that illusionism in Western painting, as discussed by Summers, has hitherto been associated primarily with mimetic representation, in terms of copying or mimicking the surface appearances of the world, as also evident in the representational conventions of photorealism or objective realism associated with most 3-D digital imaging. In comparison, immersive virtual environments such as *Osmose* and *Ephémère* are not based on mimeticism: in this case, the illusion has to do with the convincingly real quality of the immersive experience, rather than mimetically realistic visual representation. Or rather, as I will explain in chapter VI when discussing the significance of semi-transparency and low resolution in my work, it is inversely the *lack* of mimeticism and high-resolution (sharply focused detail), which enhances the "realness" of being immersed.

⁸⁴ Grau, 203.

⁸⁵ *Ibid.*

Before proceeding further, I want to examine some traditional meanings of the word "landscape". According to Edward Casey in *Representing Place: Landscape Painting and Maps*, the literal meaning of landscape is "shape of the land", a word deriving from the Dutch *landschap* that signifies: a) a vista or "cut" (hence Casey explains, the "scape") of the perceived world, construed as "country" or "land" or "field" set within a horizon; and b) the "circumambience provided by a particular place"; as well as c) a genre of painting that, in contrast with *landskip*,⁸⁶ is concerned with the "material essence of a place or region rather than with its precise topography".⁸⁷ From a slightly different perspective, Yi-Fu Tuan, in *Topophilia: A Study of Environmental Perception, Attitudes, and Values*, suggests that the word "landscape", in its original sense, refers to "the real world, not to the world of art and make believe [as in scenery]".⁸⁸ In this context, he explains that in Holland *landschap* was originally used to designate common places such as farms or fenced fields, and only when the word was transplanted to England near the end of the 1500's, did it "shed its earthbound roots and acquire the precious meaning of art". Subsequently, he writes, landscape came to mean "a prospect seen from a specific standpoint", and then, an "artistic representation of that prospect", and so on, increasingly becoming integrated with the world of make-believe.⁸⁹

Landscape, as representation

In regards to the artistic representation of landscape as painting (Casey's third meaning of *landschap*), Malcolm Andrews, in *Landscape and Western Art*, emphasizes that a "landscape", regardless of whether it is cultivated or wild, "is already artifice before it has become the subject of a work of art".⁹⁰ Even if a landscape never achieves representation through paintings or photographs, he explains, "something significant has happened when land can be perceived as 'landscape'".⁹¹ Commenting on Kenneth Clark's study of landscape painting *Landscape into Art* written half a century ago, Andrews writes that for Clark, landscape was "raw material waiting to be processed by the artist":⁹² On the contrary, suggests Andrews, "Landscape ... is mediated land, land that has already been aesthetically processed".⁹³

In this context (following the work of W.J.T. Mitchell who writes in *Landscape and Power* that "landscape is not a genre of art but a medium"; and "a medium of exchange between the human and the natural, the self and the other"; and, as such, landscape "is both the represented and presented space, both the signifier and signified, both the frame and what a frame contains, both the real place and its simulacrum..."⁹⁴) Andrews writes that landscape, which has historically been "either the real countryside or the pictured representation of it, is in effect the combination of the two, or a dissolving the two together, [or to use Mitchell's phrase] 'a natural scene mediated by culture'".⁹⁵ While I would like to explore these issues further,⁹⁶ I must refrain from doing so at the

⁸⁶ Comparatively speaking, *landskip* was an early conception of painting that emphasized a site's topographical exactitude, and was sometimes applied to maps.

⁸⁷ Edward Casey, *Representing Place: Landscape Painting and Maps*, (glossary) 348-349.

⁸⁸ Yi-Fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes, and Values*, 133.

⁸⁹ *Ibid.*

⁹⁰ Malcolm Andrews, *Landscape and Western Art*, 1.

⁹¹ *Ibid.*

⁹² *Ibid.*, 2-3.

⁹³ *Ibid.*, 7.

⁹⁴ W.J.T. Mitchell, *Landscape and Power*, 5.

⁹⁵ Andrews, 15.

present time: However, as an artist making highly mediated virtual environments that in some way facilitate perceptual experiences related to nature, Mitchell's comments about landscape as "both the represented and presented space", "the frame and what a frame contains", "the real place and its simulacrum..." are extremely interesting, as they recall what I have written earlier in another context, in terms of describing the paradoxes inherent to the medium of Immersive virtual space.

Andrews' following comments also lead back to the issue of constructing landscapes in Immersive virtual space: Landscape art in the West, he writes, "over the last 500 years, can be read as the elegaic record of humanity's sense of alienation from its original habitat in a irrecoverable, pre-capitalist world".⁹⁷ This however, he suggests, is "as much myth as history", explaining that since the late '70s, Marxist art historians have made us more suspicious of the "elegaic serenities" of landscape painting, as a "seductive 'curtain'" (to use John Berger's term⁹⁸) by which landscape is used to "mask" the land as lived by its inhabitants.⁹⁹ According to Andrews, the challenge to landscape from an "outsider's perspective"¹⁰⁰ by Marxist art historians and heritage critics has only provided an *intellectual* corrective: the more pervasive and profound challenge, he writes, has come from environmentalists. In this context he suggests, "it is difficult to escape the feeling that we are all 'insiders' now, alarmingly aware of the finiteness of the natural resources we used to take for granted as Nature's endless bounty".¹⁰¹ He goes on: "We don't have to imagine, with the aid of alluring images of Arcadian natural simplicity, what it was like to live *in* Nature: we are all too aware of our dependency on Nature now. More crucially still, we feel Nature's dependency on us".¹⁰² Most significantly, Andrews writes that considered from this perspective, "Landscape as a way of seeing from a distance is incompatible with this heightened sense of our relationship to Nature as living (or dying) *environment*. As a phase in the cultural life of the West, landscape may already be over".¹⁰³

Andrews' suggestion that traditional Western landscape painting was a way of "seeing from a distance" brings to mind a similar comment by Casey, that for Western painters, whether from the ancient world, early Greece, the Middle Ages, the Renaissance, or even the early modern period, "nature is *without*: it is something external to conquer, subdue, and shape".¹⁰⁴ Furthermore for such painters, "the natural world is first of all something to *take over* – take over in its material otherness, its transcendence of the human realm – and then to *take in*: where to "take in" connotes both to internalize and to represent, and to do so by respecting its very otherness".¹⁰⁵

⁹⁶ Other explorations of landscape in terms of its political/cultural aspects include (to name only a very few): John Berger, *Ways of Seeing*, and *Ways of Looking*; I. G. Simmons, *Interpreting Nature: Cultural Constructions of the Environment*; Neil Smith, "The Production of Nature"; M. Warnke, *Political Landscape: The Art History of Nature*; and Alex Wilson, *The Culture Of Nature: North American Landscape from Disney to the Exxon Valdez*.

⁹⁷ Andrews, 21-22.

⁹⁸ John Berger, *A Fortunate Man* (London: Writers'/Readers' Publishing Cooperative, 1976) 13, 15.

⁹⁹ Andrews, 22.

¹⁰⁰ Andrews borrows this term from the geographer Dennis Cosgrove, *Social Formation and Symbolic Landscape* (University of Wisconsin press, 1998 [first pub. Croom Helm, 1984]), 19.

¹⁰¹ *Ibid.*

¹⁰² *Ibid.*

¹⁰³ *Ibid.*

¹⁰⁴ Casey, 95.

¹⁰⁵ *Ibid.*

Contrasted with this attitude is the view of early Chinese painters,¹⁰⁶ for whom Casey suggests "nature is never strictly outside us – nor, in contrast, within us, but *everywhere*, equally so and at all times. We are already in nature, and nature is in us: 'nature' in lower case, no longer transcendent, wholly other, or altogether wild."¹⁰⁷ Therefore there is no reason to struggle *against* nature, take it over or take it in: as Casey writes, the natural world has *already* made its appearance.¹⁰⁸ Accordingly he suggests, "our task (and pre-eminently the task of painters) is to convey this pre-given immanence, this constant accessibility, this unstinting generosity of the natural realm"; and, as he goes on to explain, "The effort (or, about appropriately, the noneffort) is to reverberate with a world already well-known to us: to achieve "spirit resonance" (*ch'i-yun*) with all that is, including ourselves as an integral part of all that is".¹⁰⁹ In this spirit, Casey writes, "landscape is nothing other than the visibility of a ubiquitous nature, its manifest layout, its way of being present to us, not before us or against us, or even in us, but *with us*".¹¹⁰ And for the early Chinese, Casey explains, "the vehicle of this 'withness', the basis of any significant consonance with nature, is *ch'i*, the ever-circulating cosmic energy that inhabits human and nonhuman worlds at once, making them more same than different, *interanimated*, as it were".¹¹¹ (I will return to the notion of *ch'i* in a following section.)

In a related context, while discussing landscape paintings of the Northern Sung epoch (A.D. 960-1126), Casey introduces the concept of *re-implacement*: "Not only are places *the mediatix between body and horizon*, that is, their creative common matrix", he writes, "but in the context of landscape painting they facilitate the ingression of perceived and undergone realities into depicted ones".¹¹² As he goes on to explain, "landscape paintings are by no means restricted to representing such depicted places (this way lies the rigorous route of exact description); they also *transmit* them – first to the surface of the representational vehicle, then to our perception as viewers".¹¹³ Casey is not referring here to the particulars with which a given landscape is populated (its trees, rocks, streams etc.), but rather an experience of place: *place*, he emphasizes, *is what is primarily transmitted in landscape painting*.¹¹⁴ Such a transmission, he explains, "is a process not of purely psychical redifferentiation but of cosmic re-implacement: putting places somewhere other than where they first were (whether in the natural world in which the artist wanders earlier in his convey grand imagination), or even were secondly (in his heart or chest: his 'memory')".¹¹⁵

In this context, Casey emphasizes, *it is a matter of putting places into paintings*, and this means "putting them into the place-world of the artwork, making them its primary content... When

¹⁰⁶ Casey suggests that this philosophical framework, shared by poets and painters, connoisseurs and officials, literary critics and everyday people, was laid down early in Chinese civilization, at least as early as the *Tao-te ching* (fourth century B.C.), and continued to influence the arts into modern times. 95. I would say this might have lasted until the Maoist Cultural Revolution, whereby, as I witnessed firsthand on an extended visit to the People's Republic of China in 1979, earlier sensibilities had been replaced by a state-sanctioned Soviet-influenced social realism, at least in terms of painting. This too has been recently replaced in the "new" China.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ Ibid.

¹¹² Ibid., 113. Emphasis mine.

¹¹³ Ibid.

¹¹⁴ Ibid., 114.

¹¹⁵ Ibid.

this is done, re-implacement has happened; and when it is done well, it effects *ch'i-yun*, an expansive spirit resonance that reflects the expansiveness of the world held within, while also re-embodiment ... the *ch'i* and *li* ... of the place-world without".¹¹⁶ In this way, he explains, "re-implacement is a means of attaining artistic truth" – not to be confused with "mere 'lifelikeness', that is, formal similarity" or "verisimilitude" as it is known in the West¹¹⁷ (as in the Romans' *veritas* compared to the pre-Socratic *aletheia*) – but in terms of being *true to place*, through "transmission of the spirit that inheres in a place with which one is fully resonant".¹¹⁸ In this context, "What the painter transmits thus is an enspirited place or set of places, the detotalized totality of the *genii loci* that make up a landscape and keep it moving – and that keep its representation in a painting from becoming a 'dead image', a diagram or mere map of its literal contents".¹¹⁹

Casey's comments regarding traditional Western landscape as a means of viewing nature from *without*, as something to conquer and subdue (echoing Andrews' description of such painting as a way of seeing "from a distance", a distance which, as he says, is becoming more obviously untenable) can also be interpreted in the context of conventional modes of representation via digital technologies which reinforce the West's dominating and objectifying stance toward the world, as I have already explained in Chapter I. In comparison, I have attempted to use the medium of immersive virtual space to *collapse* such distance, to situate the previously externally situated (and disembodied) viewer as an embodied participant *within* the scene: a scene which is no longer merely *viewed* as a statically-composed and framed two-dimensional representation, but which can be visually, aurally and kinesthetically *experienced* as an animated and bodily-enveloping *place*.

Landscape, as bodily-enveloping place

Earlier in this chapter, I quoted Casey explaining that just as there can be no implaced self except as a body/self, so in the presence of place, "there can be no subject other than a corporeal subject capable of possessing habitus, undertaking habitation, and bearing the idiolocality of place itself", this being "the concrete self of the hearth, not a disembodied occupant of the cosmos".¹²⁰ In the context of landscape, he adds, "Only in the generous embrace of landscape can we go from hearth to cosmos and then, having become cosmopolitan, return to hearth once more".¹²¹ Most relevantly for this discussion, (echoing what Mitchell writes about landscape as *a medium of exchange* between human and natural, self and other, and what Casey calls the *mediatrix* between body and horizon) Casey emphasizes, "Landscape is the transitional domain that links cosmos and hearth, place and space, self and other".¹²²

Casey's understanding of landscape as subjectively-experienced, bodily-inhabited *place* is particularly relevant, because he considers landscape to be a "cusp concept", which not only serves to distinguish between space and place (differences I have referred to earlier when discussing immersion), but which also provides the point of what he calls their "most salient difference".¹²³

¹¹⁶ Ibid.

¹¹⁷ Ibid., 114; 115.

¹¹⁸ Ibid., 115.

¹¹⁹ Ibid., 115-116.

¹²⁰ Casey, "Body, Self, and Landscape: A Geo-philosophical Inquiry into the Place-World", 416.

¹²¹ Ibid., 418.

¹²² Ibid.

¹²³ Ibid., 417.

This ontological difference, he says, is nowhere more evident than in the primary feature of landscape, its *horizon*. Every landscape has a horizon he emphasizes, but space never does.¹²⁴ In this context, he quotes Erwin Straus, "In a landscape we are enclosed by a horizon; no matter how far we go, the horizon constantly goes with us. Geographical space has no horizon".¹²⁵ The horizon, Casey explains, "is an arc wherein a given landscape comes to an end – an end of visibility, of presence, of availability".¹²⁶ In comparison, "a place per se has no horizon, only an enclosure or perimeter": only when places are "concatenated in a landscape" is there anything like a horizon, which is the "undelimited limit, or better the *boundary*", for the landscape as a whole.¹²⁷ Most importantly, he emphasizes, as a boundary, the horizon does not "merely close off the landscape", but rather it "opens it up for further exploration, that is for bodily Ingression".¹²⁸ In this regard, Casey quotes Heidegger (recalling Scheibler's discussion of Heidegger's notion of horizon as discussed in Chapter I) as follows: "A boundary is not that at which something stops, but as the Greeks recognized, the boundary is that from which something *begins its presencing* [or 'essential unfolding'] That is why the concept is that of *horismos*, that is, the horizon [as] the boundary".¹²⁹ Hence, writes Casey, the horizon can be described by the same term as Aristotle uses to describe the limit of a place: the *surrounder*.¹³⁰

This notion of landscape, as not only enveloping, but in which the horizon opens up for further exploration is very familiar to me. When I was growing up, I often went exploring through the countryside as a young girl alone on horseback: During such forays (among fields and forests transforming through changing light, weather and seasons), I experienced the landscape as a spatio-temporal environment with an encircling horizon which I was not only bodily *within*, but which continually revealed itself, which *came into presence*, according to my trajectory *through* it.

¹²⁴ Ibid.

¹²⁵ Quoted by Casey, from Erwin Straus, *The Primary World of Senses*, 318-23.

¹²⁶ Casey, 417.

¹²⁷ In the context of artistic representation of place, Summers writes that while "horizon" originally meant a boundary, when we use the term we do not only mean the apparent line where earth and sky seem to meet, but rather the limit of our field of vision. And whereas the definition of the horizon as a line (common in traditional Western art) entails explicit definition of "the virtual plane as a plane in relation to the standpoint and angle of vision of a viewer", *non*-definition of the horizon (common in early Chinese painting) implies a place which "is not subject to our sight", but which "is limitless in that its limits cannot be seen". Accordingly, rather than being defined by an abstract and geometric vision, such a place is bound to the limits of embodied vision, to the presence of air and light, and "by the breath or spirit of a place, or of the world, in which the viewer is by implication, also enclosed". 465-466.

¹²⁸ Casey, 417. Of the horizon, Merleau-Ponty writes in *The Visible and the Invisible*, "When Husserl spoke of the horizon of things – of their exterior horizon, which everybody knows, and of their 'interior horizon', that darkness stuffed with the visibility of which their surface is but the limit – it is necessary to take the term seriously. No more than are the sky or the earth is the horizon a collection of things held together, or a class name, or a logical possibility of conception, or a system of 'potentiality of consciousness': it is a new type of being, a being by porosity, pregnancy, or generality, and he before whom the horizon opens is caught up, included within it. His body and the distances participate in one same corporeity or visibility in general, which reigns between them and it, and even beyond the horizon, beneath his skin, unto the depths of being". 148-149.

¹²⁹ Casey, 418. The reader should note that I have deliberately added a phrase from a different translation. The wording Casey quotes is "begins its *presencing*" from Heidegger's essay "Building Dwelling Thinking" as translated by A. Hofstadter in *Poetry, Language and Thought*, 154. I however prefer the wording "begins its essential *unfolding*" from the same essay as compiled in *Martin Heidegger: Basic Writings*, ed. David Farrell Krell, 356. This is because the notion of *unfolding*, as I will explain the following paragraph, is closely related to my own experience of exploring place.

¹³⁰ Ibid.

Thus, rather than seeing the "landscape" as a static composition some distance in front of me, I experienced it as *unfolding all around*, with myself and horse as its moving centre-point as we passed through, our every journey open-ended. Casey writes about such experience of place through *walking*, as I did on horseback then, and do now on my own land: "In walking", he explains, "we move into a near-sphere of our own choosing, if not of our own making," and in doing so, "we encounter places as much as we enliven them", with the result being "a place-world that is the correlate of the ambulatory body – a world constituted by the very same body that depends on it for its own ongoing localization".¹³¹ It is also true however, Casey writes, "that I walk in a world I am *not*: a world that I, absolutely here, discover as already *there*. The here and the there, body and space, realism and transcendentalism all meet finally – or rather, begin with – in place".¹³²

Landscape, as dialogue, as place-making

Writing from yet another perspective about landscape, Anne Spirn in *The Language of Landscape*, differentiates between a first, second, and third nature: according to her, authors from Cicero to Marx¹³³ consider "first nature" (*natura/naturans*) as a given nature unaltered by human labour, which in turn yields a "second nature" (*natura/naturata*), nature reworked by human hands.¹³⁴ There is also a "third nature", she suggests, first referred to by 16th century humanists: this is the garden, which she describes as a "self-conscious re-presentation of first and second natures", an "artful interpretation" of a specific place.¹³⁵ She includes in this category all other kinds of *designed* landscapes.

Landscapes, Spirn writes, are a cacophony, "until sorted into individual dialogues by focusing on the primary signal to which many elements respond, by tracing a single set of dialogues".¹³⁶ For Spirn, some of these dialogues are unconscious, like that of the sun sending a pervasive signal whereby all landscape elements respond to its light and heat, whereby sunflowers track it across the sky from morning to night and desert dwellers rise early and withdraw by noon. Some dialogues are extroverted and physical, like planting hedgerows to block strong winds, or building steeper roofs where snow is heavy.¹³⁷ Other dialogues, she writes, are introspective, "like the dialogue between Claude Monet and his garden: between artist and landscape; practices of designing, gardening, and painting: the *actual and the virtual*".¹³⁸

As she points out, Monet first began such a dialogue by "observing and representing landscape through painting, then created a garden that was planted, painted, and altered repeatedly from 1883 until his death in 1926".¹³⁹ It should not be surprising that ultimately, in his

¹³¹ Casey, *The Fate of Place: A Philosophical History*, 228.

¹³² Ibid.

¹³³ Following is an interesting statement attributed to Marx, as quoted by Vicky Kirby in *Telling Flesh*, (footnote 5, p. 180) – from the *Marx-Engels Reader*, ed. R. Tucker, New York and London: Norton, 1978): "Man *lives* on nature – means that nature is his *body*, with which he must remain in continuous intercourse if he is not to die. That man's physical and spiritual life is linked to nature means simply that nature is linked to itself, for man is part of nature."

¹³⁴ Anne Spirn, *The Language of Landscape*, 31-32.

¹³⁵ Ibid., 32. Spirn attributes the notion of the garden as a "third nature" to John Dixon Hunt and the 16th century humanists whom he cites.

¹³⁶ Ibid., 38.

¹³⁷ Ibid.

¹³⁸ Ibid., 39.

¹³⁹ Ibid.

late work, Monet began painting circular panoramas. I recently watched a television documentary that showed him painting these works and speaking of his desire to literally *immerse* his audience in his vision of a particular place, of his landscape. (Indeed, Grau, in his history of Immersion and Illusion, refers to Monet's painted panoramas as a precursor to virtual environments.) Spirn also cites Zen monks at particular Japanese Buddhist monasteries, and many others who have used their gardens for introspective reflection, and in this context she quotes Klee: "For the artist, dialogue with nature remains a *conditio sine qua non*. The artist is a man, himself nature and part of nature in natural space".¹⁴⁰

The thought of Monet or the Japanese monks engaging in such dialogue with a particular landscape over a duration of decades resonates with my own experience, for I too have become involved with a particular place (since beginning *Osmose* in 1994), seeking to understand its complex rhythms, processes and life-flows, as I explained in the Prologue of this text. In the course of daily living here, in this particular *place*, this *landscape*, I have become engaged in dialogue, artfully (symbolically) remaking my environment and affecting its temporal becomings; removing alien species and disease from the forest, replanting indigenous trees and plants, making ponds and so on (as are, with equal intensity and purpose, to name only a few examples, the beavers felling trees and flooding creeks¹⁴¹ and the deer feeding on the buds of trees and bushes thereby altering their growth; not to mention the alarming recent weather with its unseasonable frosts, hail storms and drought, as well as rain whose acidity from the faraway American smelters is killing the sugar maples...). Such place-making, such transformations, affected by me and all the other creatures here, have made this place a fervent conversation in a multiplicity of languages that I will spend a lifetime trying to understand – all grounded in the living matrix of this particular expanse of earth, the very humus which one day will absorb our bones.

At the same time, in context of my art-making, there is another level of dialogue (or interconnectedness or even "interanimation", to use Casey's phrase from a few pages earlier) taking place between this actual landscape and myself. In the process of being here, involved among all this, I have experienced an uncanny reciprocity, a strange slip-sliding, between the virtual and the real. I am referring to the notion that this land's living presences (and equally, their absences, their discreet withdrawals into concealment) have come to haunt my artworks like apparitions. As I have written in the prologue of this text, in many ways, the virtual environments *Osmose* and *Ephémère* are manifestations of this land, as bodily-inhabited, intensely experienced, and *felt* by me, then reinterpreted, abstracted and distilled – and expressed through art.

¹⁴⁰ Ibid., 39-40. Spirn quotes Klee from *The Thinking Eye: Notebooks of Paul Klee*, vol 1, ed. Jurg Spiller (London: Lund Humphries, 1961), 63.

¹⁴¹ Several years ago, while doing an interview that included discussing the relationship between this land and my work, I referred to an oak tree I had transplanted that same week, which I hoped a century from now might resemble the *Osmose* tree, in a strange interplay between the virtual and the real. A few days later, I checked on the newly transplanted tree, only to discover that a beaver, under cover of night, had taken a mortal bite out of its trunk (even though I had protected the tree with wire mesh in my attempt to cope with beavers non-violently, unlike the local farmers who shoot them). Thus, my artful intent, that the *actual* tree might resemble the *virtual* tree a hundred years hence, was sabotaged. Most recently, it came to my attention that I am not the only individual in this field who has "beaver problems": Verena Conley, whose comments in *Rethinking Technologies* I have cited in Chapter I, has recently published an autobiographical tale titled *The War against the Beavers* (Minneapolis: U. of Minnesota Press, 2003) so she knows what I mean...

Landscape, as virtual place

Changing focus slightly, I now want to move on to a comment by Spirn, that landscapes are like “musical or choreographic scores that must be performed to be fully experienced”; and further, that landscapes “must be experienced in place to be fully felt and known”.¹⁴² In this context, Spirn qualifies that while words, paintings, photographs or even video or film may “enhance and intensify that experience and may even inspire construction of actual landscapes”, they cannot replace “the experience of place itself”.¹⁴³

Somewhat similarly, Casey writes, “There is something about landscape that *defies* its representation in an imitative mode. To be true to it, forms of representation other than the purely mimetic have to be found”.¹⁴⁴ What is it, he asks, about landscape that resists imitation? Even if landscape is composed of particular things, he writes, it exceeds all of them, even their totality, and in this respect is an example of Sartre’s “totality detotalized” and Jaspers’ “the encompassing”.¹⁴⁵ As Casey further explains, landscape, as an “encompassing detotalized totality ... proffers to us a maximized ‘circumambient array’”;¹⁴⁶ and because it is maximally circumambient (“surrounding the human subject on all sides in an actively comprehensive way”), landscape *exceeds* the scope of any given perceived object. Involving as it does “all the bodily senses in their synesthetic unity”, landscape can thus be considered *panperceptual*¹⁴⁷ – because “that which appeals to the full bodily sensorium must itself be an encompassing whole”.¹⁴⁸ No wonder, he writes, Western painters have been long tempted by the panorama (and in 4th century China, horizontal scroll paintings). Considered in this context (or as Casey writes, “viewed in this light, which is to say, not *determinantly* viewable in *any* light”) the representation of landscape is predictably problematic.¹⁴⁹

“How is one to represent”, Casey asks, “in what medium and style, something that is at once elusive and omnipresent, a whole and yet not a totalization, perceived by no single sense but by all the senses, in a com-position that is itself problematic?”¹⁵⁰ The problem, he suggests, is one of *containment*: “How is the artist to contain something as overflowing as landscape within the very particular confines of a painting?”¹⁵¹ The issue here he qualifies, is not about representing three-dimensional objects on a two-dimensional surface (which is common to all painting not just

¹⁴² Spirn, 81.

¹⁴³ Ibid.

¹⁴⁴ Casey, *Representing Place: Landscape Painting and Maps*, 5. Emphasis mine.

¹⁴⁵ Ibid., 6. Regarding “totality detotalized”, Casey quotes Jean-Paul Sartre from *Being and Nothingness: An Essay on Phenomenological Ontology* (New York: Washington Square Press, 1966) 563: “the first phenomenon of being in the world is the original relation between the totality of the in-itself or world and my own totality detotalized”. Regarding “the encompassing” (*das Umgreifend*), Casey quotes Karl Jaspers, *Von der Wahrheit* (Munich: Piper, 1947). In his footnote, Casey suggests that it is evident that both these notions are based on the earlier idea of a perceptual gestalt that cannot “be reduced to the mere addition of its component parts”. 279.

¹⁴⁶ Ibid. Casey borrows this phrase from J.J. Gibson, *The Ecological Approach to Visual Perception*.

¹⁴⁷ Ibid. In a footnoted reference to the phrase “panperceptual”, Casey suggests that Kenneth Clark hints at this idea, i.e., of panperceptuality, when Clark writes that “landscape painting depends so much on the unconscious response of man’s whole being to the world which surrounds him” in *Landscape into Art* (New York: Harper and Row, 1976) 232. Casey further comments in his footnote that in this context “man’s whole being” could be taken to mean the totality of panperception and “the world which surrounds him” to mean landscape qua encompassing detotalized totality. 279.

¹⁴⁸ Ibid., 6.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

¹⁵¹ Ibid., 7.

landscape), nor is it a question of how pictorial representations relate to the nonpictorial "real" (for this too is common to all painting that purports to be "of" the materially real): Rather it is, he suggests, "how something that, by its very nature, overflows ordinary perception can be represented by something else that, by *its* very nature, can only present itself to the viewer as a discrete object with definite dimensions and often within a de-limited frame".¹⁵²

In other words, how can a painting "contain" a landscape in Aristotle's sense of the word (as "surrounder") unless it succeeds in wrapping itself around the landscape in its entirety and thus literally exceeds the totality of objects within it, including inherently indefinite dimensions of landscape such as depth?¹⁵³ A landscape, explains Casey, is such that "it cannot be grasped *totum simul*, all at once as a single object": Furthermore, to its quality of "spatial unencompassibility" there must be added a "temporal nonsimultaneity", because "just as a given landscape cannot be contained in a finite part of space, so its full perception cannot be confined to an instant of time. ... by its *radical circumambience*, landscape exceeds both..."¹⁵⁴ Accordingly, Casey states (citing the failure of panoramic painting to represent landscape completely), isomorphic representation of landscape is not possible.¹⁵⁵

Alternatively however, Casey suggests that we consider painterly representations as genuine *presentations*, works which seek to *present* rather than *represent*, which strive to show instead of replicate: such works, he writes, become forms not of *eikastike* but *phantastike*, in the

¹⁵² Ibid. As a former painter, I want to quote Casey at length regarding the painterly "frame", for I will return to this issue in Chapter VI, when discussing the implications of using an HMD as a display system in immersive virtual space. Casey writes about the frame as follows: "A landscape painting that purports to be literally panoramic bases itself on a refusal of the external frame – or more exactly, it keeps rolling the frame back (literally so, in the case of the Chinese scroll painting). It tries to ignore, or to repress, the meaning and value of the fixed framing of the view or set of views, while downplaying the energetic effects generated by the internal dynamics of the painting. In this way, the panorama attempts to be faithful to the circumambience of the landscape as this is grasped by the freely orbiting head of the human subject – and more ambitiously still, in the movement out of this subject's body through a long stretch of the landscape such as might be apprehended while traveling. ... But place as represented does not require any such panoramic presentation – any more than it needs precise cartographic localization. What it does require is an external frame of some sort. This frame is not merely a negation that cuts off a complete view of the landscape; by its very action of exclusion, it encloses a field of force that a painting needs for the dynamics of representation. Such representation, being less than complete, will fail to satisfy the totalizing passion of panoramic or topographic painting. But precisely as detotalized – as offering partial views only – it concentrates and holds the energy called for by the demands of representing places in a convincing and lively manner ... The external frame, by its bivalent action of excluding and enclosing, helps to generate a field of remarkable forces within the delimitation of what is technically termed the "picture plane" (i.e., the two-dimensional physical surface on which representation is realized). Were there no such enclosure, the pictographic energy would be so diffuse as to ultimately dissipate. As a quasi place, the frame contributes to the ongoing placement and re-placement of represented objects in the painting. Frame-working constitutes an energy map, and it helps convert a landscape into a landscape, a by-work into an artwork. It creates the clarified openness of a landscape painting. It clears the painting in both senses of the term: it opens it from within (as one might clear space in the forest) and it exceeds it from without (as we say that one object "clears" another by going around it). In such a *Lichtung*, 'earth' and 'world' (in Heidegger's sense of the terms) come forward to convert the flatness of the picture plane into the varied strata of represented three-dimensionality. Earth and world come to a stand in the pictorial space cleared and complicated by the energizing effects of the framework." 125-126.

¹⁵³ Ibid., 7.

¹⁵⁴ Ibid., 8. Emphasis mine.

¹⁵⁵ Ibid., 18.

context of appearing or showing.¹⁵⁶ This does not mean that such artistic presentations are landscapes of fantasy, but rather presentations whereby the topic or motif is encouraged "to come forward" in comparison to the "implicitly backward movement of representation": In this sense, the topic or motif is "*ushered in, as it were – made manifest in its own terms, whether these be fantastic or naturalistic, real or surreal, ideal or symbolic, secular or spiritual.*"¹⁵⁷ When landscape is thus presented, Casey explains, *bringing it forth* into the "clearing" or "open" (in Heidegger's sense) of a work, it is as if the "earth" of an intensely experienced landscape is presented in the "world" of the work: in this context, such showing forth or presentation of nature can be seen as its self-presentation.¹⁵⁸ (I would add here, such a concept clearly recalls the notion of art as *poiesis*, as described in Chapter I.)

It is *in* and *through* such a representation, Casey writes, that the *place* of a landscape is "taken up in the representation that both stands for this place and stands in for it"; and in this way, "place is at once signified and reinstated, reinstated-as-signified, *assigned* in a painting that represents it".¹⁵⁹ Thus, most significantly, he emphasizes, "place is not replicated but *transmuted* in the work": it is "replaced, given a place of its own", and in the context of representation, "does not occur as representation but *re-implacement*", that is, by coming forth in another place, in the artwork.¹⁶⁰

The artistic medium of immersive virtual space introduces some interesting confusion and perplexity to this issue. While it is true that virtual environments like *Ephémère* or *Osmose* do not, and are not intended to, replace "the experience of place itself",¹⁶¹ such artworks cannot be considered the same as paintings or photographs of landscape. This is because, as explained earlier in this chapter, the specific qualities associated with immersive virtual environments enable perceptual experiences whereby immersants feel as *if* they are bodily enveloped in a spherical spatiality (recalling Casey's references to Sartre's "totality detotalized", Jaspers' "encompassing", and J.J. Gibson's "circumambient array") whose horizon is not only all-surrounding, and above and below, but whose depths continually unfold when explored by the immersant. (Here I refer the reader back to my previous discussions of immersion, embodiment, and the horizon.) In the context of Spirn's earlier comments on a first, second and third "nature", the latter being the designed landscape or garden as an "artful interpretation" of a specific place, I would therefore propose that immersive virtual environments dealing with landscape as a topic or motif could possibly be considered metaphorically, poetically, as a "fourth nature", because even though they are completely synthetic artful constructions, they can paradoxically be experienced by immersed participants *as if they were in a real place*.

¹⁵⁶ Ibid. Here, Casey refers to Plato's distinction in the *Sophist* between *eikastike* and *phantastike*: as Casey explains, "in the exact *eikon* a faithful replica is produced that is the same as its original in size as well as proportion – and thus can take its place – where as a "phantastic" representation allows for liberties in size and proportion". Thus, as Casey uses the term *representation*, it is intrinsically "eikastic" in character, or at least aspires, he writes, to be as exact an *eikon* as possible.

¹⁵⁷ Ibid.

¹⁵⁸ Ibid.

¹⁵⁹ Ibid.

¹⁶⁰ Ibid.

¹⁶¹ Spirn, 81.

This is *not* to say however that such virtual environments can replace the experience of being in an *actual* landscape – for how on earth could they? (why would we want them to?) appealing as they do, at least in the case of my own work, to only sight, hearing and proprioceptive sensibilities but not to the other senses of smell or touch; and infinitely reduced in complexity in comparison to the sensory richness and detail of the actual world. But more importantly, *even if* the technological capacities associated with VR increase to the extent of involving the entire human sensorium and the interface between human and computer effectively disappears (as Grau warns); and *even if* it becomes technologically possible to isomorphically replicate everything which is visible in the field-of-view to the human subject (recalling Coyne’s warning of this trend in VR as an enactment of Cartesian ontology) – *nevertheless*, the very nature of landscape, as pointed out by Casey, is that it *exceeds* the particular things (to a Western mind, the separate “objects”) of which it is composed. That is to say, it *overflows* ordinary perception, it is *not determinantly* viewable, and therefore such landscape *defies* representation in an imitative mode...

But even more significantly, and I cannot emphasize this enough, in consideration of virtual environments as a substitution of the virtual for the real (recalling Borge’s metaphor of the map replacing the territory¹⁶²), such environments, regardless of how detailed or sensorially rich or infinitely interactive they might become, will *never* be more than manmade constructions, art-full presentations of landscape, utterly lacking in the unfathomable mystery of actual living beings presencing of their own accord.¹⁶³ (In saying this, I refer the reader back to my 1991 statement on VR included in Chapter I; and, as also introduced in that chapter, Heidegger’s definition of *poiesis* as *physis*, as the coming-forth from concealment into unconcealment of Being from out-of-itself, or equally, remaining hidden from human view, in comparison to the challenging-forth of technological Enframing whereby everything is ordered to stand-forth as standing-reserve for human use.)

So then, with my reservations regarding the limitations of this medium in such a context emphatically voiced, where do immersive virtual environments such as *Osmose* and *Ephémère*, as artful presentations of landscape, fit in all of this? If indeed as previously suggested, my goal is to create artworks which are not merely static two-dimensional and rectangularly-framed painterly representations, but rather bodily-enveloping, spatially-spherical, temporally-transforming, horizontally-unfolding, participant-responsive, visual/aural realms *within* which the immersant can bodily explore – and if indeed, as Casey writes, the experiential mode of being *in* place is the corporeal self,¹⁶⁴ and as Merleau-Ponty says, space experienced from an *embodied* perspective is

¹⁶² Borge’s metaphor has been discussed by Patricia Yaeger in “Introduction: Narrating Space” in context of Baudrillard, whereby she writes “For Baudrillard this strange act of mimesis in which the real disappears and an imitation takes its place is not a tall tale but a description of ordinary space: an encomium or memento mori for a world flooded with simulation” 2. She illustrates her comment with the following quote by Baudrillard: “Simulation is no longer [the imitation of] a territory, a referential being or a substance. It is the generation by models of a real without origin or reality: a hyperreal ... If we were to revive the fable today, it would be the territory whose shreds are slowly rotting across the map. It is the real, and not the map, whose vestiges subsist here and there, in the deserts which are no longer those of the Empire, but our own. The desert of the real itself.” Jean Baudrillard, *Selected Writings*, 166.

¹⁶³ In referring to the presencing of Being in-itself in the context of landscape, I am not referring only to the presencing of living beings such as birds or trees, but also non-living beings such as boulders, streams or even the very earth, in terms of their “isness”.

¹⁶⁴ Casey, *Body, Self, and Landscape: A Geo-philosophical Inquiry into the Place-World*, 413.

not in front but *all around*, lived from the *inside*¹⁶⁵ – then I would propose that such artworks, as fully-enveloping immersive environments, are manifestations of *virtual place*.¹⁶⁶

I want to emphasize, however, that my goal in constructing such virtual places is *not* to mimetically represent the surface appearances of landscape.¹⁶⁷ Rather it could be said, in context of what Casey has written about painterly representations as “genuine presentations” which seek to present, not *represent*, to show, not replicate,¹⁶⁸ that my virtual environments are the same. By this I mean that my artworks are attempts to *transmute* place, doing so not through representation but through what Casey calls “*re-implacement*” in terms of *putting places* into the “place-world of the artwork”.¹⁶⁹ As Casey explains, this is a matter of attaining “artistic truth”, not to be confused, he emphasizes, with formal similarity or verisimilitude (and again I would add here, not *veritas* in the Romans’ sense, but in the earlier meaning of truth, as the pre-Socratic *aletheia*, as a *revealing* or *bringing-forth* in the sense of *poiesis*) – but rather in terms of transmitting “the spirit that inheres in a *particular place* with which one is fully resonant”.¹⁷⁰

Considered in this context, my immersive virtual environments are virtual place-worlds whereby I have sought to transmit and transmute the “particular place” I have lived in and with for more than a decade, the actual living landscape described in the Prologue to this text. As such, sometimes it feels like this place, with its myriad of striving beings, its bloomings and witherings, flowings and ebbings, pours through me...

4. Defining “Nature” In Context of the Work

First of all, in case the reader wonders why definition of the word “nature” is relevant to the discussion at hand, the answer is this: over the past 25 years, certain themes or concerns have consistently appeared in my artwork, related to representing the experience of being sensuously embodied in the living flowing world. While my focus could have *equally* been directed at urban realities, it is not: I have always been concerned with the non-manmade (although certainly human-altered) realm commonly known as “nature”.

My concept of nature goes back to childhood summers spent in semi-wilderness by a remote lake near Algonquin Park, in northern Ontario, Canada, without road access, and most notably, without electricity or telephone. During those weeks away from urban life, my extended

¹⁶⁵ Merleau-Ponty, “Eye and Mind”, 178.

¹⁶⁶ As Casey acknowledges in his preface to *The Fate of Place: A Philosophical History* (xiv), the phenomenon of “virtual place” is still not well understood. Over the past decade, I have attempted to develop a phenomenological interpretation of such place (as subjectively experienced) through my immersive artworks and writings, which are contained in the accompanying list of references and bibliography to this text.

¹⁶⁷ Whether called isomorphism, mimeticism, verisimilitude, objective realism, or photorealism, all of these approaches to representation in VR – as I have already suggested – reinscribe a particular way of looking at the world in terms of Cartesian subject-object dualism and objectification of nature. As explained by Richard Coyne, *Designing Information Technology In the Postmodern Age*, and quoted in a footnote in Chapter I, this correspondence view of representation is tied to research efforts directed to the ultimate goal of erasing any distinction between a computer image and “the real thing”, whereby, as Coyne writes, VR would vindicate one aspect of Cartesianism, the reduction of space to mathematical information. 181-187. See Chapter VI for my alternative approach.

¹⁶⁸ Casey, *Representing Place: Landscape Painting and Maps*, 18-19.

¹⁶⁹ *Ibid.*, 114.

¹⁷⁰ Casey 114-115. Emphasis mine.

family fished for dinner, bathed in the lake, and used a primitive outhouse for bodily functions. My *earliest* memory of life itself is from that place: of being enveloped in deepest night, illuminated only by the light of a single coal-oil lamp. I also remember the ever-changing presence of the weather when heavy rain would keep me and my brothers in the cabin for days on end, crayoning on paper plates; the surrounding forest which stretched for miles, where there were wolves instead of roads; the lake which could turn dangerous with a single shift of the wind; and the nearby swamp in which lived the bullfrogs whose booming voices drowned out all others every evening. I also remember the small creatures I spent hours trying to catch – baby toads and snakes, as well as moles and shrews who appeared mysteriously out of the earth – holding them close against my cheek and savouring their otherness before letting them go. The point I want to make here is not that I am waxing nostalgic for some childhood paradise, or even wilderness, for the *wildness* I knew there had previously been farmed, albeit poorly – but that to me, even then, all this was not a collection of "things", nor was it mere scenery or passive background to the human drama: rather I perceived my surroundings as an entangled myriad of living presences that were the contextual ground for my young life.

No doubt, because of this early experience, when I refer to nature I mean the nonhuman world, those processes of earth, rivers, forests and so on, as well as the nonhuman beings, the fauna and flora arising from them, all of which have for me a deeply life-affirming power, precisely because they are "not-us". Each creature, however small and seemingly inconsequential to humans, is the "subject of a life";¹⁷¹ and the voice of each, the presencing or *worlding* of each, makes up the unfathomable richness of our planet's Being. Therefore, rather than thinking of nature anthropocentrically, whereby its value lies solely in its potential as a collection of objects for human use, it is a different approach which interests me here: one which is based not on the arrogance of humanism¹⁷² with its will to objectification, domination and control, but rather on respect for the *intrinsic* value of nonhuman others and the evolving habitats wherein they live.

Such respect is based on the understanding that on an essential level, in terms of the life continuum and the very "isness" of reality, there is no difference between a person or the grasses in a blooming meadow: we are, all, individual embodiments of the same flux and flow; we are, all, particular manifestations of the myriad of comings into being, lingerings and passings away that make up the world's becoming. As Dylan Thomas writes, "*The force that through the green fuse drives the flower/ Drives my green age; that blasts the roots of trees/ Is my destroyer./ And I am dumb to tell the crooked rose/ My youth is bent by the same wintry fever*".¹⁷³ This understanding of nature resonates with the pre-Socratic concept of *physis*, which I introduced in Chapter I and will return to shortly.

Defining "nature"

Before proceeding further, I want to clarify my use of the word "nature", emphasizing its problematic cultural meaning. My first introduction to this topic came around age 16 when I read Rachel Carson's now classic *Silent Spring*. Since then, a large body of literature has developed

¹⁷¹ Tom Reagan, *The Case for Animal Rights*.

¹⁷² David Ehrenfeld, *The Arrogance of Humanism*, London: Oxford University Press, 1981.

¹⁷³ Dylan Thomas, quoted by Robert Pogue Harrison in *Forests: The Shadow of Civilization*, 29.

which critically examines the human domination of nature from both a historic¹⁷⁴ and contemporary perspective, ranging from discourses based on social ecology to deep ecology and ecological feminism: the issues are so complex (and bitterly debated)¹⁷⁵ that I cannot do justice to this topic here. I will however identify myself, if the reader has not already discerned as such, as believing in the necessity of going beyond the anthropocentricity of humanism to a larger ethics based on respect and genuine *care* for the nonhuman beings who inhabit this planet with us.¹⁷⁶ Furthermore, as someone responsible for a relatively large semi-wild/semi-rural expanse of land, I situate myself among those who believe responsible reengagement with our "environment", whether on a local or larger scale, is an essential step towards solving current global crises. I say this in context of the predominately *urban* theorists who dismiss desire to "preserve" nature as misplaced yearning for a prior pristine reality, suspicious as they are that there could be anything beyond our own construct.

In response to Arran Gare's caution that for some, even the very notion of a global environmental crisis is a social construct,¹⁷⁷ I would ask, what then, of the 43%¹⁷⁸ of Europe's bird

¹⁷⁴ Some of the now classic early histories include: Clarence Glacken, *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century* (1967); Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (1980); Roderick Nash, *Wilderness and The American Mind* (1982); Max Oelschlaeger, *The Idea of Wilderness: From Prehistory to the Age of Ecology* (1991); Lynn White Jr., "The Historical Roots of Our Ecological Crisis", *Science* 155 (1967); and Donald Worster, *Nature's Economy: A History of Ecological Ideas*, (1977).

¹⁷⁵ Val Plumwood, "Ecosocial Feminism as a General Theory of Oppression" (in Carolyn Merchant (ed.) *Key Concepts in Critical Theory: Ecology*) 207.

¹⁷⁶ For example, just as in the West the notion of "respect" has been extended in the past century beyond "white men" to include women and non-whites (through a continuing and ever-widening effort to battle sexism, racism, colonialism, etc.), so in this new century, nonhuman beings may also be brought into our circle of care and concern. In this context, a comment by Bill Weber (currently Director of the Wildlife Conservation Society for North America, and with his biologist partner Amy Vedder, responsible for preserving significant mountain-gorilla habitat in Rwanda) is of interest: Bill suggested to me that even while our culture may most readily extend certain rights to the great apes because they are "most like us", perhaps our respect for them should be based instead on how "they are not like us, but rather like themselves", whereby instead of anthropomorphizing such beings, we respect that there will always be a "deep chasm" between us.

¹⁷⁷ Gare, *Postmodernism and the Environmental Crisis*, 73. In this study, Gare examines different responses to the environmental crisis, including from mainstream economics, Marxist and Neo-Marxist analyses of exploitation and the global capitalist system, to Nietzschean, Heideggerian and poststructural critiques of what he calls the "domineering orientation" of European civilization. 96. In this context, he writes "The development of postmodern culture has revealed how oppressive the idea of progress driving Western civilization has been, and has revealed the tendency for those who oppose it to reduplicate the forms of thinking causing the oppression. However, while Nietzsche, Heidegger, the poststructuralists, and also the postmodernists, who have appropriated their ideas, provide considerable insight into Western civilization's orientation towards domination, they leave it crucially unclear how people should respond to the present situation. ... And the relativism argued for by those influenced by Derrida would fragment all oppositional political movements completely, and make any concerted response to the environmental crisis impossible. Ultimately the effect of the social critiques of thinkers such as these is to disempower people." 97. He further explains, "More fundamentally, by supporting the postmodernist dissolution of perspective, poststructuralists not only fail to reveal the interconnectedness of environmental problems in the global causes of the environmental crisis, but invalidate the efforts of those who were striving to reveal them. For poststructuralists, the notion of a 'global environmental crisis' can be deconstructed and shown to serve the power of those who are attempting to mobilize people to address it. [In doing so] poststructuralists leave environmentalists no way to defend their belief that there is the global crisis or to work out what kind of responses required to meet it. ... This inability to deal with the phenomenon of a global environmental crisis manifests a loss of contact with the world.... In their failure to orient people for action ... their rejection of perspective and finally, their loss of contact with any reality beyond language and texts, poststructuralists are

species that are currently disappearing? Are they not unique evolutionary unfoldings, "presencings" of life of-its-own-accord (a true expression of *poiesis* as *physis*?) whereby, once gone, the richness of life, including our own life, on earth is irrevocably diminished? Is not the dismissal of such extinctions as mere social construct (or even worse, insisting humanly-engineered life-forms can compensate for such loss) not an example of what Heidegger calls the "final delusion", whereby once man has exalted himself to "the posture of lord of the earth", "the Impression comes to prevail that everything man encounters exists only insofar as it is his construct", until finally "it seems as though man everywhere and always encounters only himself"?¹⁷⁹

There are many other writers who are examining the nature/culture issue,¹⁸⁰ and so I will not go further here, except to quote Merleau-Ponty, who points out that "... the distinction between ... natural and cultural... is abstract: everything is cultural in us (our *Lebenswelt* is 'subjective') (our perception is cultural-historical) and everything is natural in us (even the cultural rests on the *polymorphism of the wild Being*)".¹⁸¹ Instead I want to lay down some conceptual foundations with the goal of illuminating how my own understanding of nature has contributed to my art practice.

expressing the spirit of postmodern culture, and the failures of the poststructuralists are revelations of the defects of this culture". 98.

¹⁷⁸ Announced on Canadian national television in November 2004 (as merely a text crawl underneath ostensibly more important news).

¹⁷⁹ Heidegger, *The Question concerning Technology*, 27.

¹⁸⁰ See for example: J. Bennet and W. Chaloupa (eds.) *In the Nature of Things: Language, Politics, and The Environment*; J. Cantrell and C. Oravec (eds.) *The Symbolic Earth: Discourse and Our Creation of the Environment*; Verena Conley, *Ecopolitics: The Environment In Poststructuralist Thought*; Neil Evernden, *The Social Construction of Nature*; Arran Gare, *Postmodernism and the Environmental Crisis*; Donald Harvey, *Justice, Nature and the Geography of Difference*; Katherine Hayles, "Searching for Common Ground"; M. Oelschlaeger (ed.) *Postmodern Environmental Ethics*; C. Merchant (ed.) *Key Concepts in Critical Theory: Ecology*; K. Milton, *Environmentalism and Cultural Theory: Exploring the Role of Anthropology in Environmental Discourse*; Val Plumwood, *Feminism and the Mastery of Nature*; J. Robertson, M. Mash et al (eds.) *FutureNatural: Nature, Science, Culture*; I. G. Simmons, *Interpreting Nature: Cultural Constructions of the Environment*; Neil Smith, *Uneven Development: Nature, Capital and the Production of Space*; Kate Soper, *What is Nature? Culture, Politics and the Non-Human*; M. Soulé and G Lease (eds.) *Reinventing Nature? Responses to Postmodern Deconstruction*; S. Vogel, *Against Nature: The Concept of Nature In Critical Theory*; M. Zimmerman, *Contesting Earth's Future: Radical Ecology and Postmodernity*.

For example, as Kate Soper writes in the essay "Nature/'nature'": "... while the ecologists tend to invoke 'nature' as an independent domain of intrinsic value, truth or authenticity, postmodernist cultural theory and criticism emphasizes its discursive status, inviting us to view the order of 'nature' as existing only in the chain of the signifier. Nature is here conceptualized only in terms of the effects of denaturalization or naturalization, and this deconstructivist perspective has prompted numerous cultural readings which emphasize the instability of the concept of 'nature', and its lack of any fixed reference. In contrast, moreover, to the naturalist impulse of much ecological argument, which has emphasized human affinities with other animals, and regards a dualistic demarcation between the cultural and the natural as a mistaken and inherently un-eco-friendly ontology, post-structuralist theory has emphasized the irreducibly cultural and symbolic order of human being and has consistently criticized natural explanations of the being of humanity. ... In sum, while the ecologist refers to a pre-discourse nature which is being wasted and polluted, post-modernist theory directs us to the ways in which relations to the non-human world are always historically mediated, and indeed 'constructed', through specific conceptions of human identity and difference. Where the focus of the one is on human abuse of an external nature with which we have failed to appreciate our affinities and ties of dependency, the other is targeted on the cultural policing functions of the appeals to 'nature' and its oppressive use to legitimize social and sexual hierarchies and norms of human conduct. Where the one calls on us to respect nature and limits it imposes on cultural activity, the other invites us to view the nature-culture opposition as itself a politically instituted mutable construct". 22-23.

¹⁸¹ Merleau-Ponty, working notes to *The Visible and the Invisible*, 253. Emphasis mine.

As the landscape theorist Anne Spirn writes in *The Language of Landscape*, "nature" is an abstraction, a set of ideas for which many cultures have no one name".¹⁸² The very word "nature" itself, as Raymond Williams explains, is "a singular name for the real multiplicity of things and living processes".¹⁸³ As such, it is "perhaps the most complex word in the language", encompassing both the "inherent force which directs the world or human beings or both" and also the "material world itself, taken as including or not including human beings".¹⁸⁴ The meaning of the word itself, however, has changed significantly over time.

According to Tellenbach and Kimura, the word "nature" originates in the Latin *natura*, and, as taken over into all European languages with the exception of Slavic, stems from *gnascor*, meaning *to be born, grow, emerge, originate*, and as such the word is related to the synonymous Greek term *gignomai*. Thus "nature" is more accurately a translation of *genesis*, even though the Romans used it to (mis)translate the Greek term *physis*.¹⁸⁵ In this context, Tellenbach and Kimura point out that according to Heidegger's uncovering of its earliest (Greek) meaning, *physis* originally had a "temporal connotation encompassing all of nature", which with the onset of Greek philosophy, came to mean "being as such in its entirety".¹⁸⁶ They further suggest that for Heidegger, because of the word's implied temporality, *physis* is not simply synonymous with processes observed in nature, or in individual beings, but rather the contrary – because of the pre-Socratic Greeks' fundamentally poetic-philosophical experience of being, *physis* came to mean the world of beings itself, i.e., that which becomes and endures, that which *comes into being* out of concealment into appearance.¹⁸⁷ This original meaning, however, was lost when *physis* was translated by the Romans into the Latin word *natura* – which then came to have other connotations including its current everyday meaning regarding "what is outside, in the sense of what is opposite us – e.g., the tree over there..."¹⁸⁸

The meaning of the word "nature" has further suffered a demotion in popular use, as explained by Yi-Fu Tuan. Beginning from its earliest and all-inclusive meaning for the Greeks as *physis* designating the "All" or "Everything", Tuan points out that its meaning was constricted in the Middle Ages to signify no longer the All but merely the stratified regions of fire, air, water and earth

¹⁸² Spirn, *In the Language of Landscape*, 248. For example, she writes that A. O. Lovejoy ("Meanings of 'Nature'", in *A Documentary History of Primitivism and Other Ideas*, Baltimore: Johns Hopkins University Press, 1935) found 66 meanings of the words "nature" and "natural" in literature and philosophy from the time of the early Greeks to the eighteenth century.

¹⁸³ Ibid. Spirn quotes Raymond Williams, "Ideas of Nature", in his *Problems in Materialism and Culture* (London: Verso, 1980).

¹⁸⁴ Ibid. Here Spirn quotes Williams from *Keywords* (New York: Oxford University Press, 1983.) William's comment regarding nature as one of the most complex words in the language is also quoted by Kate Soper in the opening sentence to *What Is Nature?* (from Williams, *Problems in Materialism and Culture*, p. 68.)

¹⁸⁵ Hubertus Tellenbach and Bin Kimura, "The Japanese Concept of 'Nature'", 153.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid. 154. For example, Heidegger as explained in "What Are Poets for?", Rainer Maria Rilke's use of the word "nature" in *Sonnets to Orpheus* means that "The ground of beings is Nature. The ground of man is not only of a kind identical with that of plant and beast. The ground is the same for both": Such nature, Heidegger explains, is not to be contrasted with history or opposed to art, nor intended as the subject matter of natural science, but rather is the very "ground" of history and art and "nature in the narrower sense". Here, Heidegger sees in Rilke's uses of the word, echoes of the "earlier word *physis* equated also with *zoe*, which we translate as 'life'"; explaining that, "In early thought, however, the nature of life is not conceived in biological terms, but as the *physis*, that which *arises*". According to Heidegger, for Rilke, "'Nature' is also called 'Life' [and] Nature, Life, designate Being in the sense of *all beings* as a whole". 100-101.

¹⁸⁸ Ibid. 155.

below the heavens; and subsequently, the word's meaning shrank even further, until in the last few centuries, when to speak of "nature" was to speak only of countryside and wilderness. And "wilderness" is also a word, Tuan suggests, which has ceded almost all of its power. From this diminished perspective, "nature" now evokes images, he writes, not much different from countryside, landscape, and mere scenery.¹⁸⁹

Even Roland Barthes speaks of nature's changing meaning: "According to Hegel, the ancient Greek was amazed by the *natural* in nature; he listened to it continually, and demanded the meaning of springs, mountains, forests, storms; without knowing what all these objects said to him one by one, he perceived in the order of the vegetable world and of the cosmos an immense *frisson* of meaning, to which he gave the name of a god, Pan".¹⁹⁰ Since that time, Barthes suggests, "nature has changed, and become social [or as he later qualifies, cultural]; all that man encounters is *already* human, including the forests and the rivers that we cross on our journeys".¹⁹¹ This statement is echoed in William Lovitt's Introduction to Heidegger's *Question Concerning Technology*, whereby he explains that "Modern man as scientist ... does not relate himself to nature as the Greek related himself to the multitudinous presencing of everything that met him spontaneously at every turn ... He does not relate to nature in the openness of immediate response ... For the scientist's nature is in fact, as Heidegger says, a human construction".¹⁹²

¹⁸⁹ Yi-Fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes, and Values*, 113. On the subject of wilderness, Tuan writes, "People rarely perceive the irony inherent in the idea of preserving the wilderness. 'Wilderness' cannot be defined objectively: it is as much a state of mind as a description of nature. By the time we speak of preserving and protecting wilderness, it has already lost much of its meaning: for example, the Biblical meaning of awe and threat and the sense of sublimity far greater than the world of man and unencompassable by him. 'Wilderness' is now a symbol of the orderly processes of nature. As a state of mind, true wilderness exists only in the great sprawling cities." 112.

Similarly, Edward O. Wilson writes in *Biophilia*, "This image [of wilderness] is almost gone. Although perhaps as old as man, it has faded during our own lifetime. The wildernesses of the world have shriveled into timber leases and threatened nature reserves. Their parlous state presents us with a dilemma which the historian Leo Marx has called the machine in the garden. The natural world is the refuge of the spirit, remote, static, richer even than human imagination. But we cannot exist in this paradise without the machine that tears it apart. We are killing the thing we love, our Eden, progenitrix, and sibyl. Human beings are not captured peccaries, natural creatures torn from a sylvan niche and imprisoned within a world of artifacts. The noble savage, a biological impossibility, never existed. The human relation to nature is vastly more subtle and ambivalent, probably for this reason. Over thousands of generations the mind evolved within a ripening culture, creating itself out of symbols and tools, and genetic advantages accrued from planned modifications of the environment. The unique operations of the [human] brain are the result of natural selection operating through the filter of culture. They have suspended us between the two antipodal ideals of nature and machine, forest and city, the natural and the artifactual, relentlessly seeking, in the words of the geographer, Yi-Fu Tuan, an equilibrium not of this world." 11.

As the poet Gary Snyder writes in *The Practice of the Wild*, "Wilderness may temporarily dwindle, but wilderness won't go away. A ghost wilderness hovers around the entire planet: the millions of tiny seeds of the original vegetation are hiding in the mud on the foot of an arctic tern, in the dry desert sands, or in the wind. These seeds are each uniquely adapted to a specific soil or circumstance, each with its own little form and fluff, ready to float, to freeze, or be swallowed, always preserving the germ. Wilderness will inevitably return, but it will not be as fine a world as the one that was glistening in the early morning of the Holocene. Much life will be lost in the wake of human agency on earth, that of the 20th and 21st centuries. Much is already lost - the soils and waters unravel: 'What's that dark thing in the water? Is it not an oil-soaked otter?' Where do we start to resolve the dichotomy of the civilized and the wild?" 15.

¹⁹⁰ Roland Barthes, "Structuralist Activity", as quoted by John Dixon Hunt, *Greater Perfections: the Practice of Garden Theory*, opening page (unnumbered).

¹⁹¹ *Ibid.*

¹⁹² William Lovitt, Introduction to Heidegger's *Question Concerning Technology*. xxvi.

As Roderick Frazier Nash, author of the classic *Wilderness and the American Mind*, points out, human beings did not even consider themselves distinct from nature until the dawning of civilization: for nomadic hunters and gatherers, everything natural was "simply habitat" and people considered themselves to be part of a "seamless living community" until the advent of agriculture and settlement, whereby "unmastered lands" seemed threatening.¹⁹³ According to Nash, civilization then created powerful biases whereby we developed an "ecological superiority complex and bet our evolutionary future on the control of nature".¹⁹⁴ Nature, he writes, soon "lost its significance as something to which people belonged and became something they possessed: an adversary, a target, an object for exploitation".¹⁹⁵ Of course humans are part of nature: the point is we *no longer think or act like we are*.

Not surprisingly, in the wake of the anthropocentrism that accompanies an objectifying and exploitive view of nature, as Verena Conley points out in "Eco-Subjects", even today many theories still advocate placing humankind on center stage: Thus even while in universities the subject of ecology is studied in such areas as biology and geography, in the humanities it comes last and least after socioeconomic issues of race, class, and gender.¹⁹⁶ To illustrate her point, she quotes Michael Serres who writes, "Remove the world around the struggles, keep only conflicts and debates, dense with men, purified of things, you will have the theatrical stage, most narratives and philosophies, all of the social sciences: the interesting spectacle we refer to as 'cultural'. Whoever says where the master and the slave are struggling? *Our culture cannot stand the world*".¹⁹⁷

An early exception to the traditional Western approach to nature, Conley suggests, is the work of feminists such as Helene Cixous and Luce Irigaray, who insisted on the necessity of rethinking the human subject "in the world" and accordingly sought to "decenter man's self-designated role as master".¹⁹⁸ In calling for such de-centering and "setting in motion" of the self, Conley suggests that these women were calling for ecological relations to the world even before the notion of ecology had acquired its current meaning. Ecology, Conley emphasizes, is *not* "just another transcendental signifier", but rather a concern "traversing all political and emancipatory discourses".¹⁹⁹ In this context she insists, subjects in both a singular and collective sense need to be rethought "in a nature redefined in terms of fluctuations, patterns, and randomness rather than Newtonian immobility and timelessness".²⁰⁰

Such redefinition of nature, Conley writes, following Cixous' *poetic model* of the subject engaged in constant change and transformation (i.e., in becoming) whereby a "feminine mode of exchanging let the self be altered through its tactful *écoute* of the world", has been taken up in the

¹⁹³ Roderick Frazier Nash, "Power of the Wild", *New Scientist*, Mar 30, 2002, p. 42-45.

¹⁹⁴ *Ibid.*

¹⁹⁵ *Ibid.*

¹⁹⁶ Verena Conley, "Eco-Subjects", 77. Emphasis mine.

¹⁹⁷ *Ibid.*, 77-78. Conley quotes Michael Serres from *Le contrat naturel* (Paris, Bourin, 1990, 20.)

¹⁹⁸ *Ibid.*, 78.

¹⁹⁹ 80. Elsewhere, Conley (*Ecopolitics: The Environment in Poststructuralist Thought*, 80) has pointed out that Paul Virilio, for example, has written repeatedly that ecological struggle is the only one worth fighting for. Similarly, Paul Shepard ("Virtually Hunting Reality in the Forests of Simulacra" 25, in Soulé and Lease, *Reinventing Nature: Responses to Postmodern Deconstruction*) has quoted Charlene Spretnak as saying "The ecologizing of consciousness is far more radical than ideologues and strategists of the existing political forms [...] seem to have realized." (Spretnak, *States of Grace*, San Francisco: Harper, 1991, 229.)

²⁰⁰ *Ibid.*, 80.

technosciences to show that nature too is engaged in transformation or becoming, and that "under stress, unwarranted alterations are prone to occur", just as rapid transformations under the impact of technology makes human societies equally volatile.²⁰¹ "*Becoming*", writes Conley, "henceforth revolves around both human beings and nature."²⁰² As she further explains, certain research in contemporary physics has moved away from theories of "immobility, equilibrium, and objective truth", to reintroduce subjective point-of-view and uncertainty; and scientists involved in chaos theory such as Ilya Prigogine and Isabelle Stengers have shown how the discovery of complex systems reveals the "uncertainty of our thought" about the universe, showing that "nature too has a history" and is not "simply immobile and to be acted upon".²⁰³ Such uncertainty, suggests Conley whereby "*becoming* has superseded being in the sciences as well as in the humanities"²⁰⁴ – as both natural physical systems and human societies are understood as having highly instable and fluctuating interdependencies on a global scale – invites hope for the future instead of only threat.²⁰⁵

Nature, as flux and flow, as becoming (physis)

The notion of *becoming* has become increasingly integral to my own understanding of nature, and as such is an essential aspect of *Ephémère*. In simpler terms, I call this *life-flow* – although *life-force*, in the sense of Dylan Thomas' "force that through the green fuse", quoted earlier in this section, is more apt. Even a so-called weed, pushing its way through a cracked city sidewalk, has, *is*, this life-flow; and, even the sidewalk cement made from sand and water and slowly, inexorably, dissolving into dust is also this, even though it is beyond our limited capacity to perceive. Seen in these terms, beings are no more than temporary "islands of stability within a flux of becoming";²⁰⁶ and the existence of a flower is only "a phase of incremental transformations between seed and dust...".²⁰⁷ As explained by the Japanese philosopher Keiji Nishitani, this force, "by virtue of which all things are gathered together and brought into relationship with one another ... since ancient times, has gone by the name of 'nature' (*physis*)".²⁰⁸

²⁰¹ 80-81.

²⁰² *Ibid.*, 81.

²⁰³ *Ibid.*

²⁰⁴ *Ibid.* 85. As suggested by Prigogine and Stengers' conclusion to *Order Out Of Chaos* (1984). Note that in context of her examination of chaos theory and becoming, Conley also discusses its appropriation by "integrated world capitalism" for arguably destructive ends, a subject outside the scope of my present text.

²⁰⁵ *Ibid.*, 86.

²⁰⁶ Arran Gare, 107.

²⁰⁷ Norman Bryson, "The Gaze in the Expanded Field", 97. In context of discussion on Nishitani. I will return to this notion in Chapter VI, when discussing the use of semi-transparency and transformation in my work.

²⁰⁸ Keiji Nishitani, *Religion and Nothingness*, 149. His statement is made in the following context, "All things in the world are linked together, one way or the other. Not a single thing comes in being without some relation to every other thing. The scientific intellect thinks here in terms of natural laws of necessary causality; *mythico-poetic imagination perceives an organic, living connection* [emphasis mine]; philosophic reason contemplates an absolute One. But on a more essential level, a system of circumsession has to be seen here, according to which, on the field of *sunyata* [emptiness], all things are in a process of becoming master and servant to another. In this system, each thing is itself in not being itself, and is not itself in being itself. Its being is illusion in its truth and truth in its illusion. This may sound strange the first time one hears it, but in fact it enables us for the first time to conceive of a *force* by virtue of which all things are gathered together and

As Nishitani further explains, "The force of the world makes itself manifest in the force of each and every thing in the world"; and, (recalling my discussion of the virtual as potentiality earlier in this chapter) "... the force of the world, or 'nature', becomes manifest in the pine tree as the *virtus* of the pine, and in the bamboo as the *virtus* of the bamboo".²⁰⁹ Accordingly Nishitani says, "Even the very tiniest thing, to the extent that it 'is', displays in its act of being the whole web of circumstantial interpenetration that links all things together. In its being, we might say, the world 'worlds'".²¹⁰ Over the past decade, my own intuitive understanding of reality has come to include this notion of nature, as defined by Heidegger in *Heraklit*, "In truth, *physis* means, outside of all specific connotations of mountains, sea or animals, *the pure blooming* in the power of which all that appears, appears and thus 'is'".²¹¹

I was first exposed to the notion of flow – as Heraclitian *flux* – while studying pre-Socratic Greek philosophy at university in the mid '70s. In exploring the meaning of various fragments,²¹² I became familiar with the Heraclitian notion that superficial appearances of stability (as in a river) mask continuous change,²¹³ and that fire, like water, *flows*, suggesting not only that Heraclitus saw flux on a cosmic scale, but that for him, flux and opposition were features in the nature of everything.²¹⁴ Heraclitus (b. ca. 540 B.C.) is considered the founder of the process approach in Western philosophy. As explained by Nicholas Rescher in *Process Metaphysics*, in comparison to the atomists for whom nature was composed of unchanging and inert material atoms whose relational positions might change but whose properties as substances did not – for Heraclitus, reality was not a constellation of *things*, but of *processes*.²¹⁵

Accordingly, Rescher writes that as Heraclitus saw it, "we must avoid at all costs the fallacy of substantializing nature into perduring things (substances) because they are not stable things, but fundamental forces and the varied and fluctuating activities which they produce that make up this world of ours".²¹⁶ For Heraclitus (who taught *panta rhei*: "everything flows") process is fundamental: the river is not an *object* but an ever-changing flow, and the sun is not a *thing* but a flaming fire.²¹⁷ As Rescher points out, even Plato accepted the idea that the perceptible world, the sensory world of our everyday experience, was thoroughly Heraclitean and processual, and he subsequently located his exception to it (his realm of reason, of immutable and unchanging "Ideas") above such fluctuating uncertainty.²¹⁸ In comparison to Plato's view, in the pre-Socratic notion of

brought into relationship with one another, a force which, since ancient times, has gone by the name of 'nature' (*physis*)". 149

²⁰⁹ Ibid., 150.

²¹⁰ Ibid.

²¹¹ Heidegger, *Heraklit*, 102, as quoted by Michael Haar, *The Song of the Earth: Heidegger and the Grounds of the History of Being*, 8. Emphasis mine.

²¹² For example, as attributed to Heraclitus, "All things coming to being through opposition, and all are in flux like a river"; "This world-order, the same for all, no god made or any man, but it always was and is and will be an ever-living fire, kindling by measure and going out by measure"; and "Upon those who step into the same rivers flow other and yet other waters." Excerpted from John Mansley Robinson, *An Introduction to Early Greek Philosophy: The Chief Fragments and Ancient Testimony with Connecting Commentary*, 89-91.

²¹³ Jonathan Barnes, *The Pre-Socratic Philosophers*, 66.

²¹⁴ Ibid., 67, 77.

²¹⁵ Nicholas Rescher, *Process Metaphysics: An Introduction to Process Philosophy*, 9-10.

²¹⁶ Ibid., 10.

²¹⁷ Ibid.

²¹⁸ Ibid.

the world, as Richard Coyne explains, it is the *real* which is the site of flux and indeterminacy, as well as a paradoxical, dialectical *play* between unity and multiplicity.²¹⁹

The interpretation of the world as flux and flow has been explored by various philosophical contributors to the development of process theory, following Heraclitus, including Leibniz, Henri Bergson and Alfred North Whitehead.²²⁰ As Rescher explains, for Whitehead, there are no clear separations in nature, no hard-edged objects with sharp-boundary locations in space.²²¹ Whereas mainstream philosophical traditions of the West have been characterized by "the dominance of a substance ontology that sees the world's particulars as being – typically and paradigmatically – material objects on the order of atoms or molecules or trees or planets", process philosophers do not deny the reality of things (substances) but rather reconceptualize them as "manifolds of process".²²² As such, process metaphysics stresses the need to regard physical things (material objects) as no more than stability-waves in a sea of process.²²³ Seen from this perspective, the world is "a unified macroprocess that consists of a myriad of duly coordinated subordinate microprocesses",²²⁴ whereby not only does every process possess reflexive self-orientation (including self-realization, self-formation, self-perpetuation etc.) but is interlinked with every other in an "evolutionary connectedness".²²⁵

In *Postmodernism and the Environmental Crisis*, Arran Gare writes that classical Western "science, along with metaphysics, is part of the forgetting of Being".²²⁶ But what if, he asks, science was to be based on a philosophy which privileges process, "would it still involve the forgetting of being?"²²⁷ Heidegger, he writes, assumed that "the natural sciences are irrevocably oriented towards the domination of the world, and argued that the claims to truth of science must be delimited, that such 'knowledge' must be subordinated to thinking about being".²²⁸ But it is arguable, Gare suggests, that through process philosophy, science itself is "regaining awareness of Being as presencing of the present", and in this way postmodern science can cease to be "an instrument of world subjugation".²²⁹ Process philosophers, he explains, are as opposed to Cartesian thinking as Heidegger: their philosophy involves an attempt to overcome the dualism between mind and body, subject and object, and reconceive humans as being *within* the world, as participants in the world's becoming.²³⁰

²¹⁹ Coyne, *Technoromanticism: Digital Narrative, Holism, and the Romance of the Real*, 51.

²²⁰ Rescher, 12-13. As summarized by Rescher, Leibniz (1646-1717) viewed the world as an infinite collection of agents or "monads", of pure processes endowed with inner drives which ongoingly destabilize and provide for a processual course of never-ending change, making up the world as a vast systemic complex of processes rather than substantial objects; Bergson saw reality as having process, flux and change as fundamental features which cannot be adequately encompassed by a fixed set of descriptive categories, and therefore transcend the limits of human reason (p. 18); and Whitehead, for whom temporality and its changes are basic, a "perpetual perishing" matched by a perpetual emergence; microcosm and macrocosm are linked in a seamless web of process. 21.

²²¹ *Ibid.*, 21-22.

²²² *Ibid.*, 51.

²²³ *Ibid.*, 53.

²²⁴ *Ibid.*, 84.

²²⁵ *Ibid.*, 85-86.

²²⁶ Gare, 114.

²²⁷ *Ibid.*

²²⁸ *Ibid.*

²²⁹ *Ibid.*

²³⁰ *Ibid.*, 115.

In this context, Gare suggests that process philosophy can be seen as an attempt to return us "to an appreciation of the being of the world as presencing" in much the same way as Heidegger: and like Heidegger, such philosophers stress "the temporality of being" and are suspicious of "the primacy given to vision in the way the world is now understood".²³¹ For example, Gare explains, while rejecting the Cartesian reduction of physical existence to a mathematical order, and rejecting the idea that metaphysics can grasp an immutable reality behind appearances, Whitehead seeks to reconceive beings as self-creating, and the universe as a multiplicity "in which different kinds of beings must be understood to some extent in their own terms".²³² Instead of creating a new kind of dualism between Being and beings, Whitehead tries to reconceive what beings are, stating in the *Concept of Nature* that "the immediate fact for awareness is the whole occurrence of nature. It is nature as an event *present for sense-awareness, and essentially passing*".²³³

In summary, Gare writes that even while there is "still no final unified vision emerging from postmodern science, or rather, unified understanding, since it is clear that it is no longer possible to conceive of the world as picturable, it is clear that what is emerging is a theory of the world as a creative process of becoming, a world which is irreducibly complex and a world of which it must be recognized that we, as beings struggling to understand the world, are part".²³⁴ In this context, Gare cites process-based interpretations of reality in scientific theories concerning physics in terms of relativity, quantum theory (David Bohm's universal flux) thermodynamics, and chaos theory (Prigogine and Stengers, already discussed by Conley).²³⁵ While traditional mechanistic thinking is still widespread in biology, Gare suggests that there are four areas where post-mechanistic process-based thinking is making an impact: epigenesis (cellular differentiation and generation of forms); biological self-regulation; ecology; and ethology (where the irreducible reality of awareness and thinking in organisms is being acknowledged or at least partly accounted for in terms that transcend mechanistic thinking).²³⁶ While there is not time to go into these areas here, I do want to mention that ethology (through the work of Jacob von Uexkull, who, as Gare explains, revealed the distinctive worlds of different organisms, showing how "there are as many surrounding worlds as animals"²³⁷) has very significantly led to understanding the vast variety of *life-worlds* of organisms and emergent consciousness "in relationship to the total organism defining its environment as a world and then acting within and on this world".

In this context, Gare writes that humanity must be understood as an emergent process or complex of processes *within* nature, as part of the biosphere...: "like all living entities, humans are

²³¹ Ibid. Gare explains that for Bergson, understanding the world in spatial terms, as derived from vision, (whereby it is conceived as a multiplicity of separate objects) is directly linked to the desire to control. As an alternative, Bergson suggested we move away from visual analogies to auditory analogies as a way of representing *becoming* instead of being.

²³² Ibid., 117.

²³³ Ibid. Emphasis mine. (Gare quotes Whitehead from the *Concept of Nature*, p.14) Considered in this way, Gare suggests, "a tree must be regarded as a process of becoming which is durational: what we normally identify as a tree at a particular time is a structure, the potentialities produced and maintained by this process of becoming – the potential to maintain shape, to resist penetration, to reflect light, etc. – which are realized as such in the process of becoming of other processes, and also by the tree itself as the necessary part of its own becoming". 121

²³⁴ Ibid., 124.

²³⁵ Ibid., 124-128.

²³⁶ Ibid., 128-129.

²³⁷ Quoted in Gare, 131. Jacob von Uexkull, *Theoretical Biology*, (London:Kegan Paul, 1926, 176)

processes which define their environments as their world, a world in which they are then sensuously engaged – attracted and repulsed by it, taking it in, incorporating it and excreting it, transforming it and being transformed by it".²³⁸ Furthermore, as he explains, "Conceiving of the world as a *process of creative becoming* consisting of a *multiplicity of different types of processes in various complex relations*, each making its own unique contribution to the becoming of the world, which must be understood at least to some extent as an immanent cause of its own becoming, can allow that humans create themselves through culture, and in particular, through being enacted by, reformulating, and then enacting stories about themselves and their place in the world".²³⁹

Using an auditory analogy, Gare writes that each individual process or subprocess within the universe is "like a melody singing itself within a symphony": It is not the final outcome or ending of a symphony that matters, but rather its whole duration, whereby each melody and each note within the melody are significant in themselves.²⁴⁰ Understanding the world and ourselves in these terms, he explains, enables us to appreciate "processes ranging from atoms, molecules, clusters of galaxies, galaxies, stars, planets, global ecosystems and species, to individual organisms, societies and cultures, as having an *intrinsic significance* as contributions to the unfinished *becoming* of the world".²⁴¹

The redefining of nature which I have described above seems to confirm what Merleau-Ponty predicted in "The Concept of Nature": that the Cartesian concept of nature – as "*naturata*, pure product, compiled out of absolutely external parts", an empty shell with "everything internal handed over to God's side, the pure *naturans*", and in accordance with "a distinction drawn long before Descartes but reinvigorated with his reflections" – would endure only until the "quite un-Cartesian developments in contemporary science open up... a different ontology".²⁴² Certainly, since Merleau-Ponty made this comment several decades ago, much recent research in the sciences, could be considered post-Cartesian. Some would propose that this includes genetic engineering and biotechnology, whereby the very notions of natural and artificial, living and nonliving, are being redefined: In many instances, however, such human manipulation of life, whether by scientists or artists, arguably reinscribes the very master narrative of domination and objectification (or to use Heidegger's terms, technological enframing) which I and others are critiquing.²⁴³

Before ending my discussion of nature, I want to turn to the theoretical dismissal of "nature" as little more than a social construct. (Readers might wish to refer to comments by Arran Gare and Kate Soper included in my footnotes at the beginning of this section.) As Katherine Hayles asks, "If

²³⁸ Ibid., 132.

²³⁹ Ibid., 142. Emphasis mine.

²⁴⁰ Ibid.

²⁴¹ Ibid. Emphasis mine.

²⁴² Merleau-Ponty, "The Concept of Nature", 137.

²⁴³ Further discussion of this topic lies outside the scope of my text. Others have made this argument, including Carol Gigliotti, Bill McKibben, Jeremy Rifkin, Vandana Shiva and David Suzuki. As Bruce Foltz writes in *Inhabiting the Earth: Heidegger, Environmental Ethics and the Metaphysics of Nature*, "...modern technology in the form of 'genetic engineering' carries out an attack' on life itself, striving to install it within its own framework as a technologically producible artifact". 132.

nature is only a social and discursive construction, why fight so hard to preserve it?"²⁴⁴ The answer, she writes, is emerging "from a broad spectrum of contemporary theory, including feminist challenges to scientific objectivity, the rethinking of the importance of embodiment among certain cognitive scientists, the emphasis on interconnectedness in ecology, and the recognition in anthropology of the complex ways in which physical environments, embodiment, discourse, and ideology collaborate to create a world".²⁴⁵

Hayles goes on to explain that while these approaches are diverse, they share a "common emphasis on interaction and positionality": *interactivity* because it "points toward our connection with the world" whereby "everything we know about the world we know because we interact with it"; and *positionality* because it refers to "our location as human beings living in certain times, cultures, and historical traditions" (i.e., we interact with the world "not from a disembodied, generalized framework but from positions marked by the particularities of our circumstances as embodied human creatures").²⁴⁶ Together, Hayles suggests, these notions of interactivity and positionality provide a strong challenge to traditional objectivity,²⁴⁷ which she defines as believing we know reality because we are separated from it: What happens, she asks, if instead we begin from the opposite premise, "that we know the world because *we are connected with it?*"²⁴⁸

The approach Hayles advocates is based on the idea that the particular form of our *embodiment* matters, "for it determines the nature of our interactions with the world". The word "world", she cautions, is not useful here, referring as it does "to a reality already constructed by our specific kind of sensory equipment, neural processing system, previous experience, present context, and horizon of expectation".²⁴⁹ Instead, Hayles suggests that we think about "out there" as an *unmediated flux*, emphasizing that such flux does not exist in any of the usual conceptual terms by which we construct reality/nature/the universe/the world until it is processed by an observer, whereby it "interacts with and comes into consciousness through self-organizing, transformative processes that includes sensory, contextual, and cognitive components", processes

²⁴⁴ Katherine Hayles, "Searching for Common Ground", 47.

²⁴⁵ Ibid., 48.

²⁴⁶ Ibid.

²⁴⁷ In this context, Hayles writes that such "objectivism" is not only deeply rooted in Western culture, but continues to form "the backbone of the mainstream view of scientific inquiry." 49. In the objectivist view, Hayles writes, the world exists apart from humans, and is "grasped through corrective reasoning, a cognitive property of the conscious mind"; while the mind itself is conceived as a "reasoning machine unaffected by the chassis in which it is mounted", with the effect being that "the positionality of the human mind/body is largely erased, as are the language, culture, and belief systems of the observer". Ibid. As Hayles goes on to explain – and I want to quote her at length here – "Perhaps the most pernicious aspect of the objectivist view is the implicit denial of itself as a representation. The denial is all the more troubling because of the ideological implications encoded within it. Among those who have explored these implications are Evelyn Fox Keller, who points out the relation between an "objective" attitude, the masculine orientation of science, and the construction of the world as an object for domination and control [*Reflections on Gender and Science*, 1985]; Ilya Prigogine and Isabelle Stengers, who relate the appeal of a timeless realm to fear of emotional involvement and death [*Order Out Of Chaos: Man's New Dialogue with Nature*, 1984]; and Sandra Harding, who underscores the differences between non-Western and Western science to make visible the assumptions within the dominant traditions of Western scientific practice ["After the Neutrality Ideal: Science, Politics and 'Strong Objectivity'", *Social Research* 59, fall 1992]. These critiques can be seen as acts of recovery, attempts to excavate from an abstracted shorthand the complexities that unite subject and object in a dynamic, interactive, ongoing process of perception and social construction." 51.

²⁴⁸ Ibid. Emphasis mine.

²⁴⁹ Ibid., 49.

which she calls "the cusp".²⁵⁰ As Hayles explains it, "On one side of the cusp is the flux, inherently unknowable and unreachable by any sentient being"; and "On the other side are the constructed concepts that for us comprise the world".²⁵¹ She goes on to say that "Thinking only about the outside of the cusp leads to the impression that we can access reality directly and formulate its workings through abstract laws that are universally true"; conversely, "Thinking only about the inside leads to solipsism and radical subjectivism". *The hardest thing to do*, she emphasizes, *is to "ride the cusp"*, keeping in mind "both the active transformations through which we experience the world and the flux that interacts with and helps to shape those transformations".²⁵²

There remains a difference, Hayles explains, "between calling what is out there an 'unmediated flux' and calling it an 'underlying reality'": Whereas the traditional expression "underlying reality" implies that reality exists in a timeless foundational way, she writes that "the language of mediation emphasizes that the flux can come into existence for us *only* through our interaction with it and hence is already constructed".²⁵³ Considered in this context, she explains, a constructivist position does not have to lead to a laissez-faire attitude toward environmental issues, or passively accept the excesses of postmodern society: On the contrary, this approach "points out that human interactions with the flux comprise only an infinitesimal fraction of possible modes of being in the world"; and "extends our awareness of anthropomorphism into a perspective that values other species' encounters with the flux precisely because they are different than ours".²⁵⁴ Accordingly, Hayles writes, "Understanding that we are positioned, we also understand that we are limited and finite creatures. The unique contribution that wildness can offer us then becomes apparent, for as Gary Snyder vividly reminds us, the human perspective is only one voice in the rich chorus of experience".²⁵⁵

Transforming habitual perceptions through virtuality

During my formative years at university, in addition to studying pre-Socratic Greek philosophy, I also studied Mahayana Buddhism²⁵⁶ alongside Western accounts of religious experience such as that

²⁵⁰ Ibid.

²⁵¹ Ibid., 50.

²⁵² Ibid. Emphasis mine.

²⁵³ Ibid., 60.

²⁵⁴ Ibid. Emphasis mine.

²⁵⁵ Ibid. Hayles quotes Gary Snyder from *The Practice of the Wild*.

²⁵⁶ As suggested by Jan Van Bragt, in his translator's Introduction to Nishitani's *Religion and Nothingness*, Mahayana Buddhism achieves a synthesis of affirmation and negation, locating *nirvana* (i.e. its "sacred") *within* this secular world of form and asserting that it is *here* that nirvana finds its self-expression, in comparison to the negation of Hinayana Buddhism which finds its nirvana "in a world apart from and beyond the world of *samsara* teeming with illusory appearances of individual realities". xxvi.

Since first studying Mahayana Buddhism in university, I have become aware of certain correspondences (or perhaps *resonances* is a better word) between the Buddhist worldview and aspects of process philosophy (with its roots in the pre-Socratic interpretation of reality as flux, and its attempt to replace traditional Western metaphysics and Cartesian subject-object dualism with an emphasis on a biological-organic model of becoming).

As suggested by Winston King in his foreword to Nishitani's *Religion and Nothingness*, "For process philosophy, flexibility and fluidity seem on the one hand to be in accord with Einsteinian relativity and Heisenbergian uncertainty principles [not to mention recent developments since his comments were made 20 years ago]; and on the other to be at least within speaking distance of the Buddhist view of the world as a fluxing tide of event-entities and characterized by the 'circumstantial interpenetration' of all its parts..." xxii. King uses the term of "circumstantial

of the German mystic Meister Eckhart (referred to in Chapter 1, in context of Heidegger's notion of *Gelassenheit*). Even now, I remember the insistence of my professor Claude Fredericks (who had been a monk in Japan for many years) that the surface appearances of the world – such as the shimmering foliage of the trees, the clouds passing in the sky, the grass beneath our feet – were nothing more than illusion. At that time (thirty years ago), especially because I was an aspiring painter who found much beauty in these things, this possibility left me extremely perplexed and troubled. While I no longer remember the particular texts we studied (and it is beyond the scope of my present text to revisit them here), eventually however, the notion of the *illusory* nature of the world's appearances seeped into my worldview.

Accordingly, I began questioning what might lie beyond such illusion: *not* in terms of a transcendent Platonic reality of unchanging forms or a substrate of mathematical information; but rather a reality which I intuited was *immanent*, consisting of flux and becoming all around us (through us, in us, us). And in the years that followed, I began to wonder *if only we could really see*, beyond the veil of objectified surface appearances, beyond our habitual and predominantly visual perceptions and our culturally-biased language,²⁵⁷ perhaps then might we realize that the world is *not* a collection of solid, separate, static objects in empty space viewed from the perspective of an isolated individual self (*not* the "Cartesian division of reality into immaterial, invisible, subjective consciousness and material, visible objectivity" described by Nishitani as the epitome of Western thought²⁵⁸) but rather that everything is engaged in transformation and mutability (as suggested by the pre-Socratics, certain Buddhist thinkers, and process-based philosophers and scientists), and that all boundaries between things, all separations between subject and object, all distances between perceiver and perceived, are illusory.

In this context, I want to emphasize yet again that my goal as an artist is not to represent nature as some primal truth or "immaculate materiality";²⁵⁹ I am not seeking to replicate its appearances or translate optical sensations; nor am I attempting to scientifically visualize or model nature as a flow of information or procedurally-driven artificial-life.²⁶⁰ And neither am I trying to substitute the virtual for the real – for as I wrote in the 1991 artist statement included in Chapter I, virtual-reality

interpenetration" in the following context: "Hua-yen Buddhism's philosophy of totality placed all beings in what [the translator] Van Bragt, using a Christian term for the interrelations within the Trinity, calls "circumsessional interpenetration" of one another." xi.

The parallels (and differences) between process philosophy and Hua-yen Buddhism are discussed in detail by Steve Odin, in *Process Metaphysics and Hua-Yen Buddhism: A Critical Study of Cumulative Penetration Vs. Interpenetration*. According to Odin, Hua-yen Buddhism – established as an independent sect in China during the Sul-Tang Period (559-900) when Chinese Buddhism was at its apex along with such schools as Ch'an meditative practice – attempts to unify all fundamental Buddhist teachings (Hinayana and Mahayana alike) into a single comprehensive vehicle of theory and practice. 9. Nishitani (1900-?) is a contemporary philosopher in the tradition of Kitaro Nishida of the Kyoto School (1870-1945) who was considered Japan's foremost contemporary systematic thinker, in terms of constructing a metaphysics that assimilated the history of Western philosophy into his own Buddhist ontology. 12.

²⁵⁷ In this context, Ricoeur's concept of shattering our language to increase our sense of reality become very relevant – especially since, as suggested by Gare (in *Postmodernism and the Environmental Crisis*, p. 109, and footnoted in the previous chapter) languages deriving from the Aryan language "privilege nouns" and (as Nietzsche argues) are useless for expressing "becoming."

²⁵⁸ As suggested by Winston King in his foreword to Nishitani's *Religion and Nothingness*, xi.

²⁵⁹ Clark, "Earthing the Ether: The Alternate Currents of Ecology and Cyberculture", 94, 95.

²⁶⁰ *Ibid.*, 91, 104.

environments are at best an expression of *human* being, and if we create a computerized model of a bird, the most that bird can ever be is the paltry sum of current human knowledge of birds; it has no interior otherness, no mysterious being of and in itself. Similarly, Nigel Clark has warned that whatever level of "naturalism" computer-simulated beings or bodies might attain, "they remain our own creations, another version of nature tuned to the measure of our fantasies and expectations"; and in this context he correctly suggests that cyberspace (and I would add any virtual-reality environment), "lacks the otherness with which nature is still endowed (when it evades total visibility and enforced communication)".²⁶¹ In other words, cyberspace and virtual-reality are wholly human constructions, replete with the values, ethics and worldview of their creators. Bringing the context back to art-making, David Summers similarly writes that paintings, even those which purport to represent reality, are but "*visualized opinions*, grounded in inscribed feelings, integral with perception, but especially with memory, and with our hopes and expectations for the future".²⁶²

So, if my work is not "about" nature in any of the above ways, what then, in this context, am I trying to accomplish? As I have written earlier, my goal as an artist has been to find ways of transforming our habitual, culturally-engrained perceptions of the world in the sense meant by Bachelard as "*changing space*". That is to say – and I will quote him again here – "By changing space, by leaving the space of one's usual sensibilities, one enters into communication with a space that is *psychically innovating*... We do not change place, we *change our nature*."²⁶³

In this context, I see the medium of immersive virtual space as a means of facilitating bodily experiences of a *re-imagined* nature whereby our culturally-learned and habitual assumptions about self and world may be temporarily discarded. Here, I am seeking to go beyond the conventionally objectifying view of nature as a standing-reserve of "things" to be exploited, and instead, present an alternative (post-Platonic, post-Cartesian, post-technologically enframing, but emphatically not post-biological²⁶⁴) ontology of nature: That is, of nature as all-enveloping, ever-transforming life-energy, as the pre-Socratic *physis* (or as I have quoted earlier, *physis* as Nishitani's "force by virtue of which all things are gathered together and brought into relationship with one another", and by which in its very being, "the world 'worlds'";²⁶⁵ and as Heidegger's "*pure blooming* in the power of which all that appears, appears and thus 'is'".²⁶⁶) But even more than that, I am attempting to artistically present this ontology of nature as an essential intermingling

²⁶¹ Ibid. 103.

²⁶² Summers, 321. Emphasis mine.

²⁶³ Bachelard, *The Poetics of Space*, 206.

²⁶⁴ In context of recent trends to describe our current situation as post-biological, I question whether this concept might be a yet another manifestation of technologized thinking that goes all the way back in the Western philosophical tradition to the rejection of pre-Socratic thought (See footnote #52, Chapter I, of Richard Coyne, in *Designing Information Technology in the Postmodern Age: from Method to Metaphor*, regarding the development of "technological rationality" including the imposition of metanarratives or metaphysical systems among which he places "holistic theses, including chaos theory, the Gaia hypothesis, complex-theory and theories of self-organizing systems". 104.

From a related perspective regarding the ancient rejection of pre-Socratic attitudes to nature, Robert Pogue Harrison writes in *Forests: the Shadow of Civilization*, "Turning against the vegetative and animal origins of life, Socrates idealized and formalized the essence of truth [...] Whereas earthly forms had previously been seen to arise from the primordial preformal matrix of nature, they now were seen to descend or derive from an ideal realm of disembodied form." 38.

²⁶⁵ Nishitani, 149; 150.

²⁶⁶ Heidegger, *Heraklit*, 102, in Michael Haar, *The Song of the Earth: Heidegger and the Grounds of the History of Being*, 8. Emphasis mine.

with our own embodied being and becoming so that conventional, dualistic notions of difference, between the mastering subject-self and the object-world, are dissolved.

Most importantly, I am attempting to achieve this artistically through a spatio-temporal medium which enables others to experience my construct of such enveloping, such flux and intermingling, as if they were *bodily, sensorially, immersed within it*. The significance of this is that (due to the medium's paradoxical qualities) rather than merely *reading* about such concepts in books or *looking* at visual representations in paintings, photographs or films, immersed participants in my works may *bodily experience* a temporary dissolution or confusion of boundaries (by exploring *within* a spherically-enveloping semi-transparent realm where there are no hard-edged solid objects in empty void-like space distinctly separate from them; wherein they can effectively float through everything even as everything passes through their own selves in what amounts to an *interlacing* of spatialities, of within and without, interior self and exterior world). And most significantly, because of the embodied quality of the experience, those who have been immersed in these works retain the experience as an internal bodily memory... remembering it *as if it were real*.

This paradoxically embodied experiential quality is, I believe, the key to the medium's potency, for better and worse. However, rather than fearing the danger of immersive virtual space as a totalitarianizing tool, as an instrumentalizing *techne* which will render us and the world even further into standing-reserve, as an artist I am most interested in the medium's capacity to function as a perceptually and philosophically-invigorating space in the sense meant Bachelard, serving as a *techne* not of enframing but of *poiesis*, of *aletheia*....

At this point it might be useful to answer yet again a question I am often asked: Why make virtual landscapes at all? Why construct virtual environments about nature? Why create such highly technologized and thoroughly mediated experiences instead of spending time in actual nature? Why not simply paint landscapes? Or why not, even more simply, just go walking in the woods? Well, first of all, as an artist I am *compelled* to communicate my sensibility of the world to others: rambling alone through the countryside or city is not enough. But neither is painting: as I have written earlier and will discuss further in the next chapter, I abandoned painting many years ago to work with immersive virtual space because I sensed that its unique combination of characteristics might provide a more effective means for exploring my desire to go beyond the world's veil of appearances and bodily immerse others in what I imagined to be its fluxes and flows.

But even so the question remains: given my expressed interest in nature, is it not problematic to construct such highly technologized representations of landscape? If walking in the woods or painting two-dimensional images is inadequate for my purposes, why not instead construct artworks with real earth, on-site with actual land? My answer is this, and therein is the entire rationale for what I am trying to accomplish: My work is not about nature, nor is it about landscape – my work is about *perception*. In this context, my goal has been to use the medium of immersive virtual space to enable or facilitate an undoing or dismantling of how we habitually perceive and imagine the world around us as children of the Cartesian paradigm: In doing so, my intent is to initiate a *questioning*, even if only temporarily, of our culturally-laden assumptions so that we may perceive *freshly*.

Let me explain another way: When we are in an *actual* place (and this applies equally to a rural landscape, mountainside or urban street, i.e., anywhere except oceanic or outer space), we

normally experience our bodies as solid, heavy and gravity-bound. When we move about individually, we usually do so along a solid horizontal surface, by walking, riding a bicycle, or most likely, driving a car. Most significantly, we habitually see the world around us in terms of its opaque external surfaces, categorized into a collection of solid hard-edged objects located in empty space, including our own bodies which become yet more "objects" among the many. Seen in these dualistic terms, everything appears separate from everything else, including separate from us, in a polarized dichotomy, a gaping wound, between subject-self and object-world, perceiver and perceived. *Furthermore*, so culturally accustomed, so habituated, are we to these perceptions, that not only do we rarely question them, but we are usually not even aware of them, but go along as if on some kind of auto-pilot...

In comparison, when bodily immersed in a virtual environment like *Osmose* or *Ephémère* – which have been deliberately designed to be *unlike* our usual sensibilities – it is possible to experience using one's own breath to seemingly *float*, navigating through one's surroundings as if everything, including one's own self, is immaterial even while paradoxically grounded in one's physical body; where one can not only see *through* everything but float through it as well (and equally experience everything passing through one's own self); and whereby (in *Ephémère*) everything all around is engaged in constant flux and transformation. I believe that such experience can potentially facilitate a temporary *release* from habitual perceptions and assumptions; and in doing so, possibly, facilitate some kind of questioning of what we take for granted...

As Nishitani writes,

"Normally we proceed through life, on and on, with our eye fixed on something or other, always caught up with something within or without ourselves. It is these engagements that prevent the deepening of awareness. They block off the way to an opening up of that horizon on which nihility appears and self-being becomes a question. This is even the case with learning and the arts and the whole range of other cultural engagements. But when this horizon does open up at the bottom of those engagements that keep life moving continually on and on, something seems to halt and linger before us..."²⁶⁷

This is when, he explains, even one's own self-being becomes a question, a point which "brings the restless, forward-advancing pace of life to a halt and makes it take a step back", and in the Zen phrase, "turns the light to what is directly underfoot".²⁶⁸ This stepping back "to shed light on what is underfoot of the self" (or rather, as he quotes another ancient Zen phrase, "stepping back to come to the self"), Nishitani suggests, "marks a conversion in life itself."²⁶⁹ This is what I mean, in the fullest sense, by perceptual transformation.

5. "Landscapes of Ephemeral Embrace"

So far, I have contextualized my approach to immersive virtual space in terms of my intention to subvert the conventions and cultural biases associated with VR technology in favour of an alternative sensibility which reaffirms our embodiedness in the world, and diffuses the will to objectify, master and control with an attitude of poetic wonderment or *Gelassenheit*. I have described my work as an ongoing dialogue with a particular landscape; and even a possible

²⁶⁷ Nishitani, *Religion and Nothingness*, 4.

²⁶⁸ Ibid.

²⁶⁹ Ibid.

"transmutation" or "re-implacement" of this actual place into the spherical "place-worlds" of my immersive virtual environments.²⁷⁰ I have also described my approach to Immersive virtual space as a means of going beyond the veil of objectified and surface appearances, presenting the world around us (i.e., nature) as flux and flow (*physis*), as a multiplicity of *becomings* in which we too are interflowing. And I have explained my envisioning of Immersive virtual space as a spatio-temporal arena for de-habituating, defamiliarizing and thereby transforming perception; and, in this context, for functioning *not* as a means of furthering the technological enframing of the world, but rather serving *alternatively*, as a psychically-invigorating *techne* – of *poiesis*, of *aletheia*, for revealing and questioning...

In context of Nishitani's statement above, there is something else which fuels my desire to construct artworks such as *Ephémère* and I should divulge it here.

The field...

My desire to transcend Cartesian dualism and objectification and to affirm the interrelation of self and world has another much more intimate source: This is an experience which "took place" more than thirty years ago, when I was barely 17. In describing this experience below, the reader should note that I have chosen my words carefully, using language which recurs throughout this entire text – because such language, whether noun, adjective or verb, comes closest to describing not only what happened, but what I have sought, ever since, to revisit, and re-create, through art.

I was alone in a field, at night, when I became aware of a startling sensation in which the circumference of my mind (my skull, my brain, my interior self) expanded concentrically until I merged with the encircling horizon. During that instant (or however long it lasted), there was no distinction between interior and exterior, within and without. There was no separation, no distance, no dividing boundary between subject and object, between "I" and "it". All duality, all difference, had vanished. I, my self, had expanded to encompass the horizon and the dome of sky above: indeed, I was the landscape and the landscape was me. Even though it was dark, I could "see" every detail of everything around/within. Self and world, perceiver and perceived had become one and the same. As soon as I became rationally aware of what was happening, the experience faded and I was returned to my normal state.

I have since learned that the experience of such phenomena, whereby the individual ego is transcended and habitual boundaries are dissolved without prior training, is known to researchers of consciousness as a "spontaneous mystic experience".²⁷¹ It is *not* however the so-called mystical

²⁷⁰ The phrases "transmutation", "re-implacement" and "place-worlds" are from Casey, *Representing Place: Landscape Painting and Maps*, 114.

²⁷¹ According to Arthur Deikman, in "Deautomatization & Mystical Experience", my experience of this altered state of consciousness might possibly be categorized as an "untrained-sensate mystic experience": referring to "phenomena occurring in persons not regularly engaged in meditation, prayer, or other exercises aimed at achieving a religious experience. ... The mystic state they report is one of intense affective, perceptual, and cognitive phenomena that appear to be extensions of familiar psychological processes. Nature and drugs are the most frequent precipitating factors." 35. The reader should note that my experience was *not* drug-related. As Deikman further explains, "The untrained-sensate and the trained-sensate states are phenomenologically indistinguishable, with the qualification that the trained mystics report experiences conforming more closely to the specific religious cosmology to which they are accustomed. ... Typical of all mystic experience is a more or less gradual fading away of the state, leaving only a memory and a longing for that which was experienced". 36-37. Deikman writes that mystics such as St. John of the Cross and St. Teresa of

aspect which interests me here (although I will return to this at the end of Chapter VI): rather it is the extraordinary quality of the experience itself, the sensation of expansion and envelopment as my embodied self actually became the encircling horizon and everything within it, in such total interfusion that the very concepts of interior and exterior, self and other, or self and world, lost all meaning.

The "unification of interior and exterior"

A possible insight into my experience can be found in the structure of Zen *satori* as discussed by Toshihiko Izutsu in *The Interior and Exterior in Zen Buddhism*.²⁷² In this context, Izutsu first states that our normal distinction between interior and exterior seems to reflect "a kind of intrinsic geometry of the human mind".²⁷³ Indeed, he quotes Bachelard's remark that "the dialectics of outside and inside"²⁷⁴ belongs to the most "elementary and primitive stratum of our mind", and as such, "is a deep-rooted habit of our thinking".²⁷⁵ As a result, we find the opposition of interior and exterior everywhere, whether in such simple terms as inside or outside the house, or in considering "the ego or mind as our 'inside' versus the external world or Nature as our 'outside'", or "the soul as our 'inside' versus the body as our 'outside'", and so on. Accordingly, Izutsu writes, this everyday ontology, of contrasting interior and exterior, "forms one of the most fundamental patterns of thinking, by which our daily behaviour is largely determined".²⁷⁶ Such distinction is also, he contends, an important aspect of Zen Buddhism, whereby the term "interior" is usually intended to refer to "the mind or consciousness", and "exterior" to the "world of Nature against which the human ego stands as subject against object".²⁷⁷

But most significantly for the purposes of my discussion here, Izutsu goes on to emphasize, "... strictly speaking from the Zen point of view, the problem of the interior and exterior is but a *pseudo-problem*, in no matter what form it may be raised, because, seen with the eyes of an enlightened man [or woman], the exterior and exterior are not two regions to be distinguished from one another".²⁷⁸ As he further explains, "The distinction has no reality: it is nothing more than a thought-construct peculiar to the discriminating activity of the mind".²⁷⁹ Accordingly, he emphasizes, for anyone who has really understood this, i.e., who has "seen with his spiritual eye what the Hua-Yen metaphysics refers to as the unimpeded interpenetration of the noumenal and

Avila, and Eastern mystic literature in general, "divide the effects and stages of mystic experience into a lesser experience of strong emotion and ideation (sensate) and a higher, ultimate experience that goes beyond affect or ideation. It is the latter experience, occurring almost always in association with long training, that characterizes the "trained-transcendent" group. A similar distinction between lower (sensate) and higher (transcendent) contemplative states may be found in yoga texts. 'Conscious concentration' is a preliminary step to 'concentration which is not conscious (of objects)'. ... In the transcendent state, multiplicity disappears and a sense of union with the One and All occurs." 37-38.

²⁷² Toshihiko Izutsu, *The Interior and Exterior in Zen Buddhism*, 19. I first read Izutsu in 1991, two decades after my experience in the field, and long before conceptualizing *Osmose* or *Ephémère*.

²⁷³ *Ibid.*, 8.

²⁷⁴ Izutsu quotes Bachelard, *Poetics of Space*, Chapter IX, "The Dialectics of Outside and Inside".

²⁷⁵ *Ibid.*, 8.

²⁷⁶ *Ibid.*

²⁷⁷ *Ibid.*

²⁷⁸ *Ibid.*, 9. In this context, Izutsu suggests that the essence of Zen is usually understood to consist of practicing meditation in order to "stop our mind from running after 'outward' things and turning it 'inward' upon its own 'inner' reality".

²⁷⁹ *Ibid.*

the phenomenal, and then, further, the Interpenetration of the phenomenal things among themselves, it will be meaningless to speak of the Interior standing against the exterior".²⁸⁰

In the context of considering the process by which the distinction between Interior and exterior becomes "nullified and the two ontological regions become 'smoothed out into one whole sheet'", Izutsu goes on to explain: "In analyzing what we might properly call Zen experience (the personal realization of the state of enlightenment) in terms of the relation between Interior and exterior, we find two theoretical possibilities ... the Interior becoming exterior, or the externalization of the internal; [and] the exterior becoming interior, or the internalization of the external world".²⁸¹

The first possibility, Izutsu explains, takes place when "one suddenly experiences one's 'I' (the Internal) losing its own existential Identity and becoming fused into and Identified with an 'external' object", an experience which, however, is not considered authentically Zen unless the identification goes further than fusing with a single *thing* to the point where one's "awareness [is] seen to contain the whole world of Being".²⁸² At this stage, Izutsu suggests, one's "I" *expands* to the "ultimate limits of the universe", and is no longer experienced as an independent entity, no longer "a subject standing against the objective world".²⁸³ (I want to remind the reader here of my discussion in Chapter I, of Heidegger's concept of openness and the horizon, and his notion of meditative thinking, as involving a shift of awareness from objects to the *field* of awareness the objects are within.) In comparison, Izutsu writes, the second theoretical possibility involves an internalization of the external, whereby what has previously been considered external to oneself "becomes suddenly taken into the mind".²⁸⁴ During such an experience, the perceiving subject is filled with "an undeniable realization that he, his mind-and-body, has become completely *transparent*, having lost its existential opaqueness that would offer resistance to all things coming from the 'outside'".²⁸⁵ Likening the subjective mind in such a state "to an all-embracing mirror in which the mountains, rivers and the earth with all the splendor and beauty of nature are freely reflected", Izutsu suggests that "the 'external' world is thus re-created in a different dimension as an 'internal' landscape".²⁸⁶ (The reader should note that I will return to this notion of "interior landscape" when describing the responsive boulders in *Ephémère*.)

Even though these two interpretations of Zen experience (of the interior becoming exterior and the exterior becoming interior) are apparently opposite, Izutsu emphasizes that they are "ultimately and in reality identical".²⁸⁷ As he goes on to explain, "The correspondence between the interior and exterior, leading ultimately to the *complete unification* of the two, whether we approach it in terms of the first possibility or the second that have just been briefly touched upon, can clearly

²⁸⁰ Ibid. As mentioned in a previous footnote (#255) in this chapter, the Buddhist concept of interpenetration is examined in great detail by Steve Odin in *Process Metaphysics and Hua-Yen Buddhism: a Critical Study of Cumulative Penetration Vs. Interpenetration*. As an interesting aside, he points out that the first systematic microcosm/macrocosm metaphysics in the West was formulated by the medieval Christian mystic Nicholas de Cusa, who wrote that "the entire universe is in each creature ... with the result that in each individual the universe is by 'contraction' what the particular individual is". 218.

²⁸¹ Izutsu, 18.

²⁸² Ibid., 19.

²⁸³ Ibid.

²⁸⁴ Ibid.

²⁸⁵ Ibid. Emphasis mine.

²⁸⁶ Ibid. In this perceptual state, Izutsu writes, the mind is no longer the individual mind of an individual person, but rather "what Buddhism designates as the 'Mind'".

²⁸⁷ Ibid.

be observed in the most concise and concentrated form in the experience of 'living' a certain decisive instant at which *a momentary communion* is realized between interior and exterior".²⁸⁸ Strictly speaking however, he qualifies that there is no distinction between the externalization of the internal and the internalization of the external, for even the distinction itself is a delusion: ultimately, there is no "interior"; there is no "exterior"; there is only being, "all-transparent".²⁸⁹

In this context, I would venture to suggest (albeit with great hesitation) that my experience in the field might be considered from this perspective: that is, what happened to me cannot be described *only* through Izutsu's example of the externalization of the internal, and neither can it be described *only* through the internalization of the external. Rather the sensations I experienced were of a mutual interlacing, intermingling, or interfusion, *of both realms simultaneously*, so that, as I have written earlier, the very concept of any difference or distinction between interior and exterior, self and world, lost all relevance.

"Forming one body with all things"

Further insight into my experience in the field and my corresponding artistic emphasis on transparency, dissolving boundaries, spatial envelopment, and an expanded horizontal awareness – along with my interest in flux and flow – can be also gained through what Drew Leder describes as the Neo-Confucian concept of "forming one body with all things".²⁹⁰ As Leder explains, to *ontologically* say that all things "form one body" is to comment not only on the fundamental structure of the universe, but also the place of human beings within it.²⁹¹

From this perspective he writes, "we are all composed of the same fundamental 'stuff' or *ch'i*", a concept which does not fit into Western dualistic categories.²⁹² According to Leder, *ch'i* is neither solely spiritual nor material, but has been variously translated as "vital force", "material force", or "matter-energy"; and in this context he quotes the 20th century commentator Tu Wei-meng, who writes that "Forming one body with the universe can literally mean that since all modalities of being are made of *ch'i*, human life is part of a continuous flow of the blood and breath that constitutes the cosmic process".²⁹³ As I have mentioned earlier in this chapter, *ch'i* is also described by Casey in the context of early Chinese painting as "the ever-circulating cosmic energy that inhabits human and nonhuman worlds at once, making them more same than different, interanimated...."²⁹⁴ A correspondence could also possibly be made between *ch'i* and Heidegger's definition of *physis* as "blooming" and "arising"; as well as, more obviously, my own concept of "life-flow", not to mention the use of the Immersant's breath in *Osmose* and *Ephémère* to "animate" the entire immersive experience. As for Tu Wei-meng's reference to *ch'i* as breath, I will return to this shortly.

²⁸⁸ Ibid., 19-20. Emphasis mine.

²⁸⁹ Ibid., 36.

²⁹⁰ Leder, 156. Leder identifies Neo-Confucianism as a philosophical movement in China between the 11th-17th centuries that synthesized elements of Confucianism, Buddhism and Taoism. One of its central themes is that there is "an embodied unity of all things and, more particularly, of all things with the enlightened self". 156.

²⁹¹ Ibid., 157.

²⁹² Ibid.

²⁹³ Ibid. Leder quotes Tu Wei-meng from *Confucian Thought: Selfhood as Creative Transformation* (Albany: State University of New York Press, 1985, p. 43).

²⁹⁴ Casey, *Representing Place: Landscape Painting and Maps*, 95.

For Leder, the notion of *ch'i* also relates to certain phenomenological interpretations of the *recessive* dimensions of the body.²⁹⁵ This includes not only Merleau-Ponty's perceiving/perceived flesh (his "chiasm" or "intertwining", which will be discussed in the next section), but also Leder's own notion of "blood" which he describes as "that visceral level whereby we are in chiasmatic relation to the organic world"; or as he further explains, "One's body first arises from that of another, is composed of the same stuff as the surrounding world, and lives only by ceaseless metabolic exchanges with it".²⁹⁶ Furthermore, he writes, Neo-Confucian ontology also recognizes the body's *ecstasis*, whereby we are able to incorporate the surrounding world through an *expansive* awareness:²⁹⁷ Such notion of "correlativity of world and subject" (whereby, as he explains it, just "as the world exists only in relation to the experiencer, so the experiencer exists only in relation to the world"; and "as subject, I do not inhabit a private theater of consciousness but am *ecstatically intertwined*, one body with the world") also anticipates the insights of existential phenomenology whereby "the world is an experienced world, its character dependant upon our powers of apprehension".²⁹⁸

Most importantly, Leder proposes that even though it may seem remote from contemporary debates, the Neo-Confucian concept of forming with "relation with all things" provides groundwork for a new *ethics of embodiment*.²⁹⁹ In comparison to the Cartesian approach which encourages corporeal repression and divides the world into *res cogitans* and *res extensa*, Leder writes that the intuitive empathy implied by "embodied relation" invites "an ontology and ethics of *interconnection*".³⁰⁰ In this context, he suggests there are a variety of modalities by which the

²⁹⁵ Leder, 157.

²⁹⁶ Leder, 157-158. Emphasis mine.

²⁹⁷ Ibid., 158. As explained by Leder, we can "experience and hence embody all things" through heart-mind awareness (the Chinese notion of *hsin*) understood not only as consciousness but as an "affective and valuational response to the world". Leder draws on the ideas of Wang Yang-ming (1472-1529) from his text *Instructions for Practical Living and Other Neo-Confucian Writings* (trans. Ad ed. Wing-tsit Chan (New York: Columbia University Press, 1963); and also on the ideas of Tu Wei-meng, *Confucian Thought: Selfhood as Creative Transformation*, cited above.

²⁹⁸ Ibid. Leder's reference to Wang Yang-ming's notion of correlativity between self and world anticipating existential phenomenology is attributed to Hwa Yol Jung, "Wang Yang-ming and Existential Phenomenology", *International Philosophical Quarterly* 5 (1965), 612-36.

²⁹⁹ Ibid., 159-160.

³⁰⁰ Ibid., 160. Emphasis mine. As Leder further explains, "Insofar as the Cartesian notion of the body is rooted in phenomena of dys-appearance, an ethics of transcending or controlling the body is a natural consequence". This fundamental project of overcoming, he writes, is being played out in our culture in epistemology, politics, morals, and medicine (and I would add, is reflected in the desire in digital culture to deny or transcend the body, as already discussed in earlier in this chapter in context of my own agenda to reaffirm the role of the subjectively-lived body in immersive virtual space). As Leder goes on to suggest, the usual state of the body is "to be lost in the world - caught up in a web of the organic and intentional involvements through which we form one body with other things": therefore to say that the body is "absent" has positive significance for this reasserts that "the body is in ceaseless relation to the world". As such, as *recessive* being, he writes, "these worldly relations are organic and preconscious"; and as *ecstatic* being, "we are in conscious and purposive intercourse with the environment". Accordingly, he suggests there is "a two-sided linkage, flesh and blood, ecstatic and recessive, each dimension of engagement mirroring the other". Using the example of gazing up at the stars while knowing at the same time the carbon molecules from which his body is made were forged in the furnace of dying stars, Leder writes, "I am thus doubly connected to even the far reaches of the universe. We form one organic/perceptual circuit". 160. While Leder concedes that the body can be viewed from a multiplicity of perspectives, focusing on "separation or connection, finitude or transcendence, stability or change", he emphasizes that the Neo-Confucian model of "forming one body with all things" might be a worthy successor to the Cartesian approach. 161.

principal of "forming one body with all things" can be realized, involving moral compassion, aesthetic absorption, and spiritual communion.³⁰¹

In regards to having *compassion* for others, Leder writes that in the Judeo-Christian tradition this has usually been limited to human beings only, and does not include the *nonhuman* world.³⁰² While more "embracing visions" such as those of St. Francis and Martin Buber have occasionally surfaced, he writes that belief in "compassionate mutuality with nature" has been relatively rare in the West, a stance which has had specific ramifications in terms of our current ecological problems.³⁰³ Accordingly, Leder urges that we need to adopt a more embracing moral ideal, "one that extends beyond an interhuman concern", because, as he emphasizes, "to exclude nature entirely from the moral sphere – to consider it only in the Cartesian mode as mere *res extensa* – is to risk vitiating or destroying our world".³⁰⁴

Leder writes that that we can also open ourselves to the world through *aesthetic sensitivity*: Much as I have written earlier of using immersive virtual space to invigorate perception in the sense meant by Bachelard, Leder explains that while ordinarily we are relatively oblivious to our surroundings, there are times when "we are awakened and the world rushes in, fraught with beauty or significance [whereby] we truly become *absorbed* in our world".³⁰⁵ For Leder, this is a deeply *embodied* process, indicated by the meaning of the word "absorb" which derives from the Latin root *sobere*, to "suck in" or "swallow": Accordingly, he explains, when we become deeply absorbed in landscape, "it is as if we were swallowed into larger body [while] at the same time, this landscape is swallowed into our embodiment, transforming it from within" in what amounts to a "bidirectional incorporation".³⁰⁶ In such a situation, he writes, "the boundaries between inner and outer ... become porous", and such things as birdsong or the warm sun are "within-me-without-me", neither sense data internal to consciousness or "out there" somewhere, but rather "part of the rich body-world chiasm that eludes dualistic characterizations".³⁰⁷ "This", he explains, "is an experience of bidirectional incorporation; the world comes alive empathetically within my body,

³⁰¹ Ibid., 161.

³⁰² Ibid., 164.

³⁰³ Ibid. Leder cites Lynn White, Jr., "The Historical Roots of Our Ecological Crises" which I have listed earlier in this chapter in context of historical analyses of Western attitudes towards nature.

³⁰⁴ Ibid.

³⁰⁵ Ibid., 164-165.

³⁰⁶ Ibid., 165. To illustrate his point, Leder provides the following example: "I am walking down a forest path. Yet, I am not attending to my world in a bodily or mindful way. I am caught up in my own worries ... my thoughts are running their private race, unrelated to the landscape. I am dimly aware of the sights and sounds of nature, but it is a surface awareness. The landscape neither penetrates into me, nor I into it. We are two bodies. Yet, once again, it is possible to imagine an existential shift. Over time, through the rhythm of my walking, the calmness of the scene, my mind begins to quiet. Something catches my ear – the trilling of bird ... I gradually become aware of other birds, other songs, and, as if awakening from a dream, realize that I stand in the midst of a wild chorus. I am beginning to absorb the world around me and become absorbed in it. My expanded awareness now roams across the landscape ... I open feelingly such that the world can penetrate my senses, my muscles, my consciousness. The temporality of the landscape transforms my temporality. The slow crescendo and decrescendo of the wind, the stately glide of clouds awakens a resonance within my body-mind such that my hurried stride begins to slow, my thoughts to glide effortlessly, no longer rushing toward a goal ... Where before there were words and more words, now there are only birdcalls and the whispering of leaves." 165.

³⁰⁷ Ibid., 166.

even as I experience myself as part of the body of the world".³⁰⁸ This notion of bidirectional incorporation recalls my experience in the field, in terms of a *simultaneous* externalization of the internal and internalization of the external, in what Izutsu describes as a momentary fusion or communion.

And this brings me to Leder's third modality of one-body relation, which he also describes as "communion", as in the realization of relationship with "the ground of being" – however it might be called, whether Suchness, God, Brahman, the Tao, etc. – accomplished through practices intended to "facilitate a sense of involvement with the All, however that is defined and understood".³⁰⁹ While in the West, spiritual experience has often been considered "divorced from, or opposed to, the bodily sphere", and the body itself is seen as a limitation to be "transcended, repressed, or otherwise overcome" (a stance I have already described in Chapter I, and earlier in this chapter as well, when discussing the Western desire to leave the mortal flesh body behind), Leder explains that there are certain rituals in Christianity such as the Eucharist which can become a vehicle for one-body relation.³¹⁰

More relevant to my discussion however, is his explanation of Zen practice (already alluded to in context of Izutsu's mention of the momentary communion between interior and exterior), whereby through the stillness of meditation and following one's breath, one can "suspend, examine, and overcome [the] separative body/mind".³¹¹ In this context, Leder suggests that breathing becomes a potent tool for overcoming dualism, an *embodied* means of actualizing our one-body relation with the surrounding world.³¹² His insights in this regard were very influential in my conceptualization of the breathing interface of *Osmose* and *Ephémère*. (I return to his comments in the *Osmose* working notes in Chapter IV, and strategies in Chapter VI.)

As Leder further explains, the "unitive consciousness" cultivated by such forms of meditation reaches fulfillment in the astonishing moment of *satori*, illustrated by the Zen saying, "I came to realize clearly that Mind is no other than mountains and rivers and the great wide earth, the sun and the moon and the stars".³¹³ This classic Zen phrase is echoed in Izutsu's earlier description of the mind in such a state as an "all-embracing mirror" in which all of nature is reflected: this also aptly summarizes my untrained, spontaneous experience in the field.

³⁰⁸ Ibid. Leder also extends his analogy to experiencing a work of art, both as the viewer appreciating such a work and also the artist in her engagement of artistic creation. He further asks whether it is possible to be open to the one-body experience in, say, a parking lot as much as in the woods, and suggests that there may be certain environments which invite us to ecstatic participation and others which foreclose such experience. While it has been suggested, he writes, by the world's spiritual literature that the realized sage can be "open appreciatively" to all the world, including its suffering and ugliness, most of us seek to "shut down cognitively, emotionally, and perceptually" in alienated environments. Accordingly, he suggests that it becomes important to deliberately cultivate a world that *encourages* our involvement rather than our alienation if we want to stimulate the realization of one-body relation. 167.

³⁰⁹ Ibid., 168.

³¹⁰ Ibid., 168-169.

³¹¹ Ibid., 170.

³¹² Ibid., 171.

³¹³ Ibid., 172. Leder quotes this saying from Phillip Kapleau, *The Three Pillars of Zen*, but states that it is originally from *Zenrui No. 10*, an early Chinese Zen work, and is also found in Dogen's *Shobogenzo*.

A permeability of boundaries

The Cartesian model of the body – whereby, as Leder explains, the body is considered "as a force of deception and limitation and ontologically identified with sheer *presence*, [and as] an object with clearly defined location and boundaries, here, not there, enclosed in within itself" – cannot account for such practices or experiences as described above.³¹⁴ In comparison, as Leder imagines the body, its "roots reach down into the soil of an organismic vitality where the conscious mind cannot follow [and] its branches spread throughout the universe": Considered in this way, the body is not simply "a mass of matter or an obstructive force", but rather, as Leder suggests, "*Through the lived body I open to the world*".³¹⁵

The porousness or permeability of boundaries between the so-called "interior" self and "exterior" world has been explored by scholars working in a variety of traditions, including not only phenomenologists and philosophers of Eastern traditions, but also those engaged in environmental philosophy.³¹⁶ Paul Shepard, for example, writes that ecological thinking involves "a kind of vision across boundaries", where the epidermis of the skin is thought of ecologically like a pond surface or a forest soil, "not a shell so much as a delicate interpenetration".³¹⁷ Similarly, J. Baird Callicott, in "The Metaphysical Implications of Ecology", suggests that if "one moves in imagination outwardly from the core of one's organism, it is impossible to find a clear demarcation between oneself and one's environment".³¹⁸ In this event, he explains, "The organisms outside (and inside!) one's osmotic envelope continually, albeit selectively, are transubstantiated into and through oneself".³¹⁹ Accordingly, one can imagine one's own body as a "pulsating structure in a vast sea of other patterns large and small – some of them mysteriously translating through oneself – finally to be

³¹⁴ Ibid., 173.

³¹⁵ Ibid. Emphasis mine. The reader should note that, according to notes I wrote in the margins of Leder's book, his comment regarding the body's "roots reaching down into the soil of an organismic vitality" inspired my 1991 digital still image *Root* which will be discussed in the next chapter.

³¹⁶ I want to point out the cautionary statements expressed by Val Plumwood, in *Feminism and the Mastery of Nature*, in terms of the movement of "deep ecology and the denial of difference". For example, she writes that "Major forms of deep ecology have tended to focus exclusively on identification, interconnectedness, sameness and the overcoming of separation, treating nature is the dimension of self, for example, in the concept of self-realization and in the extension of ego psychology to nature". 174. And further, "The denial of difference is also reflected in the use by some deep ecologists of a 'transpersonal' version of ego psychology, in which the self as isolated subject incorporates or internalizes outside objects in nature, assimilating them to self (or Self). ... on an interactive account, the loss of the essential tension between different and alike is characteristic of domination and instrumentalization, which involves the erasure of the other as an external limit and its reappearance as a projection of self... In the domination framework, the entire dynamic of interaction takes place within the self, rather than between the self and the external other. The framework on which deep ecology draws here represents such a psychology of incorporation...." 175. Plumwood goes on to critique three different versions this "identification of self with nature", which she identifies as indistinguishability, expansion of self, and transcendence of self, all of which, she writes, are unsatisfactory from both a feminist perspective and in terms of developing a satisfactory environmental philosophy. 176. While I do not have time to pursue this further in my present text, I do want to quote Plumwood's following comment regarding the issue of boundaries, which is a primary concern in my work: "Acknowledging the other's boundary and opacity of being is part of respect for the other. It is the master consciousness which presumes to violate boundaries and claims to subsume, penetrate and exhaust the other, and such treatment is a standard part of subordination; for example, of women, servants, the colonized, animals". 178. I will return to this issue in Chapter VI.

³¹⁷ Paul Shepard, "Ecology and Man", 2. Emphasis mine.

³¹⁸ J. Baird Callicott, "The Metaphysical Implications of Ecology", 62.

³¹⁹ Ibid.

transmitted oneself into the others": Thus, he writes, the world is "indeed, one's extended body and one's body is the precipitation, the focus of the world in a particular space-time locale".³²⁰

Callicott's reference to the world as one's *extended* body and one's body as the *focus* of the world in a *particular space-time locale* is similar to Steve Odin's statement, in *Process Metaphysics and Hua-Yen Buddhism A Critical Study of Cumulative Penetration Vs. Interpenetration*, regarding the fusing of multiplicity into unity and manyness into oneness whereby from "the standpoint of every *perspectival locus* in nature ... each event or location of reality constitutes a microcosm of the macrocosm".³²¹ Such statements also recall Hayles' comments, quoted earlier, that the particular form or positionality of our embodiment really matters in terms of determining the specific nature of our interactions with the world³²² (such interactions involving self-organizing, transformative processes that include not only human but *also* non-human beings³²³). This further echoes Gare's suggestion, also previously quoted, that our embodied human selves are but emergent processes among a multiplicity of processes, all engaged in complex interrelationships, "each making its own unique contribution to the becoming of the world".³²⁴

Similar views are expressed by the phenomenologist and environmental theorist David Abram, who writes in *The Spell of the Sensuous: Perception and Language in a More-Than-Human World* that not only is the body "precisely my insertion in the common, or intersubjective, field of experience"; but also that environmental research has increasingly yielded an understanding of earthly nature "as a realm of complexly interwoven relationships, a field of subtle interdependencies", "a densely interconnected organic network - a 'biospheric web' whereby each entity draws its specific character from its relations, direct and indirect, to all the others".³²⁵ Furthermore, Abram, much like Leder in context of his discussion of "forming one body with the world", suggests that this concept of a "dynamic, interconnected reality" converges with Merleau-Ponty's late description of "sensuous reality, the 'Flesh', as an *intertwined*, and *actively intertwining*, lattice of mutually dependent phenomena, both sensory and sentient, of which our own sensing bodies are a part".³²⁶

The "Intertwining" of perceiver(s) and perceived

As Leder summarizes Merleau-Ponty's concept of "flesh", it belongs neither to subject nor world exclusively, but is a primal "element" out of which both are born in mutual relation: it therefore cannot be conceived of as either mind or material substance, but is a kind of "circuit" which traverses the subject but of which the subject itself is not the origin.³²⁷ As Merleau-Ponty himself

³²⁰ Ibid.

³²¹ Odin, *Process Metaphysics and Hua-Yen Buddhism: A Critical Study of Cumulative Penetration Vs. Interpenetration*, 2. Emphasis mine.

³²² Hayles, "Searching for Common Ground", 49.

³²³ Ibid., 60.

³²⁴ Gare, *Postmodernism and the Environmental Crisis*, 142.

³²⁵ David Abram, *Spell of the Sensuous: Perception and Language in a More-Than-Human World*, 44, 84-85.

³²⁶ Ibid., 85. Emphasis mine.

³²⁷ Leder, 62-63 (in reference to Merleau-Ponty, VI, 139-140). As Merleau-Ponty further writes in this context, "...the visible of the world is not an envelope of *quale*, but what is between the *qualia*, a connective tissue of exterior and interior horizons..." (VI, 131); "One can say that we perceive the things themselves, that we are the world that thinks itself - or that the world is at the heart of our flesh. In any case, once a body-world relationship is recognized, there is the ramification of my

explains, "If one wants metaphors, it would be better to say that the body sensed and the body sentient are as the obverse and the reverse, or again, as two segments of one sole circular course...."³²⁸ He is careful to clarify that the seen world is not "in" the body, nor is the body "in" the visible world, for "as flesh applied to flesh, the world neither surrounds it nor is surrounded by it", but rather involves a "reciprocal insertion and intertwining of one in the other".³²⁹ And returning to metaphors (particularly relevant to my experience in the field), Merleau-Ponty further explains, "Or rather, if, as once again we must, we eschew the thinking by planes and perspectives, there are two circles, or two vortexes, or *two spheres, concentric when I live naively*, and as soon as I question myself, *the one slightly decentered* with respect to the other...."³³⁰ This notion of spherical concentricity is one that I will return to often in context of my conceptualization of immersive virtual space as a spherically experienced, bodily-enveloping medium: but so too, Merleau-Ponty's reference to decentering, in context of the lived body as "necessarily chiasmatic, a perceiver/perceived".³³¹ In this context, Leder suggests that the nature of body and world cannot be understood without referencing Merleau-Ponty's investigations of the intertwining of the "visible and the invisible": Such intertwining, according to Leder, characterizes the intimate relationship of the subjectively-lived body with its world, whereby for Merleau-Ponty the world is *always* "a world-as-perceived, not a scientific object or a thing-in-itself".³³²

body and the ramification of the world and a correspondence between its inside and my outside, between my inside and its outside" (VI, 136); and, "The very pulp of the sensible, what is indefinable in it, is nothing else than the union in it of the "inside" with the "outside", the contact in thickness of self with self...." (VI, 268).

³²⁸ Merleau-Ponty, VI, 138.

³²⁹ Ibid.

³³⁰ Ibid. Emphasis mine. The extended passage by Merleau-Ponty reads, "We have to reject the age-old assumptions that put the body in the world and the seer in the body, or conversely, the world and the body in the seer in a box. *Where are we to put the limit between the body and the world, since the world is flesh?* ... The world seen is not "in" my body, and my body is not "in" the visible world ultimately: as flesh applied to a flesh, the world neither surrounds it nor is surrounded by it. A participation in and kinship with the visible, the vision neither envelops it nor is enveloped by it definitely. The *superficial pellicle* of the visible is only for my vision and for my body. *But the depth beneath this surface contains my body and hence contains my vision.* My body as a visible thing is contained within the full spectacle. But my seeing body subtends this visible body, and all the visibles with it. *There is reciprocal insertion and intertwining of one in the other.* Or rather, if, as once again we must, we eschew the thinking by planes and perspectives, *there are two circles, or two vortexes, or two spheres, concentric when I live naively*, and as soon as I question myself, the one slightly decentered with respect to the other..." 138. Emphasis mine.

³³¹ Leder, 63. Merleau-Ponty's articulation of the "chiasmatic" relations or "intertwinings" (*entrelacs*) that characterize the flesh is described by Leder as follows: "Just as the three dimensionality of visual space depends upon the optic chiasm blending fibers from both eyes, so the world leaps out of a 'chiasm' between subject and object, my vision and that of others, perception and language." 63.

As explained by Abram, 127-128, the word "chiasm" is derived from an ancient Greek phrase meaning "crisscross", and is in use today only as a term in neurobiology referring to the "optic chiasm" between the right and left hemispheres of the brain where neuronal fibers from the right eye and left eye cross and interweave. Abram interprets Merleau-Ponty's metaphor of "intertwining" as follows: "As there is a chiasm between the two eyes, whose different perspectives continually conjoin into a single vision, so - according to Merleau-Ponty - there is a chiasm between the various sense modalities, such that they continually couple and collaborate with one another. Finally, this interplay of different senses is what enables the chiasm between the body and the earth, the reciprocal participation - between one's own flesh and the encompassing flesh of the world - that we commonly called perception". (Leder, 128)

³³² Leder, 63. (Leder references Merleau-Ponty, VI, 131; and also Merleau-Ponty's statement that "The flesh of the world is of the Being-seen, i.e. is a Being that is *eminently percipi*". VI, 250.)

Considering the Implications of a reality whereby the sensible world arises not from only from sight or any other single perceptual mode but rather from "the mutual reference and intertwining of all forms of perception", Leder writes that It is not difficult to further Imagine an arising of consciousness in *another's* body, whereby "the flesh articulates into another chiasmatic relation: that which links me to other perceivers".³³³ In this context, as Leder explains, "Our perspectives on the world, though never quite coinciding, intertwine in *mutual validation* [whereby] the reality of the world is secured via its presence to *other* perspectives than my own".³³⁴ (As Merleau-Ponty writes, "If we can show that the flesh is an ultimate notion, that it is not the union or compound of two substances, but thinkable by itself, if there is a relation of the visible with itself that traverses me and constitutes me as a seer, *this circle which I do not form, which forms me*, this coiling over the visible upon the visible, can traverse, animate *other bodies as well as my own*".³³⁵ And as he further explains, "And if I was able to understand how this wave arises within me, how the visible which is yonder is simultaneously my landscape, I can understand a fortiori that elsewhere it also closes over upon itself and *that there are other landscapes besides my own*".³³⁶) Here I want to repeat Merleau-Ponty's own insistence, already quoted in a previous section, that "associated bodies must be brought forward along with my body - the 'others', not merely as my congeners, as the zoologist says, but the others who haunt me and whom I haunt; the 'others' along with whom I haunt a single, present and actual Being..."³³⁷

In this same context, Abram writes that the reclaiming or recuperation of the "incarnate, sensorial dimension of [our] experience" brings with it an equivalent recuperation of the "living landscape in which we are corporeally embedded".³³⁸ As he further explains, "As we return to our senses, we gradually discover our sensory perceptions to be simply our part of a vast, interpenetrating webwork of perceptions and sensations borne by countless other bodies - supported, that is, not just by ourselves, but by icy streams tumbling down granite slopes, owl wings and lichen, and by the unseen, imperturbable wind".³³⁹ This "intertwined web of experience", he suggests, is the very "life-world" (*lebenswelt*) to which the phenomenologist Husserl alluded in his final writings, yet now, Abram emphasizes, that life-world is disclosed as "a profoundly *carneal* field, as this very dimension of smells and tastes and chirping rhythms warmed by the sun and shivering with seeds"; and he goes on, this is "indeed, nothing other than the biosphere - the matrix of earthly life in which we ourselves are embedded".³⁴⁰ Even more significantly, Abram explains, "... this is not the biosphere as it is conceived by an abstract and objective science, not that complex assemblage of planetary mechanisms presumably being mapped and measured by our remote-sensing satellites; it is, rather, the biosphere as it is experienced and *lived from within* by the intelligent body - by the attentive human animal who is entirely a part of the world that he, or she, experiences".³⁴¹

³³³ Ibid., 63.

³³⁴ Ibid., 63-64. Emphasis mine.

³³⁵ Merleau-Ponty, VI, 141.

³³⁶ Ibid.

³³⁷ Merleau-Ponty, "Eye and Mind", 160.

³³⁸ Abram, 65.

³³⁹ Ibid.

³⁴⁰ Ibid.

³⁴¹ Ibid.

Landscapes of longing

I want to bring this chapter to a close by explaining that, in context of the concepts introduced in this section, it could be said that the creative force that fuels my art originates in longing. Longing for what the reader may ask? A longing to re-experience that fusion I felt in the field – when the boundary of my mind and the horizon, my interior self and the exterior world, became one and the same; when my attention essentially shifted from an awareness of the objects before me to the entire “field of awareness” itself. Integral to my longing, however, is a profound sense of loss, for no matter how much I desire to experience this again, I am left with only a memory and a realization that, as a child of the Western paradigm, my everyday perceptions are, for the most part, closed-in and filtered through the dualist and objectifying constructs of our culture’s worldview. Thus perhaps, in compensation, the compelling need that drives my work: to find means of revisiting, reclaiming that perceptual epiphany.

Speaking further of longing and loss, the artwork *Ephémère* is dedicated to my younger brother Michael Rutherford Davies, who lost his own precious life in a car accident when he was only 30. His death, caused by someone else’s carelessness, has hugely shaped my sense of life’s startling brevity. Equally, a few years after Mike’s sudden exit from this world I went “through” breast cancer at the age of 36: needless to say, this encounter with my own mortality marked me deeply. Not only did these experiences leave me with a heightened awareness of the fragility of my own flesh and the ephemerality of individual life (not to mention our essential dependency on our own embodiedness, cyborgian claims to the contrary notwithstanding), they also left me with an overwhelming gratitude that I am still here, that I get to *stay longer*...³⁴²

It should therefore not be surprising that my efforts as an artist have sought to remind myself – and others too, for as an artist I am compelled to communicate – how extraordinary it is *to be here now, among the living*... Nor should it be surprising that I seek to explore and express my intuitive understanding of the numinous immanence of the world – not through some transcendent metaphysics or enframing confines of the Cartesian worldview – but rather, as an unfathomably intricate intermingling of becomings, lingerings and passings-away, into which we are born and out of which we die, we who are merely passing through – “caught”, as Henry Beston so eloquently writes, like every other creature, “in the net of life and time, fellow prisoners of the splendor and travail of the Earth”.³⁴³ With such intent, my art employs the paradoxical medium of immersive virtual space as a *techne of poiesis*, for manifesting my own envisioning of the fluxings and flowings of the Earth, for hopefully transforming and re-sensitizing our perceptions of our own being and becoming, embodied as we are *so briefly, among all this*...

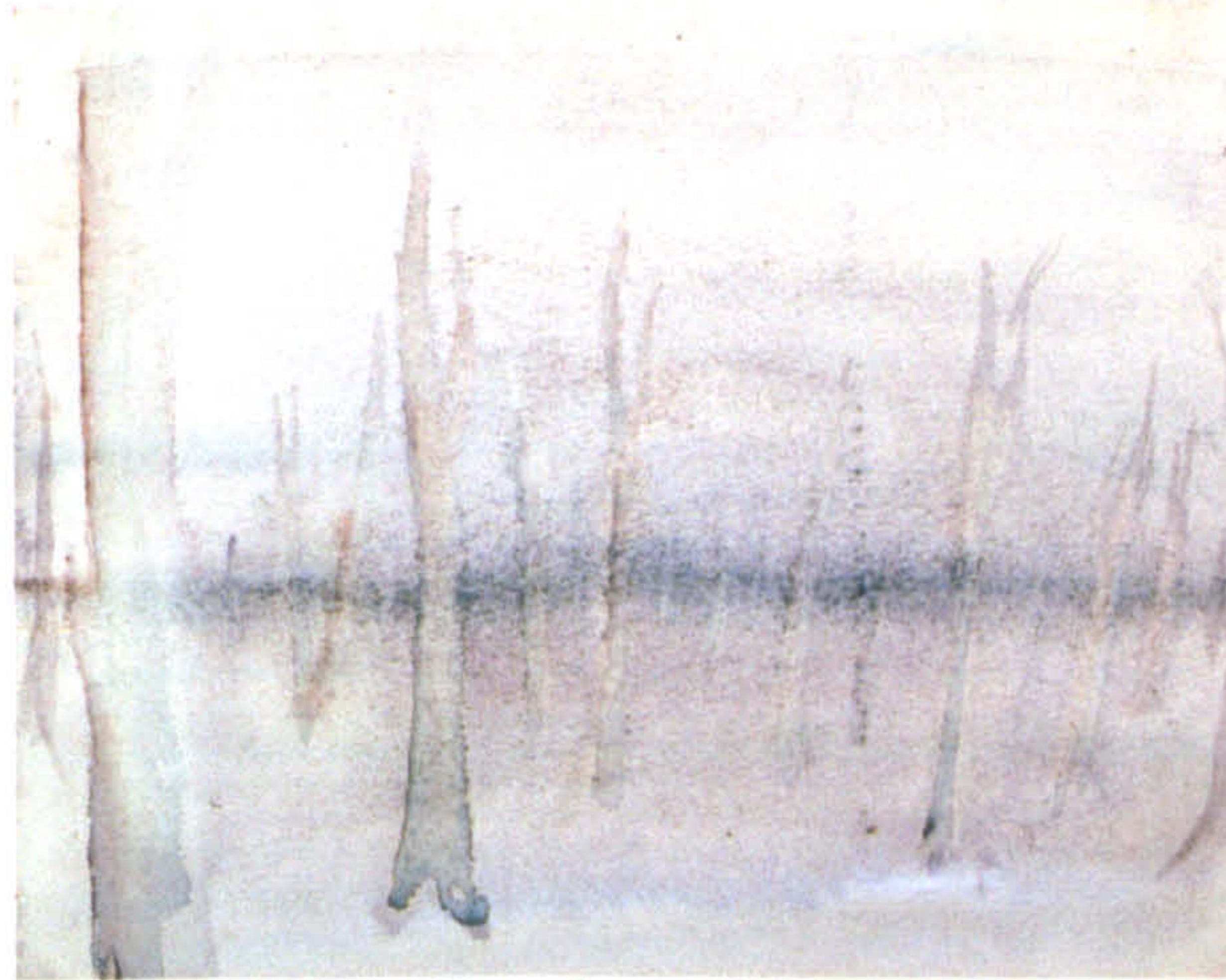
³⁴² Such experiences as these tend to strip one’s self completely existentially bare: This is probably why I have never employed irony in my work.

³⁴³ Henry Beston, *The Outermost House*, 20.

III

Origins of *Ephémère* in Prior Artistic Practice:

Emergence of Concerns & Strategies



Winter Swamp 1973
watercolour on paper



Winter Swamp, Ephémère
Digital image of 3-D virtual environment captured in real-time through HMD
during live immersive journey/performance, 1998

***How would the painter or poet express anything other
than [her] encounter with the world?***

Merleau-Ponty,
"Indirect Language and the Voices of Silence"

1. A Painter's "Encounter with the World"

In this section, I will discuss the origins of the immersive virtual environment *Ephémère* in my prior artistic practice. As I have suggested earlier, *Ephémère* is rooted in the many years I worked as a painter. The practice, the very act of painting and its mode of apprehending the world has deeply informed my approach to the medium of immersive virtual space. It is through the practice of painting that my early formation as an artist took place; where I first developed my concerns about perception, embodied subjectivity, enveloping spatiality, nature as flow, and dissolution of boundaries between subject, object, self and world; and through painting that my particular methods and strategies for exploring and communicating such concerns evolved.

Indeed, the prologue to *Ephémère*, with its opening scene of a twilight winter swamp, can be traced back to a watercolour painting I made in 1973, after having snowshoed across a frozen winter swamp at dusk and become lost in fog among the ghostly forms of dead trees: Even that small watercolour, reproduced on the opening page of this chapter, contains ample evidence of the themes which would characterize my later work in virtual space, namely the subjective experience of being in landscape while enveloped in luminous ambiguity, as well as evidence of specific techniques such as semi-transparency.

Over the past two and half decades, the desire to explore my sensibility of the world, to express my "communication with the world" to use Merleau-Ponty's phrase,¹ was, and continues to be, the driving force behind my work. It is this desire that led me to abandon painting for such media as film and 3-D digital imaging, and eventually, immersive virtual space, all the while seeking the medium most capable, most effective, for articulating what I felt, and still feel, compelled to express. Even though the complex process of constructing virtual environments necessitates working with other individuals, fundamentally my research process remains solitary, as an ongoing dialogue between myself and the living landscape, in the sense meant by Anne Spirn;² and this is what makes me a painter still, even though I have not picked up a brush in fifteen years. Often I am asked if I still paint, and if not, why not? My answer is that even though I am working with a different set of tools, i.e., the highly technologized medium of immersive virtual space, I am, in effect, still painting. I continue to think like I did as a painter, and approach the world as such.

"Seeing which is not seeing"

Why do people paint? This question is asked by Alphonse de Waelhens in "Merleau-Ponty: Philosopher of Painting", who writes that normally (and I would emphasize, *habitually, conventionally*) people frequent a "visible world in which everything, or almost everything, goes without saying".³ As I have already suggested in the previous chapter, this is a world in which everything is familiar – objectified, categorized and named – so that we go along as if on autopilot, perceptually asleep. Accordingly, de Waelhens writes, in our everyday life, "Utensils, things, and people no longer indicate anything but general actions, as invariable as possible, for which these

¹ Maurice Merleau-Ponty, "Indirect Language and the Voices of Silence": "The painter at work knows nothing of the antithesis of humanity and world, of meaning and the absurd, of style and 'representation'. He is far too busy expressing his *communication with the world*...." 91.

² As in Anne Spirn's description of artist's dialogues with their landscapes, in the previous chapter.

³ Alphonse de Waelhens, "Merleau-Ponty: Philosopher of Painting", 175.

'objects' are designed to serve as props".⁴ We no longer look at them he says, but take them for granted as "the unshakable ground of our installment in the world, without a care for that 'real nature' they cover-up and colonize, but in which, from their perspective, they are totally rooted".⁵ (Painting, de Waelhens suggests, is a way of *returning* to that 'real nature',⁶ a premise I will examine shortly, but first I want to delve further into the effects of such habitual perception...)

In this context, David Abram writes that "Our most immediate experience of things, according to Merleau-Ponty, is necessarily an experience of reciprocal encounter – of tension, communication, and commingling": However, he warns, when we "conceptually immobilize or objectify the phenomenon", we absent ourselves from this relation, and forget or repress our sensuous involvement; and when we do this, when we "define another being as an inert and passive object", we deny its ability to actively engage us and thereby "block our perceptual reciprocity with that being".⁷ Moreover, "By linguistically defining the surrounding world as a determinate set of objects, we cut our conscious, speaking selves off from the spontaneous life of our sensing bodies": as a result, Abram suggests, "Our own languages become increasingly impoverished and weightless, progressively emptied of their earthly resonance".⁸

Similarly, Nishitani writes, "Although we ordinarily think of things as real, we may not actually get in touch with the reality of those things"; and further, he suggests, "It is extremely rare for us to 'fix our attention' on things so as to 'lose ourselves' in them, in other words, to *become* the very things we are looking at".⁹ This is because "We are accustomed to seeing things from the standpoint of the self"; and to look at things from this standpoint "is always to see things merely as objects, that is, to look at things *without* from a field *within* the self" assuming a position "vis-à-vis things from which self and things remain fundamentally separated from one another": This standpoint, he explains, "of separation of subject and object, or opposition between within and without, is what we call the field of 'consciousness'", and here, the "self always occupies center stage".¹⁰ As long as we do not go beyond such fundamental separation, Nishitani writes, "we do not really actually get in touch with the realness of either the self or things".¹¹

The effect of such perception is also explored by David Michael Levin in *The Opening of Vision: Nihilism and the Postmodern Situation*, who quotes the well-known words of William Blake, "If the doors of perception were cleansed, every thing would appear to man as it is, infinite./ For man has closed himself up, till he sees all things thro' narrow chinks of his cavern".¹² Levin suggests that the closed-in cavern to which Blake refers is found in Heidegger's notion of modern civilization whereby "Man" considers himself as "sole measure and ground, in a sense which tolerates false pride, intolerance of difference, neglect of the ecology of the earth, and totalitarianism".¹³ Accordingly, Levin writes, there is "in all of us, a certain blindness: a blindness

⁴ Ibid.

⁵ Ibid.

⁶ de Waelhens, 175.

⁷ David Abram, *The Spell of the Sensuous*, 56.

⁸ Ibid., 56; 86.

⁹ Kōji Nishitani, *Religion and Nothingness*, 9.

¹⁰ Ibid.

¹¹ Ibid., 35.

¹² William Blake (*The Marriage of Heaven and Hell*) cited in Levin, *The Opening of Vision: Nihilism and the Postmodern Situation*, 26-27. Emphasis mine.

¹³ Levin, 24.

characteristic of what Heidegger calls 'the everyday perception of mortals';¹⁴ whereas in childhood we begin life with "eyes opened by enchantment", by adulthood our vision "conforms to the gaze of a social order which reflects and multiplies our fears, ignorance and passions...."¹⁵

As a result, Levin suggests, we experience "a seeing which is not seeing", whereby "most of the time, an ingrained tendency to live by habit and in the projections of desire blocks or obscures our vision: we look, and in that sense see; yet the experience is dull, stale, unfulfilling".¹⁶ Levin describes this visual event as "a kind of structuring process which wilfully *re-presents* whatever presents itself, so that every presence manifesting in the field of vision is essentially reduced to the ontology of a mere thing".¹⁷ He goes on to explain that this process of objectification, this "enframing", is linked to the domination of vision as the paradigm for knowledge in our culture, and to patriarchal consciousness,¹⁸ whereby "now, more than ever, desire, technologically manufactured desire, the masculine will to power, is what dominates our vision".¹⁹

We have already heard this from Henri Lefebvre, quoted in Chapter I, in his description of the primacy of the visual realm and the phallic principle in the reign of King Logos.²⁰ And just as Lefebvre calls for the production of *counter* space as an alternative against the homogenizing effect of Western metaphysics and science, so Levin calls for an *opening* of such closed-in vision, and in this context, he quotes Heidegger who suggests, "The first step [forward]... is the step back from the thinking that merely re-presents [and in doing so, enframes] to the thinking that responds and recalls".²¹ For Levin, such possibility is based on a "pre-ontological understanding of Being [which] is the precious gift that the *lived body*, and only the lived body, can give to thinking".²² Levin's emphasis here is on reclaiming our embodiment (similarly to Abram above), not only in terms of our *positionality*²³ (recalling Hayle's comments in the previous chapter), but in terms of Merleau-Ponty's *intertwining*²⁴ (also discussed in the last chapter) as a means of a "recollection" of Being intended to restore and protect the full dimensionality of our being in the world.²⁵

Painterly (and poetic) seeing

I will discuss embodiment in the context of painting shortly, but before doing so I want to return to de Waelhens' statement that, "First of all, painting is a way of returning to that 'real nature'".²⁶ What does de Waelhens mean by returning to "real nature"? As a painter, I will answer: in my own experience (although for others it may not be so) the process of painting is a way of investigating

¹⁴ Ibid., 55. Levin quotes Heidegger in "Moira", *Early Greek Thinking* p. 100.

¹⁵ Ibid., 58.

¹⁶ Ibid., 65.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid., 59.

²⁰ Henri Lefebvre, 408.

²¹ Ibid., 65. Emphasis mine. Levin quotes Heidegger from "The Thing", *Poetry, Language, Thought*, 181. For Heidegger, Levin writes, 67, such re-presenting is a "making-stand-over-against, an objectifying that presses forward and masters". (From Heidegger, "The Age of the World Picture", in *The Question concerning Technology and Other Essays*, 150.) Here, Levin emphasizes that Heidegger's use of the word 'master' is significant for it "accurately accuses the patriarchy. 67.

²² Ibid., 46. Emphasis mine.

²³ Ibid., 31.

²⁴ Ibid., 45.

²⁵ Ibid., 26.

²⁶ de Waelhens, 175.

one's perceptions, of attempting to go beyond conventional perceptions and assumptions, in order to approach the very "suchness", "isness", or "thereness"²⁷ of Being Itself – how things *really* are behind/beyond/within the everyday surface appearances of the world we take for granted. I am not suggesting that there is a knowable reality beyond such appearances: rather, what is more important is the act of seeking itself, the questioning, the attempt to go beyond the objectification – the "enframing" of things – that blinds us, and binds us, as I have written elsewhere, to the biases of a dualistic and technologizing worldview. In this context, the painter's task is akin to phenomenology's effort to "reachieve", as Merleau-Ponty writes, "a direct and primitive contact with the world";²⁸ or as Stanton Garner explains (quoted in Chapter II), to "*redirect attention from the world as it is conceived by the abstracting, 'scientific' gaze and 'return perception to the fullness of its encounter with its environment'*".²⁹

This effort has been described by Shelley, in his *Defense of Poetry*, whereby a function of poetry is to *purge* "from our inward sight the film of familiarity which obscures from us the wonder of our being ... [to create] anew the universe, after it has been annihilated in our minds by the recurrence of impressions blunted by reiteration".³⁰ Similarly, Coleridge – who I have quoted when concluding Chapter I – writes of combining "the child's sense of wonder and novelty with the appearances, which everyday for perhaps forty years had rendered familiar ... so to represent familiar objects as to awaken in the minds of others ... that freshness of sensation...."³¹ As suggested by M.H. Abrams, the persistent goal of these Romantic poets was "to make the old world new not by distorting it, but by *defamiliarizing* the familiar through a refreshed way of looking upon it".³² As he goes on to explain, the source of the problem is "'custom' – what Wordsworth ... repeatedly condemns as 'habit' ... – which works insidiously and relentlessly to assimilate the unique existent to general perceptual categories".³³ According to Abrams, the result of "overcoming this 'lethargy of custom', Coleridge says, is to disimprison the 'wonder' in the 'familiar'; or in Wordsworth's alternative term, to reveal the miracle in the sheer existence of an object".³⁴

²⁷ "Suchness" is a Buddhist term I remember from years ago, and is used by Nishitani, for example, to convey the connections between *tathata* or "true suchness", *tathagata* or "thus come" and the "suchness" of all things (Nishitani, *Religion And Nothingness*, glossary: 304). And here I mean "isness" and "thereness" in the phenomenological sense, as in Merleau-Ponty's statement that "the world is always 'already there' before reflection begins – as 'an unalienable presence'...." (Merleau-Ponty, *Phenomenology of Perception*, vii); Or as George Steiner writes of Heidegger, "Instead of making of singular, phenomenal, objective beings – the things and presences that furnish our world – the degenerate fragments of the Platonic ideal sphere or the fluctuating matrix for intangible Aristotelian energies, Heidegger concentrates on the total *thereness* of these particular existentials. They fill him with wonder. He stands soul- and spirit-deep in immanence, in that which is, and in the utter strangeness and wonder of his own "isness" within it." *Martin Heidegger*, 65.

²⁸ Merleau-Ponty, *Phenomenology of Perception*, vii.

²⁹ Stanton Garner, *Bodied Spaces: Phenomenology in Performance in Contemporary Drama*, 2. Emphasis mine.

³⁰ Percy Shelley, cited in M. H. Abrams, *Natural Supernaturalism: Tradition and Revolution in Romantic Literature*, 384. This phrase by Shelley is also cited in Neil Evernden, *The Natural Alien: Humankind and Environment*, 139.

³¹ Samuel Taylor Coleridge, cited in Abrams, *Natural Supernaturalism*, 378-379.

³² M. H. Abrams, *Natural Supernaturalism*, 379. This passage by Abrams is also quoted by Evernden, 139.

³³ *Ibid.*

³⁴ *Ibid.*

In this context, I want to remind the reader of similar concepts I introduced in Chapter I, 2.2 *Techne as Poiesis*: for example, Heidegger's explorations of "meditative thinking" as a cultivation of *Gelassenheit* or wonder at the very mystery of the presencing of Being itself; his notion of *poiesis* as an artistic/poetic bringing-forth or revealing; and his concept of poetry as a "setting-into-work of truth [which] thrusts up the unfamiliar and extraordinary and at the same time thrusts down the ordinary and what we believe to be such".³⁵ I also want to call the reader's attention to Ingrid Scheibler's suggestion that by focusing on the metaphoric force of language, Heidegger is urging us to think through "its power to challenge habitual signification and, hence, habitual modes of representation";³⁶ and similarly, Richard Coyne's insistence that that poetic, metaphoric language has the potential to change our way of looking at things,³⁷ whereby, as expressed by Ricoeur, "... we receive a new way of being in the world, of orientating ourselves in this world."³⁸ Such comments also recall, as I have discussed in Chapter II, Bachelard's notion of changing space in order to change our nature, that is, to leave the space of our usual sensibilities in order to *defamiliarize* and thereby invigorate and refresh our habitual perceptions.³⁹ Lastly, I want to remind the reader of McLuhan's statement that the role of the artist is to "open the door of perception to people otherwise numbed in a non-perceivable situation...."⁴⁰

Speaking of doors of perception, when I was first starting out as a young painter in the late '70s, one of the texts which most inspired me was Aldous Huxley's *Doors of Perception*. Within its pages he writes about his mescaline-induced experiences of intensified awareness, of perceiving the "Dharma-Body of the Buddha" everywhere, including in "the hedge at the bottom of the garden", and in everyday things like books and flowers.⁴¹ In reference to such artists as Van Gogh, Cézanne, Vermeer, and Vuillard, Huxley writes, "What the rest of us see only under the influence of mescaline, the artist is congenitally equipped to see all the time".⁴² According to Huxley, the artist's perception is not limited to what is biologically or socially useful, but includes some of the knowledge belonging to "Mind at Large" which "oozes past the reducing valve of brain and ego, into his consciousness".⁴³ This is a knowledge, he explains, of the "intrinsic significance of every existent" whereby "for the artist as for the mescaline taker, draperies [for example] are living hieroglyphs that stand in some peculiarly expressive way for the unfathomable mystery of pure being".⁴⁴

Speaking of his own direct experience while under the influence of mescaline, he reports that the folds of his gray flannel trousers are "charged with 'is-ness' ... and in this way force the miraculous fact of sheer existence upon the attention...."⁴⁵ He then comments, "...I could clearly see what, if I had been a painter of genius, I might have made of my old gray flannels ... enough to make [people] understand at least a little of the true significance of what, in our pathetic imbecility,

³⁵ Heidegger, "The Origin of the Work of Art", in *Poetry, Language, Thought*, 75.

³⁶ Ingrid Scheibler, "Heidegger and the Rhetoric of Submission: Technology and Passivity", 124.

³⁷ Richard Coyne, *Designing Information Technology in the Postmodern Age* 299-300.

³⁸ Paul Ricoeur, cited in Coyne, 300. Emphasis mine.

³⁹ Gaston Bachelard, *The Poetics of Space*, 206.

⁴⁰ Marshall McLuhan, *Through the Vanishing Point: Space in Painting and Poetry*, 241.

⁴¹ Aldous Huxley, *Doors of Perception*, 19.

⁴² *Ibid.*, 33.

⁴³ *Ibid.*

⁴⁴ *Ibid.*

⁴⁵ *Ibid.*, 33-34.

we call 'mere things' and disregard in favour of television".⁴⁶ He then goes on to exclaim: "*This is how one ought to see, how things really are*".⁴⁷

The potential for such heightened perception by painters is also examined by Linda Singer, in "Merleau-Ponty on the Concept of Style", whereby she writes that what distinguishes the painter's vision "is not that it stems from some extra faculty [as suggested by Huxley] but that it is moved by a nexus of concerns *not present in ordinary seeing*": In this context she explains, "Painterly seeing is distinguished by its interrogative orientation and its commitment of praxis", an interrogation that is manifested in the painter's "greater attention to the visual world and its underlying conditions".⁴⁸ Painters, she says, work to develop "sensitized modes of discrimination in order to discern the ground phenomenon of vision that *ordinarily gets taken for granted or overlooked*".⁴⁹ She goes on to explain that "Unlike the ordinary spectator who transcends his seeing toward the things seen", painters do not take "the synthetic products of vision for granted", and are concerned not only with aspects of vision by which things reveal themselves, but "also with the surrounding field, and the interaction of forces which help constitute the thing's appearance".⁵⁰ In this way, according to Singer, the world is a constant resource to the painter, leading to Merleau-Ponty's belief that an artist discovers her style *in* the world, regardless of whether or not her work purports to represent it.⁵¹

Returning now to de Waelhens with whom I began this discussion, in terms of his suggestion that painting is a way of "returning to real nature", he emphasizes that the issue is not to merely reproduce or "restore an in-itself of reality, the only truly real", because "painting, being language, *must also be expression, and therefore a creative process*".⁵² In this context, he explains, "the term 'real' to which the painter thinks he is giving himself over is, in fact, a creation that 'invents' ... 'nature'"; and secondly, the term is a "structural obligation and necessity – the need to construct (in order to reach nature) emblematic systems of expression (such as words are in language), all of which see themselves as 'realist', since they all aspire to present being in the modality of visibility, and none of which *is* realist, since they never tend to 'duplicate' a scene already complete in itself – no more than sentences simply duplicate that of which they speak".⁵³ It is however impossible, de Waelhens suggests, for a painting to "free itself from all references to the

⁴⁶ Ibid., 34.

⁴⁷ Ibid. Emphasis mine.

⁴⁸ Linda Singer, "Merleau-Ponty on the Concept of Style", 237. Emphasis mine.

⁴⁹ Ibid. Emphasis mine.

⁵⁰ Ibid.

⁵¹ Linda Singer, 237-238. Emphasis mine.

⁵² de Waelhens, 175. Emphasis mine. Similarly, Etienne Gilson, in *Painting and Reality*, writes that the origin of the creative process is *not* the sensation of seeing in itself, but rather "the response of *imagination* to the stimuli of sense perceptions", and he suggests that this has important consequences in regard to the "ambiguous notion of 'subject'" in painting, emphasizing that the "answers to sense perception given by the mind of the painter actually are, and remain for us, the very subjects of his paintings". 140. This also recalls David Summers' comment quoted in the last chapter who writes that paintings, even those which purport to represent reality, are but "visualized opinions, grounded in inscribed feelings, integral with perception, but especially with memory, and with our hopes and expectations for the future". *Real Spaces: World Art History and the Rise of Western Modernism*. 321. And this further resonates with Merleau-Ponty's comment in "Eye and Mind" that painting is a combination of "Essence and existence, Imaginary and real, visible and invisible – a painting mixes up all our categories in laying out its own oneiric universe of carnal essences, of affective likenesses, of mute meanings". 169.

⁵³ Ibid., 176.

real, since that reference is a constitutive of humanity's being, and the goal of art is to constitute it at a certain level".⁵⁴

Hence Merleau-Ponty's statement, which I have cited on the opening page of this chapter as an indication of its underlying theme: "How would the painter or the poet express anything other than his encounter with the world?"⁵⁵ Whether a painter (or poet) chooses to work "from life" or from her imagination is irrelevant, because as Merleau-Ponty explains, "It makes no difference if he does not paint from 'nature'; he paints, in any case, *because he has seen*, because the world has at least once emblazoned in him the ciphers of the visible".⁵⁶

This brings us to the issue of creative urgency, whereby as Merleau-Ponty suggests, "It is as if in the painter's calling there were some urgency above all other claims on him ... What, then is this secret science which he has or which he seeks? [What is] that dimension which lets [him] say he *must go further on*?"⁵⁷ Merleau-Ponty answers his own query by quoting Max Ernst who states, "Just as the role of the poet ... consists in writing under the dictation of what is being thought, of what articulates itself to him, *the role of the painter is to grasp and project what is seen in him*".⁵⁸ As Merleau-Ponty further explains, "The painter lives in fascination", whereby "the actions most proper to him – those gestures, those paths which he alone can trace and which will be revelations to others ... to him they seem to emanate from the things themselves, like the patterns of the constellations".⁵⁹

Accordingly, *inevitably*, the relationship between the painter and the visible is reversed, and this is why, he explains, "so many painters have said that things look at them".⁶⁰ In this context, he suggests, the very word "inspiration" should be taken literally, whereby "There really is an inspiration and expiration of Being, action and passion so slightly discernible that it becomes impossible to distinguish between what sees and what is seen, what paints and what is painted".⁶¹ Or as phrased by Michael Smith, "Painting is no longer an anthropocentric function. The human being, through whom Being expresses itself, is the privileged locus in which the world turns back upon itself, becomes a 'visible see-er'".⁶²

Thus, Merleau-Ponty explains, the painter "must affirm, as one philosopher has said, that vision is a mirror or concentration of the universe or that, in another's words, the *idios kosmos* opens by virtue of vision upon a *koinos kosmos*; in short, that the same thing is both out there in the world and here in the heart of vision – the same or, if one prefers, a *similar* thing, but according to the efficacious similarity which is the parent, the genesis, the metamorphosis of Being in his vision".⁶³ Such a statement resonates deeply with Izutsu's description of Zen *satori* (discussed in Chapter II, under *The "unification of interior and exterior"*) whereby the mind is experienced an "all-embracing mirror" in which all of nature is reflected.⁶⁴ And so, as Merleau-Ponty further writes,

⁵⁴ Ibid.

⁵⁵ Merleau-Ponty, "Indirect Language and the Voices of Silence", 93. Also in de Waelhens, 176.

⁵⁶ Merleau-Ponty, "Eye and Mind", 166. Emphasis mine.

⁵⁷ Ibid., 161. Emphasis mine.

⁵⁸ Ibid., 167. Emphasis mine.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² Michael Smith, "Merleau-Ponty's Aesthetics", 206.

⁶³ Merleau-Ponty, "Eye and Mind", 166.

⁶⁴ Toshihiko Izutsu, *The Interior and Exterior in Zen Buddhism*, 19.

"It is the mountain itself which from out there *makes itself seen* by the painter; It is the mountain that he interrogates with his gaze",⁶⁵ a comment which recalls my relation with my own land whereby it often feels (as I have written in the prologue to this text) that its mountain, its forests and fields, boulders and streams, bloomings and witherings *pour through* me, as if demanding to be manifested as art...

Here again, Merleau-Ponty explains that the painter's vision is not a "view upon the *outside*, a merely 'physical-optical' relation with the world"; the world does not "stand before him through representation"; but rather, "it is the painter to whom the things of the world give birth by a sort of concentration or coming-to-itself of the visible".⁶⁶ In this context, it is perhaps appropriate to quote David Abram who writes, "We might as well say that we are organs of this world, flesh of its flesh, and that the world is perceiving itself through us";⁶⁷ and lastly, to end this section with the words of Rilke, who asks "*Earth, isn't this/ what you want:/ rising up/ inside us invisibly/ once more?/ Isn't it your dream/ to be invisible someday?/ Earth! invisible!/ what is it/ you urgently ask for/ if not transformation?*"⁶⁸

The painter's body: Soft sight reveals "a spatiality without things"

As a phenomenologist, Merleau-Ponty emphasizes the embodied nature of the painterly process. To this end, he quotes Valéry as saying that the painter "takes his body with him".⁶⁹ "Indeed", Merleau-Ponty emphasizes, "we cannot imagine how a *mind* could paint. It is only by lending his body to the world that the artist changes the world into paintings".⁷⁰ Furthermore, he explains, "To understand these transubstantiations, we must go back to the working, actual body - not the body as a chunk of space or a bundle of functions but that body which is an intertwining of vision and movement".⁷¹ While Merleau-Ponty's comment is made in the context of discussing vision as eye movement, the see-er's mobile body within the world, and the enigma of bodily seeing and being seen - I bring a different understanding to his statement.

My own bodily seeing, my vision, is *extremely* myopic: Measured at minus 17 diopters, in layman's terms, my eyes require a thickness of 17 corrective lenses to see the world in sharp-edged 20/20 focus. When "uncorrected", I see a radically different world than other people, whereby all semblance of hard edges, all boundaries, all distinctions between "things", between figure and ground, between near and far - that is all the usual perceptual cues by which we habitually objectify the world - dissolve into an ambiguous intermingling of semi-transparent volumes of varying hues and soft luminosities. In the world as my eyes truly see it, there are no solid separate objects, no sharp boundaries, there is only light in sensuously-enveloping space.⁷²

⁶⁵ Merleau-Ponty, "Eye and Mind", 166. Emphasis mine.

⁶⁶ Ibid., 181.

⁶⁷ David Abram, *The Spell of the Sensuous*, 68.

⁶⁸ Rainer Maria Rilke, *The Duino Elegies*, 83.

⁶⁹ Ibid., 162.

⁷⁰ Ibid.

⁷¹ Ibid.

⁷² I am certainly not the only artist whose interpretation of the world has been filtered through her particular eyesight. There are many artists whose various visual "defects" have influenced their work. In addition, various age-related degenerative visual maladies (including cataracts, now commonly removed) have affected the work of painters in the past, too numerous to name, although a few such as Matisse and Monet come to mind. Cezanne was referred to in 1889 as "an

And only through bodily touch, whereby flesh meets flesh (and by this I mean not only skin touching skin, but also a knee or shin coming into contact with the unseen corner of a table, in a most literal example of Merleau-Ponty's chiasmic Intertwining) does the world solidify again...

Many years after the artistic discovery of my own "uncorrected" mode of perception with its attendant phenomenological transformations, I came across Merleau-Ponty's description of a state of perception whereby, to use his words, "the world of clear and articulate objects is abolished [and] our perceptual being, cut off from its world, evolves a *spatiality without things*".⁷³ This sensibility is very close to how I experience the world without "corrective" lenses. Merleau-Ponty was actually writing about what happens to our perception in the dark whereby, "Night is not an object before me; it enwraps me and infiltrates through my senses, stifling my recollections, and almost destroying my personal identity".⁷⁴ Most relevantly to the discussion at hand, Merleau-Ponty describes the experiential effect as one in which as perceiving subject, "I am no longer withdrawn into my perceptual look-out from which I watch the outlines of objects moving by at a distance. Night has no outlines; it is itself in contact with me and its unity is the mystical unity of the *mana*".⁷⁵ As he goes on to explain, such nocturnal space is experienced as "pure depth without foreground or background, *without surfaces and without any distance separating it from me*".⁷⁶

In my own experience of myopic vision, the absence, or rather *withdrawal*, of visual focus or acuity has a similar effect, in terms of loosening the habitual reliance on visible external appearances, and allowing another way of "sensing" to come forward: here, my attention is dramatically shifted as my other perceptual modalities come forward, such as hearing, smell, and even feeling the ground beneath the soles of my feet; and accordingly, I begin to experience space itself as full and sensuously enveloping, as *all around* and close upon my skin like that of a body immersed in the sea. This alternative way of sensing is one in which not only perceptual boundaries between things (and between one's subject-self and things) dissolve, but accompanying conceptual boundaries break down as well. As the visible world begins to lose its substantiality, and conventional categories dissolve into ambiguity, the experiential effect is one in which the Cartesian polarization, the duality, between perceiver and perceived, "I" and "it", "out there" and "in here", dramatically gives way. As this happens, the *distance*, which ostensibly separates the enclosed self from the object world, begins to collapse.

Merleau-Ponty actually writes about this distance, suggesting that "What protects the sane man against delirium or hallucination, is not his critical powers, but the structure of his space",

artist with diseased eyes, who in the exasperated apperception of his sight, discovered the preambles of a new art" (J.K. Huysmans, cited in Galen A. Johnson, "Introductions to Merleau-Ponty's Philosophy of Painting", 5.) Until recently, humans have historically "seen" the world through a wide ranging quality of vision with varying amounts of focal clarity and other effects: the recent commercialization of laser-based surgical procedures to correct myopic eyesight to 20/20 heralds a trend towards the *homogenization* of vision, whereby everyone (who can afford it, that is) will "see" exactly the same. And now, television commercials have begun selling laser correction *beyond* 20/20 as vision "enhancement" and "high-definition vision", as if our bodies can be upgraded like machines. (I have recently been told that the military is upgrading the vision of its fighter pilots beyond 20/20.) If this trend continues, even eyesight which is naturally 20/20, not to mention myopic vision like mine, will be considered intolerably obsolete.

⁷³ Merleau-Ponty, *Phenomenology of Perception*, 283. Emphasis mine.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid. Emphasis mine.

conventionally a spatiality structured so that "objects remain before him, keeping their distance".⁷⁷ Accordingly, he suggests, hallucinations and myths are caused by a "shrinkage in the space directly experienced, a rooting of things in our body, the overwhelming proximity of the object, the oneness of man and the world, which is, not indeed abolished, but repressed by everyday perception and by objective thought, and which philosophical consciousness rediscovers";⁷⁸ and I would suggest, philosophically-enquiring painterly consciousness as well.

I feel fortunate as an artist to have had access to an alternative experience of spatiality through my own body. I would not at first describe my perceptual experience as one of only "shrinkage" however, but rather of expansion (in some ways similar to what I experienced in the field, as described in Chapter II); or perhaps even more accurately, as an intermingling of subject and object, accompanied by a softening or even dissolution of boundaries between self and world. I cannot emphasize enough the importance of this concept, and the influence that this alternative mode of visual perception has had on my entire art practice. In fact, most of my aesthetic principles – in particular, my deliberate strategy of using semi-transparency both in painting and in *Osmose* and *Ephémère* to enable the immersant to seemingly see through and bodily pass through things, thereby literally collapsing dichotomies between figure and ground, form and space, and introducing both perceptual and cognitive ambiguity – are grounded specifically in the reclaiming of my own unmediated, uncorrected vision as a means of overcoming conventional, habitual ways of seeing, being in, and behaving toward, the world.

2. The Emergence of Key Concerns, Strategies and Style through Painting

I am now going to move away from theory to discuss the particularities of my own work. Here, I want to describe the constellation of concerns that have emerged through my work as a painter and become central to my research in immersive virtual space. I also want to examine how these concerns fueled the strategies and techniques that have become characteristic of my current work, including its visual style, all of which originated in my earlier painterly research.

As I have written at the beginning of this chapter, the desire to articulate my own intuitive and experiential sensibility, to express my "communication with the world", has been a driving force behind my work. Accordingly, my constellation of concerns has remained fairly consistent even while my work has evolved over a range of media, beginning in the late '70s with traditional painting in oil; moving on through the 80's with filmmaking, including painting-on-glass under an animation camera, and subsequently with 3-D digital imaging; and, most recently (since the mid-90s), with immersive virtual environments. Throughout this process, now spanning more than two and a half decades, the particular limitations of each medium, in terms of its capacity for "carrying" what I wanted to convey, have successively caused me to abandon it (e.g., painting for its two-dimensional and static surface; film for its two-dimensionality and temporal linearity; and 3D computer-generated images for their two-dimensional and static quality when reproduced as photographs) in my search for the most effective means of exploring and communicating what I am compelled to say.

⁷⁷ Ibid., 291.

⁷⁸ Ibid.

In this context, my primary concerns, the central themes of my work, can be grouped into the following areas, in terms of *presenting*: a) a particular experience of *seeing* the world, in which distinct boundaries between objects are dissolved and one can seemingly go beyond both pictorial and material surface; b) a subjective experience of being *in* the world, in which space begins from the embodied perceiver, enveloping her within an encircling yet unfolding horizon; c) the transformational and mutable quality of the world, as flux and life-flow, as becoming (*physis*); and d) an intermingling or "intertwining" of spatialities of subject/object, interior/exterior, self/world (all, categories kept separate and in opposition by a dualistic worldview). I have already discussed most of these concepts at length, but will now do so in context of my own work.

Regarding my particular techniques and characteristic visual style, I want to draw the reader's attention to statements by several commentators on Merleau-Ponty, asking the reader to stretch the terminology beyond painting to the construction of immersive virtual environments. First of all, de Waelhens writes, "Style is not an end, and even less a means of representation: it is a mode of approach".⁷⁹ And further, Singer writes in "Merleau-Ponty on the Concept of Style" of the *necessity* involved: "The painter, in developing his style, finds that he must adjust his gestures [or choice of medium⁸⁰] to the demands of things he wants to paint [whereby] far from being an activity of pure conquest, the painter's brushwork [and here I would include my *approach* to the medium of Immersive virtual space] often constitute a response to the motif he has chosen".⁸¹ Furthermore, Singer goes on to say, "The artist is most aware of his style [only] when it appears as a limitation. When it works he lives it as an existential 'I can'".⁸² My own experience confirms this.

Before going on to discuss the evolution of my concerns and strategies through painting, I want to provide some background about my earliest work, so that the reader can understand the path since taken. First of all however, I want to express a *caveat* in the context of this discussion, quoting at length the words of Merleau-Ponty (even though as a female artist, I feel excluded by his use of the male pronoun):

"...how long it takes the painter ... to recognize in his first paintings the features of what will be his completed work, provided that he is not mistaken ... Even more: he is no more capable of *seeing* his paintings than the writer is capable of reading his work. It is in others that expression takes on its relief and really become signification. For the writer or painter, there is only the allusion of self to self, in the familiarity of one's personal hum, which is also called inner monologue. The painter works and leaves his wake; and except when he or she indulges in examining his earlier works to try to recognize what he has become, he does not like very much to look at his work. He has something better in his own possession; the language of his maturity eminently contains the feeble accent of his first works. Without going back to them, and by the sole fact that they have fulfilled certain expressive operations, he finds himself endowed with new organs; and experiencing the excess of what is to be said over and beyond their already verified power, he is capable ... of going 'further' in the same direction. It is as if each step taken called for and made possible another step, as if each successful expression prescribed another task ... whose efficacy it will never stop testing anew."⁸³

⁷⁹ de Waelhens, 177.

⁸⁰ David Summers, in his glossary to *Real Spaces: World Art History and the Rise of Western Modernism*, (687) defines style as referring primarily to "evidence of individual hand" as well as local traditions of craft. While there is no evidence of "hand" as in *bodily* gesture when working in virtual space, I am translating this "cross medium" to suggest my use of semi-transparency.

⁸¹ Singer, 238.

⁸² Ibid.

⁸³ Merleau-Ponty, "Indirect Language and the Voices of Silence", 89-90.

Early work in painting and film: representing the surface appearances

When I started my professional career as a painter in 1978, I was a determined realist. During my formative years as a young artist in the mid '70s however, conceptual and minimalist art-making was at its zenith: I therefore struck out on a wayward and solitary path, concentrating on learning classical drawing and oil painting techniques, because I wanted to learn the rules of traditional representation before I broke them. With this goal in mind, I taught myself the skills of so-called objective realism through portraiture, still life, and landscape.

Soon after graduating from university, I went off to a remote logging camp on Vancouver Island in British Columbia, Canada and began painting portraits of the loggers working in the forest. In addition to working from directly from life, I also began taking photographs of my subjects and using these as references for my paintings. At that time, my interest in such realism was based on the desire to not only represent, but amplify, the colours and textures I saw around me, as a means of communicating the raw immediacy of life. It was during this period that I was most inspired by Huxley's recorded experiences of intensified perception, of what he called the "isness" of reality.



Logger & Tree 1981
oil on canvas



Faller (Tony) 1979
oil on board



Fallers & Truck 1981
Oil on canvas



Pokergame 1981
Oil on canvas

In parallel to making this work, I also began experimenting with the medium of documentary film, not because I was interested in photography, but because the static, non-temporal quality of painting seemed increasingly inadequate. Working in super8, I made several short films, including one set in a West Coast lumber mill that revelled in the luminous, sensuous materiality of the mechanical processing of huge trees, even while evoking a sense of loss at their demise. In 1979, I approached the Vancouver office of the National Film Board of Canada with a proposal for a documentary film about the loggers and the forest I had been painting.

My desire to explore the cinematic medium was encouraged by reading Siegfried Kracauer's *Theory of Film: The Redemption of Physical Reality*, in which he emphasizes film's unique propensity, not for linear narrative (for as a painter I had no interest in that), but for affirming the *sensuous immediacy* of reality. Among the passages I marked in 1979 were those which emphasized that "Films come into their own when they think record and reveal physical reality", including phenomena which "would hardly be perceived were it not for the motion picture camera's ability to catch them on the wing".⁸⁴ In accordance with the tendency for any medium to be partial to what it is uniquely equipped to represent, so the cinema, Kracauer writes, is "conceivably animated by a desire to picture transient material life, life at its most ephemeral".⁸⁵ "Significantly,

⁸⁴ Siegfried Kracauer, *Theory of Film: The Redemption of Physical Reality*, ix.

⁸⁵ *Ibid.*

he suggests, "the contemporaries of Lumière praised his films – the first ever to be made – for showing 'the ripple of the leaves stirred by the wind'".⁸⁶ Furthermore, as Kracauer notes, the "peculiar potentialities" of film lie in its capacity for recording and exploring physical reality and, most importantly, it "challenges us to confront that reality with the notions we commonly entertain about it – *notions which keep us from perceiving it*".⁸⁷

It is perhaps in this "revealing power", he writes, that the significance of the medium lies. It was precisely this potential for "revealing" (as in *poiesis*, although I did not know this phrase then) that drew me then to film; the same revelatory potential that drew me to immersive virtual space many years later.

While reading Kracauer 25 years ago, I made numerous notes in the book's margins which reflected not only my attitude towards painting at the time, but my desire to find a medium whose characteristics might enable me to describe my experience of the world more effectively. For example, in response to Kracauer's comment about the advent of realist photography making people perceive the world they actually lived in (which he describes as "no mean achievement considering the power of resistance inherent in habits of seeing") and the role of photography in "exploding perceptual traditions" and thereby influencing artists such as Marcel Duchamp⁸⁸, I wrote in the margin of that page that 'Artists seek to defy conventions of seeing the world so we can see it *freshly*, opening the doors of perception, *questioning* traditionally accepted approaches to reality'.

And in another margin note, I wrote that 'Film can reveal the things no other medium can – my film about the forest can show simultaneity, e.g. trees falling, surf pounding, eagles landing, to create associational meaning ... showing the interrelation of things like a web ... Film can do this ... *My paintings cannot.*' Decades later, I was to use a wholly different medium to communicate this: Whereas in 1979, I envisioned the technique of film-editing as a means of interweaving events to suggest temporal simultaneity, 15 years later in *Osmose* and *Ephémère*, I applied semi-transparency in the visuals to achieve the same effect, suggesting not only temporal simultaneity but also collapsing ostensibly disparate things into a kind of spatial simultaneity, along with evoking associational, rather than literal, illustrational meaning, as I will explain Chapter VI.

While the film about the logging camp in the British Columbia forest was completed,⁸⁹ my goals were diluted due to my youthful inexperience and working with others whose agendas were different from my own. Although I did go on to make another film with the NFB, I soon realized that documentary film was not the medium I was seeking, and I continued painting.

In 1980 however, my painterly concerns began to undergo a radical shift. This shift can be seen in the painting below, the last of the logging camp series, made in 1981.

⁸⁶ Ibid.

⁸⁷ Ibid., 241. Emphasis mine.

⁸⁸ Ibid., 9.

⁸⁹ Titled *Jacks or Better*, this documentary film is archived and available for public viewing from the National Film Board of Canada film library.



Cookhouse Floor 1981, oil on canvas



detail

In the process of producing this painting, whose subject matter was ostensibly the interior of a logging camp cookhouse, I came to realize that I was no longer interested in mimetic realism. Even though (or perhaps because) I had become technically proficient at painting in a photographically-realist representational style, doing so ceased to challenge me. Accordingly, in this painting – rather than concentrating on delineating the hard-edged boundaries and spatial intervals between things – my attention had turned to the implied and ambiguous spatial depth that lay beyond the reflective two-dimensional surface of the cookhouse floor.

Around that same time, I made a watercolour of an aluminum tea kettle in which I became most interested in the volumous space implied in and beyond the kettle's flat reflective surface. I imagined and represented this illusory space as a small landscape complete with a dark hill or mountain in its furthest depths and a frozen snowy lake surface stretching from that mountain forward towards the planar surface of the kettle itself.



Kettle 1981, watercolour on paper



detail

Going beyond objects and surface

No doubt, my interest in suggesting such spatiality as a luminous three-dimensional volume on the *other* side of a two-dimensional surface, lay in the discovery I had made the previous year, which consisted of acknowledging or reclaiming – rather than denying – my own myopic way of seeing the world.

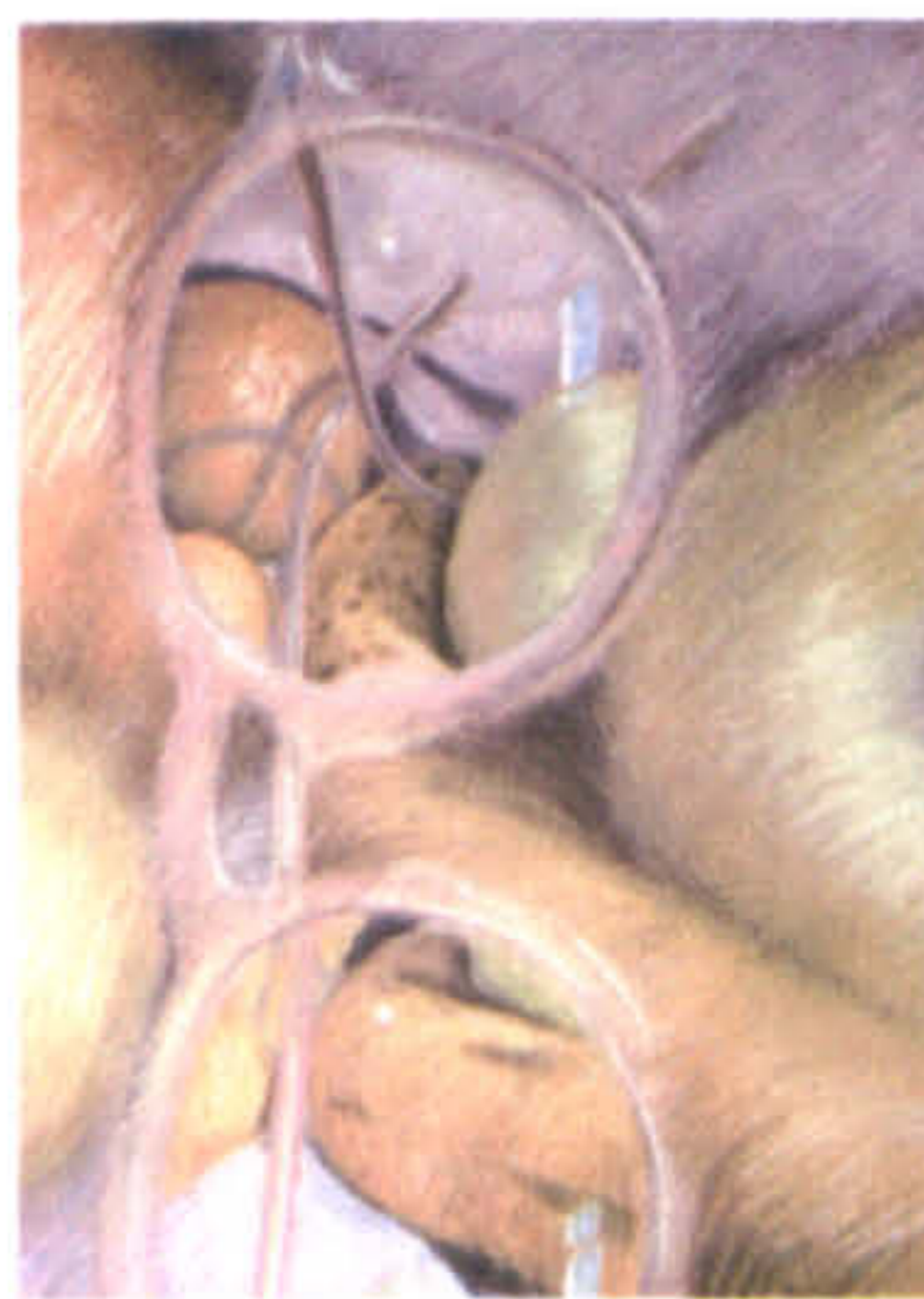
In 1980, the simple act of removing my glasses to paint a still life of two cups changed the course of my artistic career: this turning of attention to my own unmediated physiological vision led me to acknowledge a very different way of seeing the world, one which was my body's own.



Myopic Cups 1980, oil on paper

As I have explained earlier in this section, this alternative mode of perception is based on myopic vision, a condition which, in my extreme case, effectively *undoes* the boundaries between things and between things and the space surrounding them, dissolving everything in light. In this perceptual state, objects give up their hard edges and discrete “objectness”; and rather than remaining in opposition, habitual dichotomies of subject/object, form/emptiness, figure/ground, break down and intermingle, creating not only perceptual but also cognitive ambiguity. As a result, space no longer appears empty, spread out *in front* of the surveying gaze, but is experienced as full and all around one’s body. As I have written earlier, this alternative mode of perception, with its attendant phenomenological transformations, has had a profound influence on all my subsequent artistic work, including the use of semi-transparency in *Osmose* and *Ephémère*.

Once having become artistically aware of this “other” way of perceiving the world, I was no longer interested in pursuing the conventions of objective realism. Instead, I sought to re-construct this ambiguous spatiality in drawings and paint.



Still Life & Glasses 1980
chalk on paper

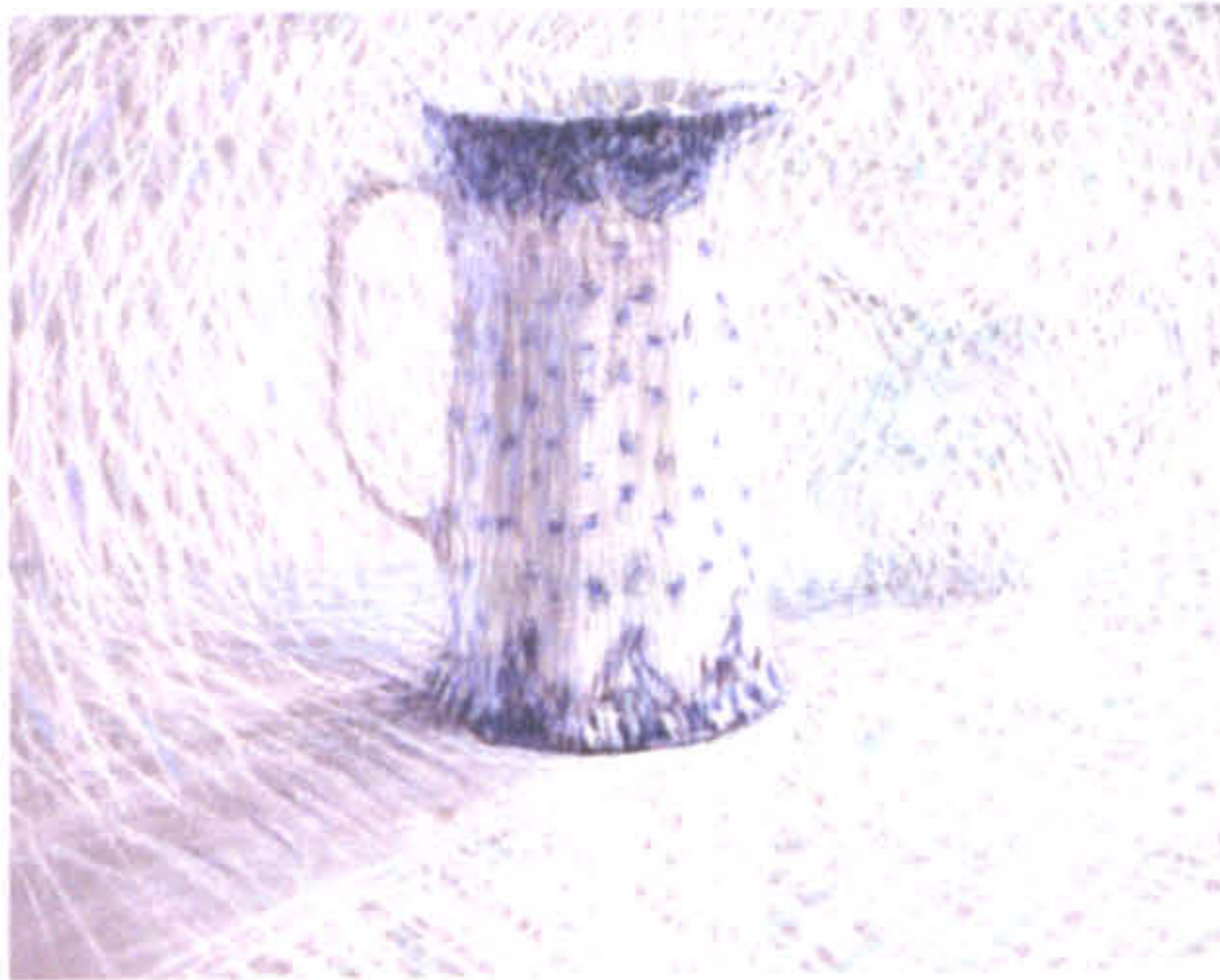


Seeing Through Glasses 1980
chalk on paper

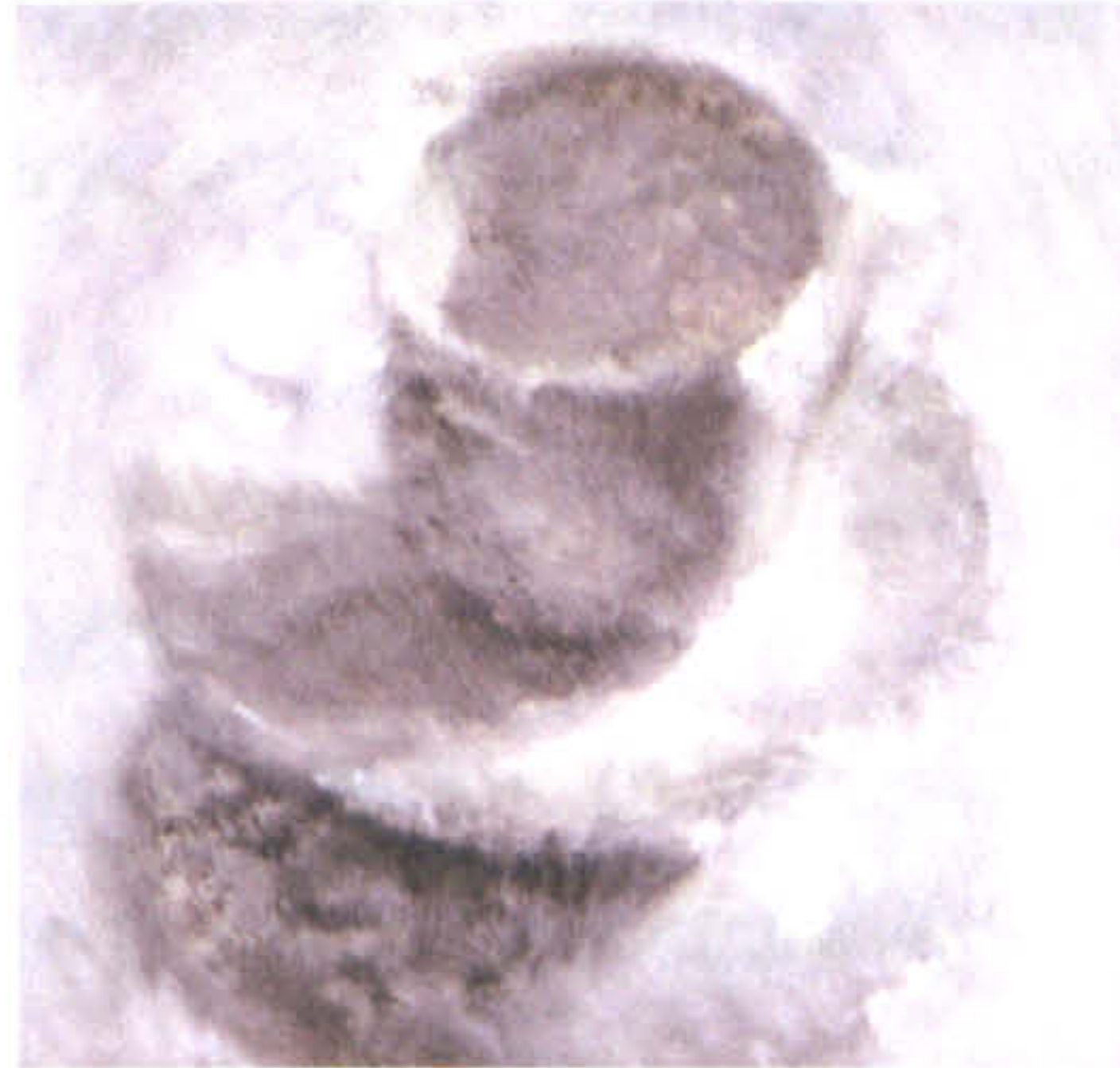
Consequently, I embarked on several series of images, made without wearing corrective lenses. (Eventually I had a pair of half glasses made, so that I could see my tools and the marks I was making clearly on the page or canvas, even while my subject a short distance away remained out of focus.) The main body of this research consisted of still-lives (there were portraits as well which I'm leaving outside this discussion) made between 1982 and 1985, all of them made directly from life, of simple everyday utensils such as jugs, cups, water glasses and jars.

In the construction of these images, I began exploring the dissolution of solid form through light, developing a technique which consisted of layering or crisscrossing strokes so that they suggested a porous interlacing of form and space, as can best be seen in the drawing, *White & Blue*

*Jug.*⁹⁰ In the course of this research, I developed a heightened awareness of light and space, or rather, of light in space, or, even more accurately, volumous space interfused with light. Accordingly, I became increasingly intent on representing the *flux* of light as it ebbed and flowed among and upon the objects set before me: eventually I became less and less concerned with colour, until I was painting white cups on white ground. So strong was my desire to transcend the "objectness" of things and to move beyond the limits of opaque surface appearances, that ultimately I began painting glass jars on reflective mirrors, so that surfaces might effectively disappear altogether, and everything might become transparent, defined only by light in volumous three-dimensional space.



White & Blue Jug 1982, chalk pastel on paper



Cup (Remember Me) 1984, oil on board



Glass Jars on Mirror 1985, oil on canvas

The last of these still-lives, a rendition of a transparent glass half filled with water, was created using Apple's McDraw software on a Macintosh computer in 1985: this was the first translation of my painterly concerns with transparency and volumous spatiality into a digital medium.



Water Glass 1985, 2D digital image (McDraw) on printer paper

While working on these images, I became increasingly interested in representing an illusory space beyond the pictorial – let me correct that – *material* surface. Note that the word "pictorial" here was actually a voice recognition error: I have not corrected this however because the twinning

⁹⁰ My particular method, which involved applying hard chalk-pastel with semi-random and forceful strokes against a hard surface, eventually caused such stress to my wrists that I had to abandon this series of drawings. In fact, the damage was such that by 1982 I was unable to use my right hand for a year. Not deterred however, I continued the series in paint, using soft bristled brushes which minimized the pain. Within a year my wrists healed, but I never worked with chalk again.

of both words is in fact fortuitous, as the desire to *go beyond surface* – both the pictorial surface of the 2D painterly picture plane, and the opaque material surface of solid physical objects – became one of the principal impulses behind my later explorations in virtual space.

I am referring here specifically to my later conceptualization of immersive virtual space as a means of enabling perceptual experiences whereby viewers can seemingly cross over the 2D pictorial surface into a voluminous all-encompassing space beyond; and, once within it, can effectively – because of my use of semi-transparency – *see through* and *bodily pass through* the opaque material surfaces of "things", with the ultimate goal being a perceptual and thereby cognitive collapse (or at least confusion) of the figure/ground, object/space, and subject/object divide. The deliberate enabling of such collapse became one of my greatest challenges: my chosen means of facilitating such effect, even as a painter, was to abandon all modes of realist representation to construct imagery that lay midway between recognizable figuration and abstraction.

Evoking perceptual and cognitive ambiguity

In this context, my goal was to evoke ambiguity. In comparison to more literal, imitative modes of representation – which limit a work to a single predetermined meaning which the viewer can "read" quickly with minimal consideration – such ambiguity "opens" the work to imaginative play, implicating the viewer in constructing meaning. Furthermore, when figure/ground relationships become unstable, the resulting variability in the visual field causes sensory and semiotic fluctuations, creating what I call "perceptual buzz". This effect stimulates the viewer's mind, bringing their attention back to the work repeatedly, and in doing so, can induce a kind of dreamlike reverie.

The potential of images to induce such reverie has been explored in great depth by Bachelard in such texts as *The Poetics of Space*, *The Poetics of Reverie*, and *Water and Dreams: On the Imagination of Matter*, particularly in context of the work of poets. For example, in discussing Rilke's evocation of blooming roses, which Bachelard describes the poet's desire "to express the interiority of a being of the external world" as being accomplished through a "strange purity of abstraction, withdrawing from immediate images, conscious that one does not arouse dreams by describing".⁹¹

Speaking as a visual artist, in my experience the attainment of such ambiguity is exceedingly difficult, both technically and conceptually. This is because the zone between figurative representation and abstraction is very narrow and therefore extremely elusive. In fact, I have come to think of it metaphorically as a "razor's edge", because it is all too easy to fall into literal illustration on one side or arbitrary chaos on the other. The creation of true ambiguity, whereby an image perpetually *hovers* midway between recognition and abstraction, whereby meaning is evoked rather than illustrated, became one of my greatest challenges as a painter, and remains so today.

The primary means I developed for achieving such ambiguity in painting involved using semi-transparency to enable the viewer to *see through* surfaces (material *and* pictorial). In this

⁹¹ Bachelard further writes that in doing so, i.e. in withdrawing from immediate, literal images, Rilke "confronts us that the simplest motives of reverie; with him, we enter the chamber of a dream". Gaston Bachelard, "In the Chamber of a Dream", (from *La Terre et reveries du repos*) in Colette Gaudin, *On Poetic Imagination and Reverie*, 92.

way, I attempted to confuse spatial relationships between figure and ground, dissolve hard-edged boundaries between things, and collapse conceptual distinctions between solid form and empty space.⁹² In doing so, I was also seeking to suggest a kind of spatio-temporal *simultaneity*, whereby multiple forms could occupy the same space at the same time. My use of semi-transparency for such purposes eventually became a defining characteristic of my visual approach or style as a painter. Ultimately, this also became a key strategy for the immersive virtual environments *Osmose* and *Ephémère*, whereby the immersant is effectively able to not only *see through* things but additionally *float through* them as well, extending my desire to transcend both pictorial and material surface even further. I will return to further discussion of transparency and ambiguity in the context of my strategies for immersive virtual environments, in Chapter VI.

Representing the embodied perceiver in enveloping space

By 1985, another locus of concerns was emerging in my work, that of making reference to the presence of the perceiver, not as an observer disinterestedly surveying a distant scene, but rather as an embodied subject *within* the scene, spatially *enveloped by her surroundings*.

The first example of my explorations of this theme⁹³ is the painting *The Bath (The Annunciation)*, a rendition of the classic painterly motif, "woman at her bath" – this time, however, viewed not through the gaze of a male voyeur, but through the eyes of the woman herself (myself) as she lies bodily immersed in the bath water. This painting is thus a representation of both the woman's lower body seen from her own point-of-view, and her perception of the space her body is

⁹² More specifically, as a means of achieving these effects, I developed a painterly technique that combined additive painting with erasure. I almost always worked in oils over a semi-randomly structured acrylic under-painting, doing so in such a way as to develop transparency – not through delicate application of washes or glazes – but by laying down loose gestural layers of oil pigment much thinned with turpentine, then spontaneously and often brutally scraping or scrubbing away certain areas with sandpaper or solvents. I would thus build up certain areas of the image, then erase, repeating this process over many days until a semi-recognizable yet spatially-ambiguous image began to emerge.

⁹³ My sense of space as all-enveloping, and as *bodily felt* rather than merely seen, can actually be found a decade before, in a very early painting, *Blind Self* (1977), about a blind person sensuously feeling space *all around* his/her body (here the sexes are representationally superimposed and thereby merged), through the proprioceptive sense of touch, of balance, and of the skin, rather than the forward-looking orientation of sight. Here, I was already using semi-transparency to suggest *spatial simultaneity* in terms of multiple bodies occupying the same space/place at the same time. This painting also contains a "blind-man's stick" used as an instrument to "feel" space, an element discussed by Drew Leder, in *The Absent Body*, 33, in relation to Merleau-Ponty and others. In this context, Merleau-Ponty writes "The blind man's stick has ceased to be an object for him and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight". *Phenomenology of Perception*, 143.



Blind Self 1977



detail

within, a luminous volume consisting of air, rising steam, and transparent, reflective water inside the bathtub walls.



The Bath (The Annunciation) 1985, oil on canvas

Most significantly, while constructing this painting my attention began to shift, from representing space itself as a luminous volume situated before the viewer (as in the still-life drawings) to representing the subjective sensations of actually being bodily *inside* that space. Accordingly, I began to conceive such space as all-surrounding, as a sensuous, almost viscous, medium *in* which the viewer was immersed: rather than being empty or even filled with light, I began to conceive space as intimately embracing the perceiver's body.

This conceptualization was accompanied by a further shift of my attention, to the embodied perceiving subject as the *still point*, or pivot, around which such space revolves. This notion recalls Merleau-Ponty's comments, which I have already quoted in the previous chapter in context of defining immersion, about experiencing space not from the outside as in Descartes' *Dioptric*, but rather from an embodied perspective, whereby space is experienced "starting from me as the zero point or degree zero": "I do not see it according to its exterior envelope", he writes, "I live it from the inside; I am immersed in it".⁹⁴ "After all", he explains, "the world is all around me, not in front of me".⁹⁵ My own notion of the body as a subjective null point or pivot also recalls Edward Casey's conception of the body as a pivot of the place-world: however, in comparison to his exploration of the body's pivotal "outgoing" and "ingoing" capacities (beginning from Henri Lefebvre's claim that the body serves "both as point of departure and as destination"),⁹⁶ I was more concerned with the idea of the embodied self as pivot in terms of being a subjectively experiential locus from which the encircling horizon *expands*.⁹⁷

⁹⁴ Merleau-Ponty, "Eye and Mind", 178.

⁹⁵ Ibid.

⁹⁶ Edward Casey, "Body, Self & Landscape: a Geophysical Inquiry into the Place-World", 413-414.

⁹⁷ In this context, I want to mention Norman Bryson's examination of the *de-centering* of the perceiving subject according to Sartre and Lacan (and Nishitani, which I will discuss in Chapter VI) in "The Gaze in the Expanded Field". As Bryson explains it, the self-enclosure of Sartre's subject (as "absolute centre of lived horizon", as "still point of the turning world, master of its prospects, sovereign surveyor of the scene" p. 88) is fractured by the threatening *regard* or Gaze of an Other, whereby the perspective lines which had run from the subjective perceiver to the horizon now reverse and re-converge on the intruder, to whom the subject becomes no more than a "vanishing point, *not* a viewing point", an "opacity" on the other's horizon in a "dialectic of master and slave". 89. According to Bryson, for Sartre, metaphorically situated in a park, the intruder becomes "a kind of drain which sucks in all of the former plenitude, a black hole pulling the scene away from the [perceiving self] into an engulfing void". Ibid.

I have experienced this numerous times, particularly as a woman, when my solitary sojourn in an urban park is interrupted by the distant arrival of a (male) stranger: indeed, in such a situation, Sartre's "plenitude and luminous peace" as Bryson calls it, is certainly threatened and the formerly

My practical research in this area found its first effective manifestation in 1985, in the painting *Blue World-Space*. In this image, there isn't any recognizable form or any concerted effort at optical interpretation: instead there is only the suggestion of a voluminous three-dimensional space in which the centre is marked by a vertical white stroke, denoting the "zero point" or pivot around which the spherical world-space revolves.



Blue World-Space 1985, oil on canvas

There are several other compositional elements or strategies in this image which became central to my approach. The first of these is the suggestion of a slanted and curved *horizon*, intended to imply not only the curvature of the earth, but also its horizontal encircling of the perceiving subject (as pivot) as if within landscape. The fact that the horizon is slanted was a deliberate attempt on my part to allude to its perception by a *lively* and *mobile* embodied subject *within* the scene, around which the encircling horizon unfolds and expands. (See Chapter I, in the last section *Techne as poiesis*, and Chapter II, under *Landscape as bodily-enveloping place*, for earlier discussion of the horizon, particularly in terms of its unfolding.) In this painting there are also faint light lines which pass by the pivot-stroke as if converging to a vanishing point somewhere beyond the horizon: these were meant to imply spatial *depth*. As such, these elements were intended to *doubly* describe the space, as both enveloping space experienced by the pivotal

expansive space around me abruptly *shrinks*. In my experience, however, there are alternatives to Sartre's threatening gaze of the Other: and this is one of the reasons that I have chosen to move out of the city (with its spatially-contracting effects, recalling Drew Leder's comments, footnoted in Chapter II, #309, when he asks if it is possible to be experientially open to one-body expansiveness in all environments) to the rural countryside whereby, in relative isolation, it is possible to maintain an *expansive* sensitivity to my surroundings.

Bryson (91-93) also describes Lacan's dismantling of the centralized subject, achieved not through the "irruption of another personal viewer" but by the less personal "irruption, in the visual field, the Signifer". As Bryson explains it, for Lacan, we do not simply look out into the world and see light and unspecified, undifferentiated form: the rays of light are caught in a *rets*, a "network of meanings". As human beings who collectively agree on our visual experience, it is required, Bryson suggests, for each of us to "submit his or her retinal experience to the socially agreed description(s) of an intelligible world": Unmediated visual experience is thereby socialized, and deviation from this "social construction of visual reality" is pathologized. Accordingly, inserted between the retina of the perceiving subject and the world itself is a "screen of signs", consisting of all the discourses which make up the cultural construct of "visuality". When we learn to see socially, we no longer see independently but are inserted into pre-existing "systems of visual discourse": hence, Lacan's "screen" has a shadow (a Laconian scotoma or stain) which cuts across the "luminous plenitude" of subjective vision and prevents us, as seeing subjects, from being the center of our own visual experience. In this context, I have used strategies such as semi-transparency in my work as an attempt to go beyond the means by which we objectify the world and distance ourselves from direct immediate perception.

perceiving subject *inside*, and as space receding from the frontal picture plane as if viewed by an observer who is *outside* the scene.

A second compositional strategy also emerged from this painting: the application of randomly painted strokes which appear to not only revolve around the subjective pivot within the space, but also "float" forward as if *through* the frontal plane of the pictorial surface towards a viewer on the outside. While such mark-making had its most origins in my previous still-lives as a means of suggesting the dissolution of form into spatial luminosity, here these "floating strokes" and "flecks" were intended to refer to something more, in this case the *retinal* processes⁹⁸ of the perceiver (simultaneously situated within the scene and without) engaged in the embodied act of vision. In this case, it could quite literally be said, after Merleau-Ponty, that "the painter paints not only what is visible, but the *intertwining of the visible with the seeing*".⁹⁹

A third strategy emerged from this painting as well: this is the implied *ovoid-spherical* shape that not only fills but almost bursts through the image's rectangular frame. Here, I was attempting to allude to a *convex* frontal plane pushing against and beyond the pictorial surface, while simultaneously depicting a *concave* anterior plane curving away from its furthest depths: my intent was that such voluminous space would thus become *spherical*, or rather *ovoid* in shape.¹⁰⁰ As

⁹⁸ Here, I am referring to several *interior* bodily phenomena associated with vision, including "floaters", described by ophthalmologists as "condensations" of fibers in the vitreous gel inside the eye: this gel is attached to the retina and as the eye ages, little bits will detach from the retina, and accordingly, appear to float over one's visual field. I am also referring to a strange phenomenon which I have experienced when an ophthalmologist shines a bright light into the back of my eye, consisting of a *virtual projection* of a branchlike pattern of nerves or veins (I'm not sure which) upon my visual field, *semi-transparently superimposed* over whatever I see in the "exterior" world.

⁹⁹ Jacques Taminiaux, "The Thinker and the Painter", 287. Emphasis mine.

¹⁰⁰ The origins of my compositional strategy lay in research I had been previously pursuing into ways by which to "warp" the painterly picture plane – in terms of making its 2D planar surface appear simultaneously convex and concave instead of merely flat. To this end, several years earlier I had begun making notes on vision and perspective, and had searched for artists whose work had planar distortions in which the frontal plane seem to bulge outward toward the viewer. Such artists include the mid 20th-century Canadian painter David Milne, as well as more obvious examples like van Gogh; there are however many previous examples as explained by John White, in *The Birth and Rebirth of Pictorial Space*.

John White, for example, writes that early Italian Renaissance artists including the painter Ucello and after him, Leonardo, also attempted to develop alternatives to what we now call artificial, linear, or even Cartesian perspective. This alternative system, which White calls "synthetic perspective", is based on *curves* (instead of the straight lines used in artificial perspective) and entails "transference of the *subjective appearances* of the real world, conditioned partly by physical, and partly by psychological limitations, onto a plane surface". According to White, this is accomplished by projecting onto the plane proportions obtained on an intersection of the visual cone by a "*spherical surface concave to the eye*". Characteristics of such a perspective include curvilinear distortion for all lines not passing through the point on the plane surface closest to the observing eye, and a foreshortening and increasing distortion of objects in all directions from this point with no stressing of the plane surface: the result is a *spherical space* which, White explains, is homogeneous but not simple, and which shares qualities with Einstein's "finite infinity". 207-208.

While historically, artificial or "Cartesian perspectivalism" became the dominant model in Western painting, it has since been thoroughly critiqued as I have explained in Chapter I – for its privileging, as Martin Jay suggests, of a disembodied subject *outside* a world it claims to know only from afar, and for ignoring our bodily *embeddedness* in what Merleau-Ponty calls the flesh of the world (Jay, "Scopic Regimes of Modernity", p.10). There have however been alternative "scopic regimes", including not only the spherical space of what White calls "synthetic perspective", but later, the "fragmentariness" introduced by photography, the "anti-perspectivalism" of Impressionist painting, and so on. (Jay, 15). In a Western context, Cubism also comes to mind – and in this context, Merleau-Ponty writes (in reference to modern painting's "efforts to detach itself from illusionism and to acquire its own dimensions...") that Cézanne "knows already what cubism will repeat: that the

such, the spherical-ovoid composition was meant to suggest the volumous spatiality which now completely encompassed the perceiver, i.e., the so-called "exterior world" which the embodied subject was situated within; while simultaneously, the spherical-ovoid was intended to mirror the *interior* curvature of the back of the perceiver's eye. As such, this spherical-ovoid suggests the "spheroidal optical world" referred to by Erwin Panofsky in *Perspective as Symbolic Form*.¹⁰¹

I want to emphasize that these last two strategies – the ovoid-sphere and the floating strokes and flecks – have become a constant characteristic of my work, recurring in nearly every major image I made since 1985 onwards. Even today, if I make a quick sketch of a real landscape, or make a schematic drawing of an idea for a new work (such as can be found in the working notes of *Ephémère*), these compositional elements are almost always present: It is as if I cannot draw anything to do with the perception of self or world-space without them issuing forth. For example,

external form, the envelope, is secondary and derived, that it is not that which causes a thing to take form, *that this shell of space must be shattered, this fruit bowl broken...*" ("Eye and Mind", 178; 180. Emphasis mine.) Historically, there were other alternatives as well, such as that posed by Chinese landscape painting, as I have discussed in Chapter II, in *Landscape, as Representation*.

As a painter, I intuitively sought ways to resist artificial perspective, seeking an alternative by using semi-transparency, ambiguity and, as just described above, by representing space as an ovoid-sphere surrounding a perceiving subject within. When I eventually began working with 3-D digital software and found it to be thoroughly tied to the "scopic regime" of artificial perspective, again I sought to subvert it through transparency and ambiguity, and when later using that same software in immersive virtual space, I further sought to compensate for what Jay calls the regime's "absolute oculo-centrism" (p.17), by introducing an interface which relies on the immersant's proprioceptive sensations of breath and balance to navigate through immersive virtual space. I will return to this in chapter VI.

¹⁰¹ In this context, Erwin Panofsky writes in *Perspective as Symbolic Form* that "In order to guarantee a fully rational – that is, infinite, unchanging and homogeneous – space, this 'central perspective' [by which he is referring to "linear perspective"] makes two tacit but essential assumptions: first, that we see with a single and immobile eye, and second, that the planar cross-section of the visual pyramid can pass for an adequate reproduction of our optical image. In fact these two premises are rather bold abstractions from reality, if by 'reality' we mean the actual *subjective* optical impression. For the structure of an infinite, unchanging and homogeneous space – in short, a purely mathematical space – is quite unlike the structure of psychophysiological space". 28-30. "Exact perspectival construction is a systematic abstraction from the structure of the psychophysiological space. For it is not only the *effect* of perspective construction, but indeed its *intended purpose*, to realize in the representation of space precisely that homogeneity and boundlessness foreign to the direct experience of that space. In a sense, perspective transforms psychophysiological space into mathematical space. It negates the differences between front and back, between right and left... [and] it forgets that we are not with a single fixed eye but with two constantly moving eyes, resulting in a *spheroidal field of vision*". *Perspective As Symbolic Form*, 30-31. (Emphasis mine.)

Furthermore, Panofsky explains "... the rules of painterly perspective [have to lead us] to believe that straight is always seen as straight, without stopping to consider that the eye in fact projects not onto a *plana tabella* but onto the inner surface of a sphere". 34. And here, Panofsky in a footnote quotes Kepler (as writing "This world is indeed visible and is itself concave and round, and whatever in the hemisphere we perceive as greater than it in a single glance, this is equal in its rotundity ...") before continuing, "And indeed, if even today only a very few of us have perceived these curvatures, that too is surely in part due to our habituation – further reinforced by looking at photographs – to linear perspectival construction: a construction that is itself comprehensible only for a quite specific, indeed specifically modern, sense of space, or if you will, sense of the world. Thus, in an epoch whose perception [is] governed by a conception of space expressed by strict linear perspective, the curvatures of our, so to speak, *spheroidal optical world* [have] to be rediscovered". 34. Emphasis mine.

In this context, Christopher Wood, in his Introduction to Panofsky's *Perspective As Symbolic Form*, writes that if one wanted to be faithful to the truth of perception, "The truest of all perspectives would be a complete curvilinear construction". 22.

many years after the ovoid-spherical space first emerged in my work, it evolved into the subjectively-perceived, body-enveloping spatiality of immersion in my virtual environments (and most literally, as the "Life-world" of *Osmose*, and the boulders and germinating seeds in *Ephémère*, all of these being ovoid-spherical elements into which the immersant can enter, becoming bodily-enveloped within). Equally, the floating strokes and flecks characteristic of my paintings become the luminous particles and fields of floating flecks within *Osmose*, and especially *Ephémère*, which – as the immersant experiences not only seeing but effectively *passing* through them – virtually merge with her own retinas, in an almost literal example of the collapse of distance between perceiving subject-self and world (as well as "intertwining of the visible with the seeing").¹⁰²

Furthermore, contained within these twin strategies is a representational paradox which surfaced in my painting and has remained an aspect of my work ever since: This paradox, which I have often called the "doubled point-of-view", is related to the problem of visually representing subjective experience, of looking upon from without what is experienced firsthand from within. Also implied in such doubling, of course, is what Merleau-Ponty calls the "enigma" of the body which "simultaneously sees and is seen;"¹⁰³ whereby, as I have already discussed in the last section of Chapter II, to use Drew Leder's words, "the lived body is necessarily chiasmatic, a perceiver/perceived".¹⁰⁴



Fish (Living Water) 1986, oil on masonite

Here, for example, is a rather ambiguous painting of a fish. (It actually rotted before me as I painted, in a literal dissolution of form. This was, by the way, the last time I ever painted directly "from life": afterwards I began painting from imagination, although, as I have already cited Merleau-Ponty, *it makes no difference if the painter does not work from life, she paints because she has seen.*¹⁰⁵) In this image, the stroked-filled ovoid-sphere which surrounds the fish, and also penetrates and dissolves the fish, was intended as an allusion to the aqueous environment the fish was originally within, suggesting that the fish is but an embodied extrusion of that environment manifested as "fish". The same stroke-filled, fleck-filled ovoid-sphere, however, was also intended to suggest the aqueous retinal presence of the painter/viewer engaged in the embodied act of *seeing* the fish/image, uniting the "beheld" and the "beholder" in a momentary embrace.

¹⁰² Taminiaux, 287.

¹⁰³ Merleau-Ponty, "Eye and Mind", 162. Emphasis mine.

¹⁰⁴ Drew Leder, 63.

¹⁰⁵ Merleau-Ponty, "EM", 166. Emphasis mine.

As I have already just explained, in the 1985 *Blue World-Space* painting and the 1986 *Fish (Living Water)* painting above, as well as most of the images which followed, I was attempting to visually describe space as an expansive *spherical* volume as it might be subjectively experienced by someone bodily inside, immersed within. At the same time, particularly because my mode of representation was the two-dimensional medium of painting, I was necessarily arranging the elements within that space as a two-dimensional composition viewed from outside the frame. This representational paradox, of deliberately combining allusions to a three-dimensional landscape or architectonic space (as subjectively experienced from within, as *place* – discussed in Chapter II) with a two-dimensional pictorial composition (as viewed from without, as *image*) has remained a key aspect of my subsequent work. My further attempts to represent this paradox of the "doubled point-of-view" can be seen in the paintings which are reproduced in the following pages. (I was also faced by the same paradox when using computer software to create three-dimensional digital scenes which were to be viewed as two-dimensional images: I will discuss this problem in the last subsection of this chapter.)

But before moving on to digital work, I now want to discuss the concept of temporality in my painting, in terms of my efforts to present the world as flux and becoming; after which I will revisit another kind of doubling, as in the experiential intertwining or interlacing of subject/object, interior/exterior, self and world.

Temporalizing the world as flux and flow, as becoming

By the mid-80s, another concern was emerging in my work: that of presenting the world in its temporal dimension, as transformational flux. (My interest in doing so was informed by reading about the "new physics" as it was called then, in Prigogine and Stengers' *Order Out Of Chaos* and Fritjof Capra's *The Turning Point*: As such, their ideas directly influenced the already discussed painting *Blue World-Space*.) My previous attempts to describe space as luminously full rather than empty, as three-dimensionally voluminous rather than flat, and as subject-enveloping instead of isotropic, were now expanded to include nature's temporality and its emergent life-force or becoming. Thus, in paintings such as *Blue World-Space* and *Fish*, the previously-described "floating strokes" were also intended to suggest transformation, as they later do most obviously in the dynamic environments of *Osmose* and *Ephémère*.

My much earlier practice, not mentioned until now, of painting landscapes in situ (in *plein air*), significantly contributed to my desire to convey temporal transformation. For example, while engaged in such painting, one is the perceiving subject-pivot-still point within an encompassing and expansive horizon (and a solitary human among a myriad of other, nonhuman, beings, most keeping concealed of-their-own-accord, and all of whom are their own perceiving centres, their own subjects-of-a-life¹⁰⁶): One is also retinally, aurally, bodily immersed in an enveloping flux of light and shadow, sounds, scents and temperature, as well as shifting winds, weather and seasons. (In such a situation, the trembling landscape is perceived not only through the eyes and ears, but also through the skin...) Another major influence in my desire to represent the temporality of experience, was my previous practice, described earlier, of painting still-lives in natural sunlight. Even though this may seem paradoxical, when focusing one's attention wholly on a still object for

¹⁰⁶ Tom Reagan, *The Case for Animal Rights*.

long durations (i.e., for five or six hours straight) one becomes attuned to the ebbing and flowing of light upon its surface, and therefore resensitized to the passage of time – and also, accordingly, to one's own bodily position and geographical location on the earth itself, as morning light warms into afternoon and then withdraws...

Beginning in the early 80's (in the midst of the forest/logging film), I had already begun investigating ways of extending the static limitations of painting into a temporal dimension. My first attempt consisted of painting an extremely close-up depiction of my own eye gazing, blinking, and gazing, in a mirror, while filming – one frame at a time – hundreds upon hundreds of strokes on a single piece of glass under a 35mm animation camera to produce a 60 second film, *The Eye* (1981). Another attempt involved painting successive layers of strokes on sheets of transparent plastic which I laid over small landscape paintings: the sheets could be lifted to reveal a landscape transforming in appearance as one might perceive it in the field so to speak, e.g., as late afternoon light ebbs into dusk. I also planned (but did not produce) a series of landscapes to be painted under an animation camera, whereby the painting's composition would remain the same while the strokes upon its surface would change over time, in order to suggest diurnal/nocturnal cycles of light and darkness as well as seasonal transformation. (Such diurnal/nocturnal cycles became an aspect of both *Osmose* and *Ephémère*; and seasonal transformation a key characteristic of *Ephémère*.) At the time, I did not consider these to be animated films but rather “animated paintings” which I planned to exhibit rear-projected on translucent screens. This research, from 1981 to 1985, embodied my earliest attempts to extend the stillness of painting into time.

The following images, small mixed media studies made in 1986, served as another means of exploring these ideas, and as such, illustrate my concerns and the techniques I was developing to articulate them.



Marsh & Bull-rushes (Swamp) 1986, mixed media on paper



Winter Clearing (Swamp) 1986, mixed media on paper

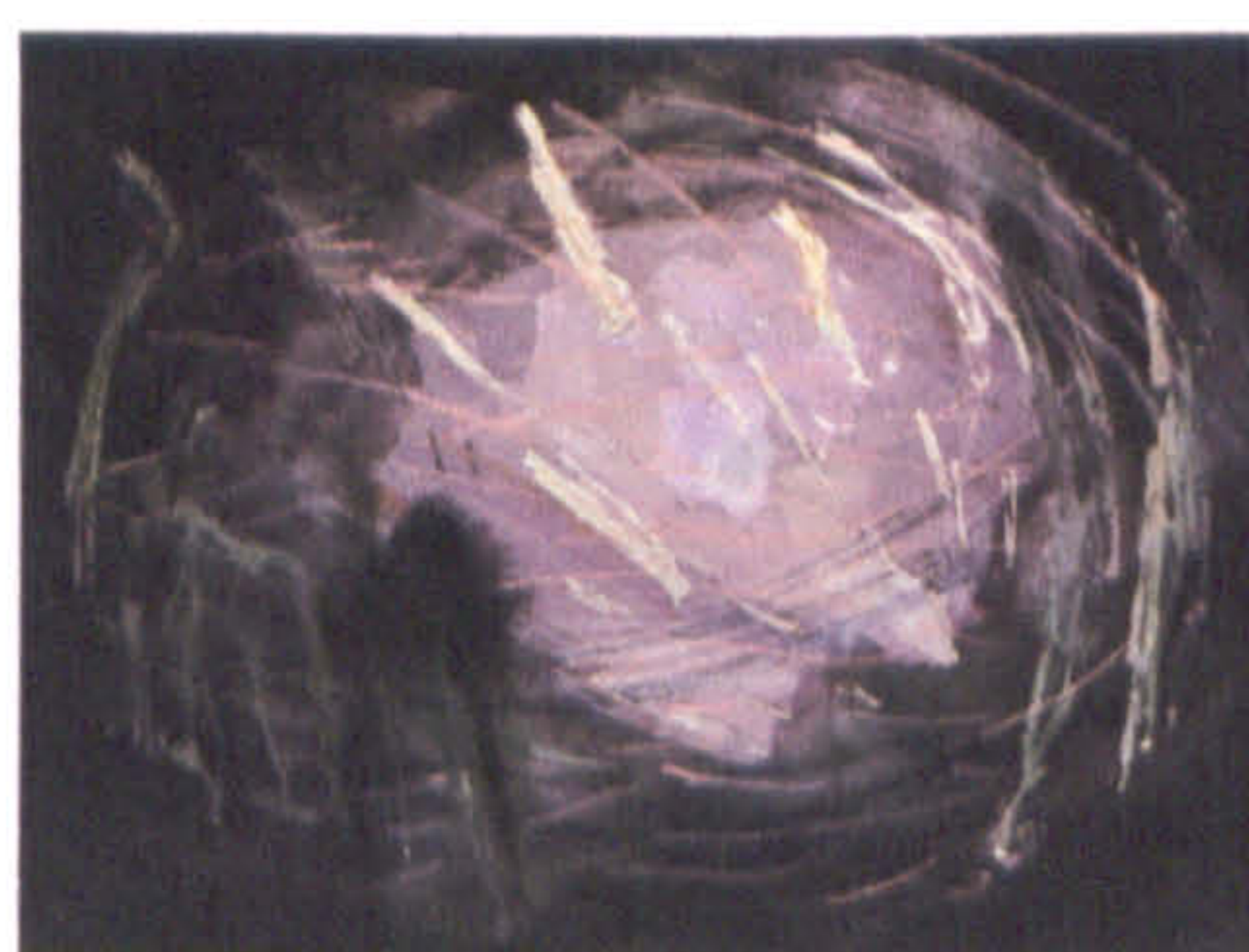
The first image, *Marsh & Bull-rushes (Swamp)*, is more representational than the 1985 painting *Blue World-Space*, yet it structures space in a similar way: for example, again there is a transparent ovoid-sphere within which the various elements are situated. Such elements include not only dark vertical slashes intended to suggest bull-rushes, but also, nearly horizontal strokes in pale gray or white which were intended to seemingly “float”, amplifying their structural function in describing a three-dimensional space which revolves around a central pivot. The floating strokes are also meant to animate the space, and, in conjunction with the ovoid-spherical composition, to refer to the retinas of the observer engaged in looking upon the scene. Thus, as in the *Blue World-Space*, there is a doubled point-of-view: from within, as subject-centre inhabiting the implied three-

dimensional space; and from without, as the so-called objective viewer gazing through the two-dimensional pictorial composition.

The second image *Winter Clearing (Swamp)*, also contains the ovoid-spherical spatial composition and the floating strokes (in this instance, their whiteness created by the removal of pigment) which were intended to seemingly rise through the space toward the viewer, simultaneously animating the space within and referring to the embodied act of vision. Here too are dark vertical slashes meant to suggest bare tree trunks (a motif which recurs a decade later in the winter swamp and forests of *Ephémère*). This painting also contains the slanted and curved horizon, previously discussed, as a means of suggesting the subjectively-lived experience (within an instable, mobile body) of being enveloped in landscape. The scene itself, of a winter clearing, is a recurring theme in my work, first appearing with the 1973 watercolour *Winter Swamp* illustrated at the beginning of this chapter, and culminating two decades later, not only the *Osmose* clearing, but in the winter swamp of *Ephémère*.



Lake 1986, mixed media on paper

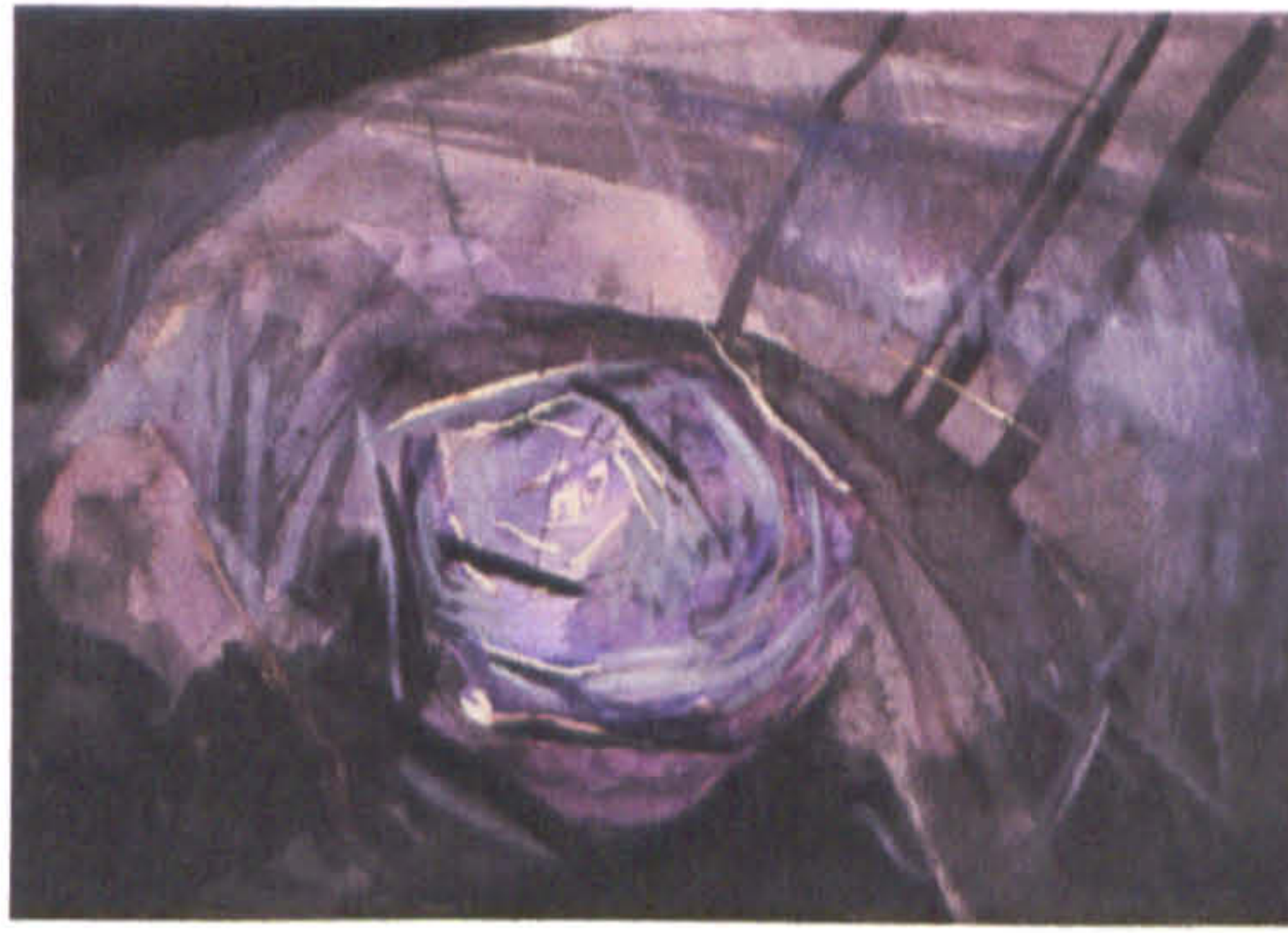


Landscape with Sky 1986, mixed media on paper

The third image, *Lake*, contains most of the compositional elements already discussed: an ovoid-spherical composition; a curving and slanted horizon; dark vertical elongated strokes to suggest trees; and other strokes, some white, some grey, which were intended to seemingly float towards (and by implication, *through*) the frontal plane. As with the other paintings in this series, this image was an attempt to destabilize, dematerialize and animate the landscape, merging it with the viewer's motile body engaged in the very act of seeing. Similarly, the fourth image, *Landscape with Sky*, also contains most of the compositional elements described above: here however, the enveloping horizon curves the other way, situating the viewer low within the scene looking skywards. This image was yet another effort to articulate the experience of being *within* a landscape engaged in temporal flux.

Another of these mixed media studies sought to represent not only the flow of time, but to allude to something else altogether: the life-force or becoming – or “blooming” as suggested by Heidegger, who writes, as I quoted when discussing nature in Chapter II, “In truth, *physis* means, outside of all specific connotations of mountains, sea or animals, the pure blooming in the power of which all that appears and thus ‘is’.”¹⁰⁷ (I was unaware of Heidegger's phrase, or the term *physis*, when I made this image.)

¹⁰⁷ Heidegger, in Michael Haar, *The Song of the Earth: Heidegger and the Grounds of the History of Being*, 8.



Blooming 1986, mixed media on paper

The image *Blooming* contains many of the elements described previously, e.g., the ovoid-spherical composition; floating strokes which appear to emanate from the image centre, spinning upwards as if through the frontal plane toward an outside observer; dark vertical strokes in the background representing skeletal trees; and a dramatically curved horizon with a bright arc of light suggesting the path of the sun. All of these compositional elements revolve around a central form, blue violet in colour, intended to represent a flower in the process of blooming. But most importantly, almost a revelation to me then, was the blue space *within* the bloom, which, to my eyes, seemed infinitely deep, and opening, as if inviting me into another spatial realm.

While I was making this work, according to notes kept at the time, I was reading Bachelard on Rilke's poem "Interior of the Rose" (mentioned earlier in this section in the context of ambiguity) which reads, "*They can barely stand by themselves;/ many, swollen to the point of bursting,/ overflow with inner space/ into days which enclose/ an ever vaster fullness,/ until the entire summer becomes a chamber,/ a chamber within a dream*".¹⁰⁸ According to Bachelard, Rilke is evoking the "interiority" of an external being, suggesting the summer is contained within a flower, and that the rose *overflows* with inner space. This theme recurs often in Rilke's work, as in this phrase from his *Duino Elegies*, that, "*We never have/ even for one single day/ that pure space before us/ that flowers can open/ endlessly into....*"¹⁰⁹

This concept of spatial interiority as an opening from hidden depths, as an unfolding, overflowing, expanding, emerging (and thus, suggestive of the future) – as *becoming* – along with the notion of entering into such voluminous spatiality – became a recurring theme in my subsequent work. Accordingly, it can be found in several of the 3-D digital images reproduced in the next section, such as *Vessel (Blooming)* and *Seed*. Variations can also be found in *Osmose's* "Life-world"; and in *Ephémère's* responsive boulders, whereupon entering inside them initiates other landscapes (recalling the "internal landscape" referred to by Izutsu in Chapter II). This theme is most obviously present in *Ephémère's* watchful seeds, whereby initiation of their potentiality (their germination or "blooming") is dependent on the immersant's physical proximity and attentive gaze: when blooming has begun, the immersant can enter then that interior space to be enveloped by luminous transformation.

¹⁰⁸ Bachelard, "In the Chamber of a Dream", (from *La Terre et reveries du repos*) in Colette Gaudin, *On Poetic Imagination and Reverie*, 92.

¹⁰⁹ Rilke, *The Duino Elegies*, 72.

Interlacing space: the "Intertwining" of subject/object, interior/exterior, self and world

By 1986, my concerns with dissolving duality and collapsing boundaries between subject and object had evolved to include the *interlacing* of the so-called "interiority" of perceiving subject and "exteriority" of the world. In this context, I am not referring to what I have earlier called the "doubled point-of-view" and its dilemma of visually representing/viewing subjective experience – or even to Merleau-Ponty's chiasmatic concept of the body as perceiver/perceived, simultaneously seeing and being seen – but rather the subjective experience of an intermingling of spatialities of interior and exterior, within and without. This notion of intermingling, if considered in Merleau-Ponty's terms, resonates with his concept (as described by Leder and quoted earlier in Chapter II) of "sensuous reality, the 'Flesh', as an intertwined, and actively intertwining, lattice of mutually dependent phenomena, both sensory and sentient, of which our own sensing bodies are a part".¹¹⁰

My desire to affirm this interlacing, intermingling or "intertwining" was hugely influenced by my experiences as a landscape painter, already mentioned, whereby I would work in solitude for hours on end (often in isolated places), totally attentive to my environment while transcribing my perceptions, encircled by horizon amid ever-changing light and seasonal transformation. In this situation, the painter no longer feels separate, but wholly present and connected conceptually *and* sensually with the surrounding world. Such experience, no doubt, gives rise to observations such as, "The landscape thinks itself in me, and I am its consciousness", and, "Nature is on the inside," attributed by Merleau-Ponty to Cézanne.¹¹¹

Accordingly, Merleau-Ponty writes, "The painter, whatever he is, *while he is painting*, practices a magical theory of vision", one in which "He is obliged to admit that objects before him pass into him or else that ... the mind goes out through the eyes to wander among all objects...."¹¹² In this event – as I have already quoted Merleau-Ponty explaining at greater length – the painter has no choice but to affirm that "the same thing is both out there in the world and here in the heart of vision..."¹¹³ It is inevitable, he suggests, that the roles between the painter and the visible are reversed, an experience which many painters have described as one in which "things look at them"; whereby, as André Marchand says after Paul Klee, "In a forest, I have felt many times over that it was not I who looked at the forest... some days I felt that the trees were looking at me, were speaking to me. ... I was there, listening. ... I think that the painter must be penetrated by the universe and not want to penetrate it...."¹¹⁴ This notion can be found in my virtual environments, whereby the Immersant can pass through things and equally, experience them passing into and through her own self.

On a deeper level, my emerging preoccupation with conveying such painterly "reversal" was no doubt rooted in my epiphanic experience in the field – already discussed in Chapter II in context of "spontaneous mystic experience", "Zen *satori*", and "forming one body with the world" – whose relevance is such that I will repeat it briefly here: I was alone, in a field, in darkness (and drug-free) when my mind-body-self expanded until I merged with the surrounding landscape, so

¹¹⁰ Leder, 85.

¹¹¹ Cézanne's comments are quoted by Merleau-Ponty respectively in "Cézanne's Doubt", *Sense and Nonsense*, 17; and in "Eye & Mind", 164.

¹¹² Merleau-Ponty, "Eye & Mind", 166.

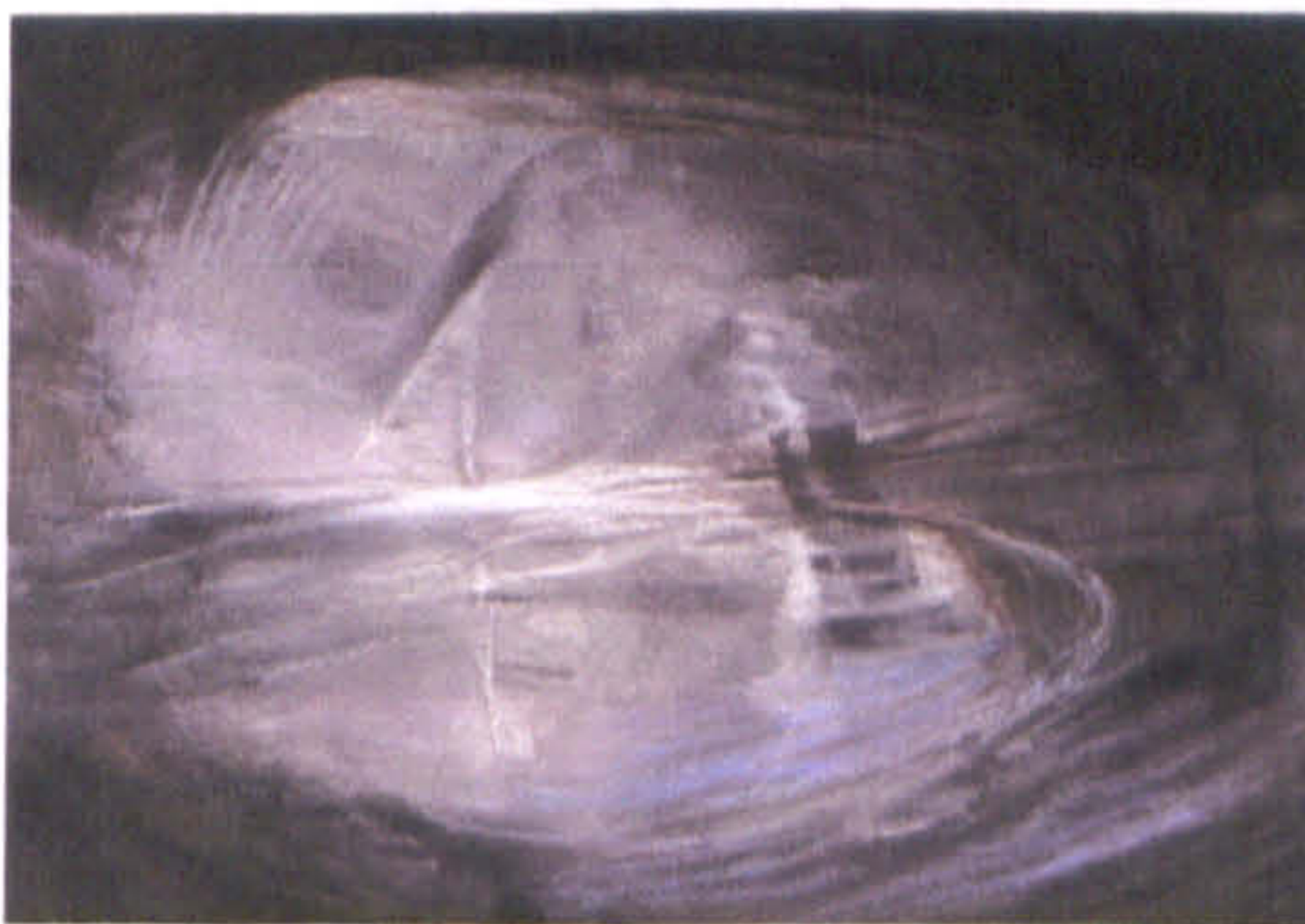
¹¹³ *Ibid.*

¹¹⁴ *Ibid.*, 167. Merleau-Ponty quotes André Marchand from G. Charbonnier, *Le monologue du peintre*, Paris, 1959, 172.

that there was no distinction between "in here" and "out there". Most significantly, it was as if – no, it was not "as if", this *actually* happened, and here I ask the reader to note my deliberate choice of words – the *circumference* of my interior centre expanded *concentrically* until it fused not only with the *encircling* horizon but with the entire *spherically* encompassing world. Again, Merleau-Ponty's words are resonant, for he suggests (as I have cited near the end of Chapter II) that the seen world is not "in" the body, nor the body "in" the visible world, but rather both are engaged in a "reciprocal insertion and intertwining" as if "*there are two circles ... or two spheres, concentric when I live naively, and as soon as I question myself, the one slightly decentered...*"¹¹⁵ And, as expressed in the working notes accompanying his final unfinished work: "My body *in* the visible ... does not simply mean ... there is the visible and here is my body [but rather] between them there is a relation that is one of *embrace...*"¹¹⁶

Considered in this context, it should not be surprising if ultimately I began to seek to articulate my experience of landscape – not as viewed by a disembodied and distant subject looking on from afar, and represented as a two-dimensional surface within a rectangular frame – but rather as a bodily-enveloping, horizontally-encircling, all-encompassing *sphere*, within which there is an interpenetrating of *spatialities* of interior and exterior, self and world. Imagined in this way, indeed, the mind-body does become Zen's "all-embracing mirror" in which nature is reflected, and nature, in turn, contains the mind; whereby ultimately, as Izutsu writes, there is no interior or exterior", only "all-transparent" being.¹¹⁷

In the following pages, I will discuss several other paintings and accompanying studies, all of them made in the months leading up to that exhibition and part of the same body of work. I include such images because they provide further evidence of my exploration of these concerns, and my accompanying development of methods and techniques. These images also contain a newly emerging allusion to what I thought of then as a metaphorical "co-equivalency" or "correspondence" between the subjectively-lived human mind-body and the realm of nature: this metaphor is one which reappears in much of my subsequent work, including many of the 3-D digital still images which will be discussed in the next section, as well as in *Osmose* and *Ephémère*.



Lake/Lung I 1986, mixed media on paper



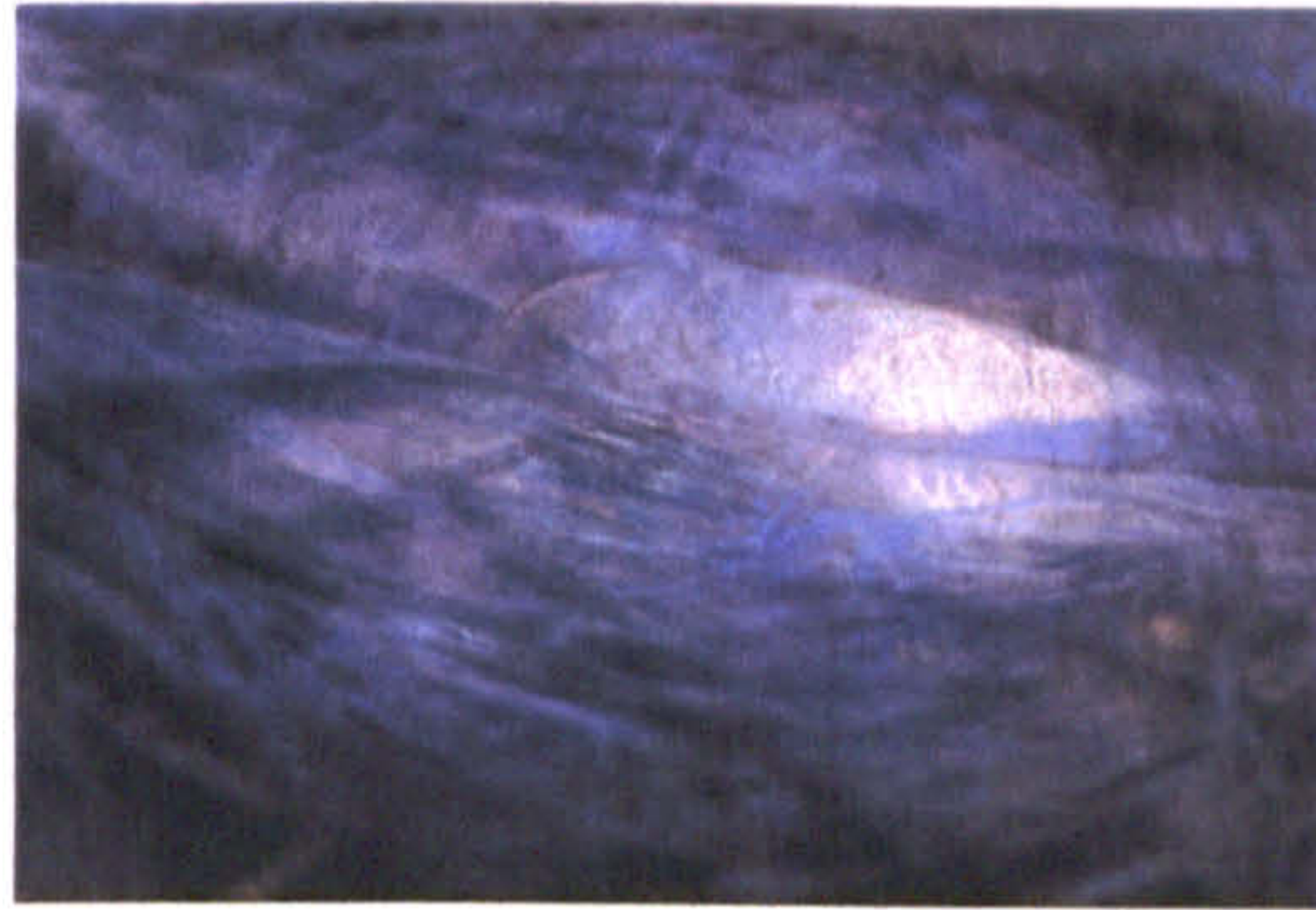
Lake/Lung II 1986, mixed media on paper

¹¹⁵ Merleau-Ponty, *The Visible and the Invisible*, 138. Emphasis mine.

¹¹⁶ Merleau-Ponty, *VI*, 271.

¹¹⁷ Izutsu, 36.

These two images above, like most that preceded them, have an ovoid-spherical composition with an implied *convex* frontal plane. More specifically, within each one is the suggestion of an oval shaped pond or lake with a foreground shore, distant horizon and sky: Not only is the horizon slanted and curved, it is also *doubled*, like two halves of a clamshell, intended in this case to simultaneously suggest the interior lobes of human lungs, hence the metaphorical titling of the works, *Lake/Lung I and II*. The second of these images also contains dark vertical strokes intended to suggest trees (similar to those in *Ephémère* a decade later), and seemingly random strokes intended to seemingly float upward through the frontal plane into the viewer's eyes. As in all the images I was making at the time, there is extensive use of semi-transparency to create spatial ambiguity, and, as I will explain below, a kind of spatial *simultaneity*.



Lake 1987, oil on canvas

The painting, *Lake*, is yet another example of my attempt to represent the merging of self and world. Closely echoing the composition of the *Lake/Lung* studies made the year before, this painting contains in its left off-centre the suggestion of a leaping fish, intended to function as the perceiving subject-centre or pivot around which the spatial environment of sky, air, and lake surface/depth revolves. Here, I was using semi-transparency in an attempt to represent both the lake's exterior surface and interior depths, and to suggest the landscape's merging with the flesh of a human viewer. In doing so I was seeking to suggest a spatial simultaneity in terms of suggesting two or more spaces, in this instance, of interior and exterior, above and below, *occupying the same place at the same time*. As I have explained earlier, the use of semi-transparency to suggest such spatial interlacing – appearing in its earliest form in *Blind Self*, 1978; *Cookhouse Floor*, 1981; and *Glass Jars on Mirror*, 1985, and culminating in the following images I will describe – became a defining characteristic of all my later work, including not only the 3-D digital still images, but *Osmose* and *Ephémère*.

My attempt to represent such fusion, such co-equivalency, between mind, body and landscape is very evident in the mixed-media study *World/Mind/Body*, reproduced below. In this painting however, the familiar ovoid-spherical composition was intended to not only suggest an enveloping spatiality but also the visual field as seen subjectively through the opening of an eye socket, and as well, the shape of a lobed brain seen from without (in yet another example of the doubled point-of-view).



World/Mind/Body 1987, mixed media on paper

There are many aspects of this little 1987 painting which anticipate *Osmose* and *Ephémère*. For example, in the centre of its image space is a dark rectangular shape intended to imply a window or doorway: this "opening", a recurring element or motif in my work since 1973, reappears in *Osmose* as a tiny bright window which follows the immersant, and in *Ephémère* as a flickering flame in its germinating seeds. In this particular image however, the dark window/doorway appears hinged on a bright pivot-point around which the spatiality of entwined mind-body and landscape revolve. Within the upper section of the ovoid-sphere is a loose, abstracted and semi-transparent rendition of a winter swamp (as in *Ephémère*) again with a curving horizon: below the swamp's horizontal surface (which divides the composition into an above and below) are vague shapes suggesting subterranean rocks and boulders as well as body organs.

As such, this image points forward to the "landscape above" + "earth below" spatial structure of *Osmose*, and further, to the "landscape above" + "earth=body below" structure of *Ephémère*. In addition, its ovoid-spherical composition, here suggesting a brain, or more accurately, a human mind with a landscape *within*, recalls my experience in the field and the Zen concept of 'internal' landscape inside the mind (as a simultaneous internalization of the exterior and exteriorization of the interior¹¹⁸): It also seems to be strangely prescient of the internalization of space that goes on in the minds of immersants when they are engaged in remembering their immersive experiences in *Osmose* or *Ephémère*.¹¹⁹ (I want to emphasize, however, that even while I am using hindsight to point out the recurrence of certain elements in my work, particularly elements which are manifested later in *Osmose* and *Ephémère*, such recurrence has occurred entirely from intuitive necessity, rather than deliberate calculation.)

The final image in this series, *World Space: Beyond the Cave*, was my last attempt to use painting as a means of representing the interfusion of the interior mind-body and exterior space of the world. (When these paintings were exhibited, I named this body of work *Espaces Entrelacés*, as in "interlaced space".¹²⁰)

¹¹⁸ Ibid., 19.

¹¹⁹ For example, I was told by the director of a museum in Mexico where *Osmose* was exhibited that the day after her immersive experience, she felt that the virtual landscape she had previously been "inside" was now inside her own self, almost like a sphere nestled within her mid-body. She spoke of feeling a strange and lingering sadness in that she longed to return there even while knowing she could not.

¹²⁰ I learned recently that Merleau-Ponty used the French "*entrelacs*" to denote "intertwining". The statement I wrote for this exhibition reads as follows: "These paintings have emerged from inquiry into the nature of reality and consciousness. They attempt to describe the relation between the outer shell of reality and the underlying processes which give it structure. This entails exploring entanglements of matter, energy and



World Space: Beyond the Cave 1987, oil on canvas

Like many of its predecessors, this painting also contains the suggestion of an all-encompassing ovoid-sphere, as well as a slanted and curved horizon with a blazing pathway of light as had first appeared in the mixed-media study *Blooming* (and revisited with *Ephémère's* constantly rising sun). There is also a faint suggestion of a large pale sienna doorway in the image centre, before which floats a small planet-like sphere, the centre around which the ovoid-spherical space is intended to revolve. In addition, in the very lower right area of the painting there is a somewhat abstract recalling of a dark feminine pubic mound (recalling the one depicted *In the Bath*, 1985). Not obvious at first glance, this painting also contains, embedded within the female body, a perspectival view of a tiny computer monitor and mouse.

Such reference pointed forward to my future involvement with digital technology, for this was the last painting I ever made. As soon as this painting and the others were placed on the gallery walls for the exhibition *Espaces Entrelacés* in October 1987, I closed my studio and moved down the street to become involved in building a 3-D computer software company. In doing so, I deliberately abandoned the traditional medium with which I had worked for nearly 15 years.

Explained most simply, the reason I abandoned painting was because by the mid '80s, the two-dimensionality of the painterly picture plane, not to mention its static finite quality and its rectangular frame, had begun to feel increasingly inadequate for exploring and conveying my concerns. (This recalls Singer's statement, quoted at the beginning of this section, that when the artist's stylistic approach "works he lives it as an existential 'I can'", but when it doesn't work, the artist becomes aware of it as a *limitation*.¹²¹) While I had attempted to overcome such limitations by exploring alternatives, including at the end, even painting on the transparent convex surfaces of plastic half-spheres, differently sized so that they might fit one inside the other, as a way of creating images which might be semi-transparent, multi-layered, three-dimensional and spherical – all of these efforts proved ineffective. Increasingly, I longed to go beyond the two-dimensional picture plane altogether, and create within what I imagined to be a three-dimensional working space *on the other side*. As I will explain in the next section, the medium that seemed most

mind. These images hover between representation and abstraction, constructed with layered transparent strokes. I want to suggest a multi-dimensional reality in which the "world" as perceived by human eyes coexists with an elemental order of flowing energy, where observer and observed are merged in a spatial sea. This search for unity is a response to the alienating effects of our culture's fragmentary worldview and the urbanization, industrialization, which increasingly separates us from Nature. I want to express the idea that we are intrinsically connected to the life-support processes and ecosystems of the planet, its destiny ours."

¹²¹ Singer, 238.

promising for accomplishing this was the emerging technology of 3D digital software with its associated "virtual" space.

In ending my discussion of painting here, I want to return briefly to the 1985 painting *Blue World-Space*: During the act of creating this image, I came close to destroying it out of frustration, and did in fact destroy an accompanying painting I was working on at the same time. My overwhelming frustration was due to the fact that I was attempting to communicate a perceptual sensibility, a subjective experience, for which I did not yet have a formal language or adequate medium. Even though I could not articulate this at the time, the experience I was ultimately attempting to represent, or rather present, to others, was none other than that of being sensuously immersed in the life-world, bodily-enveloped in luminosity, flux and flow, within an encircling yet ever-expanding horizon, spherically all-encompassed. My true subject-matter, of course, was not the particular "things" in the world, but rather the very experience of *being-in-the-world* itself, whereby subject and object, inside and outside, above and below, human and nature, perceiver and perceived, were intertwined, *interfused*, in an enveloping, ephemeral, embrace.

Only in hindsight did I realize how prescient this painting *Blue World-Space* was: within it were all my mute attempts to articulate such experience on an inadequately two-dimensional, static and contained painterly surface. It could also be suggested that I was anticipating – without yet knowing – the very sensation of being immersed in the fluxing and all-encompassing spatio-temporality of one of my future virtual environments, predating my work in that medium by nearly a decade. Accordingly, when *Osmose* premiered at the Montréal musée d'art contemporain in 1995, the painting *Blue World-Space* was exhibited alongside.¹²²

¹²² There are only a few painters who have attained what I scarcely hoped to achieve through painting: the first of whom is Turner (in his very late works such as *Snow Storm – Steam Boat off a Harbour's Mouth*, 1842; *Shade and Darkness – The Evening of the Deluge*, 1843; and *Light and Colour (Goethe's Theory) – The Morning After the Deluge*, 1843). I would also add classical Chinese landscape painting, referred to in Chapter II (Edward Casey's insights on landscape) and Chapter VI (Norman Bryson's footnoted discussion of Ch'an painting). And most contemporarily, Anselm Kiefer's landscape paintings, made with pigment, mud and straw.

In this context, I want to mention the very late work of Monet, such as the 1920 *Nymphs* or *Waterlily*, as well as his earlier serial studies of haystacks, Rouen Cathedral and so on. As suggested by Karin Sagner-Duchting (in "Monet's Late Work from the Vantage Point of Modernism" introducing the 2001 exhibition catalogue, *Monet and Modernism*) Monet's late work is arguably a precedent to much modernist abstract painting. She writes, "In Monet's late work, the point of departure is no longer the motif or nature alone, but essentially the sensations felt by the artist in the face of the motif. ... From the 1920s to the present day, Monet's position has been basically understood as lying somewhere between naturalism and abstraction. This apparent contradiction made the late work seem paradoxical (in the negative sense) ... Monet's concern with subjective sensations, his recurrence to nature and his dispensing with solid pictorial structure were viewed as an irrelevant retreat into some private earthly paradise. Although the dissolution of static form in the late works found a positive echo among the futurists, including Boccioni and Soffici, the Cubists largely rejected these works.* This judgment was reached especially by comparison to Paul Cézanne, to whose works the avant-gardes of the period oriented themselves ... The Cubists, with their conceptual approach to subject matter and attempt to objectify the painting process, therefore declared Monet's work to represent a decorative use of painting in space (the Orangerie) and to lack composition and 'wholeness'.* Yet apart from these widespread criticisms, a few young avant-garde artists of the period did recognize the significance of the late works for Modernism quite early on ... including Kandinsky and Malevich..." 21.

Sagner-Duchting continues: "Key aspects of the serial imagery introduced by Monet and central to Modernism found a wide echo in 20th-century art. Still, Monet's modernity does not rest solely on the pioneering achievement of his logical, serial development of a motif. It is based, in a more complex way, on the radically altered perception and translation of nature that was announced in the series from 1890 onwards, but that culminated in the series of paintings of his garden at

3. Transitional Work: Beyond the Picture Plane Into 3D Virtual Space

In the following section, I will describe my introduction to 3-D computer-generated imaging and my subsequent involvement with the computer software industry beginning in 1987. I will then discuss the series of 3-D digital still images I made between 1990 and 1993, known as the *Interior Body* series. These images are relevant to the discussion at hand because they embody the continuing evolution of the concerns, strategies and style that I had previously developed through painting: As such, they can be considered transitional works, forming a bridge between painting and my later work with immersive virtual environments.

Seeking Access to 3D Digital Technology

My very first exposure to 3-D digital imaging was in late 1982 or 1983. While working on various film projects (which I was in doing in parallel with painting) at the National Film Board at its headquarters in Montreal, I attended a screening of a short 3D computer-animated film called *Vol de Réve*. This early 3-D animation, of a cross-legged human throwing what looked like ping-pong balls into a pool, was made with simple 3D vector graphics consisting of phosphorescent green lines in black space. While watching this little film, I intuitively sensed the potential of 3D digital technology for communicating my own ideas about being enveloped in light and space and time. Accordingly, I began considering whether such technology might be an effective way to represent animated strokes of light-in-flux, and whether the three-dimensionality of this new medium might effectively enable me to go beyond the painterly two-dimensional picture plane into a virtual three-dimensional working space.

Subsequently, I began investigating ways to gain access to 3-D computer technology. Between 1985 and 1986, I submitted several proposals to various funding bodies with the intent of

Giverny. ... In this series, which was conceived as a permanently installed architectural decoration ... the external world was projected into an interior space and functioned as a similar to nature as opposed to a technological environment. The decorative wall painting or mural was conceived as liberating the conventional easel painting from its frame,* and opening new dimensions for painting, both literally and figuratively." 26-27. "Interestingly, Monet's original plan for the installation of his Waterlily decoration was closely linked with the idea of the panorama which enjoyed great popularity in the 19th century.* In an artful way, Monet's decoration, originally planned for a rotunda, was similarly meant to convey the illusion of actually being out of doors, in a real garden ... This illusion of a continuous, open space in which the garden space both figuratively and literally became an interior space, could be created only by exploding the conventional picture format, or in other words, by completely dispensing with rigid, one-point perspective. Thanks to this lack of perspective as a space-defining device, the viewer no longer has any precisely defined vantage point. The space expands in his mind, things apparently near grow distant, and the traditional viewer-to-picture distance is undermined.* The concomitant ambivalence, multivalent meaning and opening of space were already key aspects of the serial method, and yet these can also be immediately seen in the artist's pictorial translation of landscape space, pointing to Monet's radically altered perception of nature*." 27

She continues: "Monet repeatedly spoke of his effort to merge with nature, and, in a unity of sensation and memory, to achieve a holistic conception and translation of reality into art.* ... Monet understood reality as being caught up in continuous change, and saw the artist's task as visualizing and pictorially translating this dynamic, pantheistic unity of all things. This philosophy intrinsically implied a rejection of any static, rationally inexplicable worldview, and hence of mimetic representation. ... In order to truly see nature anew and not merely register it, habitual perception must be made more difficult, by means, say, of creating analogies to visible phenomena, merely suggesting rather than sharply delineating objects, emphasizing ambiguity and openness, employing serial methods, and including the viewer in art." 29. *I have removed her references for the sake of brevity.

exploring the possibilities of 3-D computer animation. The first proposal was submitted to the National Film Board, but was turned down. The second proposal, submitted to the Canada Council, was for a project to be made on Alias software with cheap midnight access offered by Alias Research headquarters in Toronto: this proposal was also rejected by the arts Council, with its jury advising that I work with a 2D system instead, since these were readily available in university design courses. (Such a suggestion missed the point of what I hoped to accomplish.) In 1986, I made a third proposal, applying to the Canada Council for yet another 3-D computer-based project, to be made on what was then known as the Tarna system at the University of Montreal: it was also turned down. Interestingly enough, the conceptual origins of *Osmose* and *Ephémère*, in terms of both content and technique, can be found in these early proposals. Even the titles of these projects were prescient: *Biosphere*; *Ecosphere* (3D cg); *Strands of Light* (3D cg); *Beyond the Picture Plane* (3D cg); and lastly, *Threshold/Between Self & World*.

Even though my earliest attempts to gain access to such technology were unsuccessful, another opportunity soon emerged. A few years earlier, I had been approached to make a short film for a music video on acid rain, by painting on glass under a 35mm animation camera (as I had previously done in my short film *The Eye*). In 1986, I was commissioned to make a hundred drawings for the purposes of obtaining funding for this film, and in the process became involved as its co-writer and art director. By then, this project, an impressionistic history of the Western worldview of nature (entitled *Ciel de Metal* or *West of Eden*), had evolved into a 3-D computer animated film.¹²³ However, even while the funding was raised, the necessary software tools had to be developed: In late 1986, my partner (who I had earlier introduced to the project), started a 3-D animation software company. Together we named the company Softimage, and I became a founding director and its first vice-president.

Building the Tools: Softimage

Softimage was founded on the premise of developing user-friendly high-end 3D software tools for artists and designers who did not have programming experience. The already existing software market at that time (around 1987-1988) consisted of software packages such as Alias, Wavefront, TDI, etc., which were so technical that an engineering background was required to use them, meaning that designers and animators were unable to work directly with the tools and had to work via an engineer or learn how to program themselves. At that time, it was largely agreed that this

¹²³ This text does not include discussion of this film because it was a collaborative project and I was only its art director, not its director. Nevertheless, there were numerous correlations between this project and my own work, such as scenes of an interior flesh body and a subterranean cave. Another scene consisted of descending through semi-transparent layers of ambiguous landscapes, for which I digitally scanned satellite photographs of the earth's surface. I also worked almost single-handedly on a three-dimensional scene of a sand beach, whereby I textured hundreds of pebbles and rocks individually. While most of the film had a photorealistic and illustrational aesthetic, several scenes expressed my own sensibility of transparency and ambiguity.



Sand, 3D digital frame from West of Eden

limitation created a bottleneck so to speak, hugely reducing creativity in the field. Softimage's tools, on the other hand, were deliberately designed from the start to emulate the intuitive creative process so that designers and animators could work with them directly, hands-on.

Softimage's user-friendly approach (akin to Apple's philosophy for the Mac) was overwhelmingly welcomed by non-technical users, as evidenced by public response to the first showing of the software during Siggraph 1988.¹²⁴ In providing such solutions, Softimage arguably changed the priorities of software development in the industry, and in the process became the world's leading developer of 3D computer-animation software. After its two public offerings on NASDAQ in 1992, Softimage was acquired by Microsoft in 1994 and resold in 1998. During the 10 years I was with the company (1987-1997), it also arguably revolutionized the process of creating special effects for film, with its 3D animation software contributing greatly to the mimetic realism of Hollywood blockbuster films such as *Jurassic Park* and *The Matrix*.

I necessarily put aside my own artistic research in the company's early years to take on wide-ranging management responsibilities. As head of Visual Research I also directed a small creative team with the mandate of writing the user manuals and working with the fledgling software to provide feedback to the programmers, with the goal of increasing its capacity as an intuitive and expressive instrument. During this time, as the software tools were being developed, we worked intermittently on the aforementioned 3D cg film project. It was then that I first began working with a traditional film animator, Georges Mauro, who later worked with me on *Osmose* and *Ephémère*. During these early years, Georges became familiar with my visual sensibility, an essential initiation for when we worked together later.

While becoming involved with building the company Softimage ultimately enabled me to achieve my original goal, which was access to 3D imaging technology for my own artistic research, my involvement as an insider in the software industry ultimately had another effect: I became deeply aware of the cultural biases inherent in the technology, particularly in terms of the quest for photo-realism which continues even today. This relentless striving for illusionist or mimetic representation is – as I have already discussed in context of the technology's other biases and prejudices in Chapter I – not only a reflection but a reinforcement of the traditional Western dualistic and technologizing worldview. Given the many years I had already spent as a painter attempting to go beyond such dualism and objectification, as explained in great detail in the previous chapter, it should not be surprising that I would become increasingly interested in how digital technology could be used *alternatively*.

The transitional images: creating images on the other side of the picture plane

By 1989, I had begun intermittently investigating the Softimage 3-D imaging software for my own purposes. These earliest efforts resulted in several still images consisting of ambiguous compositions of semi-transparent, organic-looking, three-dimensional forms. Unfortunately these early images no longer exist: at that time the software was in such an early stage of development that it was not yet possible to render and save an image to disc. All that remains of this work are

¹²⁴ Strangely enough however, the reverse was true in the emerging field of digital art: at that time, artists with engineering backgrounds and programming skills – who were usually male – were more respected than those without such skills: Whether the same bias holds true today lies beyond the scope of this narrative.

my notes written at the time, which describe my astonishment at this first experience of creating my own images as virtual, three-dimensional "scenes", on the other side of the picture plane.

Journal Entry, Oct. 19, 1989. An ecstatic rush of sensation upon creating an image that expresses open, endless, layered meaning – an image that is ethereal and sensuous at the same time, of spirit, of body...

Five cardinal splines joined by a skin of patches, with an ambient material colour of maroon, and a diffuse colour of pale pink, given 50% transparency; lit by 2 point lights, one pale blue with 50% shadowing and 50% focus, one pale green with 50% shadow, set behind and in front of the object so their light shines into and through... The effect is of some ghostly warm *body organ*, luminous and undefinable. The nuances are infinite as I turn the object one way or another in relation to the camera.

With this discovery, I realize the expressive potential of this technology, as the instinct that has encouraged me finally merges into result... So I begin to learn this new language, and the recurrent imagery flows. I now know that the emotional depth I want to express is possible, and that by using transparency, an ambiguity and open association of meaning can be communicated.

In some ways, I thought of this new creative process like constructing a miniature theatrical stage set, in that I was creating three-dimensional "scenes" composed of various three-dimensional models in relation to carefully placed lights of varying colour, intensity, and aura and so on. The difference, of course, was that the lights and the models to which I had applied variable material properties such as colour, texture, and varying amounts of transparency and translucency, were immaterial, existing only *virtually* on the other side of the computer screen. As an artist who had already developed a very particular stylistic approach, I instinctively and immediately bypassed the conventional 3D cg techniques to create the qualities that I had come to value as a painter. Accordingly, I was not interested in constructing hard-edged polygonal "objects" and situating them in an "empty" xyz-coordinate space: instead, I sought an alternative approach, based on my own painterly background.¹²⁵

¹²⁵ For example, rather than building complex three-dimensional models, I constructed the most simple forms possible, usually by modeling a single geometric sphere, which I pushed/pulled into a less geometric shape, and then inverted (turned it inside out) so that its polygonal "surface normals" were pointing the wrong way. The result was that, after I had illuminated this model by placing virtual lights all around it, its exterior surface would register light as if upon its interior surface, creating intriguingly ambiguous lighting effects. In this way, I deliberately subverted the photo-realism to which most users of such 3-D software tools aspired.

Additionally, in the software's early days, there were various pockets of irrationality (or rather, "bugs") in the rendering algorithms that had not yet been corrected: for example, there was a period of time when it was possible to do illogical things such as increase the intensity of a particular light past 100% to 1000% or even higher. I worked extensively with these features because of the non-realist, non-objectifying, spatially ambiguous effects that could be created.

When the software tools developed to the stage of offering "shadow-casting" through transparent texture maps, I immediately directed my efforts to casting light and shadow through the many semi-transparent surfaces in a scene, in order to suggest complexity of detail even when there was none, and thereby create further spatial ambiguity.

The reader should note that when I say "surface", I am not referring to 2D compositing techniques which are now commonplace, but rather the depth effect created by the "inter-placement" of multiple semi-transparent, three-dimensional forms, whereby it is possible to see through all their surfaces simultaneously, i.e., through a form's anterior and posterior surfaces as well as the surfaces of all forms in front and behind. Given that I am speaking of virtuality however, the very notion of surface is quixotic. My particular approach, of course, had its origins in my painting, of using semi-transparency as a means of presenting multiple forms occupying the same

During the entire process of constructing a scene/image, I was constantly looking through the virtual camera's field-of-view, while moving the camera *within* the scene, exploring all possible locations and angles, and altering the optical properties of its lens – as if searching for the best still photograph through the viewfinder of a real camera in an actual scene that I could bodily enter and explore: At the same time, I would continue experimenting with rearranging the contents of the scene, including adjusting the models, changing their material properties, altering the lighting and so on, all in response and relation to the rectangularly-framed view as seen through the virtual camera.

The energetic tension¹²⁶ created by this reciprocal relation – i.e., between a three-dimensional place or scene, experienced as if from *within*, translated into a two-dimensional representation, as picture or image, viewed from *without* – became an essential aspect of my creative process. (I have referred to this paradox earlier in the context of painting as the "doubled point-of-view", and will return to it at the end of this section.)

Meanwhile, over a long and delicate process involving equal parts of trial and error, serendipity and control, the scene/image would evolve over much iteration. When an optimum composition was achieved in terms conveying my intended meaning or perhaps another meaning newly found, I would do a final rendering of the scene at high resolution, outputting the resulting image to film as a large-scale transparency to be mounted in a light-box for exhibition.¹²⁷

During these few years (1990-1993), I worked on numerous scenes/images, but abandoned most of them when they did not adequately communicate the meanings I wanted to convey. I do remember experimenting with automating the process, by creating a camera path through a scene so the camera could roam during the night, taking hundreds of images on its own: however, never did this automated approach produce a final meaningful result. The reason for this is that I was not interested in making images which were arbitrary and abstract, nor was I interested in realist representation. I was seeking something which to my eyes was far more elusive: *ambiguous evocation*. This involved negotiating a fine line between recognizable figuration and abstraction, in order to *suggest* my intended meaning rather than illustrate. I have written about this previously as

space at the same time – with the intention of collapsing not only distinctions between figure/ground, near/far, but also "solid" form and "empty" space.

¹²⁶ Casey, in *Representing Place: Landscape Painting and Maps*, refers to the tension associated with the "frame" in the context of painting as follows: "This frame is not merely a negation that cuts off a complete view ... by its very action of exclusion, it encloses a *field of force* that a painting needs for the dynamics of representation. ... The external frame, by its bivalent action of excluding and enclosing, helps to generate a field of remarkable forces within the delimitation of what is technically termed the "picture plane".... Were there no such enclosure, the pictographic energy would be so diffuse as to ultimately dissipate". 125-126. I have already quoted Casey at greater length on this subject in Chapter II, footnote #152.

¹²⁷ Each image took over a month to produce: this usually involved at least a week to create the three-dimensional scene, and then another two to three weeks making rendering tests while dealing with minor adjustments and bugs. At the time (in the early '90s), rendering one of these images as a single frame took up to 40 hours on a high-powered Silicon Graphics computer. This was not because of the modelling which was minimal, but rather because of the complexity of casting light and shadow through many semi-transparent layers. (I deliberately did not use ray-tracing because of its obvious photorealistic effect.) To put this in context, when constructing immersive virtual environments, frames must be rendered in 1/30 of a second or less to be convincing as "real time". But now of course, a decade later, all of this can easily be done with a PC, as the recent re-engineering of *Osmose* and *Ephémère* from a Silicon Graphics Onyx to a humble PC attests.

one of my greatest challenges while painting, and will return to it again in relation to my virtual environments in Chapter VI.

Indeed, on a conceptual level, the process of creating these digital images was very similar to the creative act of painting, in which one lays a stroke, responds to the result, backtracks, then tries a different tact, and so on, with the process following unexpected trajectories, sometimes leading nowhere, sometimes sparking cognitive leaps. This may well be what Merleau-Ponty is referring to when he writes that "Expression is like a step taken in the fog – no one can say where, if anywhere, it will lead".¹²⁸ This *is* my way of working, my creative process, regardless of medium or technology: By this I mean that I do not work from a predetermined design, whether I am making a painting or digital image, a virtual environment or even an actual environment in terms of shaping real landscape: rather, I create in response, in dialogue, to the unfolding work itself.

As I wrote in November 1989, "I only have a *sense*, and an emotion to be expressed; the vision clarifies only through the search, only when that resonance is attained; and the *search* – the slow dim clearing of the intuition – *this* is the joy and the frustration always – the *becoming*."

The Interior Bodies Series

The resulting 3-D digital images, produced between 1990 and 1993, were collectively titled the *Interior Bodies* series. In these works, I continued to explore the themes pursued in the previous paintings, including the symbolic correspondence between elements of nature and the subjective flesh body, mostly as organic phenomena imagined from the *inside*. Such elements included, as I wrote at the time, "stones as seeds; rivers as veins; under-earth as womb; leaves as flesh; the world as body; the interior body; enveloping horizon; and doorways of light". Like the paintings before them, the *Interior Bodies* images anticipate the thematic content of both *Osmose* and *Ephémère*.

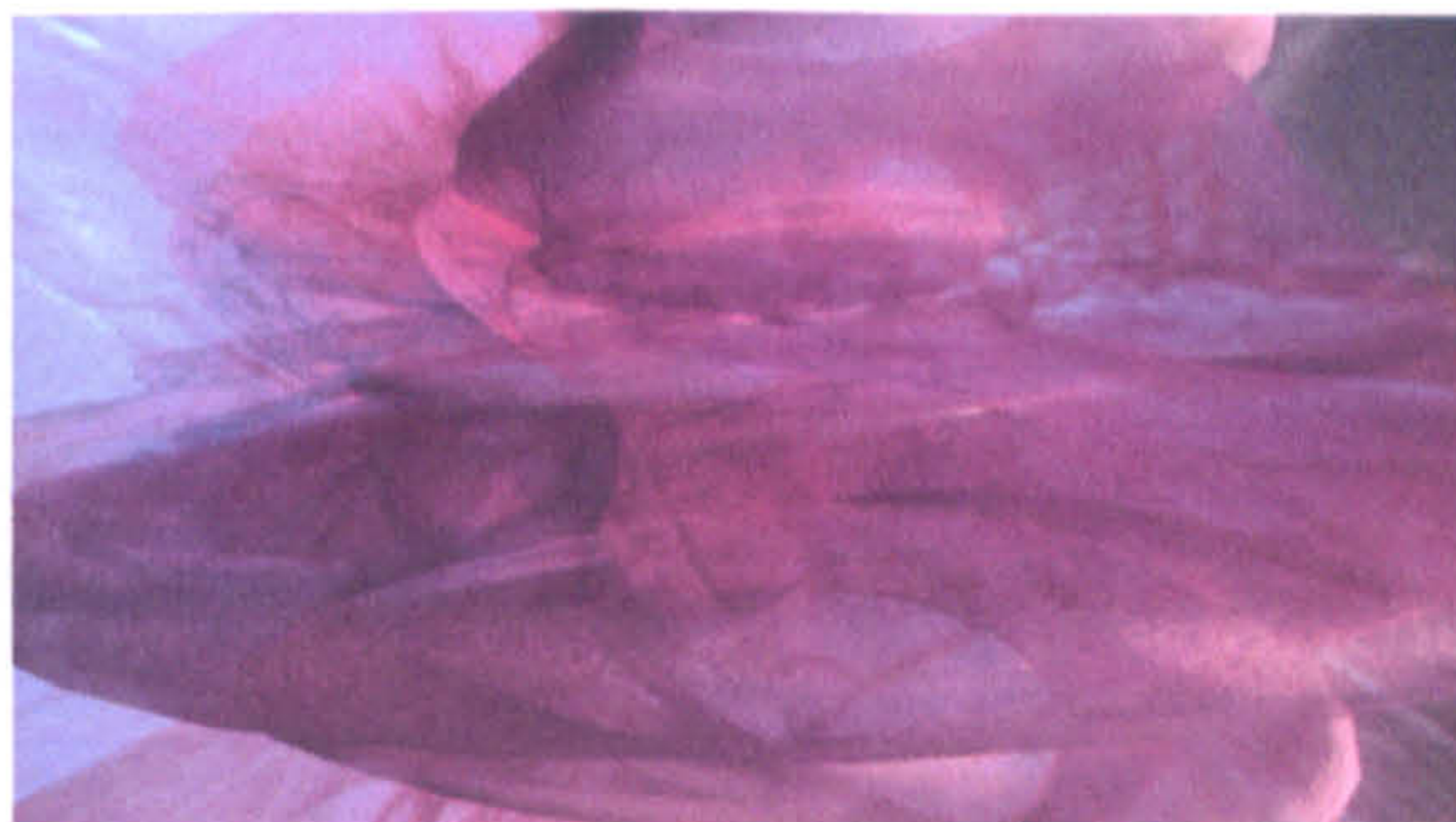
In the pages that follow, I will include excerpts from journal notes written in the immediacy of creation, usually composed while waiting for an image to render, appearing scan-line by scan-line (which in those days happened very slowly, sometimes taking over 40 hours for a single image). As such, these notes refer to the process of intuitively developing the content, and in this sense reflect my *first* agenda (described on page 1 of Chapter I) – in terms of my quest to explore my own understanding of being embodied in the world, and developing an effective visual language for doing so. I also began writing formal technical statements to accompany the images to various exhibitions and conferences. These statements are the earliest published references to my techniques and theoretical concerns, including my increasing wariness of computer technology: As such, they reflect the *second* agenda in my work (as described on page 1, Chapter I) – of *subverting* the conventions and biases in the tools in order to express alternative sensibilities and values.

These two interwoven agendas are the driving force behind the *Interior Bodies* images: I have therefore deemed it appropriate to include excerpts from both the journal notes and the published statements, alternating between these two voices – one intimate and poetic, composed in the immediacy of creation; and the other more technical, written after the fact – when describing

¹²⁸ Merleau-Ponty, *Sense and Non-sense*, 3.

the images below. However, in order to keep this thesis to a more reasonable length, I have included the technical statements as footnotes, below the main text.

The first image, *Vessel (Blooming)*, created in 1990, most obviously refers back to the small mixed-media painting *Blooming* of 1986. As such, it was intended to suggest the interior of an orchid in the process of blooming, and, at the same time, interior body flesh. As its title implies, this image was intended to suggest that in blooming, a flower becomes a "vessel" for the continual flow of life. This motif also reappears in *Ephémère* as the germinating seed.



Vessel (Blooming) 1990, 3D digital still image

Journal Entry, Mar. 6, 1990. I feel a deep need to explore, to give form to images about life, the myriad of forms that it takes – not the forms themselves, not their "profiles" or external surfaces – but the *process* of life flowing through, creating form, blooming and withering, pulsing from dust to dust. To go deeper into Being as it is expressed through the processes of terrestrial life.



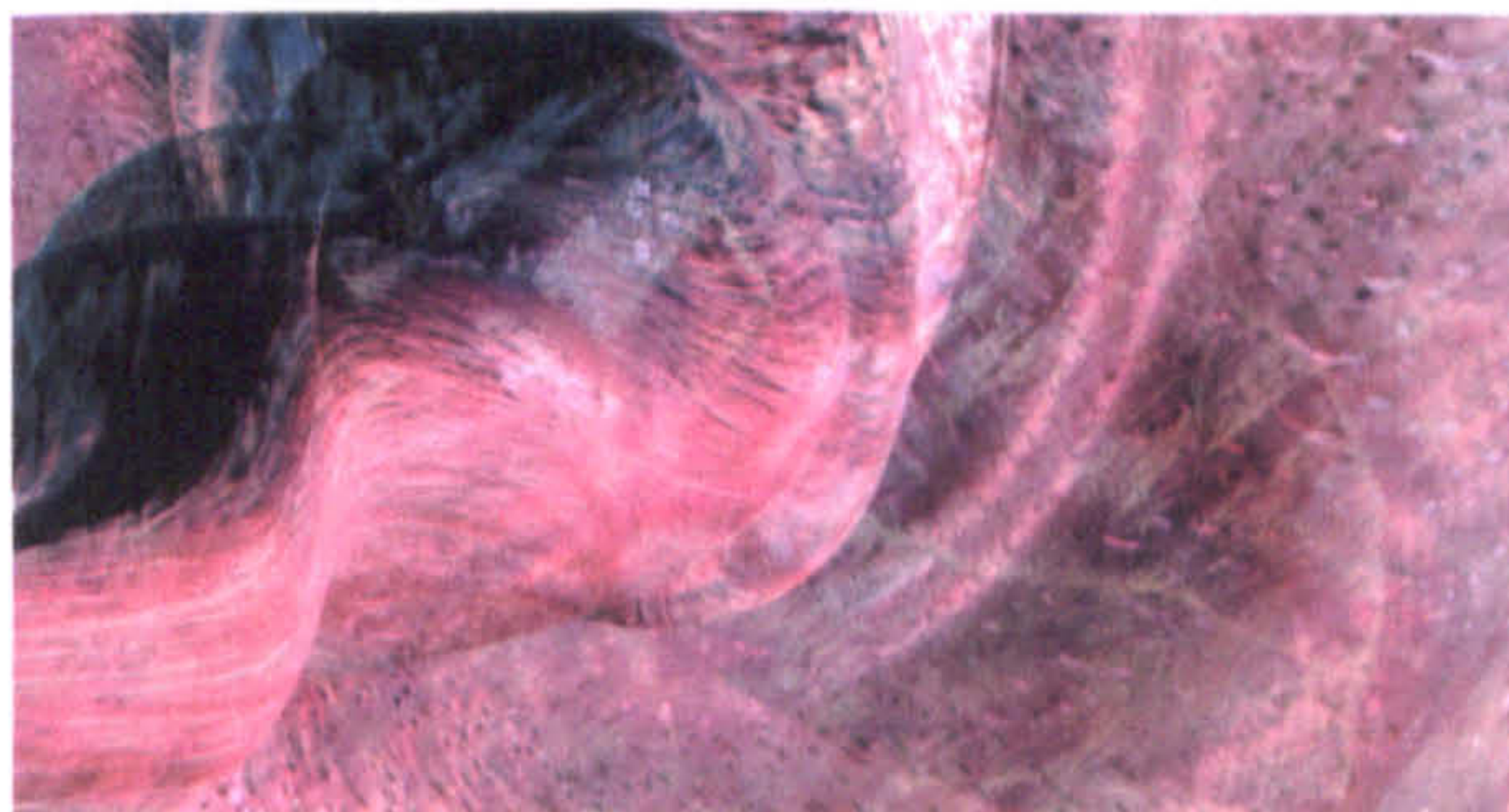
Leaf (Light) 1990, 3D digital still image

The next image, *Leaf (Light)* was intended to evoke a sense of the interior of a leaf during the luminous process of photosynthesis. This theme also reappears in *Osmose*, as the Leaf-world. Both *Vessel (Blooming)* and *Leaf (Light)* contain a digitally-scanned photographic detail of CAT-scanned arteries of a human brain. The subliminal reference to human flesh was intended to affirm a metaphoric co-equivalence between body and earth. Note that my intent¹²⁹ here was to represent

¹²⁹ In 1990, I wrote more formally of the technology involved in making *Vessel (Blooming)* and *Leaf (Light)* in an artist statement published in the 1990 *Der Prix Ars Electronica International Compendium of the Computer Arts*, Linz Austria. (A similar version of this text was also published in the proceedings of the *Second International Symposium on Electronic Art*, 1990): These images were created with 3D animation software, the *Softimage Creative Environment*. The technique involved modelling 3D forms by extruding patches along splines; defining material qualities such as shading, colour and transparency; applying texture for surface pattern and roughness; lighting the models with coloured, shadow-casting lights; and positioning the virtual camera inside the scene, defining angles of view, depth of field and so on. Each image is a

not only exterior but also interior spatialities, simultaneously viewing a leaf or bloom from without and within: Hence the title of the series, *Interior Bodies*, which recalls the phrase *Espaces Interlacés (Interlaced Spaces)* related to the previous paintings.

The next image in the *Interior Bodies* series was completed in early 1991. In its final form, *Root* was intended to allude to a root in subterranean soil, and eventually, more subliminally, to an umbilical cord in the womb. The subterranean reference in this image originates in very early paintings from the mid '70s; it also points forward to the under-earth realms in *Osmose* and *Ephémère*.



Root 1991, 3D digital still image

Journal Entry, Feb 1991: In this image, there is a root, simultaneously solid and transparent, still and moving. It is both enveloped by, and superimposed upon, its own surroundings. There is simultaneously deep earth below where the root is seeking nutrients, and the forest above, of light and foliage and trees and stars. All of this in layers and layers. [...]

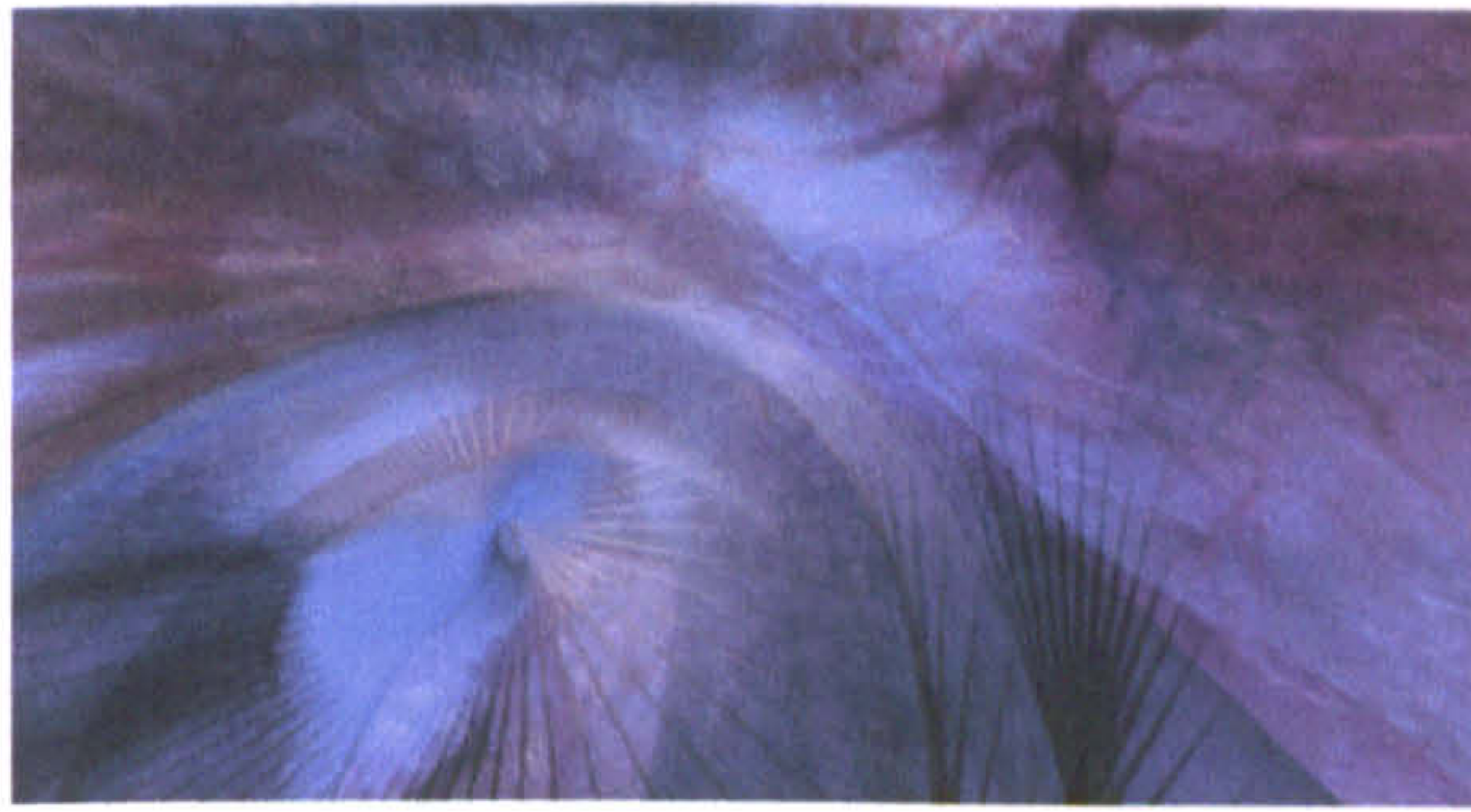
This image merges interior, exterior, subjective, objective, in a figure/ground gestalt. Part of the intrigue is that the image contains, wrapped around and transparently cast upon its forms, other images that were either painted by me, or more significantly, scanned in: there include scanned images of a forest (take off- handedly from a calendar photo); an image of blood vessels in a human brain (from a medical CAT scan); and high aerial landscape photos of the desert and the arctic (photographed by astronauts). None of these are identifiable, yet somehow, they bring a presence, an ineffable presence... This is *beyond* painting...

The following image, *Seed*, contains the same digitally scanned brain arteries used previously, but this time intended to suggest plant tendrils and roots.¹³⁰ This image, like the others,

single "frame" of a three-dimensional world and was rendered at a resolution of 2048 lines, without anti-aliasing filters so as to leave a technological residue. The computer is a seductive tool, in this instance encompassing aspects of painting, sculpture, photography, film and theatrical set design, with entirely new syntactic elements. Besides the present technical limitations concerning output/reproduction methods, the only creative satisfaction I find lacking is that of tactility: this is a tool of and for the mind. I am also aware there are certain value-laden conventions such as Cartesian space, linear perspective, and "objective" realism which are probably intrinsic to the computer as a product of western scientific tradition. For me personally, the challenge is to go beyond these conventions, using the technology to create subjective visions, layered and ambiguous. In its ability to simulate, the computer may be distancing us from direct physical experience of the natural world: in compensation, these images "Vessel" and "Leaf" express a yearning for organic, flowing matter; internal realities of blossom, flesh, blood, chlorophyll, as vessels of life.

¹³⁰ In 1991, I wrote more formally about these two images in the following artist statement, for ISEA: Third International Symposium on Electronic Arts, 1991: My interest as a painter in computer graphics was initially based on the desire to pass beyond the picture plane and create in three-dimensional space.

was not meant to be an objective representation, or be realistic in any way: rather I was seeking to suggest an imagined interior process, of a seed germinating, a recurring theme in my work with its most recent manifestation in the seeds of *Ephémère*.



Seed 1991, 3D digital still image

While making this image, I wrote that I imagined the seed as the germinating centre of fresh life, as Goethe's "inward infinitude".¹³¹ Accordingly I wrote (anticipating what I have written in the previous section about the mixed-media painting titled *Blooming*):

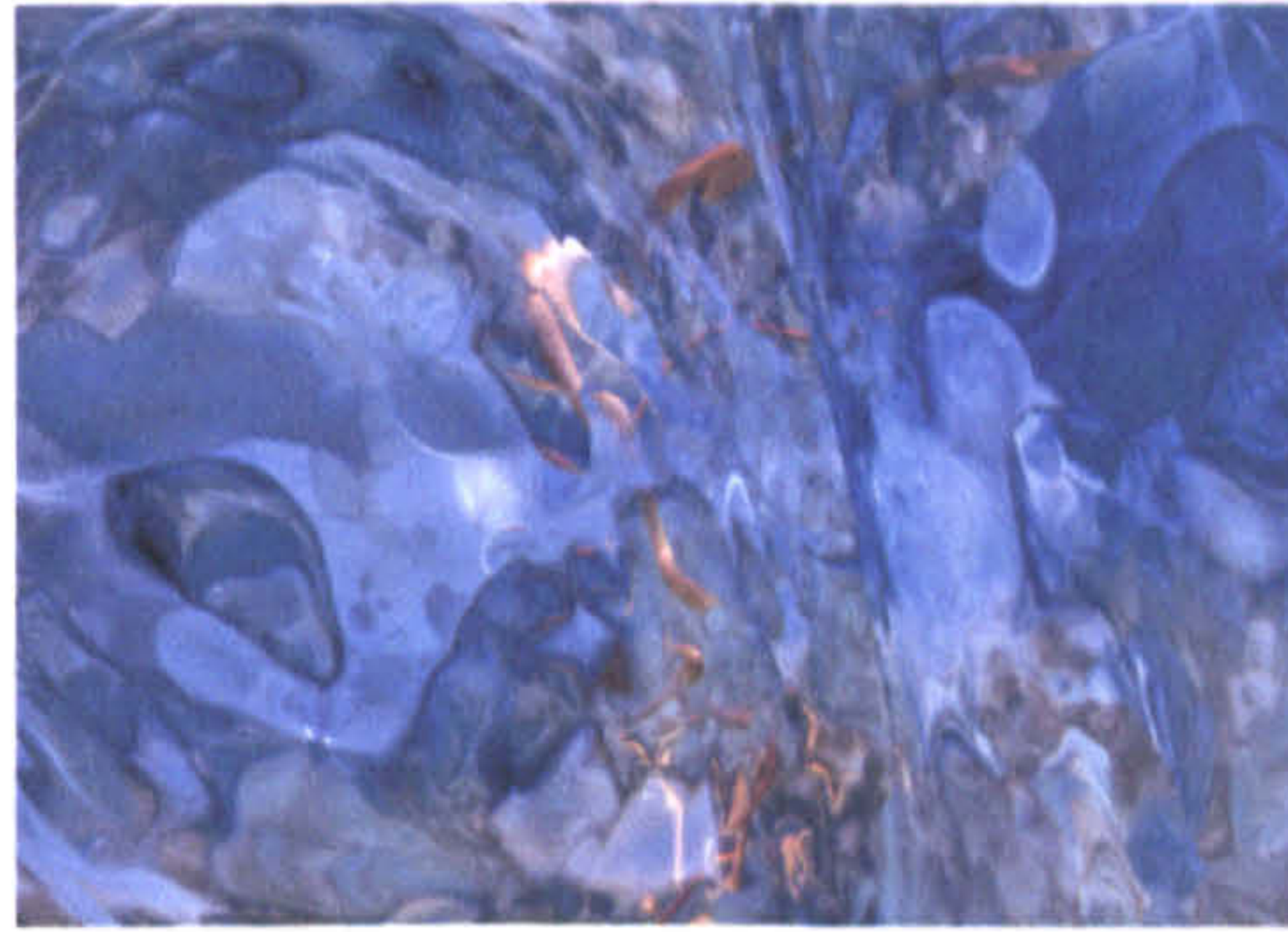
Journal entry, Feb. 1991: There is such *space* in this image – there is a bright blue area that seems to open into an inner expanse of space, which is very different from the external space of veins, roots and branches that surround the round fleshy form containing the blue area.

This is why I thought of this name, of the unifying concept of *seed*. The seed contains the broad expanse of the future, contains the future enfolded within, surrounded by the present of earth, air, water, vein, river, and root. The past breaks down, decomposing, to feed the future. The present unfurls the future. *The future is unborn...*

Unlike traditional 2D media or paint-box software, interactive 3D computer technology enables me to achieve this. The experience of working with virtual three-dimensional space, however, is paradoxical: even as its virtuality denies physicality, its very three-dimensionality "involves" the body, because although I cannot express gesture or touch the forms I have created, I am able seemingly (via the virtual camera) to move around and inside them. The forms created therefore feel "embodied", as if belonging to our world, and I can explore them within enveloping space as if they were "real" – at least far more so than if they were made of strokes of pigment laid across a canvas. Another unique aspect of creating images with this technology consists of simulating the natural behaviour of light as it interacts with various surface materials of virtual three-dimensional form (involving parameters of colour, shadow, refraction, reflection, transparency, texture, atmospheric fog and so on). Using a vast array of algorithmic tools accessible via the software's user interface, I can create visual effects which paradoxically belong to the physical world of solid form: However, most significantly, I can also subvert these effects to cross external boundaries [...] By portraying "inner" and "outer" realities simultaneously, I can interweave mind and body, subject and object, imagined and real. The software's interactivity allows me to work intuitively, concentrating on the emotional and visual content, instead of mathematics and machine – and in this way the technology almost becomes transparent. I say "almost", because there are ironic implications to searching for "post-Cartesian" metaphors of reality with technology which is itself a product of Western science and a dualist, mechanist Cartesian worldview. In many ways, 3D computer graphics is further widening the split between mind and body, leading us away from corporeal experiencing, and I wonder if understandings of nature revealed by scientific visualization will not merely be used for further subjugation and exploitation of the living world. As I have explained above, the actual process of creating images with 3D computer software allows me to visualize in ways I could not achieve with any other medium – however, it is for philosophical reasons that I am particularly challenged as an artist to use this technology.

¹³¹ Actually, Goethe's wording is "infinite within", referring to the ethereal spaces within plant growth. See G. Adams and O. Whicher, *The Plant between Sun and Earth*, 196.

Soon after making *Root and Seed*, I produced a third image in early 1991, entitled *Stream (Wellspring)*.



Stream (Wellspring) 1991, 3D digital still image

I first thought of this image as a river, and wrote of it as follows:

Journal entry, Feb. 1991: The unifying element of all these images is the river of *life*, which flows through, impeded here, flowing easily there. Perhaps this then is the central metaphor: of life flowing through physical channels, arteries and rivers – arteries inside arteries – rivers of water carrying fish, containing rivers of cells. But even this is dualistic, for it implies the life substance can flow only on the inside of the "artery", or "river", and not on the outside. Unless there are multitudes, a myriad of arteries, interlaced, superimposed, so that there is no negative space, no outside: every outside is an inside of something else, and therefore *relative*.

Writing now, and reflecting upon these images from more than a decade safely past, I want to point out that their content, with its focus on internal organic life processes, now seems strangely prescient. Without digressing into detail, it should be said that the continuing series of images I envisioned – all dealing with the primary metaphor of "life-flow" – was abruptly interrupted, only eight weeks later, by the diagnosis in May 1991, within the interior of my own body, of breast cancer. Consequently, what had previously been a conceptual preoccupation with interior spatialities was replaced by that of my own body becoming the site of urgent medical investigations into those very cellular interiors; and accordingly, my conceptual concern with life-flow was eclipsed by a stunned confrontation with my own mortality and desire to live. The "battle" I became engaged in over the rest of the year immediately took precedence over making further images, mostly because I did not want to make images about death.

When I did return to my own research, my goals had sufficiently evolved so that by early 1992 I was writing about my desire to go beyond making single still images: instead I wanted to combine my representations into three-dimensional environments that could exist in spatial relation to one another. Accordingly, I wrote about wanting to create an entire cosmology of "recurring elements", not as isolated images but as a whole *system* – as a symbolic world. (I discuss such elements in greater detail in my commentary in the working notes to *Ephémère*, in Chapter V.)

Furthermore, I wanted to place these elements inside a virtual three-dimensional space, whereby rather than existing as two-dimensional pictorial compositions, they could be extended three-dimensionally and also into time. Most significantly, I believed that if I could accomplish this,

such elements would no longer be viewed as mere images, as representations, but rather *experienced*, as "volumetric entities". Additionally, I wrote about going beyond the unidirectional linearity of animated film sequences: by placing these elements inside a three-dimensional space and enabling the viewer to enter within that space and move *among* them, I imagined that I might be able to surpass both painting and film, and free myself (and my audience) from their respective limitations.

In conceptualizing these elements as volumetric entities, the reader should note that I was not thinking in terms of objects; nor in terms of Plato's ideal forms, of perfect circles or spheres etc.; nor of cubes, spheres and cones as pursued by Cezanne; nor even the various polygonal models one could create with a 3D computer animation software. Rather, such elements or entities were my symbolic vocabulary, consisting of seeds, roots, rocks, stones, streams, bones, veins & arteries, and so on.

I imagined such elements as living, flowing, emotive archetypes (see my further discussion on recurring elements in the commentary in the *Ephémère* working notes, Chapter V), engaged in constant transformation. Here, my goal was to suggest a *dynamic correspondence* between such elements, whereby the under-earth transforms into womb, boulders become pulsing organs, rivers become flowing blood vessels, and so on – suggesting that through such metamorphosis, there is a *metaphorical* co-equivalency between earth/nature and the interior flesh body (and *all* bodies). I also wrote at that time that interaction between such elements and the viewer might include sound, rhythm of breath, blood pressure, and bio-feedback and so on.

Meanwhile, during the following year of 1992, even though I made numerous attempts to construct additional scene/images, all my efforts were unsuccessful: as a result I have no saved images from that time.

However, journal entries describe my ongoing search, expressed in poetic terms. I want to emphasize that much of this writing was done by the light of the computer screen in a dark room while I was engaged in the solitary process of creating images: these words therefore represent a particular state of mind whereby the act of writing itself became an accompanying creative activity, in terms of extending my imagination and exploring poetic associations and metaphor. In this context, such writing tended to induce a state of "reverie" in the sense meant by Bachelard, who wrote of the imaginative process gained through solitary meditation as "that strange reverie which is written and indeed forms itself in the act of writing".¹³² The value of these written notes thus lies in their active role in my creative process not only in terms of verbally exploring and articulating what I was seeking to express, but often leading my visual explorations in certain directions. Most significantly, almost *all* of the themes, motifs and elements described below were manifested later in *Osmose* and *Ephémère*.

Journal entry, Sept 5th, 1992: I try to sort through a *topology*: an embryo-like sack [ovoid-sphere] of sky, of blue sky, nested in dense ground, with stones, synonymous with bones, with sense of being *under, below*.

¹³² Bachelard in Colette Gaudin, *On Poetic Imagination and Reverie*, xxxix.

Journal entry, Sept 8th, 1992. A voice – again speaking the body, origin of our dreaming, interior subjective dimly-sensed rhythms and reality of body, flesh, delicate organs, a myriad of processes, bones, blood – our ultimate reality – merged, enveloped by a blue domed sky, and horizon of pulsing vegetation, earth and stone (and realities of other creatures). Not outer space or virtual reality, but the song, ecstatic song of the Earth-bound, body-bound, of frail fleeting mortality, dust longing for dust. These words are searching for key concepts, letting the mind flow, like a river.

Finding a voice, a clear voice, speaking the body; recalling the body as subjective not object; as self, interior; as poetry not science; of delicately veined tissue and bone, enveloped in a larger wider body of air earth wood stone and other bodies; elemental, archetypal, realities in which we are rooted. A song of this binding, even as others want to sever this bond, to deny the body as origin, to cut our cord to this Earth: Even if that is a future before us, of disembodied minds and genetically controlled life-forms, patented and marketed – then *especially* so, this is a voice to celebrate the dim-witted wisdom, ultimate wisdom, of the body, our body, Earth-body, as home.

Journal entry, Sept 17, 1992. The doorway of light, long prevalent as a recurring archetype in my work, is not only a doorway into life or into death, but of perception, into light, the doorway *cleansed*. And the body itself is upright, tomb-like within its dark secret interior – and therein are the organs and the womb from whence the future. Womb, sparking ovaries, tied to the lunar body as the oceans themselves are tied, as the migrating fields of fish and fowl are tied, as are the wild blossoming fruiting rotting chlorophyll makers.

I am getting closer to the source, a sense of imagery is forming, of bones, not dwarfed by earth, but larger-than-life; and vertical, the verticality of man, of walking through this world as human; and delicate transparent organs. I feel this as light and dark, luminous and shadow, an immense space of breadth and depths. The interior body, profound: How does it all fit inside the sack of skin, lungs liver kidney, filtering, transforming the world into self?

Journal entry, Sept 28, 1992. If one goes "down", "deep", "inside" the self, and "interior" sense of body, one finds in that archetypal "ground" of elemental being, the key, a *merging* with elements of nature. There are stones and rivers and roots and lakes inside us. The very salt and molecules of the ocean are in us – dust to dust, our source and end.

Journal entry, Oct 1st, 1992. I go back into the image, slow, arduous, to the source, to a level of Ground, of resonant meaning – searching. I cannot find the way... Perhaps now, I have found something, a delicate floating organ, globelike, veined, transparent, and luminous. The organs, hang, like globes of fruit, full, mysterious, harboring seeds of life, pearls. Render, wait, render, wait, working from an intuition, working until what exists on the luminous screen equals the numinous idea inside me – until I find a *correspondence*, a *resonance*, of one to the other.

I realize this image I am seeking is not grounded enough, being only luminous organs and bones. I need to add rocks, stones, elements of earth. Only then will it resonate. [...] I begin to realize that this imagery is of the body, of the body as womb, as tomb, recurring elements of stones and doorways of light. Inside the body is the earth, the collective unconscious. The body is our ground, where we dream, we return there to dream, return to the source, the inner rhythms of our body organs which give rise to our myths, to our metaphors; they are rooted there – the substratum...

Journal entry, Dec. 6th, 1992: Blue embryonic [ovoid-sphere]. Bones. Stones. Earth. These symbolic elements return.

(a) The [ovoid-sphere] of sky blue as a lung, life breathing, in-spiring; it is also the dome of sky; the opening into the world from the womb; and that last view of the life-world from the burial tomb. And, in addition to window and doorway and threshold, it is a three-dimensional [ovoid-sphere], as in lung, as an embryo, as a transparent watery microorganism. It is *all* these things. And the challenge is to represent this archetypal entity, not as a graphic or textual symbol, but as a volumetric entity so it can express simultaneously all these meanings. So it transforms...

(b) The vessels that link this element to the enveloping environment, including undulating veins, arteries, and umbilical cord...

(c) The enveloping environment itself, as in the *Root* image; it is womb, it is the earth pressed against the body, it is the body, ground...

(d) Bones... luminous shafts that are structurally formed and solid. They express the skeletal body in death or in its formative development in the womb: luminous because they are life-giving...

(e) Stones... they symbolize seeds, eggs, and the slow presence of stone....

The next images, created in 1993, were influenced by my first experiences of scuba diving in oceanic space. The first, *Drowning* (to which I gave a secondary title, *Rapture: Falling from One into the Other*) recalled my first bodily descent into very deep water (180 feet down, over an abyss that was more than 6,000 ft.). The green in this image is the green of the phosphorescence of phytoplankton blooming at night in the oceans. Its content refers to the overwhelming sensations I felt at being so completely enveloped by pure blue space, sensations of utter rapture and mesmerizing trepidation.



Drowning, 1993, 3D digital still image

Journal entry, Jan. 1993: The temptation to *let go*, to float downwards into the blue depths, into oblivion was very present: One could forget to swim back, and then forget even to breathe, and the journey to oblivion would be swift, as pressure made one sink more and more quickly, and ultimately drown. That oblivion, that blue enveloping: why is it so gentle, so sweet, the urge to give one's self over, to surrender?

Whereas the image *Drowning* sought to describe the experience of descending into the oceanic depths and encountering an hypnotic call for self-extinction (later manifesting in *Osmose* as

the Abyss) – in seeming compensation, the image *Yearning* refers to *ascending* from the depths to light above the ocean's surface. Both images, in effect, refer to subjective experiences of spatial descent and ascent.¹³³ This emphasis on the vertical, in terms of bodily ascending and descending (and using one's breath to do so) became integral to both *Osmose* and *Ephémère*.



Yearning 1993, 3D digital still image

The three-dimensional scene that was ultimately rendered as the image *Yearning* originally suggested, during its process of construction, a metaphorical human *lung*. (This is a motif that had already occurred in my painting, as evidenced by the 1986 mixed media studies entitled *Lake/Lung*) During the long process of working on this scene however, other more ambiguous meanings emerged: Indeed, I often "discovered" a scene/image's primary meaning, along with its final title, through the act of writing as the following journal entry reveals.

Journal entry, Jan. 1993: Here are insights into the image "lung" I have been working on: besides being a lung, a doorway into birth, into death, looking at life from the womb, from a tomb – it is also a view of the upper air world from underwater, from the *depths*, looking up through the water to the dome of blue sky, the airy blue world above. A threshold...

Journal entry, Jan. 6, 1993: This image contains an effect from a texture map derived from a satellite image of the Arctic, not used as a shadow-cast transparency map but as static blur. It creates a layer of evocation that speaks of being *under*, looking upwards towards an *opening*, a *threshold* of light: of being "under" rather than "in". How delicate are these metaphors. *Lung-world*. It is nearly impossible to describe in words what I am seeking. I am "divining" for a substrate of meaning – of visual, emotional metaphors that link self and world, human and wild nature, soul and body – where lung-like shapes of

¹³³ An artist statement written in 1993 (published in *Der Prix Ars Electronica: International Compendium of the Computer Arts*, 1993, 26-29) reads as follows: [...] in my research, I am constantly pushing the software's capacity as an intuitive and emotionally expressive instrument, for it is this capacity that I value most. In terms of content, these images are the fruits of an ongoing quest for an underlying unity of nature and psyche. Fueled by a desire to compensate for living in a world that has become de-sacralized and increasingly bereft of untainted wild places, this work is an attempt to express and reaffirm our spiritual embeddedness in nature. As such, these images are intended to have a hierophantic (i.e. manifestations of the sacred) quality. [...] On another level, my method involves circumventing the conventions of linear perspective, Cartesian space and objective realism (probably inherent to the computer as progeny of Western civilization) in order to collapse a culturally created distance between subject-viewer and world. In this light, my research is philosophical, as it attempts to express a non-dualist worldview which envisions the human self inside the "natural" world, alive and flowing, enveloping like a womb.

delicate filigreed blue are *also* doorways, windows from wombs, tombs, and *also* the sea, all of them the undifferentiated other-world.

I am seeking numinous (*luminous* with spiritual meaning) metaphors that express, explore, reveal, a deeply rooted unity between "us" and all life forms, and entities such as stones and rivers. I am seeking to express the underlying unity of all things. No doubt this quest is fueled by the shifting worldview of our time, where "science" is finding evidence of such unity, of our basic interdependence. [...] I sense that behind the veil of hard-edged surfaces, disparate objects, separations of self and world into reigning ego and Other, of humans set apart, above all forms of life, of culture astride nature – behind this veil, (and behind our frantic maps of global technological communication) there lie our roots, intertwined with roots of all the life forms existing, and these roots flow in one *life-stream*, as woven currents.

The paradox of making 2D Images with 3-D software

Before ending my discussion of these 3-D digital still images here, I want to return to the representational paradox inherent in their making – what I call the "doubled point-of-view".

I first encountered this problem while painting, in terms of attempting to visually describe a three-dimensionally voluminous space as it might be experienced subjectively by someone bodily immersed *inside*, while composing its elements as a two-dimensional rectangularly-framed image from the *outside*. In working with the digital tools offered by the Softimage 3D computer graphics software, this problem, or rather paradox, remained: as such, it forms a link between my earlier paintings and my future research with immersive virtual environments. (In Chapter VI, I will discuss this paradox in relation to my virtual environments as physical installations, whereby the subjective first-hand experience of immersion can be observed by an audience observing from the outside.)

As I have already explained, while creating the *Interior Bodies* images I was, for all intents and purposes, working inside a virtual three-dimensional space on the other side of the picture plane: in doing so, I was constructing scenes with three-dimensional models and lights, viewing them through a virtual camera which could be situated anywhere *within* the scene. Thus, during the act of creation, I was, effectively (virtually) *inside* the scene myself, perceiving it as a subjective-centre around which the space revolved, much like Merleau-Ponty's "zero-point" or the white stroke in the 1985 *Blue World-Space* painting.

And yet – and here is the paradox – throughout this entire process, I was nevertheless, constructing the scene like a painting, giving most consideration to the framing of its contents as viewed from without, as a single, static, yet pictorially-energized composition.¹³⁴ While the tension inherent in this contradiction, between the three-dimensional scene as an architectonic or landscape space and the framed two-dimensional image as energized pictorial space, became an important aspect of constructing such works, eventually it began to feel like an insurmountable limitation.

Accordingly, I began to increasingly regard all of the 3D still images from the *Interior Body* series as having fallen short of my original intentions. Regardless of the fact that they had been conceived as three-dimensional scenes – or rather, as volumetric entities within a three-dimensional spatiality (although distinct differences between form and space were ambiguous

¹³⁴ See footnote regarding Edward Casey's discussion of the pictorial frame as an energizing force, in the section *Landscape, as Virtual Place*, in Chapter II.

through my deliberate use of semi-transparency) – in their final rendition they were, ultimately, no more than two-dimensional images, finite, static and *flat*. The spatial depth I had experienced, the three-dimensionality I had explored, in the process of their making, was nowhere to be found.

The following journal notes, excerpted from the beginning and the end of a thirteen-month period in 1993-1994 (when I was already, in parallel, conceptualizing and writing about *Osmose*) reflect my increasing frustration with the tools I was using:

Journal entry, Jan. 6, 1993: The archetypes I seek, the numinous elements, cannot exist as two-dimensional symbols but as embodied...? I don't have the word! Are not volumetric, three-dimensional forms as "embodiments" of archetypes inherently different and more "accurate" than mere two-dimensional representations of archetypes? Yet with the images as I'm making them, because they are rendered as pixels on the two-dimensional surface of the screen, because they are output as flat photographs, doesn't this defeat my own premise? Perhaps it is only by surpassing this method of display, by going into a temporal immersive display, that I can address this.

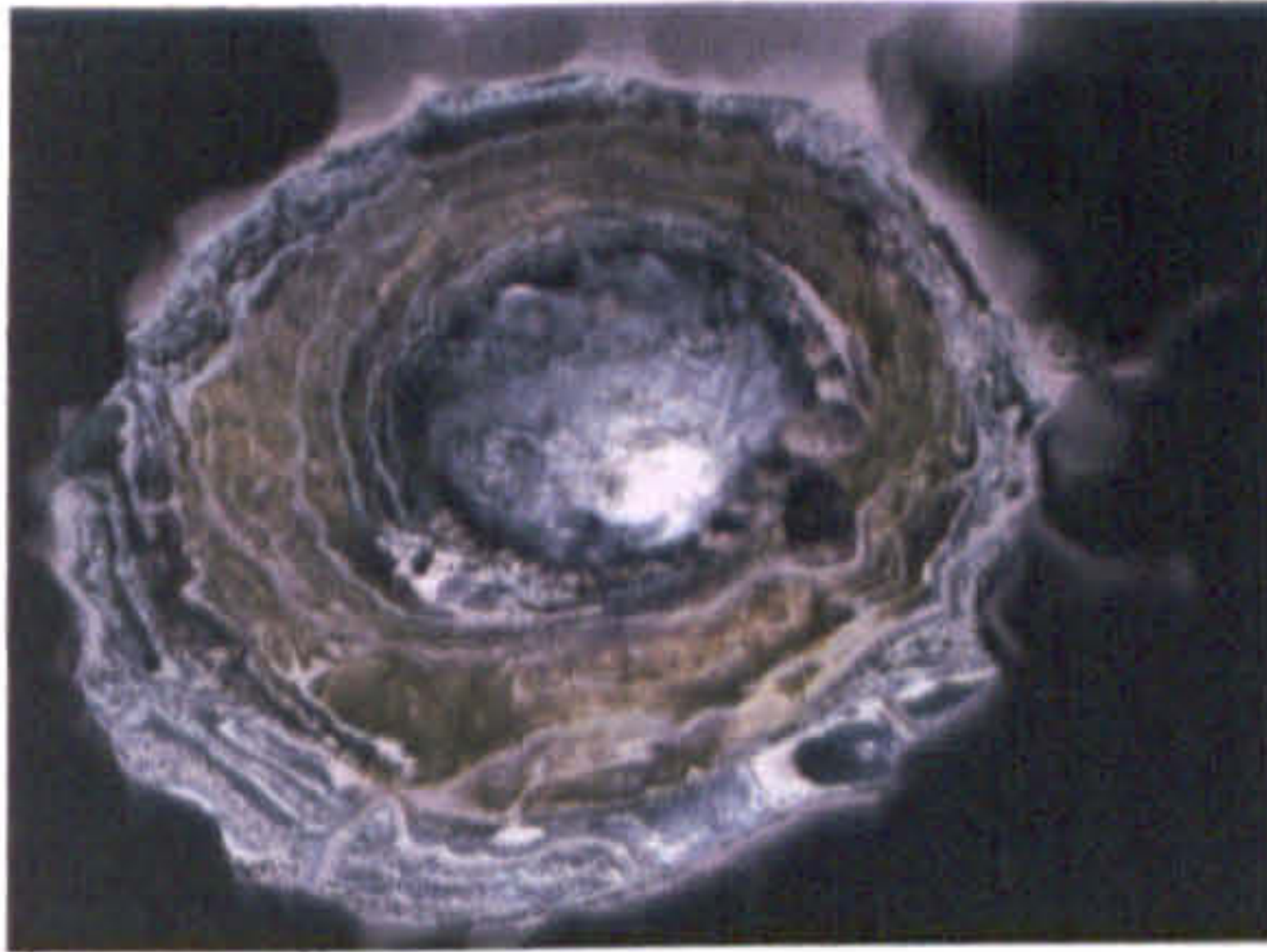
The difficulty here, perhaps the ultimate truth to this work, is that the "meaning" created/evoked seems only to "hold" from one point-of-view, one instant in time and space. If the camera (i.e., the viewer) moves a fraction of distance, or if the elemental forms shift in the slightest degree, or if a light moves, or any other aspect of the composition is altered even minutely, then the compositional "constellation" falls apart, and its meaning becomes chaos. Perhaps this metaphor is most relevant of all: that the "search" for meaning is created; that "meaning" is the search itself; that all meaning is a merely construction of the human mind.

Journal entry, Dec. 8, 1993: I render tiny frames, searching for a plausible entry to the scene for another "Blooming": named, but not created. [...] I want to create a *blooming*, an *opening* up into space. [...] this blooming, this sense of life exploding, surging in slow motion into light, in time, in space, keeps returning...

And yet, rather than create a framed two-dimensional composition, I want to have the self contained in a sphere, and the sphere then swallows it, envelops it, becoming a *Life-world*, an ontological representation of being-in-the-world. I know what I want to say, but it seems unattainable, to represent the un-representable, the sublime, in the truest sense. [...] I want to create a spheroid brain-like shape that is the Life-world: and inside, the branches against the space of the sky, and the roots in the earth. Life-world in *blooming*. Now as I write, a shape takes form, a world, of blue and cloud, an impossible space created by deforming a skin-made shape upon a sphere, an incomprehensible space that still, has a roundness.

I want freedom from the frame – to express that this is *more* than image, that this is the concept of a *space*, a mental space, but that one could bodily travel around in it, enter it.... I want to create not framed images but *worlds*. Not a picture, not a frame, but an experiential spatio-temporal context. An idea for suggesting that each element is itself an encompassing space, and one could enter into it: The format of the frame thus becomes unimportant, it becomes a frame of the universal darkness, and so I am free of the picture plane, and the three-dimensionality of the idea becomes clear, and the challenge then is to create the gestalts of figure/ground, of compositional spatial elements within that sphere, so as a spectator stands closer they can "read" the composition and content intended. It would be evident that these are not pictures but world spaces.

The last 3-D digital stills I made, untitled because I considered them failures, are reproduced below.



Untitled 1994, 3D digital still image



Untitled 1994, 3D digital still image

Journal entry, Jan. 23, 1994: This image, of a river-*umwelt* [life-world: see Chapter IV] has a section in the foreground bottom, of water over a sandy bank, that seems so wet, so real, and liquid – almost a hallucination in its "realness", or "suchness" to use a Buddhist term. This image/space is unlike anything I have seen; it is more a rounded symbol/icon/archetype than an image or picture, free of the frame and floating against black space.

Journal entry, Jan. 30, 1994: The time-consuming part is going down one dead-end after another with the software: there are things I want to do and *cannot*. I want to push the capacity for expression wider, so all elements are not relegated to homogeneity, treated the same by an imperious camera, a hegemonic camera that dominates the entire scene. This is what I struggle against, because the tools aren't there, and the Softimage 3-D software development team is too burdened with other things.

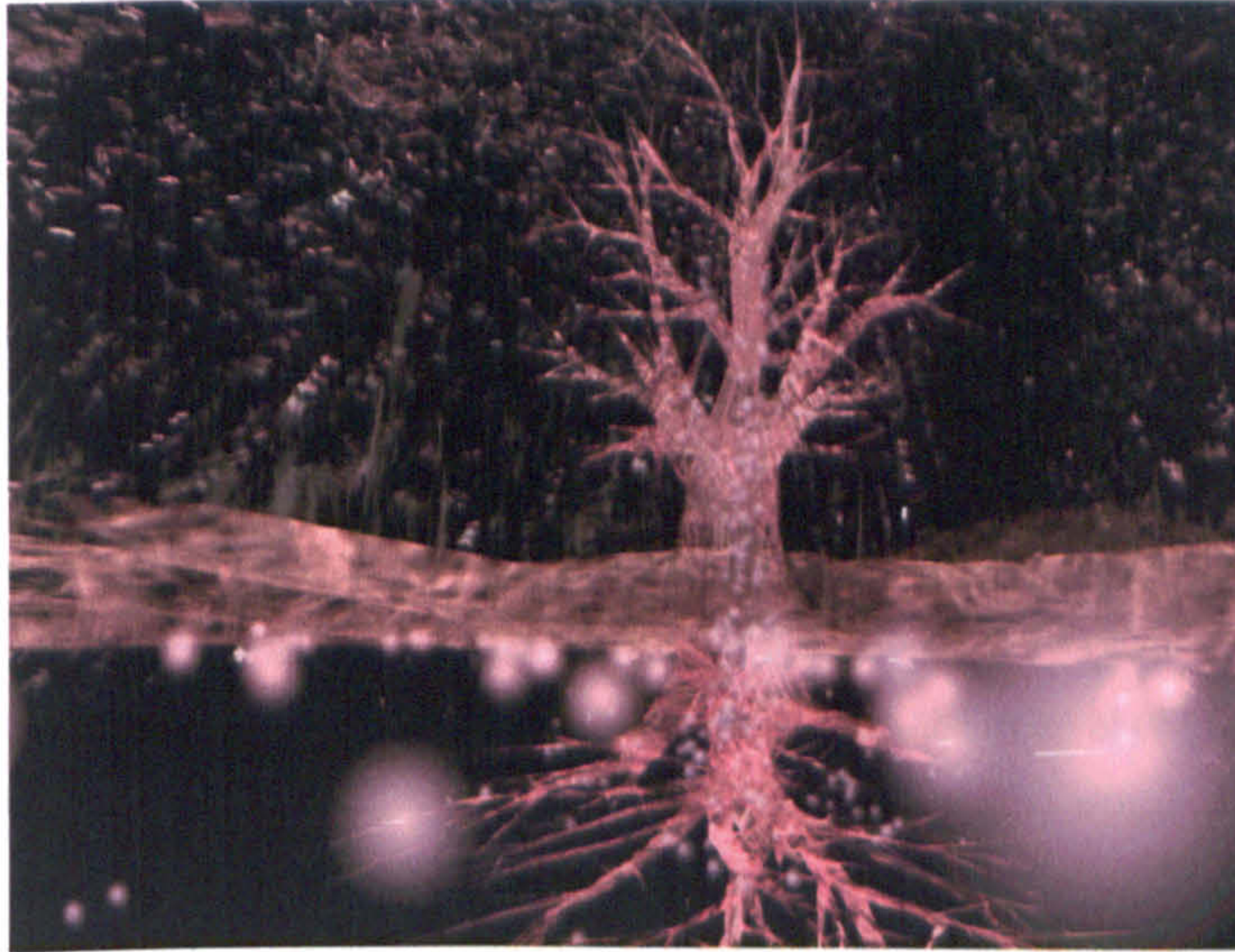
By this time, the software tools were incapable of meeting my evolving needs (now of course, ten years later, such 3-D tools are easily combined with all kinds of 2D processing methods which might have offered me more options, but back then, resorting to two-dimensional processing of three-dimensional imagery seemed to defeat the entire purpose). It was not, however, only the software itself which presented a limitation – but even more so, the available "output medium" for making such still images consisted of photographs, in the form of film transparencies backlit in light boxes. Once more, the static framing and two-dimensionality of the picture plane seemed like an impenetrable wall I could not get beyond.

I therefore began seeking for a way to get past this limitation, for a medium which might somehow enable my viewers to break free of the flat surface and the frame, and to cross over the picture plane into a space on the other side, where they could experience firsthand the three-dimensionality of the scenes I was constructing. Intuiting that the medium of "virtual reality" with its qualities of three-dimensionality and enveloping spatiality, not to mention its capacity for temporality and interactivity, might enable me to pursue my concerns more effectively, in the autumn of 1993 I began to conceptualize an immersive virtual environment. This brings us to the next chapter of this text, regarding my first explorations in immersive virtual space, *Osmose*.

IV

First Explorations in Immersive Virtual Space:

Osmose



Tree Pond, Osmose

Digital image of 3-D virtual environment captured in real-time through HMD during live immersive journey/performance, 1995

Osmosis as metaphor: transcendence of difference through mutual absorption; dissolution of boundaries between inner and outer; inter-mingling of self and other ...

Davies, 1993-1994

1. Envisioning an Immersive Virtual Environment

In the early fall of 1993, I had an unexpected experience which led directly to the making of my first immersive virtual environment: I was alone on a tidal flat on the Brittany coast of northern France, enveloped by darkness with a new moon rising and the tide ebbing, my ears filled with the sounds of tidal seawater trickling thinly beneath my feet, an owl hooting, a dog barking, distant surf pounding. I remember feeling a very unusual sense of immersion, a sense of being ecstatically present in a dynamic, bodily-enveloping, multi-sensory *spherical* whole, an unforgettable experience that begged to be communicated. The next day I began to write about the necessity of constructing a virtual immersive environment as the only means possible of conveying what I had perceived and felt. I did not reconstruct the Brittany tidal flat: instead, *Osmose* emerged. Below are excerpts of the unpublished notes I wrote at that time: I consider them to be relevant to this narrative because they reveal the actual thought processes in which I first articulated my vision of

what an immersive virtual environment could be, and as such illuminate the origins of my intentions apropos content and interaction. Many of the ideas described in these notes were ultimately manifested not in *Osmose* but in *Ephémère*. (For the sake of keeping this text to a reasonable length, I have removed those which I may use in future work.)

The Brittany Notes (1993)

Bretagne, tidal flats, 360-degree encircling horizon – descending darkness, rising moon, ebbing tide, trickling water beneath my feet, flowing out to sea – owls calling back and forth, dog bark and echo, rhythms of tide, moon, night. Darkness and low lighting obscure detail. Darkness is a solution for low-resolution shapes and lack of detail, so not illustrational, only a sense or a feeling of all-enveloping spherical space. Such space defined by sound. Hearing takes over sight. Goal is to re-create this experience of "place". The virtual "places" could be a series of different spherical landscapes, flowing + ebbing through darkness and light.

Interaction would be at the level of perception, of perceptual sensitivity. At first you don't see, don't hear, then as one's head + body slow down, and become calm – and breathing too – and as the chattering human mind becomes quiet – one can begin to "perceive" beyond the bubble of human interaction, to hear the sound of running water here, and owls there, a heightened sense of landscape, and of psychic projection. So the interactivity is essential, yet not at the level of pushing buttons or self-entertainment, or stepping on foot pads – but of... letting go... And so the virtual place becomes a space of meditation, of facilitating another way of *being* in the world.

Goal of this project is: mind (body) + space = *place*. Use immersive virtual space as a way of exploring our sense of space, of landscape as "place", as perception. Not the voyeuristic gaze – i.e., a gaze that measures and surveys, but rather a gaze that drinks in ecstatically, a gaze that seeks union. And the perceiving self is at the centre, and the landscape is a sphere. Goal is to immerse the viewer in that space, to communicate an experience of place, of landscape, of merging, enveloping, of union. Goal is to create an immersive, interactive visual/aural experience of nature-space. A landscape in which participant can experience a sense of unity, of integration, of merging: in which the edges of the mind and the enveloping horizon become one, no longer inside and outside, self and world, but *one*.

If I can effectively pass on and amplify this experience, I could possibly alter the way people "see" nature – alter the way they perceive themselves "in" nature. They may then have access to this experience next time in "real" nature and change their attitudes to it. As a way of compensating for our collective loss of nature space, for our increasing distancing from the natural world, this work is an attempt to re-establish that *lost link*, re-creating a refreshed experience of World. Re-creating a heightened sense of Being in the enveloping space of nature, representing its larger rhythms, en-meshed rhythms, of moon, tide, nightfall, ebbing flowing light.

And following is more on interactivity and on the notion of *relational stillness*, instead of conventional speed:

[...] In terms of content and meaning, participant must slow down, become still (in comparison to most interactive pieces that encourage action and movement). The work explores the relation between participant and the virtual space in a way that corresponds to our relation in the "real" world: it explores the perceptual boundaries between participant + space, self and world as fluid, relative, responsive.

Sound is as essential as images, and also responsive to participant's attention/stillness. Responsivity of images and sound also to direction of participant's gaze / ear. [...]

I listed other areas to be researched later, including:

- 1) Linking in real-time to external phenomenal data such as light levels, tides, wind etc.
- 2) Reference to peripheral levels of retinal tissue/body vessels, bones, cells, all *enveloping* the space.
- 3) Addition of hypertext-like levels that cause elements to "open" – so one can enter space of a stone, a blossom, a tree, a cell etc. These become micro spaces, all present *simultaneously*.

I then went on to summarize more formally that the work would explore the following themes:

- 1) Our relation with Nature (longing, loss).
- 2) Fluid perceptual boundaries between mind/world, Inner/outer.
- 3) Alternative use of interactivity in terms of non-action and stillness.
- 4) Stylistic approach: alternative to photo-realism, working with spatially ambiguous gestalts instead.

In September, 1993, the intended work was named "*Osmose*". As I wrote in my journal at the time, *Osmose* (osmosis in English) was from the Greek *osmos*, meaning to *push*. Such a concept suggested "biological process, permeable membranes, and three-dimensional space, and an entity (a self) absorbing the exterior world into itself". I selectively quoted from a dictionary that biological osmosis was the "passage through semi-permeable membranes from a less concentrated to a more concentrated solution until both solutions are of the same concentration"; and I referred to such osmosis as "a process of spatial relations between inner and outer, a process in which they became *entrelacés*, merged and fused". I wrote of the work's central metaphor as "The world-self, enveloped by retina, brain, body, vessels and veins, by bones and rocks, by earth and stars: a poetic *weltenschang*". In December 1993, I wrote: "The essence of *Osmose* is an attempt to represent a solution to the classic Western mind/body self/world problem, by establishing a fluid quivering interrelation between them on the perceptual level, so one is truly the other."

2. Conceptualizing *Osmose*

Immediately after writing the Brittany notes, I began working on a more formal description of my conceptual goals for such a project. This document, which at the time I called the *Osmose* "white paper", was written over a six-month period between the autumn of 1993 and spring 1994, with its final version of 12,000 words completed in July 1994. This paper was written before I had any practical experience in the medium of immersive virtual space, and most of it was written before I had put together a team. Nevertheless, it became the starting point for everything I hoped to accomplish with the medium, and as such, served as a map of guiding principles and goals.

Here, for example, I wrote for the first time about the potential of immersive VR as a means of "crossing over the picture plane" into a three-dimensional, all-encompassing *spherical* space. Here too, I mapped out my interest in the medium's capacity for combining the immaterial and the

material, and the virtual and the real; along with its incorporation of three-dimensionally spatialized sound, the passage of time, and interactivity. I also laid out my intentions for subverting conventional design approaches to VR through the deliberate use of semi-transparency, ambiguity and transformation; and an embodying interface based on breathing and balance. Finally, I described possible scenes or "spatial realms" as I called them, involving the recurring elements which had already appeared in my paintings and 3D still images, such as roots in the under-earth, rocks and boulders one could go inside of, flowing streams one could travel in, and germinating seeds which one could enter. Readers familiar with my work will recognize these elements in *Ephémère*.

Even though this conceptual paper was written ostensibly about *Osmose*, nevertheless it contains the earliest descriptions of my intentions for *Ephémère*, including many ideas which were put aside until the making of the later work. I am therefore including excerpts from this paper here, noting those which are particularly relevant to *Ephémère*. This paper has never been published because it was written as an internal document for those who were working on the project with me. Even though it was written more than a decade ago, it contains many ideas which even now I have not yet explored: because I may revisit these ideas in future work, I have omitted these. I have also omitted detailed references to concepts which have already been introduced in chapter II. Such omissions are shown by [...].

The Osmose white paper

1. Context

Osmose as metaphor: transcendence of difference through mutual absorption; dissolution of boundaries between inner and outer; inter-mingling of self and other. [...] By interpreting the experience of being-in-the-world in terms of *relationship* rather than domination, this metaphor, lying essentially outside the Judeo-Christian/Cartesian tradition, offers an instructive approach to contemporary issues concerning our attitudes and actions towards Nature. [...]

The project is an immersive virtual environment, utilizing real-time 3D computer graphics, motion-capture devices and stereoscopic head-mounted display technology to interactively link and immerse the participant in a virtual world of visuals and sound. Computer-generated virtual environments – as artificial spaces in which mental models can be constructed and relations and processes are abstracted and amplified – offer intriguing possibilities in terms of enabling us to explore and interact with our own spatio-temporal concepts of the world. In this context, I believe it is vitally important that this technology be used to compensate for its dominant uses, to communicate alternative cultural values and to re-affirm *other* ways of being-in-the-world. Accordingly, this virtual environment seeks to go beyond current methodologies in terms of modes of interactivity, aesthetics and content.

The *Osmose* environment – composed of my already established vocabulary, of archetypal nature-related elements all intricately linked so each affects the others as if invisibly webbed – is conceived as an arena of mutual responsibility rather than a site for active exploration. Entities within are not objectified as solid static structures but are semi-transparent, and engaged in fluid process. Space is not empty or uniform but transformative and relative. The participant is not the instigator of action but is involved as a visceral presence, entwined within the virtual world through intimate bodily processes which function as channels not of control but communion. Interactivity is a state of being, a metaphor for subtle inter-relationship.

The potential of this technology, even with its heavy burden of cultural conventions and testosterone-fueled desire, is significant as a means of re-formulating our place as sentient beings among the living flowing world. If *Osmose* can effectively enable participants to experience, however fleeting, a sense of self in communion with a virtual world, returning them to the real world with greater sensitivity and reverence for all life, then this project will have achieved its goal. References for this project include environmental philosophy and ethics; twentieth-century western & eastern philosophy (e.g., Heidegger, Merleau-Ponty, Nishitani, Izutsu, Leder, Levin); as well as readings in feminist and cultural theory, and ecology and biology.

2. Content

The content-related objectives of the project involve the use of VR as a means of *re-modelling* our concepts of our relations with the world. It is my intent to introduce participants to seeing/hearing/relating to the world in a new way, through revealing inter-relationships within the world, in terms of experiential relativity between sentient subject(s) and surroundings. This environment is thus conceived as a non-narrative, non-teleological, fully-connected matrix.¹ Narrative is not an aspect of this project, except in the sense that the participant, through the pathways they choose and the interactions set off accordingly, will create some kind of temporal passage. [...]

2.1 Inter-relationship. My primary goal is to enable participants to subjectively experience a particular way of "being-in-the-world", one which transcends the hierarchical duality pervasive in Western thought, revealing a world whereby interdependent relationships are more "real" than the related entities themselves, and interaction is not sequentially causal, but associative, and contextual, as "a fluxing tide of event-entities and characterized by the 'circuminsessional interpenetration' of all its parts".² In this context, it is useful to draw on Drew Leder's phenomenological inquiry into embodied perception, in terms of the notion of the "expanded self" and the Neo-Confucianism concept of "forming one body with all things". [...]³

2.2 Bodily embeddedness. Another key goal of the project is to explore the *interplay* between virtuality and materiality, between transcendence and embodiment. Current notions of VR tend to see virtual space as a disembodied space, based on cultural values which privilege virtuality and stigmatize physicality. [...] In the context of current VR trends, my goal is to re-insert "materiality" back into the dialogue, approaching the technology as a means of re-affirming our physical embeddedness and intertwining with the world. All interface methods in the project will be used with this goal in mind. [...]

¹ What I meant by "matrix" here can be found in this passage by Leibniz (1646-1717), suggestive of the entire tradition of process philosophy, "[The] interlinkage ... of all created things to each other, and of each other to all others, brings it about that each simple substance has relations that express all the others, and is in consequence a perpetual living mirror of the universe. [In nature] all is a plenum, which renders all matter interconnected... And in consequence, all bodies feel the effects of everything that happens in the universe". Leibniz, (*Monadology*) in Nicholas Rescher, *Process Metaphysics: An Introduction to Process Philosophy*, 37.

² Winston L. King, in reference to the Buddhist worldview, foreword to Keiji Nishitani's *Religion and Nothingness*, xxiii.

³ The original and complete version of the *Osmose* white paper includes numerous lengthy quotes from Leder's *The Absent Body*: I have removed most of these for the sake of brevity and to avoid redundancy, as I have already discussed Leder's ideas elsewhere in this text.

2.3 **Perceptual relativity.** My objective is also to extend the concept of "relativity" to subjective perceptual experience. If, for example, we imagine the visual "external world" composed of a broad spectrum of electromagnetic oscillations of varying wave lengths⁴ emanating from various entities with interpretation dependent on a subject's particular physiological/psychological state, then we could more clearly re-present the truly *relative* nature of experience, by which sentient subject and surroundings are *not* separate, but rather *intermingle* to create "reality". The human tendency is to assume that the world as humans perceive it is the (only) world: our goal is to demonstrate that this is a very limited view. [...]

2.4 **Solitary depth.** This project also attempts to re-affirm the value of the solitary "depth" experience, as an alternative to the current trend toward collective VR experiences. Whereas there is a tendency now to focus on interactivity in VR and the Internet as a means of connecting human minds together, this project deliberately seeks to re-affirm the connecting of a single mind-body with a virtual environment. [...]

2.5 **Transformation.** Even though in our everyday experience, we see the world as composed of distinct solid structures in empty space, many visionaries and recent physicists have described a different reality. My goal is to dismantle the western mis-perception of the world as primarily static, re-presenting it instead as flux and dynamic process, of elements endlessly recycling through each other. "All bodies are in a state of perpetual flux like rivers, and the parts are continually entering in and passing out." Leibniz⁵

Here, for example, is Norman Bryson describing Keiji Nishitani's notion of the world as a "field of transformation", and a "mobile continuum": Where for example,, "If the object is, say, a flower, its existence is only a *phase* of incremental transformations between seed and dust, in a continuous exfoliation or perturbation of matter: at no point does the object come under an arrest that would immobilize it as Form or *eidos*."⁶ As Bryson further explains, "The form of the seed is already turning into the form of the flower, and the flower is already becoming dust. The present state of the object appearing as the flower is inhabited by its past as seed and its future as dust, in a continuous motion of postponement, whose effect is that the flower is never presently there, anymore than seed or dust are there".⁷

Rather than creating physical forms and adding "life-flow", we must create flow and give it temporary form: i.e., life-flow manifests as one entity here and another there, and so on. (Also, the ecological understanding of species as expressions, biological "extrusions" of the environment in which they exist...)

2.6 **Poetic visualization.** My goal, however, is not to re-create scientific visualizations of biological or ecological functionings. Rather, we must *poeticize* the elements (in the sense of Bachelard) in order to fulfill my primary objective: that of coaxing the participant to let go of

⁴ From Albert Hofmann, *Inside Outlook*, 6-11.

⁵ Leibniz, quoted in Leder, *The Absent Body*, 30.

⁶ Norman Bryson, "The Gaze in the Expanded Field", 97. I discuss this concept further in Chapter VI, in context of my use of semi-transparency and transformation in *Ephémère*.

⁷ *Ibid.*, 98-99.

encultured concepts/percepts of a world separated into a duality of subject and objects in order to experience "inter-relatedness-of-being" within a multi-dimensional living world in flux and transformation. [...]

3. Technique: interactivity, interface, and stylistic approach

Our technical objective is to develop the means to express the desired content, approaching the interactivity, interface, and [stylistic approach] accordingly.

3.1 Interactivity.

My goal is to extend the concept of interactivity beyond sequential cause-and-effect to contextually-based. [...] Through patient observation and sensitive maneuvering, participants may potentially experience the inter-relational nature of the world, doing so more and more "deeply" with increased familiarity over time.

3.1.1 Relinquishing control. In its most familiar form (i.e., electronic games), interactivity can be "a metaphor for power vested in the individual, through skill, speed, efficiency and control".⁸ My objective is to go in an alternative direction, creating an environment in which the participant is rewarded for *relinquishing* control, and for calm and meditative awareness (see diving analogy below). Similarly, the acquisitive grasping approach of many virtual environments, evidenced by a modelled cyber-hand, is replaced by a gentle, "inquisitive" approach, without use of hands at all, in the belief that through heightened receptivity on the part of the participant, the world will gradually reveal itself.

3.1.2 Inter-relationship. The relationship between participant and space is central, in both conceptual and technical terms. In this respect, our goal is to go beyond a situation in which the participant merely moves around a passive environment, banging into virtual walls and manipulating objects. The true challenge of this project is to create a *responsive* space, an environment in which "place" and participant are intimately linked. The word "inter-relation" is more suited here, compared to the common term "inter-action", because "inter-relation" suggests a sustained state of being *in fluid relationship*, while interaction suggests the causal activity/reactivity associated with deliberately pushing buttons, waving arms and so on.

Intricate *inter-relation* is the germinating concept here: imagining the virtual environment as a cell, the participant as its nucleus and the space as quivering plasma, all finely "wired" together.

3.1.3 Heightened awareness. A variety of practices involving contemplative engagement with the world, such as bird-watching and landscape painting, demonstrate that cultivating stillness and attention can create a mental state of heightened awareness. [...] While most interactive games pressure players into ever faster actions/reactions, I want to encourage participants to become calmly and attentively perceptive.

⁸ Regina Cornwall, "From the Analytical Engine to Lady Ada's Art", 49.

Scuba-diving offers a useful model for this approach: new divers, entranced by sensations of weightlessness in the unfamiliar medium of oceanic space, tend to spend their first dives in constant motion, swimming rapidly around and noticing little of the oceanic environment around them. Only when divers begin to calm their activity and quietly observe, do the intricate relations of the underwater realm become apparent, as if Nature were gradually revealing itself to the diver in a fluid dance between observer and observed.

3.2 **Interface.**

Rather than using the most common methods of interaction such as joystick, keyboard, buttons or pointing with a data-glove – all which tend to limit involvement to the hand only, effectively excluding the participant's body and denying her physicality (except to merely "fly around") – I want to involve the body as fully and deeply as possible, implicating the body and its life-processes in the work. Rather than using isolated parts of the body to simply control the space, I want to weave the body's rhythmic presence into the multitude processes in progress, whereby "...each visceral or sensorimotor function can become a channel for the experience of communion".⁹ The *bodily-participatory* channels we shall use include breath, balance, voice, gesture, and bio-processes. There is also the environmental...

3.2.1 Breath. Breath is one of our most important means of interface, not only as a means of travelling through or affecting the virtual space, but emphasizing the physical embodiment of the participant, and her biological dependency on the actual physical environment (i.e., air). The use of breath is also metaphorical. From the perspective of Zen mediation, as explained by Drew Leder, breath is "a potent tool for surpassing dualism":

"Physiologically, respiration stands at the very threshold of the ecstatic and visceral, the voluntary and the involuntary. ... Inside and outside, self and Other become relativized, porous, each time one takes a breath".¹⁰ [...]

[...] This approach would surely help to re-insert physicality back into the VR discourse, by welding the participant's physical being to the virtual elements within the space, while heightening her awareness of her own body and amplifying the relation of her body to the world.

The function of breath can also be seen from the perspective of diving: in gravity-free oceanic space, a diver learns to move in very different ways than on gravity-bound land. While diving, breath becomes the means of controlling the body's ascent, descent and hovering, almost as if one were a hot air balloon rising and falling, rising and falling – with practice it is possible to develop an exquisite intuitive control.

3.2.2 Balance. This is the other primary metaphor and means of interface. By using balance, closely centered around the body's spine, we not only implicate the *full* body but constantly involve the body in terms of its essential vertical alignment between earth and

⁹ Drew Leder, *The Absent Body*, 172.

¹⁰ *Ibid.*, 171-172.

sky.¹¹ Subtleties of body balance as learned through diving, Tai Chi, dance and even horseback-riding are models for this approach. As an interface method for movement, balance can be used to initiate horizontal movement (forward, back, sideways), in combination with breath (up, down). [...] According to David Michael Levin "Balance is a question of centering":

"When we are properly centered, our experience of Being is in equilibrium. Being well-centered, we can encounter other beings in a more open, receptive way. Finding our centre is a necessary step in the development of our ontological capacity to open ourselves to the larger measure of Being and to encounter other beings with equanimity, justice, and a presence that is deeply responsive... Coming 'home' to our true centre of being, we can begin to relax our egological defences and begin to experience things outside the subject/object polarization. ... we can begin to *let things be*. ... Being well-centered in Being is therefore at the very root of *Gelassenheit*, that 'way of being' in virtue of which, according to Heidegger, we are going to be most favoured with a deeper experience of beings, and the presencing of Being as such".¹²

[This is my first reference to cultivating an attitude of "releasement" (*Gelassenheit*) or "letting-be" in relation to developing an alternative approach to interactivity in a virtual environment. It was only after reading Levin that I later began to research the concept in context of Heidegger's own writings.]

3.3 Stylistic approach [or "visual aesthetic"]

The main technical goal, in addition to those related to interactive techniques, is to develop a stylistic approach [what I have, perhaps incorrectly, termed my "visual aesthetic" in the past] that can provide an alternative to the hard-edged-objects-in-empty-space that characterize most VR. In this context, my goal is to dissolve the hierarchical duality between perceiving subject and perceived object(s); to reveal the transformational, dynamic nature of reality; to represent the inherent relativity of perception; and to re-create the dynamic, spatially-complex quality of subjective embodied experience of "being-in-the-world". It is my intent to provide an alternative to the representational convention of objective realism which dominates the field of 3D computer graphics and VR today.

3.3.1 Visuals. The visuals are characterized by luminosity, translucency, and semi-transparency, as well as *ambiguous* boundaries between figure and ground. I want to avoid objectification, i.e., solid-surfaced, hard-edged separate objects in so-called empty space.

Certain physiological experiences of vision, in which the threshold between "out there" and the interior of the eye/self is broken down, provide a model. These experiences include, first of all, my extreme myopic vision in which spatial distinctions between objects and surrounding space are blurred into soft overlapping globes of luminosity. Second, is seeing in the dark, whereby compensatory particles appear to float before the eye [in terms of the visual field breaking up into tiny dots that seem to be a projection of the retinas' rods and cones]. (Equivalent to this is a diving experience I have had of being immersed in blue

¹¹ David Michael Levin, *The Body's Recollection of Being: Phenomenological Psychology and the Deconstruction of Nihilism*, 273.

¹² *Ibid.*, 274.

oceanic space with minimal visual reference, whereby after a duration of time, it became impossible to differentiate spatially between retinal activity, tiny jellyfish, and distant pelagics.) And third, seeing behind closed eyes, where luminous particles and ghostlike shapes pulsate and seem to float upon the retinas, depending on whether one is facing into shadows or light. It may also be useful to experiment with how the eye processes visual information, working with perception in terms of the [human] eye itself.

3.3.1.1. Perceptual Relativity. The visual aesthetic may be characterized by a "relativity" between the visuals and the participant's perceptual state: the world as perceived is in subtle transformation *in response* to the perceiver. [...]

3.3.1.2. Ambiguity. A key premise is that, rather than being "empty" and laid out like a Cartesian grid of xyz coordinates, our space (in terms of subjective experience) is relative, complex, and multi-faceted. [...] We should attempt to dismantle the hegemony of single camera perspective and homogeneous organization of space [...] i.e., not all representations in the subject's visual field occupy the same space organized under the same perspective at the same time. We should also attempt to maintain these spaces or partial spaces *concurrently*, with perceptual predominance depending on various conditions.

For example, at times, the landscape will be set in semi-darkness. In such low lighting conditions, with less visual differentiation, it may be possible to work along a certain threshold of perception. This threshold will allow the effective use of lower resolution graphics, and exploration of shifting relations between acoustics and graphics as the primary means of defining space; and it will allow for ambiguous figure/ground relationships.

Such ambiguity can be used to create cognitive "gestalts" whereby the meaning of things constantly fluctuates, remaining mysterious and unattainable. This ambiguity should be fluid, with elements transforming ever out of conceptual reach (in terms of recognition) in response to the participant's own proximity. Such ambiguity will also help create susceptibility in the mind of the participant, in which the perceptual boundary between world and self, "out there" and "in here", dissolves: This subtle semi-hallucinatory state could be heightened by integrating representations of retinal nerve activity and other compensatory visions (as well as sounds) within the space.

3.3.1.3 Particles & wire-frame. Flowing particles and unstructured wire-frame may offer the most viable approach due to real-time rendering limitations. Particles are luminous and dynamic, and offer the advantage of describing whole entities rather than surface appearance through relative density: they may also be made to undergo transformation from one form to another.

3.3.1.4 Transformation. Dynamic process, rather than static structure, is an essential characteristic. In addition to establishing relativity between subject/world, which creates constant yet subtle transformation on a perceptual level, my goal is to

have every element in perpetual transformation. *Stillness is motion temporarily suspended.* Pulsation or flickering (of luminosity or colour) is another important effect that can be used to support the relative, experiential and *fluid* nature of perception and the instability of the "exterior" world. Even if at times so subtle as to be on the very threshold of perception, this effect can serve to stimulate the retinal receptors of the participant's eyes, engaging her more sensuously in the space. [...]

3.3.1.5 Range of representation. We should also engage a full range of representation between perceptual and symbolic. Examples: atmospheric depth (fog) tends to be perceptual; wireframe is symbolic; particles may be both. [...]

3.3.2 Sound.

The ear is a very important bodily sense in VR in terms of enabling the participant to believably experience a spatially complex environment. Since the senses of taste, smell and touch are denied here, it is vital that this project explore sound in relation to sight as fully as possible. Methods and approaches already defined for the visuals are applicable in most cases for the audio. In particular this involves relativity and transformation of sound in real-time. Rather than attaching discreet sounds to various entities which are then obviously triggered into action when the participant approaches or manually signals, we need to develop alternative ways in which the evolution of sounds can be fluid and spontaneous depending on various interactions taking place. Sounds may also be, under certain circumstances, primary agents for initiating change. All audio representations involving tone, volume, and rhythm will be relative to various events. [...]

[Detailed notes on possible interactions between participant and various elements in the virtual environment have been removed.]

4.0 Possible Scenarios or Spatial Realms

The following are possible scenarios or spatial realms to be constructed, along with symbolic elements. [...]

4.1 Entry: Connect participant biologically to the virtual space (preparation is similar to diving). As participant looks through the HMD, she will see darkness and hear her own body processes amplified.... [...] Gradually light becomes evident in the darkness from above (has she risen without knowing?) If she leans back and breathes in, she will rise toward it, if she leans forwards and breathes out, she will sink...

4.2 Forest. The forest is a system composed of subsystems. These include Tree, Leaf, Root, Subsoil and Life-entities of various scales. All are engaged in rhythmic processes and transformation including absorbing energy, reproduction and mortal life spans; and all are affected by larger rhythms related to light cycles (light/dark, temperature, seasons), water cycles, wind, lunar. [...] There is no horizon, the trees are close around, and beyond their

branches are yet more branches. (If the participant voluntarily tries to leave the perimeter, she merely enters again.) [...] If she stays too long in the forest, eventually it will become disorientating and she will be cast out. The forest is a metaphor for lung, and for breath. Its soil is life generating. Passageways to other realms include: <Tree, <Seed

[The Forest becomes an important spatial realm in *Osmose*, and reappears in *Ephémère* as an enveloping spatio-temporal realm called Forest/Landscape which transforms through the seasons.]

- 4.3 Subterranean or Under-Earth:** This space is dense and close, without horizon, but not claustrophobic: rather it is three-dimensionally spacious with sound, resonating, and reverberating, low, deep, high, rapid, eerie noises of abundant life activity usually unheard by human ears. In the darkness are structures and particles, in various motions, pulsating, luminous. [...] The subsoil is metaphor for the recycling, renewal of life. There are vague un-nameable forms disintegrating all around, and the participant can sense, visually and aurally, various entities engaged in transformation, in life processes, relatively affected by elements beyond this space, such as sun and moon, and seasons and weather. The participant cannot leave this underworld through her own motility, rather it will seem to continue indefinitely and if she reaches its edge, she will be returned to its other side. Passageways to other realms include: <Seed, <Root, <River

[Note that the Under-Earth, already established as a primary theme or motif in my previous work, becomes an important spatial realm in both *Osmose* and *Ephémère*, whereas the archetypal elements of Seed and River (and Bone) described below are manifested not in *Osmose* but only later in *Ephémère*.]

- 4.4 Aquatic** [...] Green phytoplankton are an important means of metaphorically connecting light to life, transforming light into energy.. [...]

- 4.4.1 Abyss.** The abyss is a metaphorical space, in which one faces rapture of the deep, the temptation to completely surrender the individual ego-self. A vast expanse of blue which darkens as one goes deeper, with little visual stimulation, resulting in a perceptual breakdown of boundaries between exterior and interior, and eventually disorientation. Although the Abyss may seem empty of life, it is filled with echoing sounds. There is also a constant gravitational pull downwards that increases with depth: if the participant goes too deep, she will experience self-extinguishment. Passageways out of the Abyss include: <succumbing to the depths and self-extinguishment, leading to an interior body experience or to a meta-location outside the world where one must wait for an opportunity to re-enter the world. [...]

- 4.5 Root:** If the participant *enters* a Root, she is moving into the temporary space of <Tree (temporary because she cannot stay there, it propels her out) through involuntary passage upward through its trunk and through branches into <Leaf. The participant can also pass

through tree downwards, exiting from Root deep into the sub-soil. Root may also take her into <psyche. Root may lead to <bone.

- 4.6 **Leaf:** In Leaf, light is filtered green from chlorophyll. Leaf is interior space, light, and green, interspersed with periods of darkness. There are veins, like the participant's own veins, and filtered transparency. Leaf is transforming light into energy (?) Leaf has rhythm, beyond day and night, of seasons, of bud and reach, wither and let go, drop and decay.
- 4.7 **River/Stream:** When the participant *enters* the River, she is entering *flow*. She is immersed in a flowing-through-space. There is turbulence, passing around her, by her, pushing her, *carrying her along*. She can lean back and river particles will speed past her, or she can lean forward and be swept up. Underground, in the subsoil, River is dark, flowing from a spring: when it surfaces she can see the light of day above. [...] In River there may be: flow (speed, direction, and pulsation), particles, stones, fish, and eggs. If she enters River it will carry her horizontally, and eventually from within it she will see the light of day above as it surfaces. As a river may surface in any number of places throughout the various worlds, it is not a direct way to travel. If she were to *enter* <Spring, it would carry her quickly out of the subsoil, but may transform into a stream of sap, of blood, of lymph, of life fluid...

[Note that the River, especially as an indirect nonlinear way of travelling through various spatial realms, is not used in *Osmose*, but does become an important feature of *Ephémère*. There, it manifests (reconfiguring its visual and aural characteristics depending on the context) as a river within the Landscape/Forest realm, as an underground stream in the Under-Earth, and as an artery/vein or bloodstream in the Interior Body realm. Just as originally envisioned here, it is possible for the participant to become "swept up" by the River and carried along, because in *Ephémère* the River current has gravitational "pull".]

- 4.8 **Rock/Boulder:** If the participant *enters* the Rock or Boulder, everything slows, and sounds are very low, like a record on very slow speed, warped slow. Is stone a place of light or dark? What happens there? Perhaps she cannot go inside as stone is the only solid; or perhaps she only goes near, and within its "field of influence" her perceptions of sight and sound will alter.

[This idea for the Rock/Boulder is ultimately not pursued in *Osmose*. It is manifested in *Ephémère*, in both the Winter Swamp and Landscape realms. As I will describe in the next chapter, the boulders "watch" for the immersant and will respond to her bodily proximity and gaze: when approached, they will then "open" to reveal "interior landscapes" within, which briefly expand and envelop the immersant before fading.]

- 4.9 **Seed:** When the participant *enters* a Seed (and there are many suspended throughout the subsoil, at various stages of germination) she enters a sub-world interior space with accompanying transformations of perception, the space envelops her in processes of germination and eventually carries her out of the subsoil into air. The sprouting of seeds

around her in the soil indicates which direction is upward, as they instinctively grow toward the light, roots downward. Timing of entry into a Seed is crucial. If one wishes to leave the subsoil (Under-Earth), for the Seed may not germinate until it is triggered by events above. This space is affected by rhythms beyond the soil, of cycling days and nights, which transform the Seed space into a plant (or Tree) and Blooming above ground. Seed, because it is transformative, is a method of travelling in two directions: out of the Under-Earth into the air; and, because the Seed can be dropped, into the subsoil. A Seed may transform faster if there is more water etc. A seed may also "open" into the future, skipping forward through time.

[Ultimately, the *Seed* is not pursued in *Osmose* because of the production schedule, but it does become an essential element in *Ephémère*. There, the Seed elements function similarly to the Rock or Boulder elements described above, in that they "watch" for the Immersant and respond to her proximity and gaze by "opening": If she moves towards a seed during its transformational process, she can enter inside its "blooming". Ultimately however, in *Ephémère* the idea of the seed as a way of travelling through space and time to other places is abandoned because of scheduling demands.]

3. The Making of Osmose

The conceptualization of *Osmose*, as written in the document excerpted above, took place over six months between the autumn of 1993 and early summer 1994. By spring 1994, I had begun putting together a team. Research and production on *Osmose* took place over the ensuing year, between June 1994 and August 1995 (with a four month suspension of the project midyear due to circumstances beyond my control). The project's completion was determined, however, not by the achievement of all my goals, but by the deadline for its premiere exhibition at the Montréal musée d'art contemporain. As a result, many of the ideas I had originally hoped to implement were postponed until the making of *Ephémère*. It is for this reason that it is impossible to separate one work from the other except chronologically. In many ways, they are a single project, with *Osmose* as part 1, and *Ephémère* as part 2. The explanations that follow, of the creative process and the making of *Osmose*, should thus be read as an introduction to the subsequent making of *Ephémère*.

Research context

As a founding director of Softimage (and probably, also because of international response to my previous 3-D still images), I had the support of the company behind me in terms of initiating the *Osmose* research. In the spring of 1994 however, Softimage was acquired by Microsoft. During the acquisition process, I was asked to submit an official "mission statement" about my planned research. In this context, in May 1994, I wrote that my specific intent was to *push* the technology associated with VR, and that I intended to accomplish this by: a) developing "an alternative visual aesthetic to the objects-in-empty-space aesthetic" that characterized much of 3D computer imaging, interactive games and VR at the time; b) using breathing in the user interface in order to "re-insert physicality back into the VR discourse, by connecting the participant's physical being to the virtual beings within the space, while heightening the participant's awareness of their own body and amplifying the relation of their body to the world"; and c) disassembling the conventions underlying much of 3D computer graphics in order to "dissolve the hierarchical duality between

perceiving subject and perceived object, and thereby re-create an inherent relativity of perception, in order to represent the dynamic, spatially-complex quality of subjective experience". Support for my research in immersive virtual space was continued and I proceeded with the project. (Such support lasted for 3 ½ years but was withdrawn at the end of 1997, halfway through the making of *Ephémère*, at which point I left Softimage to found Immersence for the purpose of completing the work on my own.)

Creative process

Up until this time my research process had always been solitary: the complexity of the intended *Osmose* research, however, required working with a small team in order to manifest my vision. Accordingly, while I tend to lightheartedly liken my role to the driver of a bus, a more apt analogy is perhaps producer, writer, director and art director of a film project, albeit for a project that bears little resemblance to film.

The first person to join the project was Georges Mauro, who became responsible for constructing the 3D graphics and animation under my direction. Georges was a classically trained animator who had already worked closely with me for several years pursuing visual research and working on short 3D film projects at Softimage: he therefore already understood and empathized with my thematic intentions and also my visual sensibility. Georges worked not only on *Osmose*, but also on *Ephémère*. In May 1994, I hired John Harrison, a 3D software engineer, who went on to write the custom virtual reality software for both *Osmose* and *Ephémère*, adapting the 3D graphics for real-time viewing. John brought considerable technical expertise as well as a sincere desire to work towards an artist's vision. As part of our working together, I familiarized John and Georges with my earlier research as a painter, so that they might comprehend the origins of my particular goals for the *Osmose* project (and later *Ephémère*): this proved to be very helpful as it created a foundation of mutual understanding between us.

A year later (in May 1995), only a few months before the completion of *Osmose*, I temporarily brought in Dorota Blaszczyk from Poland to design and program the sound. Dorota also worked on *Ephémère*: I have since come to describe her contribution as "sonic architect". She was joined by Rick Bidlack from Seattle who composed and programmed the music: he also was involved with *Ephémère*. (While I would like to have been able to pursue the sound development simultaneously with the visuals and interactive design, this was not possible due to budget constraints.) While much has been written about the difficulty of artists working with engineers, my own experience, or should I say *our* experience, has been primarily positive.

The commitment by these individuals to my overall vision was crucial to the fruitfulness of our work on *Osmose* and subsequently *Ephémère*. Equally important was their understanding and respect for my creative process, which, even though it now involved in working with other people, continued to be very similar to the process I had pursued while painting. My methods, for example, are very "process" based in comparison to the deliberate design and execution involved with commercial productions. This is to say that even while I had spent six months writing about my intentions for *Osmose*, I did not begin the work with a predetermined plan in terms of anything like a cinematic storyboard or production schedule. To do so would have limited the research, removing the rich possibilities of exploring the medium and seeing where the work would take us.

Let me explain: Instead of beginning with a specific hypothesis to be tested or set of ideas to be illustrated, I usually begin with no more than a gut feeling, an intuitive sense of what I generally want to communicate with the work within the range of possibilities afforded by the particular technology I am using. As soon as the "feeling out" of certain technical possibilities (what I call preliminary testing) is underway, the ongoing evolution of the work begins, as if embarking on a journey without being entirely certain of the destination. This process is somewhat like feeling one's way through a dark and unknown forest towards some kind of dim landmark on the horizon. The journey always becomes richer and deeper as it proceeds, as one explores unforeseen pathways, some of which open into surprising discoveries, in turn leading off in unforeseen directions, and others of which arrive at impenetrable thickets, whereby, even after weeks of work, we become lost and have to backtrack.¹³

In my experience of such a process, the constantly evolving work feels as if it were alive, no doubt because the trail of investigation, of exploration, of searching, although sometimes leading to dead-ends and discarded efforts, inevitably opens into unexpected territory. It is this aspect of the process that is most similar to painting (and, as I have found recently, also to creating landscape with actual earth and trees and boulders), a dialogue of discovery between the artist and the evolving work, whereby every stroke, every mark laid down, (or every path laid and tree planted) can alter the ensuing direction of the work, not only reconfiguring its visual composition but altering the meaningful associations it might eventually carry.

Merleau-Ponty also writes about this process of discovery, in context of Panofsky's history of painting: Panofsky, he explains, shows that "the 'problems' of painting that structure its history are often solved obliquely, not in the course of inquiries instigated to solve them, but, on the contrary, at some point when painters, having reached an impasse, apparently forget those problems and allow themselves to be attracted by other things".¹⁴ Then, all of a sudden, Merleau-Ponty suggests, with their attention elsewhere, these painters come upon their former problems and surmount whatever obstacles previously blocked them. "This hidden historicity", he emphasizes, "advancing through the labyrinth by detours, transgressions, slow encroachments and

¹³ The metaphor of forest pathways and impenetrable thickets is not unique to my own way of working. Most recently I came across one of Heidegger's metaphors for his own thinking process which he compared to woodpaths within "impenetrable thickets": "In the wood are paths that mostly wind along until they end quite suddenly in an impenetrable thicket. They are called 'woodpaths'. Each goes its peculiar way, but in the same forest. Often it seems as though one were identical to another. Yet it only seems so. Woodcutters and foresters are familiar with these paths. They know what it means to be on a woodpath." From the foreword to *Holzwege*, quoted by David F. Krell, *Martin Heidegger: Basic Writings*.

The metaphor of the "woods" is also discussed by Umberto Eco (in *Six Walks in the Fictional Woods*, p. 6) in relation to the narrative text. In this context, Eco writes (borrowing as he says a metaphor devised by Jorge Luis Borges) that "a wood is a garden of forking paths". Accordingly, "Even when there are no well-trodden paths in a wood, everyone can trace his or her own path, deciding to go to the left or to the right of a certain tree and making a choice at every tree encountered." In a narrative text, Eco writes, the reader must make such choices all the time, an interpretive experience which, I would add, has become even more obvious through the advent of hyper-textuality and so on.

¹⁴ Merleau-Ponty, "Eye and Mind", 148. Note that I have quoted this passage from the version contained in the *Merleau-Ponty Aesthetics Reader*, ed. Galen A. Johnson. I have done so deliberately because I prefer the translation of this specific paragraph in comparison to the version included in *The Primacy of Perception*, also published by Northwestern, which I have referred to in all other instances.

sudden drives, does not imply that the painter does not know what he wants, *but that what he wants is on the hither side of means and goals....*¹⁵

Merleau-Ponty also writes that "In 'working over' a favorite problem ... the true painter unknowingly upsets the givens of all the other problems".¹⁶ The painter's quest, he suggests, is "total even where it looks partial. Just when he has reached proficiency in some area, he finds that he has reopened another one where everything he has said before must be said again in a different way".¹⁷ As Merleau-Ponty further explains, "The upshot is that what he has found he does not yet have. It remains to be sought out; the discovery itself calls forth still further quests".¹⁸ In this context, he writes, the very "idea of a universal painting, of a totalization of painting, of a fully and definitively achieved painting, is an idea bereft of sense. For painters the world will always be yet to be painted, even if it lasts a million years...."¹⁹

The Osmose working notes

During the process of actually making *Osmose* I kept a notebook, in which, as a means of clarifying my thinking, I made numerous drawings, sketches, schematic charts and lists, regarding the work's intended content and spatial structure. Sometimes, I made handwritten notes while conversing with the other team members, or while reading various texts, occasionally incorporating quotations (e.g. by Bachelard, Rilke, Dylan Thomas, Goethe, and others) into various sketches. The entries however are relatively sparse and few in comparison to the four notebooks I later filled while making *Ephémère*. (Too much time has elapsed for me to remember why I did not maintain more detailed notes for *Osmose*.) I have transcribed the *Osmose* working notes and included excerpts, not only to convey the immediacy of my creative process and the evolution of my ideas while making *Osmose*, but because many of the ideas contained therein were not ultimately manifested in *Osmose*, but rather in *Ephémère*. That this is so demonstrates how these artworks cannot be separated except chronologically; they are ongoing steps of a lifelong endeavour.

As the following drawings and schematic charts show, certain themes or motifs and symbolic elements appear over and over in my work, regardless of the medium with which I am working. Many of these elements have already been described in relation to my paintings and 3D digital still images, and numerous references to them appear in the *Osmose* white paper. As such, they include ovoid-spheres meant to suggest to landscapes with enveloping horizons, stones and boulders, subterranean earthen realms containing roots and rocks (usually viewed from below, looking upwards), trees with bare branches and intricate roots, germinating seeds and blooming buds, flowing rivers and streams, and lastly, openings of light in the form of doorways. All of these elements are present in the *Osmose* working notes, and they also reappear in the working notes regarding *Ephémère* in the following chapter.

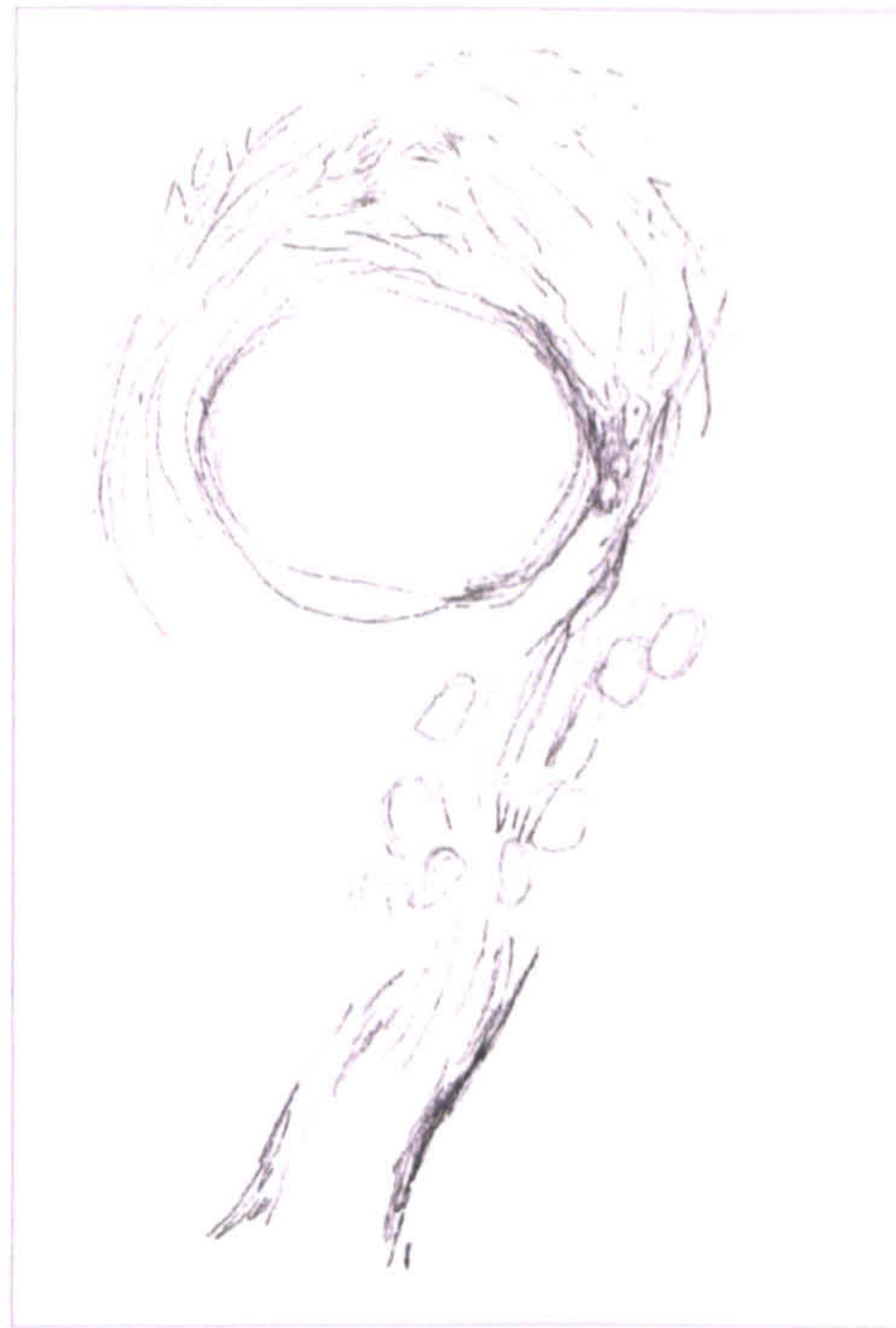
¹⁵ Ibid.

¹⁶ Merleau-Ponty, "Eye and Mind", *The Primacy of Perception*, 189.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.



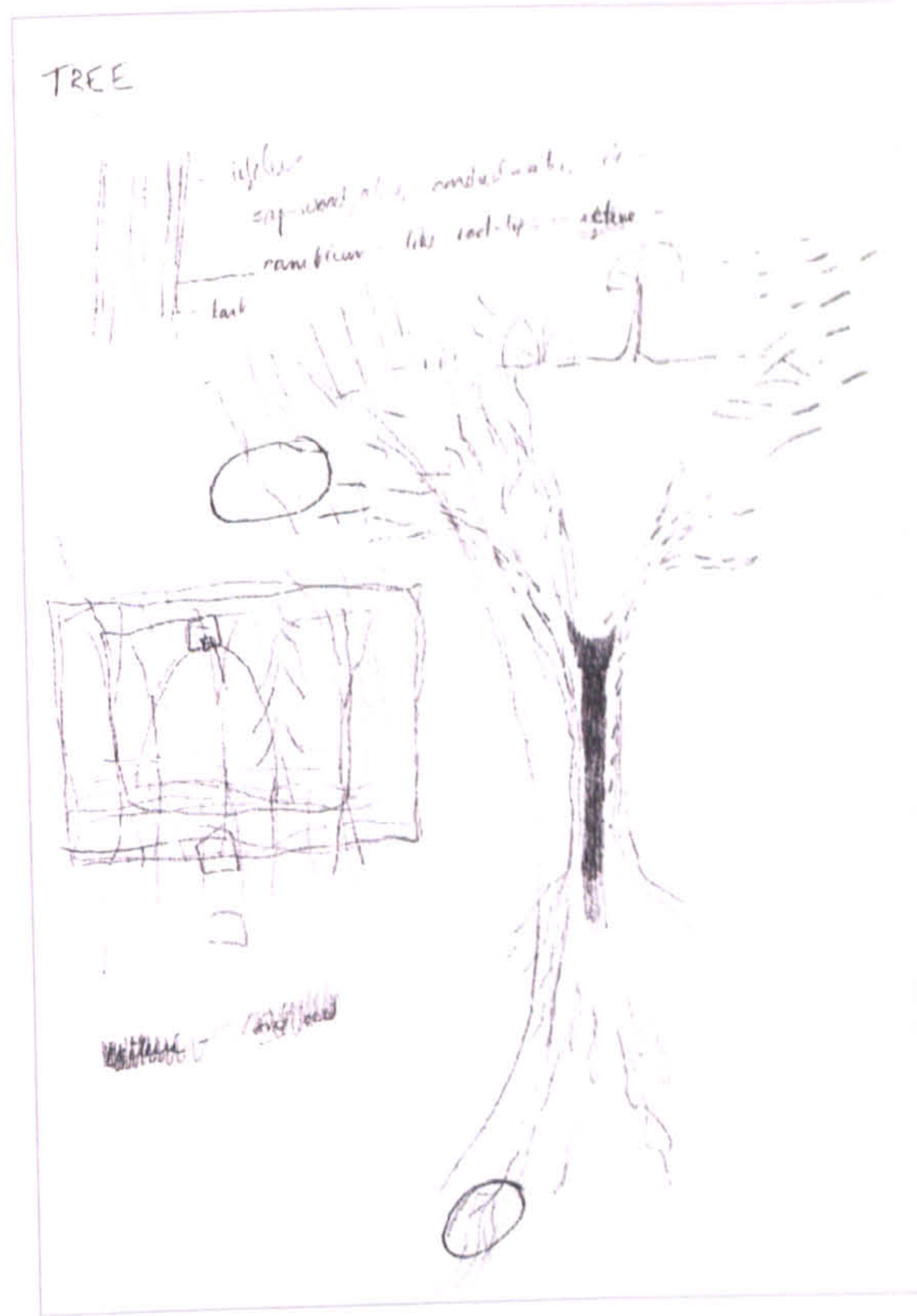
Ovoid-Sphere with Stones and Flow
Osmose working notebook, 1994

August, 1994 [Transcribed from handwritten Osmose Notebook]

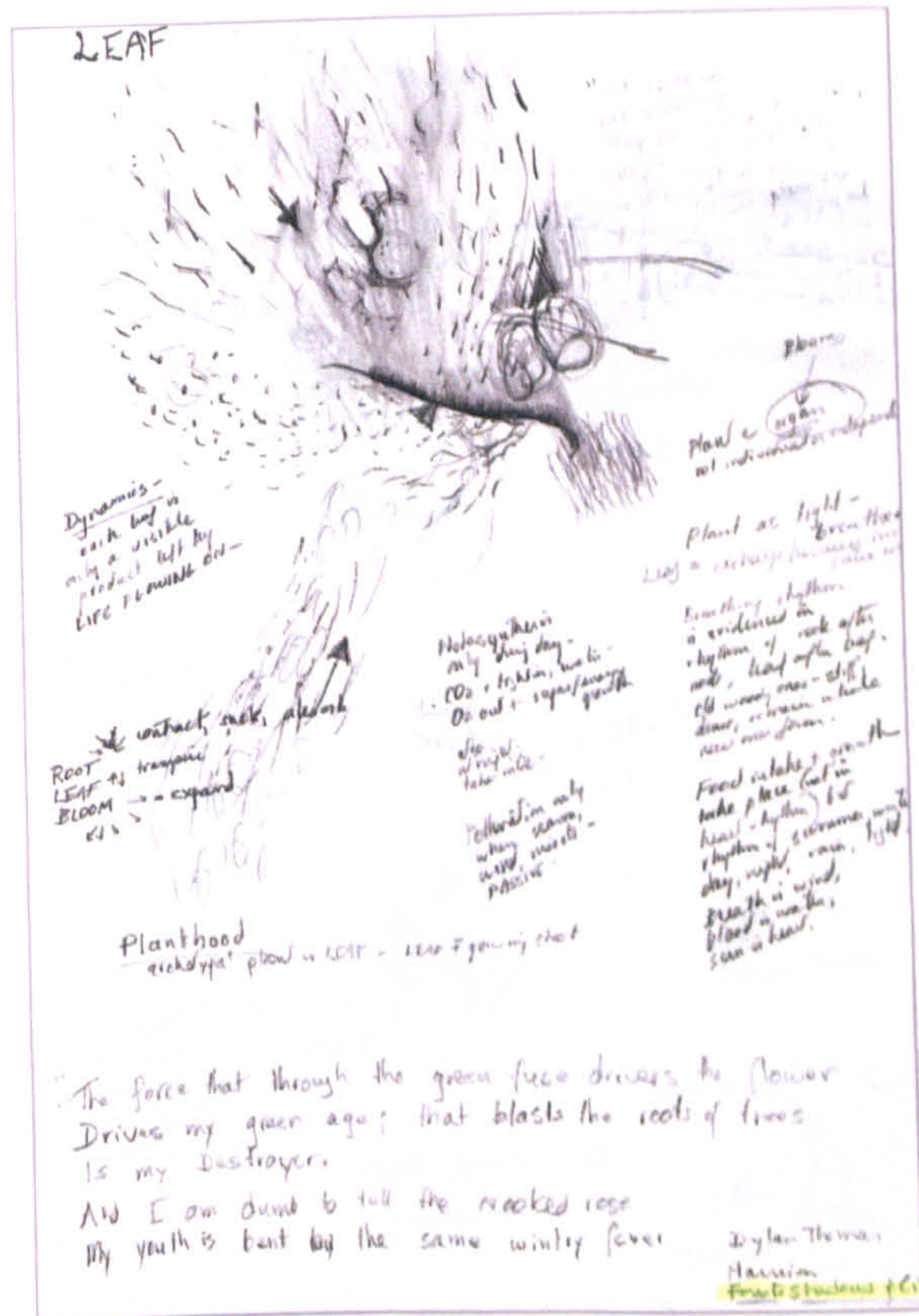
Tree: Notes from reading Bachelard's *Air and Dreams*,²⁰ Tree as "*primary image*". As the basis of the world; tree of life; as the central metaphor, as the omega point in the world, as a reference to return to... as a measure of rhythms, daily and seasonal, responsive to light, flowering and dying... Tree as "verticalizing image"; "silent, slow-moving, invincible upthrust"; *rising sap, falling leaves*; responsive to light; witness. Tree as air/wind, earth/root) water/sap and "father of fire" (warmth and wood). Tree as "dwelling" (nest); as bud, leaf, blossom, fruit (seed); as a "sensitive antenna". Cosmological tree. Tree as *lung* of the earth, as *breath*. "The Tree holds the whole earth in the grasp of its roots and its rising towards the sky has the strength to hold up the world". Roots touch the realm of the Dead. "...the reverie of the tree that *produces the seasons*, that commands the whole forest to produce buds, that gives up its sap to all of nature, that calls up the breezes, that forces the sun to rise...." Tree, as the "active image that produces all others", as *primary image*. "The life of the vegetable world ... produces the peace that comes from slow movement, its own great, peaceful rhythm. The tree is at one with this great rhythm: it epitomizes annual rhythm. Its rhythm is the clearest, the most precise, the most dependable, the richest, and the most exuberant of all". "...when a flower is about to open, when an apple tree is about to produce light, its very own pink and white light, then we will really know that a single tree is a whole world".

I begin to think of blossoms as the Tree producing light – of time measured by a bud – and a single tree as the entire world.

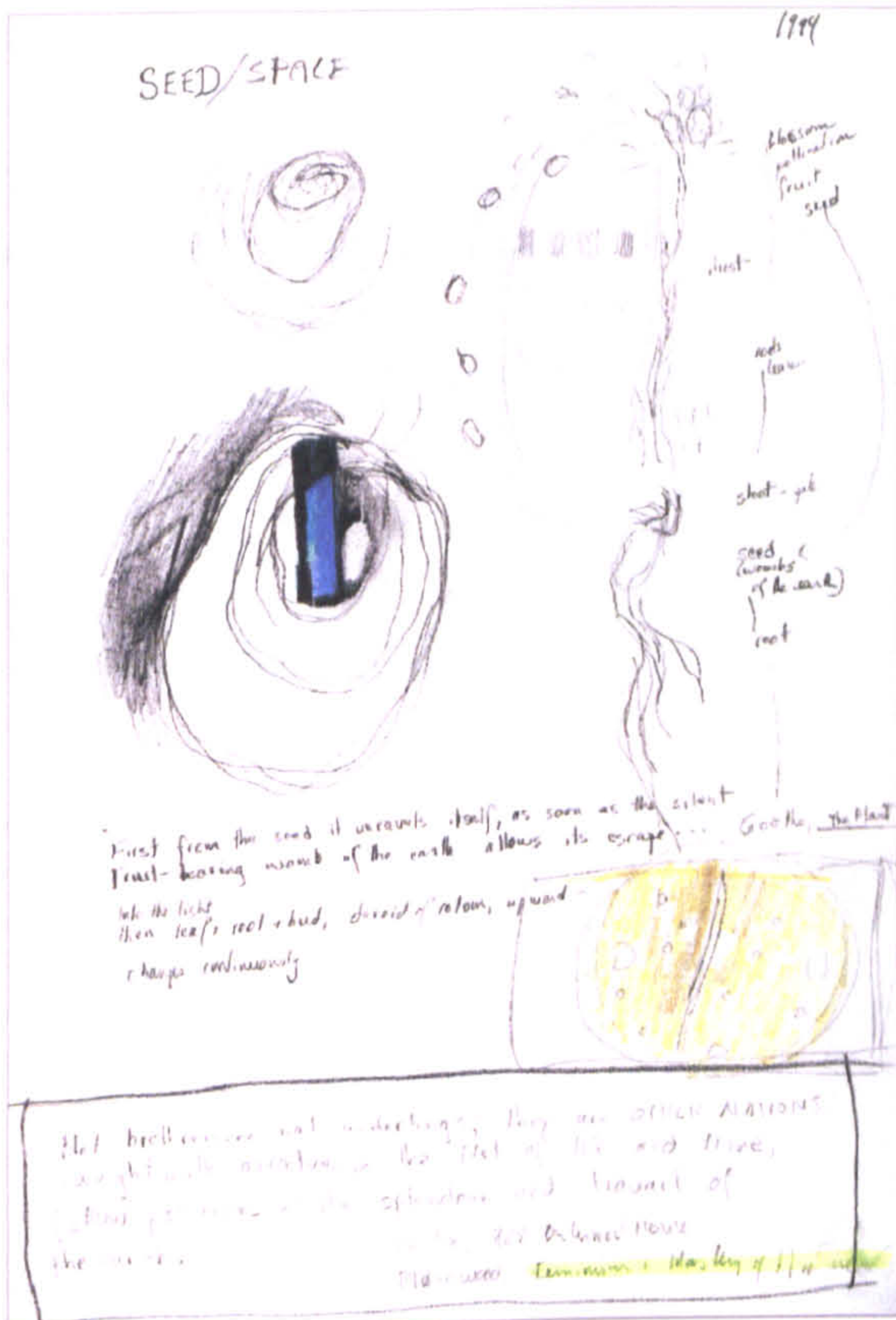
²⁰ Bachelard, "The Aerial Tree", *Air and Dreams*, 204-224.



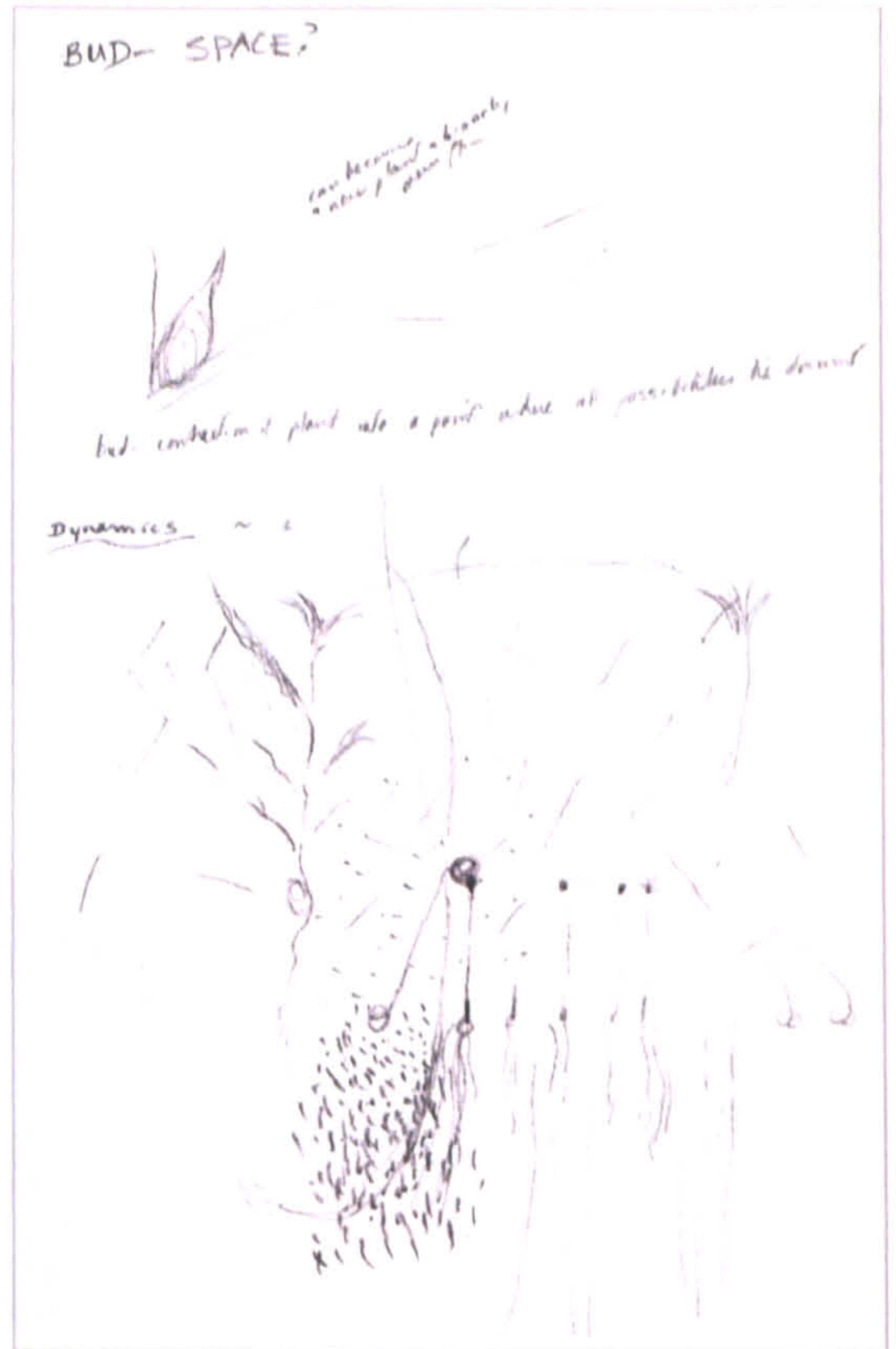
Tree Interior with Various Processes (Sap Flowing, Water Evaporation etc)
Osmose working notebook, 1994



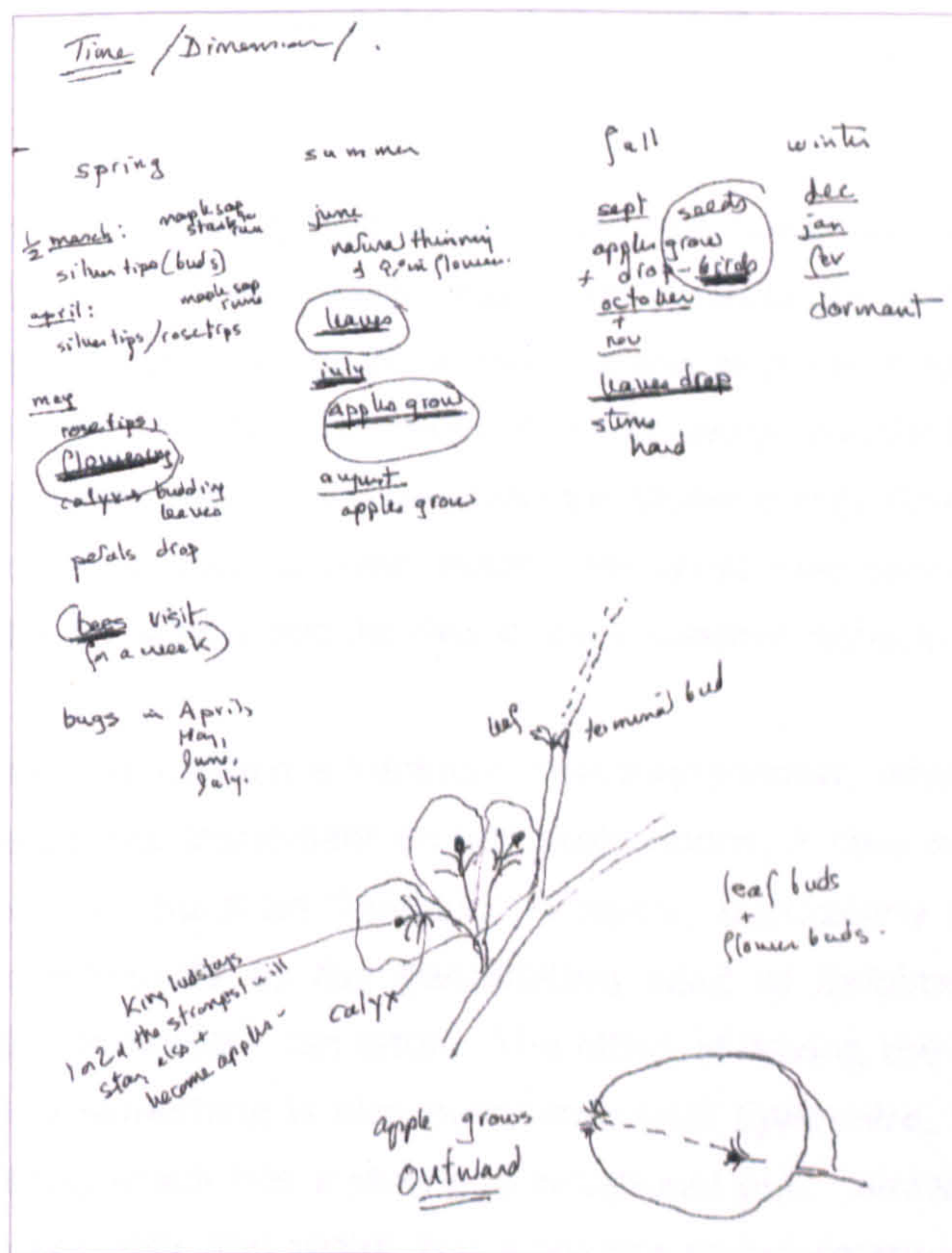
Leaf Interior - in Process of Photosynthesis - with Quotation by Dylan Thomas
Osmose working notebook, 1994



Seed Interior with Blue Window/Doorway & Quotations
Osmose working notebook, 1994

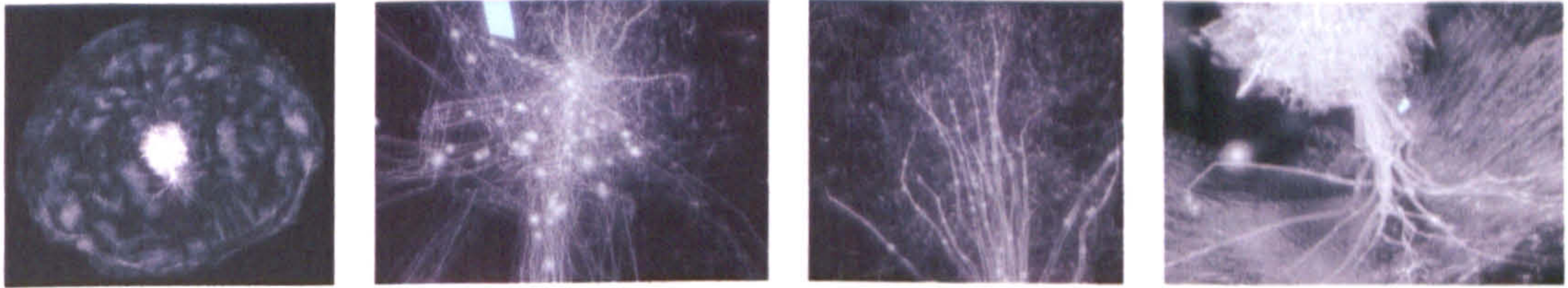


Bud Interior & Dynamics of Blooming
Osmose working notebook, 1994



Apple Tree: Time Dimension with Blossoming
Osmose working notebook, 1994

[The following images, 1994 rendering tests from *Osmose*, contained both the recurring elements of a central tree and a luminous doorway, along with flowing particles. To contextualize these test-images, I have included a reproduction of one of my paintings of a tree inside a luminous doorway, made in 1986, nearly a decade before.]



Osmose Tests: Tree inside Ovoid Sphere; Tree, with Window & Particles
Frame-captures of 3D scene, 1994



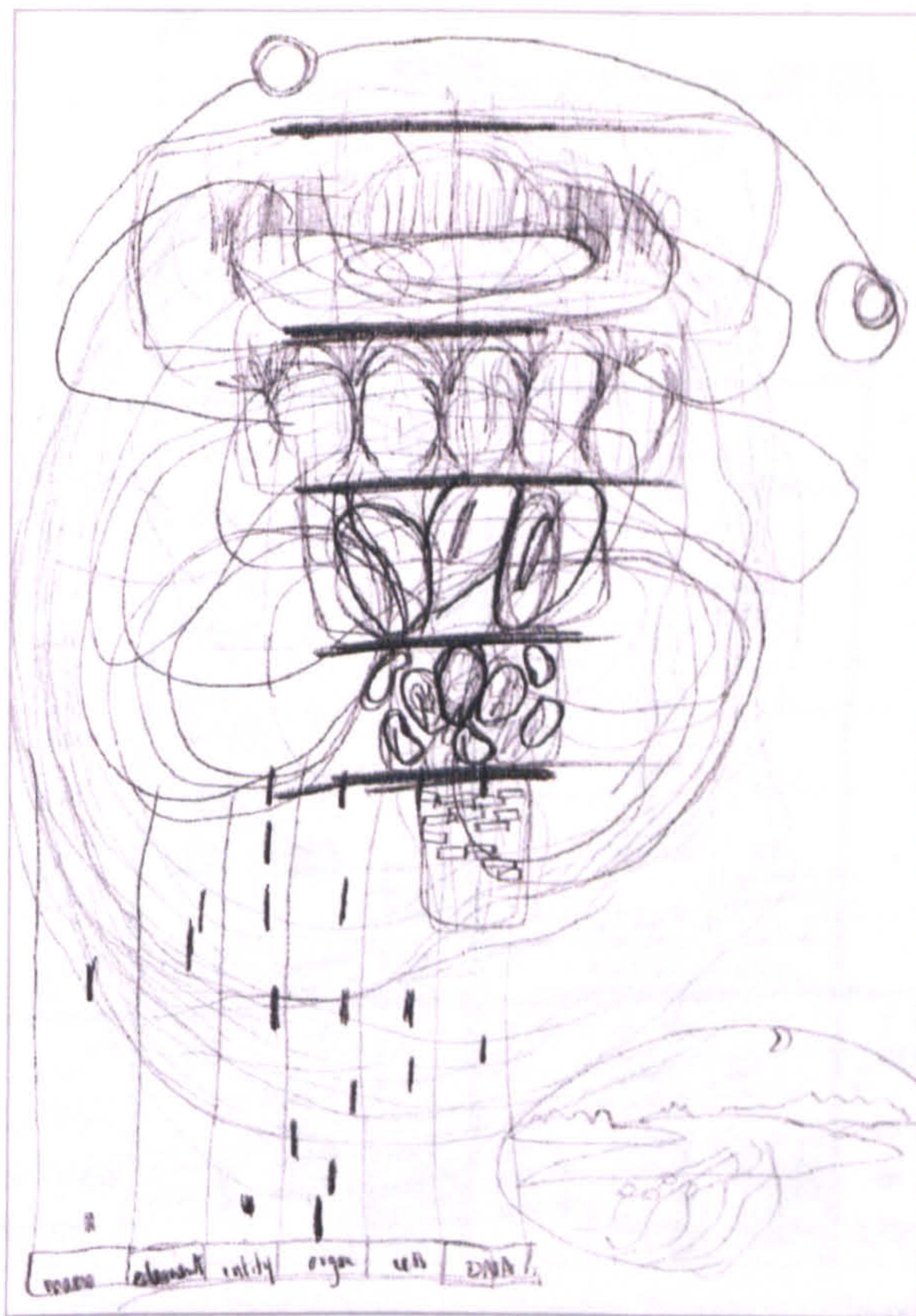
Tree & Luminous Doorway
Oil on board, 1986

[Between September 1994 and January 1995, for a period of more than four months, work on the project was suspended due to circumstances beyond my control.]

February 11, 1995

The environment is not static, but is dynamic in space and time. Luminous doorways are *openings* for travelling to different dimensions of life. A bloom may be more essential as the first opening, rather than a leaf, because it is related to reproduction. Blossoms and leaves as points of light. When the participant becomes closer, she does not see realism but flowing cycles of energy, and the Blooming energy (White) would be more intense, faster, and shorter-lived than the slower energy flow of the leaves, and the participant, when approaching close, is pulled inside. We could have symbolic day and night. For example, four days/nights per season, with the days longer in summer, nights longer in winter etc.

[While *Osmose* ultimately does contain a luminous doorway/window, which appears as a pale blue rectangle and follows behind the immersant on her explorations, it does not function as an opening into other dimensions of life: Such an "opening" however, particularly in terms of the blooming referred to above, does manifest as the germinating seed of *Ephémère*, into which, once its "blooming" has begun, the immersant can enter. The effect of having the immersant "pulled inside" when approaching close to something is also postponed until *Ephémère*, whereby this effect takes place in the river or stream, which has a strong gravitational pull. Similarly, while the Clearing in *Osmose* does cycle between day and night, the seasonal transformation between winter, spring, summer and autumn is left for *Ephémère*. Further discussion of such elements is continued in the next chapter, within the working notes of *Ephémère*.]



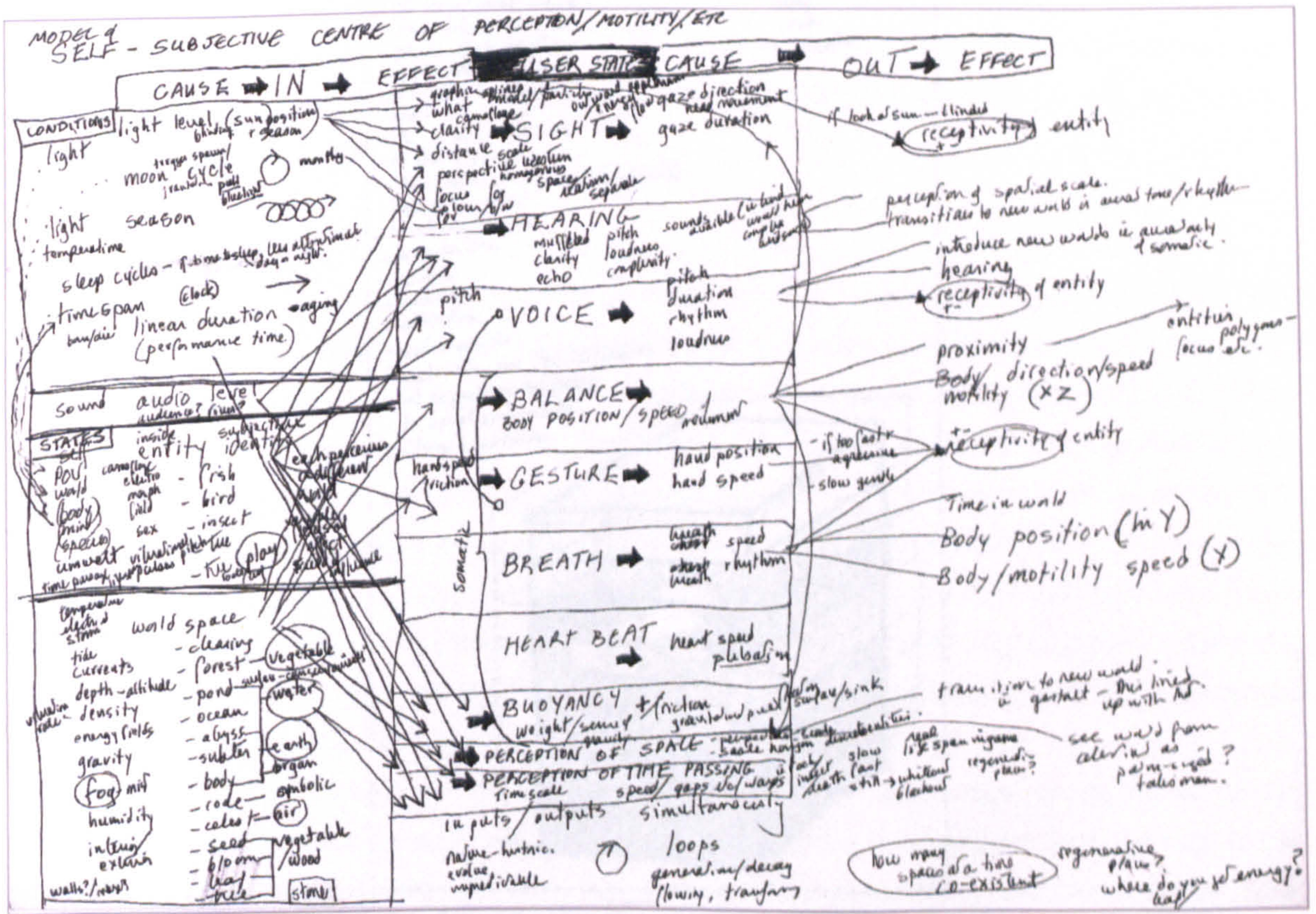
Osmose Spatial & Temporal Structure with Ovoid-Spherical Landscape
Osmose working notebook, 1994

LEVEL	ELEMENTS	FUNCTIONS	CYCLES
SPACES under-earth - - world for seeds - break down of bodies	water	flow / trees	
COMMUNITY STEPS	group minds		evolve
ORGANISMS h	rain-bugs = insect water-bugs = bird river-suck = fish under-soil = jelly	(insect) → (insect) bird → fish → jelly →	- birth-matter-die - reproduction
ORGANS specialized cells	root leaf flower seed	heart = 1000 leafy hearts lungs = 1000 pair of tiny lungs	
CELLS	nucleus cytoplasm membrane	egg / sperm / spawn	divide - multiply - - die
	DNA genetic info	- transform energy - transmit genetic information - specialize to different functions - same n	- multiply - mutate
ATOMS		- once inside network of living matter become enmeshed in cycling from one animal to another	

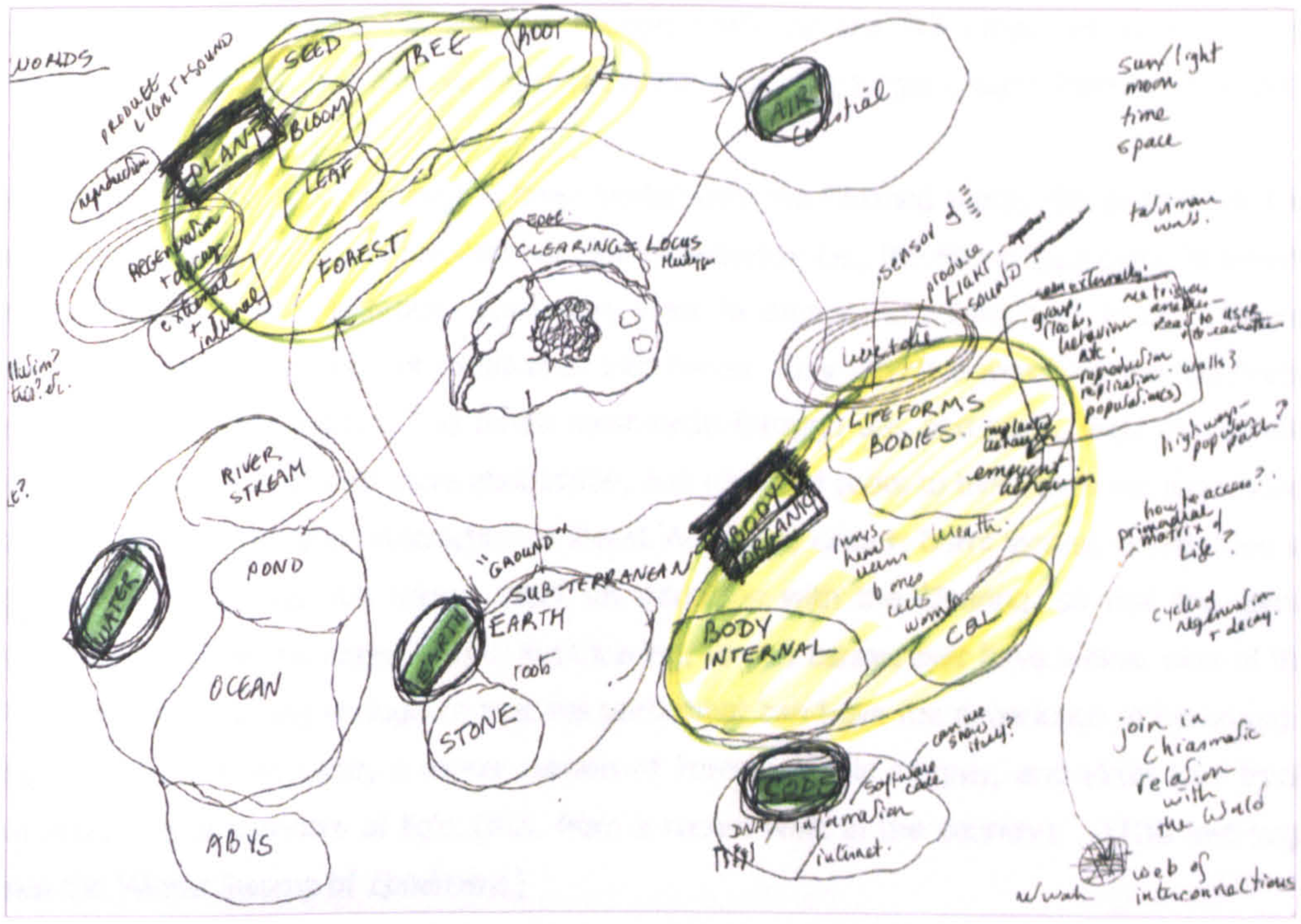
Osmose Structure: Levels, Elements, Functions, Cycles
Osmose working notebook, 1994

SCENE :	① CLEARING	② FOREST	③ POND	④ OCEANIC	⑤ SUBSTRATE	⑥ BODY	⑦ CODE	⑧ CELEST	⑨ SEED	⑩ BLOOM	⑪ LEAF	⑫ TREE
models:	rocks tree ground pond surface (most edge moon	trees bushes bss paths clearings	pond wall	rocks rocks veins	roots rocks veins	organs bones	code paths	seed blossom	bee	light	top light water etc	tree
gplines:	birds sea mammals	birds rodents	fish wells	fish wells birds prey	bacteria	cells blood etc water						
effects:	variable	dance to medium	dense	med	med	med	0	variable	?	?	?	?
fog range -	black	black GR	GR/BL	BLU	BLACK	BLACK	RED	BLACK/WH	?	?	?	?
backgr colour -	black	black	LIGHT GR	LIGHT					?	?	?	?
up-colour -	black	black	DARK GR/BR	BLACK					?	?	?	?
down-colour -	black	black	whitish surface	blue					?	?	?	?
sunlight -	full rhythm visual triggers	full	blue light	blue					?	?	?	?
moon -	full rhythm visual triggers	full	FRIBZE water	triggers only					?	?	?	?
season -	full rhythm visual triggers	random wind gravity	random current	random current					?	?	?	?
fields gravity	random wind gravity	random wind gravity	random current	random current					?	?	?	?
electro- way density	variable	variable muffled	med dense	frampant echo	empty echo							
AUDIO	variable	variable muffled	med dense	frampant echo	empty echo							
transitions	xyz ↕	xz	y ↕	y ↕	y ↕	y ↕	y ↕	y ↕	xy ↕	xy ↕	xy ↕	xy ↕
variable start condition end	xyz ↕	xz	y ↕	y ↕	y ↕	y ↕	y ↕	y ↕	xy ↕	xy ↕	xy ↕	xy ↕
scene to trans	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree	clearing ↔ ocean ↔ pond ↔ subtree ↔ tree

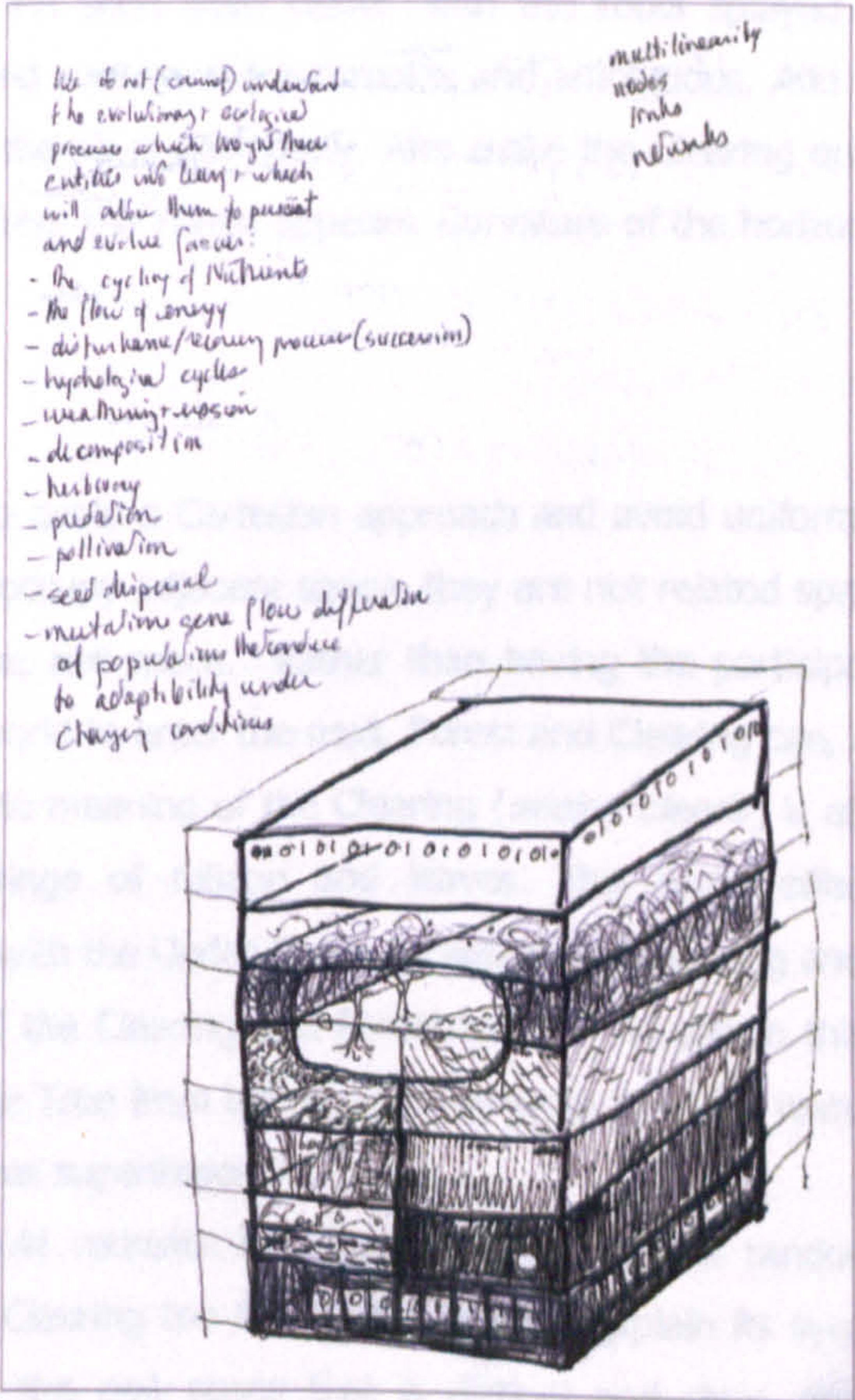
Osmose Chart with Spatial Realms and Elements, Transitional Effects, etc
Osmose Working Notebook, March 1995



Model of Perceptual Self: Causes and Effects with Related Perceptual & Environmental States
Osmose Working Notebook, March 1995



Osmose Map of Spatial Realms & Elements with Clearing at Centre (Seen from Above)
 Osmose Working Notebook, March 1995



Osmose Spatial Structure Viewed as Cube with Spatial Realms
 Osmose Working Notebook, March, 1995

April 20, 1995

Our first experience in *Osmose* in the stereoscopic HMD, on the SGI Onyx: we need to see things moving, need to interact, need to have life flows, need to be able to get caught, follow certain paths.

Forest: Now that the Forest scene has been loaded with the Clearing scene, the project has moved to a new level, and we can respond through our own experience; i.e., the Forest as a place to become lost, no sense of direction, disorientation, frustration, want to escape, to return back to the Clearing. We must be careful in the Clearing not to fall back into Forest. Very effective when we see the Forest edge *superimposed* over the Clearing. The forest must cycle through day and night, with alterations in the lighting, colour, and sound. Add more abstraction, add layers of roots to the leaves we have now, so we will have an entire range from abstraction to literal. Add more colour: burnt sienna, ochre, blue violet to sap green, rich, sensuous, full colour. Work on transition with the Clearing, so that the forest edge appears before you see the entire Tree in the Clearing, so you *cannot* ever have a clear view of the Tree. The Forest should last long enough so that the participant can have the experience of becoming *lost*, of wanting to find the way. Later, a winter version of Forest, that is all gray, and violet tree trunks with vertical access, with corridors of light (this, from a recent walk in the country). [This last suggestion becomes the Winter Swamp of *Ephémère*.]

Clearing: Represents the only scene that contains discrete things, i.e. tree, pond, stream, ground etc: Symbolism of the "locus" of the Clearing, as light and openness, in the chaos and overwhelming mass of Forest. Most interesting when seen from below, with the roots splayed out, and the tiny luminous particles of the folded ground surface. More complex and ambiguous. Add a folded texture of luminous particles in the air, so that the air is not empty. Also make the Clearing quite small, so that before you get too far away from the Tree, the Forest appears. Curvature of the horizon of the Earth in the Clearing is quite effective.

May 1, 1995

Clearing: We are trying to avoid a Cartesian approach and avoid uniform geometric space. Therefore Forest and Clearing do *not* occupy adjacent space, they are not related spatially, but more symbolically. Their relation is one of *time*, not space. Rather than having the participant go from one to another, conventionally exiting one world to enter the next, Forest and Clearing can, at moments, spatially *coexist* in relation to each other. The meaning of the Clearing (*seeing clearly*) is affected by the appearance of the Forest edge, of its fringe of foliage and leaves. This same effect can also be created by superimposing the Clearing with the Under-Earth, as well as the Clearing and the Pond. We need to learn from the superimposition of the Clearing and Forest in order to create this effect in others. Even the view from underneath, of the Tree from below, with luminous particles textures in folds above the point-of-view, creates an ambiguous superimposition.

Georges asks if we should recreate the spatial ambiguity and randomness of the Forest in the Clearing: he asks, isn't the Clearing too literal, too clear? I explain its symbolism as "a Clearing in the Forest". I explain that it is the *only* scene that is distinct and clear, and I read him passages from Heidegger, Bachelard and Robert Pogue Harrison's *Forests: the Shadow of Civilization*. We analyze all the scenes which are more abstract: if the Clearing were also abstract, it might be too oppressive. We

need a "clearing" to have relief: that is what makes us human. (If we were to *merge* completely, it might bring madness, we might be no longer distinguishable as human.)

[Robert Pogue Harrison's exploration of forests as metaphor, in *Forests: the Shadow of Civilization*, provided much inspiration for my thinking about the realms of the forest and the clearing in *Osmose*. For example, he asks: "What does one see vertically or laterally in a dense forest?" He answers, "The mute closure of foliage", and also, "The boundless oblivion of the dormant mind".²¹ In regards to the "clearing", Harrison quotes the eighteenth-century Italian theorist, Giambattista Vico, who writes, "Every clearing was called a *lucas*, in the sense of an eye, as even today we call eyes the 'openings' through which light enters houses".²² According to Harrison, for Vico, this was the "burnt-out clearing" in the forest as an "obstacle to visibility", an "obstacle to human knowledge and science".²³ I was also inspired by Heidegger's discussions of the clearing (*lichtung*), for example, to mention only briefly: "*Aletheia* - Openness - clearing, light, shining"; and "To clear [*lichten*] something means: to make something light, free and open; for example, to make a place in the woods free of trees. The open space that results is the clearing [*lichtung*]"²⁴ (Here, the reader might want to refer to my discussions of *aletheia* as truth and revealing in Chapter I, under *Techne as poiesis*.)

I soon introduced another recurring element, which I thought of as a volumetric entity that the Immersant could look at from without, and also, when conceptualized further, as a spherical space the Immersant could enter and be within. I remember that when this element "appeared" (and it really seemed to manifest of its own accord in my imagination), it had much symbolic import even though I wasn't certain exactly what: I therefore named it the "Talisman". (The Shorter OED describes "talisman" as an object supposed to have occult or magic powers, or which achieves remarkable results.) As I conceived it however, this entity was not only to be regarded from the exterior, but also *entered*, thereby functioning as a luminous doorway (already a long-standing element in my work). Most significantly however, as described below, I imagined it as having an *ovoid-spherical* shape which, when entered by the Immersant, became the enveloping "world" containing the Clearing inside. Accordingly, I renamed the talisman the "Life-world" and we subsequently referred to it in this way. Most definitely the "Life-world", especially because it could be seen from *without* while also being entered *within*, was a recurrence of the ovoid-sphere from my last paintings, with its accompanying paradox of the doubled point-of-view.]

The Talisman [Life-world]: We also discuss that even the Clearing is interior, and that the only truly *exterior* scene is the Talisman [subsequently renamed the Life-world] because one can be truly outside of it. The Talisman/Life-world should become the Introduction *and* the ending. I always had an intuition that this "talisman" was necessary, but only now does it become clear how to use it.

The Introduction would be black space, with random luminous particles moving and pulsating with some colour. The participant should not know if she is in undifferentiated matter, pre-born, post-death

²¹ Robert Pogue Harrison, *Forests: the Shadow of Civilization*, 4.

²² Giambattista Vico in Harrison, *Forests: the Shadow of Civilization*, 9-10.

²³ *Ibid.*, 10.

²⁴ Heidegger, (*Being and Time*) quoted by Reinhard May in *Heidegger's Hidden Sources: East Asian Influences on his Work*, 31; 33.

(prenatal, postmortem) or whether it is simply retinal activity inside the eyes. The sounds can make the participant more aware of her own breathing, and also remind her to slow down. Accordingly, there may be a few moments of orientation and calm. Then, through sound, her attention can be drawn behind, above, or below (most unusual for newcomers in VR is the *vertical* axis), sometimes behind, sometimes above, etc., or sometimes changing position to have the participant look at all these directions.

Perhaps the Life-world starts off quite small, as an "opening", luminous against black space; an opening of light (a doorway) so participants will tend to move towards it. Then they will see it as an ovoid-spherical shape, a cell-like blob, and as they approach more closely they will, most surprisingly, see the Clearing within. Thus they are entering the "World", as if they are taking physical form. [The shape I was referring to here was the recurring element of the "ovoid-sphere" that had occurred in my paintings previously.] When the Life-world becomes larger (making the participant *feel* as if she is approaching it, whether she is or not), the Clearing will be initiated, so it is possible to see both *superimposed* upon each other.

In this way, the Life-world surface can never be approached too closely. (The Clearing should not be seen from above, but probably only from below, so people enter it from the subterranean or Under-Earth.) Also, the Life-world can only be visited when entering the work or exiting: neither of which are voluntary. However perhaps it can also be *entered* voluntarily through the Abyss (as an "opening of light"). The Abyss, equaling self-extinction, thus allows a rebirth, through the Life-world, back into the world. This is the only way *out* of the Abyss, and would appear in its depths. In a later version of the work, the Life-world could also lead to the cellular realm.

Life-world as ending: At the end, when there are 30 seconds left of the 15 minute experience, the Life-world appears again, superimposed over where ever the participant is, and takes over. Participants then lose control of their willful motility while the Life-world becomes smaller and smaller, probably below, so that they feel like they are rising up. They now realize they have no choice: *they must die from the world*. This also makes the work a cycle, and signals to the audience or next person waiting for immersion, when the session is closing.

[My use of the phrase "life-world" is related to the word *umwelt*, used by the theoretical biologist Jakob von Uexkull in 1926 to describe the "subjective world" of an individual organism. (I have previously referred to Uexkull in Chapter II, 4.2, in context of Arran Gare's discussion of process philosophy.) According to Neil Evernden, in *The Natural Alien: Humankind and Environment*, one of the metaphors Uexkull used to illustrate this concept was a soap bubble, whereby every creature, as subject, is surrounded by a bubble filled with its own perceptions: if we were to enter that bubble, our own perceptions would transform accordingly. Every subject thus helps create its own *surrounding world*: all that a subject perceives is its "perceptual world"; all that the subject does, is its "effector" world, and together these form a closed unit, or *umvelt*. Accordingly, there are "parallel universes (*umvelten*) within the world of living beings", rather than a single world into which all creatures are fitted.²⁵ As David Abram further explains, the phrase "life-world" (*lebenswelt*) is also used by Husserl to describe the inter-subjective world of human beings, the

²⁵ Neil Evernden, *The Natural Alien: Humankind and Environment*, 79-82. Evernden quotes von Uexkull from "A Stroll Through the Worlds of Animals and Men", in Claire Schiller, ed. *Instinctive Behaviour* (New York: International Universities Press, 1957), and *Theoretical Biology*, London: Kegan Paul, 1926.

world of our immediately lived experience.²⁶ I was already aware of these meanings when I wrote of the "life-world" as *umvelt* in my journal, more than a year and a half earlier, i.e., in Jan. 1994:

"*This*, the recurring undercurrent, the archetype that seems to me to enclose the entire world, a summary of subjective being, whether myself, a fish or plant, or a fruit blossoming into the future. I wonder, however, if this enclosed sac-like window [the ovoid-sphere that had first appeared in my painting] is too finite, too inadequate to hold the flowing inter-related complexities of creature, species, ecosystem... I wonder if we have the conceptual agility to consider, truly, the complexity of life – of interwoven species, all part of some vast ancient rhythmic flow, each member birthing and dying, interacting with its environment, inseparable. We are not yet capable it seems to me of imagining metaphors for such intricacies, our minds habituated into pigeonholing other life-forms as "objects", commodities in a human-centric world. This is my obsession, to express integration, interrelation, to make whole. *Umwelts* can contain other *umvelts*: each is flowing process, seed to bloom to dust, and they flow through each other..."

May, 1995

Scenes or spaces: Intro – Clearing – Tree – Bloom – Leaf – Seed – Forest – Cloud - Earth - Pond – Abyss – Life-world – Code. The river/stream is an extension of Pond.

In this version of the work, we will not get into the Interior Body due to lack of time.

This version of the work (*Osmose*):

-diurnal/nocturnal cycles

-scenes:

Clearing
Forest
Leaf
Pond
Abyss
Under-Earth
Life-world
Code
Text

To add in next version [*Ephémère*]:

- seasonal cycles

Seed
Bloom
Interior Body
Cell
DNA

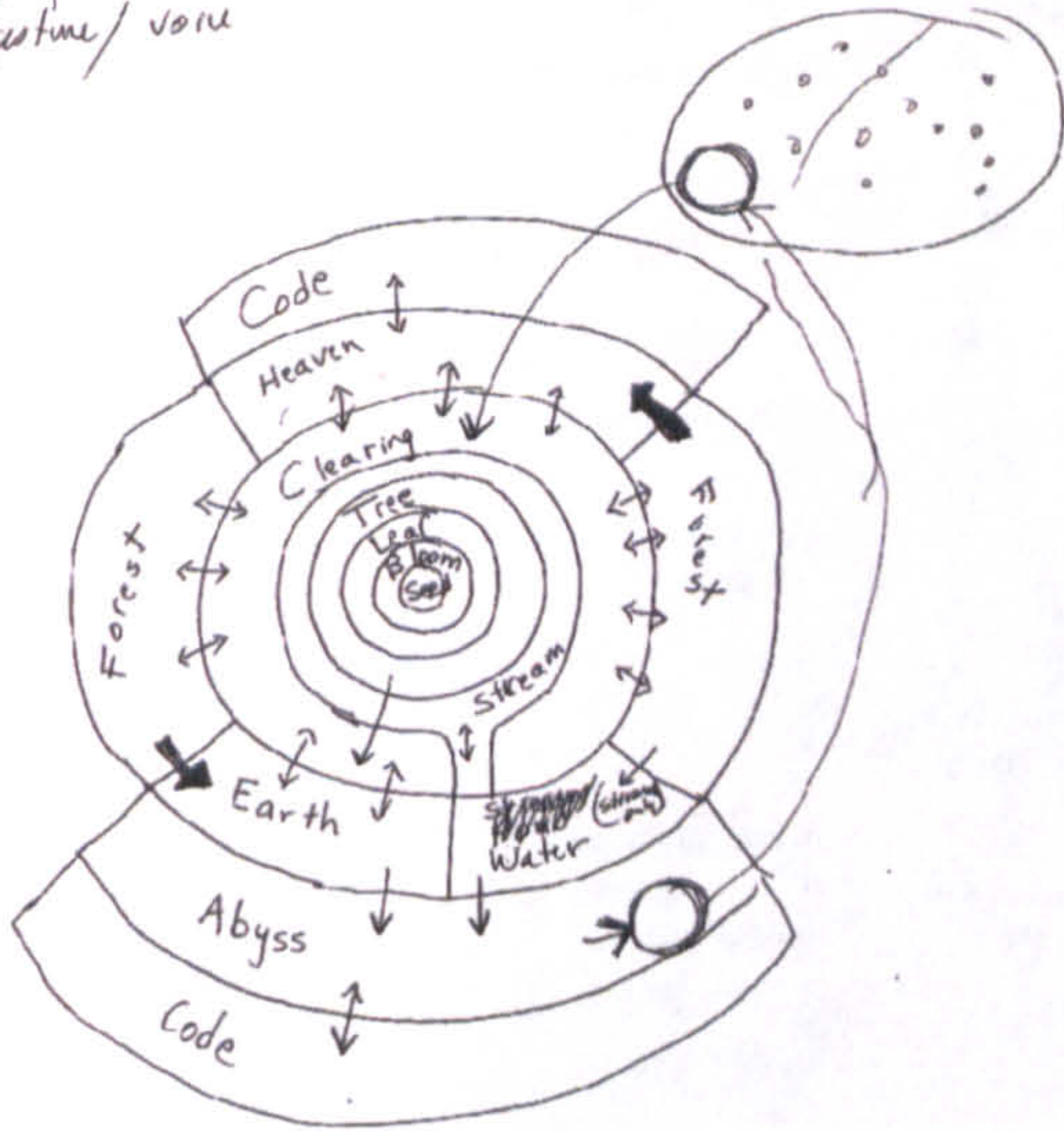
²⁶ David Abram, *The Spell of the Sensuous, Perception and Language in a More than Human World*, 40-43.

Then Version:

- diurnal/nocturnal
- ^{scene} Clearing / Forest / Tree
- Subterranean / Pond / ~~Stream~~
- Abyss / Seed / Bloom / Leaf
- Code
- interface - breath / balance / gesture / voice

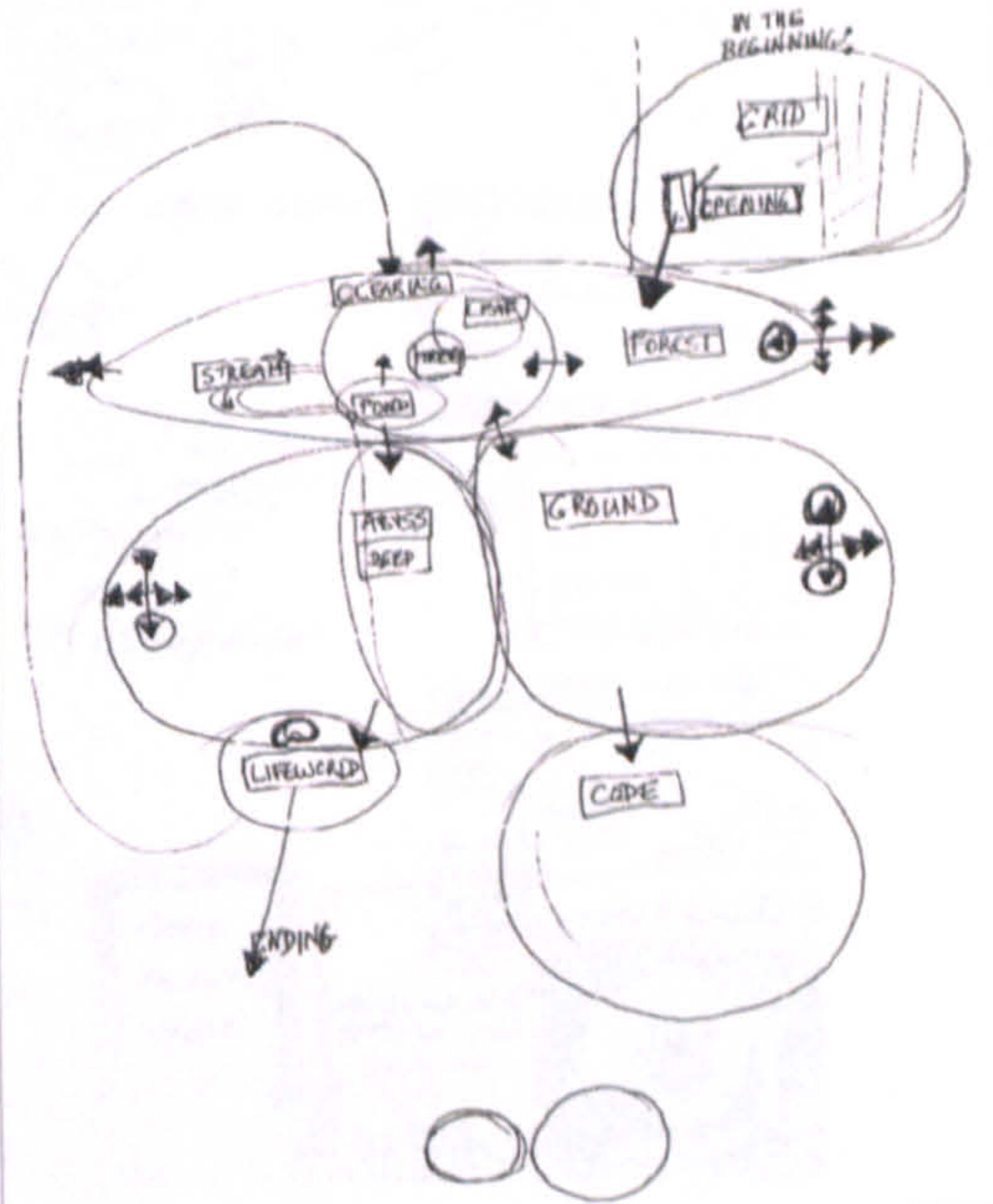
Next Version:

- seasonal changes
- ^{space} Body / call / DNA / Stone
- Ocean (with depth) doesn't die
- interface - brain / electro-magf. / head / touch



Osmose Structure: Viewed from Above as Circles with Seed at Centre
Osmose Notebook, April 1995

May 29:



Osmose Spatial Structure Viewed from Side
Osmose Notebook, May, 1995

OSMOSE

ENVIRONMENTAL CONTEXT with Life-Forms

CURRENT ENVIRONMENT WORLD-SPACE	TIMING: LINEAR & CYCLES	OBJECTIVE IDENTITY OF OTHER LIFEFORMS	INHERENT, ENVIRONMENT-DEPENDENT BEHAVIOUR	PERCEPTIBLE VISUAL & AURAL QUALITIES
1. INTRO	EXTERNAL PASSAGE	CLEARING/ FOREST:	VEGETABLE: aging (linear)	VISUAL: visible <-> invisible
2. CLEARING	SEASON: spring / summer / fall / winter	plant	tree	still <-> moving
3. TREE	HOUR: dawn / day / dusk / night	bird	sprouting (root, leaf)	fast <-> slow
4. LEAF	MOON: new / waxing / full / waning	bat	leaf flowing	steady <-> unsteady
5. BLOOM		insect	/ leafing	up <-> down
6. SEED		mammal	/ blooming	left <-> right
7. DEEP FOREST			/ seeding	bright <-> dull
8. RIVER		SUB-EARTH:	/ fruiting	dark <-> light
9. POND		tree	/ ripening	transparent <-> opaque
10. SUBTERRANEAN EARTH		plant	/ leaf falling	dense <-> disperse
11. INTERIOR BODY		seed	/ dormancy	distinct <-> camouflage
12. CELL		insect	ANIMAL: aging (linear)	focus <-> unfocus
13. INFO. DNA		bacteria	heart-beating	pulsate <-> constant
14. OCEAN			breathing	colour <-> b/w
15. ABYSS		RIVER/POND/ OCEAN:	resting / active	large <-> small
16. INFO. CODE		fish	ingesting / excreting	AURAL: audible <-> inaudible
17. CELL		plant	dying	quiet <-> loud
18. OUT-OF-BODY		coral	pollinating	high <-> low
		INTERIOR BODY: cell	preying / preyed	single <-> multiple
			heat / parasite	short <-> sustained
			singling / flocking	pulsating <-> drone
			running / swimming / crawling	sharp <-> soft
				echo <-> no echo

INTER-ACTION

REAL-TIME INTER-DEPENDENT & INTER-ACTIVE BEHAVIOUR

Various visual & aural signalling acts as a cue to communicational states.

FIELD OF INFLUENCE: weak <-> intense, wide <-> small, steady <-> fluctuating, gravitational pull <-> repel

BOUNDARIES: open <-> closed, permeable <-> impermeable

BEHAVIOUR: approach <-> retreat, attentive <-> indifferent, still <-> move, fast <-> slow, passive <-> aggressive, receptive <-> defensive, absorb <-> reject, resist <-> acquiesce

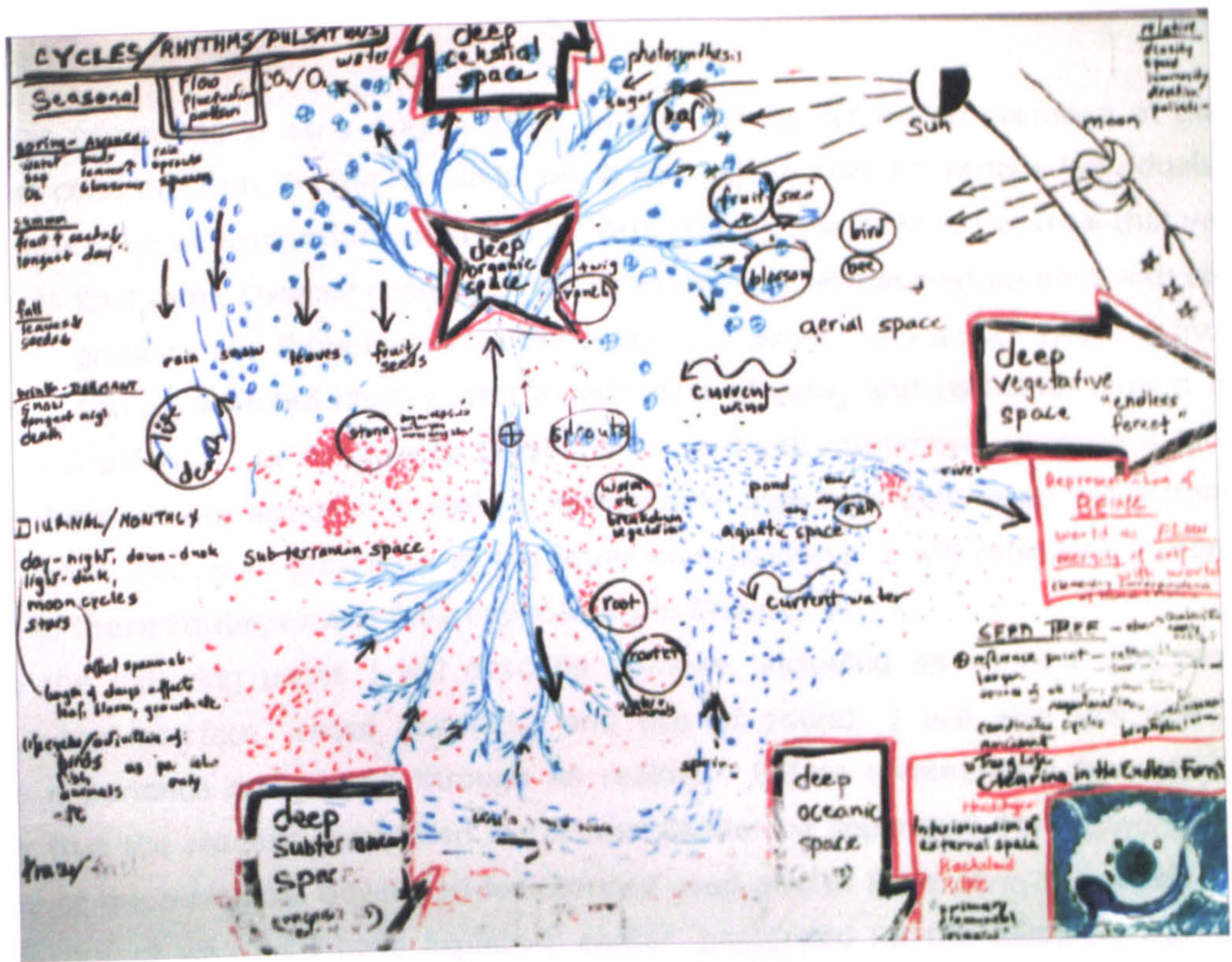
TRIGGERED EVENTS: invisibility <-> camouflage <-> nationless <-> silence <-> closure <-> flight <-> death

SUBJECTIVE STATE (p.o.v. & abilities)

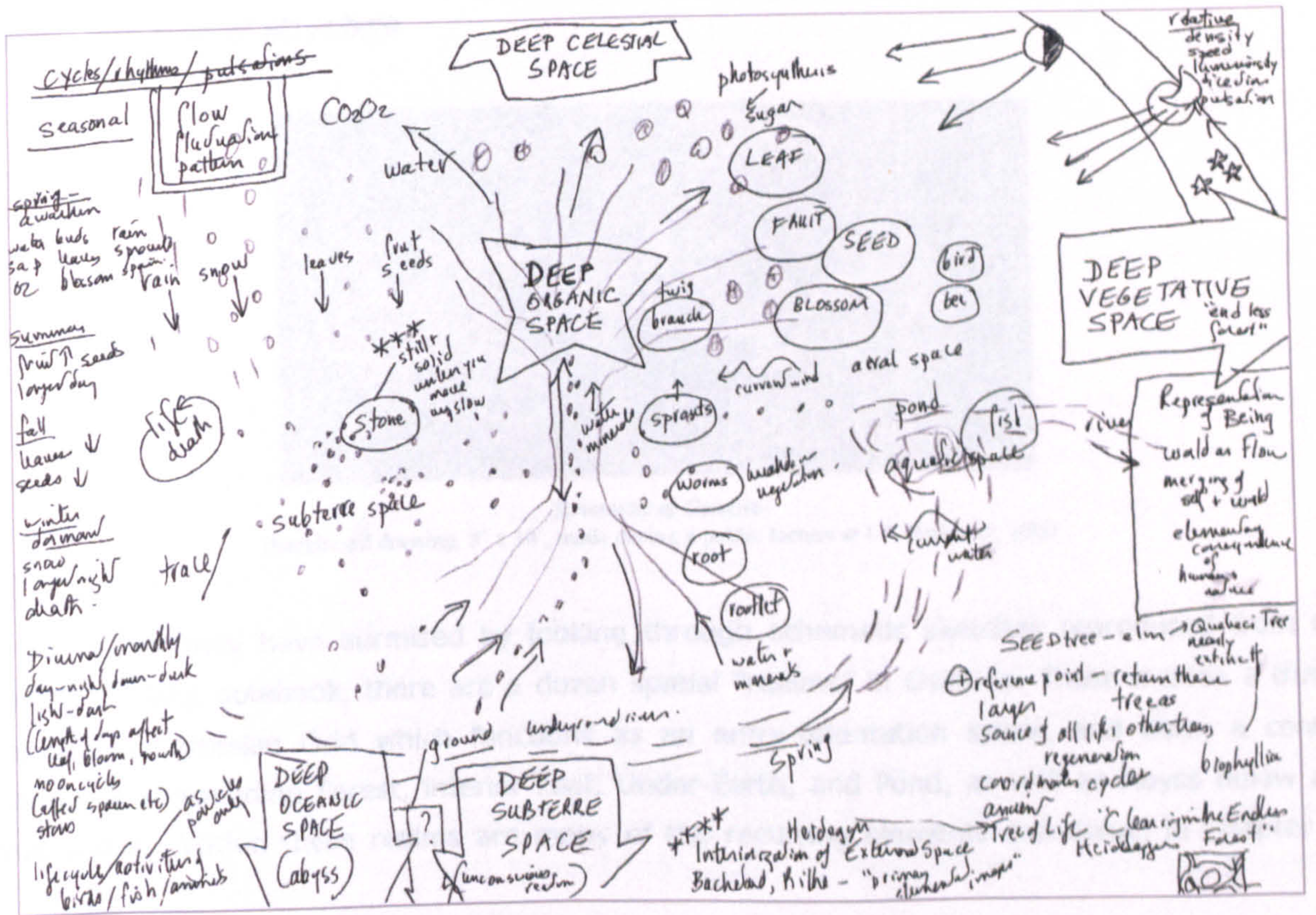
SUBJECTIVE STATE: "USER MODEL"	RESULTING CHANNELS OF AGENCY & INTERACTION	RESULTING PHYSICAL & PERCEPTUAL ABILITIES	SUBJECTIVE STATE: VIA BODILY SENSES OF
CALMNESS	BREATH RATE: RISE / FALL	ACTIVITY LEVEL: nocturnal / diurnal / seasonal	DISEMBODIED SELF
AGRESSIVITY	shallow <-> deep	regular <-> erratic	LEAF, SEED, BLOOM
RECEPTIVITY	BALANCE: FORW / BACK, LEFT / RIGHT	fly / swim / run / crawl	BIRD
ATTENTIVENESS	upward <-> downward	wind / water	BAT
EXPERIENCE	moving <-> still	left <-> right	INSECT
MALE/FEMALE	upward <-> downward	fly / swim / run / crawl	MAMMAL
	MALE/FEMALE: toward <-> away, near <-> far	open <-> close, fast <-> slow (still), up <-> down, left <-> right, sudden <-> smooth	FISH
	VOICE: soft <-> loud, low <-> high, sustained <-> intermittent, repeat <-> new	VISUAL: colour / b/w, far <-> near, certain elements	
	HEART RATE:	AURAL: high <-> low, certain elements	

05.04.95

Osmose: Environmental Context, Interaction, Subjective States Etc.
(with Added Notations on Successful Implementation in Osmose or Ephémère)
Osmose Working Notebook, 1995



Osmose: Original Conceptual Map
 White board drawing, 1994-1995



Osmose: Conceptual Map
 copied from white board drawing
 into Osmose Working Notebook, 1995

4. The Completed Work

Osmose was completed in early August 1995, in time for its scheduled premiere at the Montreal musée d'art contemporain. During its exhibition, it was experienced by various individuals attending the Sixth International Symposium on Electronic Arts (ISEA), also held in Montreal that year.²⁷

In its final form, *Osmose* consists of a fully-immersive virtual environment with stereoscopic 3D computer graphics and three-dimensionally spatialized sound; and a user interface incorporating a stereoscopic head-mounted display with a wide field-of-view, and real-time motion tracking of breathing and balance. In addition to providing an in-depth immersive experience for a solitary individual, the work was designed to have a performative aspect as well, as an installation involving real-time visual and audio projection of the immersive journeys. I will return to a more in-depth discussion of these strategies and their implications in Chapter VI.

In the following pages I will describe *Osmose*, including its content and compositional structure, user interface, visual aesthetic, and use of sound. I will also describe a possible immersive experience or passage through its realms. Before commencing however, I want to emphasize that the research embodied in *Osmose* cannot be separated from *Ephémère*. Not only were many of the strategies developed for *Osmose* used also in *Ephémère*, but much of *Osmose's* envisioned content was, as I have explained earlier, postponed for the following work. If we had had more time (cut short due to an exhibition deadline), many aspects of *Ephémère* would most certainly have been contained within *Osmose* itself.

Content and spatial structure



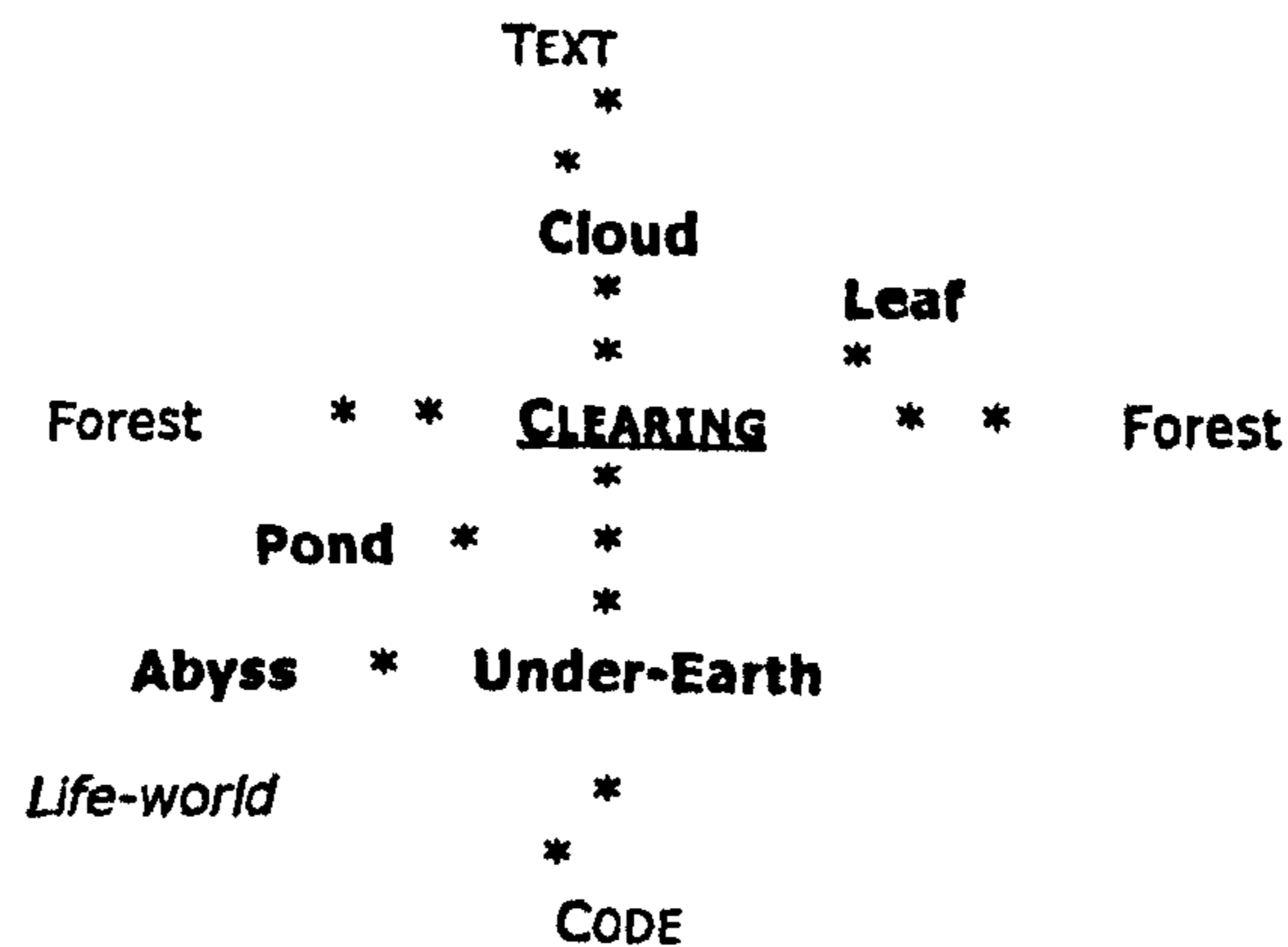
Schematic of Osmose
Blackboard drawing, 8' x 30', made during a public lecture at UC-Berkeley, 2000

As the reader may have surmised by looking through schematic sketches reproduced from the *Osmose* working notebook, there are a dozen spatial "realms" in *Osmose*. These include a three-dimensional Cartesian Grid which functions as an entry-orientation space, and then, a central Clearing, a surrounding Forest, interior Leaf, Under-Earth, and Pond, as well as Abyss below and Cloud above. Within these realms are many of the recurring elements mentioned in Chapter III

²⁷ At that conference, I presented an accompanying paper, "Osmose: Notes on Being in Immersive Virtual Space" (subsequently included in the conference proceedings, and published most recently in *Digital Creativity: a Reader - Innovations in Art and Design*, 2002.) The following year I co-wrote a more technical paper with John Harrison, "Osmose: Towards Broadening The Aesthetics Of Virtual Reality", published in *Computer Graphics: Virtual Reality*, XXX: 4, 1996.

(journal notes of 1992) and in the *Osmose* white paper and working notes, such as a skeletal bare-branched tree, lush forest foliage and leaf interior, flowing streams, and subterranean roots and rocks, as well as a translucent ovoid-sphere (the Life-World), which under certain circumstances contains an interior landscape. In addition to these realms of metaphorical nature, there is also a lower realm of Code, which contains many lines of the custom software code used to create the work, and an upper realm of Text, which contains excerpts of relevant texts on technology, the body and nature: Together these two areas, Code and Text, function as conceptual parentheses around the work.

ENTRY: Cartesian Grid



ENDING:
Receding Life-world

Spatial Structure of *Osmose*

While the Clearing functions as a central spatial area and is horizontally surrounded by Forest, the structure of *Osmose* has a strong vertical axis (rather than the conventional horizontal plane of most VR environments). The relational vertical placement of such realms as the Under-Earth, Abyss, Cloud, Text and Code is amplified by reliance on the Immersant's own breath to rise or descend. There is also a kind of *vertical* spatial recycling, whereby if the Immersant ascends to the very heights of Text, she will be returned to the depths of the Under-Earth, and if conversely, she searches for the bottom of the Code, she will find she has been spatially returned to Cloud: In comparison, *horizontally* most realms feel limitless, because their various elements endlessly recur within; and similarly, the Forest is limitless in every direction. Additionally, if the Immersant descends into the Abyss, she may discover the Life-world, which when entered, recycles her to the Clearing: this serves as a nonlinear way of moving through the work.

Even though an Immersant could remain in the *Osmose* environment for an unlimited amount of time, we chose to bring each experience to closure after fifteen minutes. (This amount of time is sufficient to allow certain perceptual transformations to take place during individual Immersant sessions, while enabling several dozen people to experience the work on a daily basis during public exhibitions.) We accomplished such closure by bringing in the Life-world which appears before the Immersant only to immediately (slowly but irretrievably), recede, thereby gently bringing the Immersive session to an end.

In describing *Osmose*, I want to remind the reader that this work is not a finite "thing" like a painting, sound recording or a film: it is not a static representation of the visual world or a preset sequence of events, nor does it offer a selection of nested hypertextual choices. Rather, this work

functions more like a *spatio-temporal arena*, an *experiential* site for facilitating embodied perception (to the extent that perception involving stereoscopic vision, hearing and proprioceptive sensibility, but not touch, smell or taste can be considered embodied). As such, *Osmose* was designed to be experienced firsthand, *in situ*, as a swimmer experiences immersion in the enveloping sea; or, perhaps more relevantly, as a walker experiences being *in* landscape, its encircling horizon unfolding, tantalizingly out of reach; and with the revelation of its sights and sounds dependent on the rambler, i.e., what direction she goes, how quickly or slowly she moves, where and how long she looks or listens, whether she lingers in a particular place.... In this context, *Osmose* is metaphorically like an actual landscape, one without predetermined paths: Accordingly, the immersant is able to roam (or rather *float*) anywhere she so desires; and she cannot take the exact journey again, because nothing remains the same.

Navigating with breath & balance

To immerse oneself in *Osmose*, one must dress, in specific gear, as divers do. This includes donning a stereoscopic and wide field-of-view head-mounted display (HMD) with stereo audio headphones, and an interface vest which tracks breathing and balance through motion-capture sensors. One sensor tracks breathing by recording the expansion and contraction of the immersant's chest; two other sensors located vertically along the spine track changes of balance as she leans forward, backwards or sideways. They also measure changes in relative height achieved through bending the knees.



Immersant in HMD and Breathing/Balance Vest #1, 1995

The HMD and sensors on the vest are linked through various cables to the computer and digital sound synthesizers/processors. As the immersant looks around, breathes in or exhales and shifts her balance, the computer calculates her point-of-view and ever-changing spatial position within the virtual realm, and in real-time – *on the fly* – generates the appropriate visual elements and aural effects to create the experiential illusion of being bodily immersed and moving through the virtual space, ascending, descending, changing direction and speed. As we designed it, the simple act of breathing – in to rise and out to fall – facilitates a convincing sensation of “floating”, as if the immersant's body were gravity free. As I have written earlier in this chapter (see the *Osmose* white paper, on *Interface*), the strategy of using breath and balance was intended to counter conventional ways of navigating and interacting in virtual space. My intention was also to

paradoxically “ground” the disembodied sensation of floating in the participant’s own body, the implications of which I will return to in Chapter VI.

Visuals and Sounds

The visuals in *Osmose* consist of semi-transparent three-dimensional forms and flowing particles. When an immersant is within the work, everything she sees is accordingly soft, luminous and translucent. Just as in my own “un-corrected” vision, here, there are no sharp distinctions between things, no hard edges, no solid objects separated in empty space. Instead, because of the use of varying degrees of transparency, there is an ever-changing intermingling of varying hues and forms – all transforming in relation to the immersant’s shifting point-of-view and position within the immersive space. By enabling the immersant to see through, and also seemingly pass through, everything as she navigates within the virtual realm, hitherto stable figure/ground relationships are constantly altered, distinct boundaries blur, and recognizable “things” give way to spatial and cognitive ambiguity.

In comparison to the mimetic representation conventionally sought after by most users of 3D computer-imaging software, such spatial ambiguity not only softens, lessens and thereby breaks down rigid dualistic categories, but in doing so allows for open-ended, associational interpretations (as I have already explained in the previous chapter when discussing ambiguity as a concern in my painting, and which I will return to in Chapter VI). In addition, the transitions between the various spatial realms in *Osmose* have been designed to be slow and subtle, fluid and complex. Under certain circumstances, disparate spatial realms can be experienced simultaneously, for they occupy the same place at the same time, enabling the immersant to experience a distinctly non-Cartesian spatiality.

The sounds within *Osmose* are spatially multi-dimensional and have been designed to respond to changes in the immersant’s location, direction and speed. All the sounds are derived from samplings of a male and female voice uttering phonetics (a deliberately subliminal affirmation of the human body within the work): these samplings have been digitally altered to create a wide range of aural effects. As in the visuals, I was seeking to create ambiguity in the sound: I did not want it to be too literal, nor recognizably musical or mimetic, but neither did I want it to be too abstract, chaotic or arbitrary. Most of all, I wanted the sound to be emotional, even mournful in places. Because a work such as *Osmose* is designed to be experienced as a spatial environment in real-time, the sound could not be a linear composition: therefore all sounds have been composed as cycles and have been placed or “localized” in three-dimensions within the various spatial realms. As the immersant floats among these realms and passes through their fluid transitions, she will hear sounds and melodies coming and going accordingly.

An Immersive experience

I am now going to describe an immersive experience or passage through *Osmose*, as if I were narrating a journey, making up just *one* of infinite possibilities.

Entry: When an immersant first “enters” *Osmose*, she will find herself in the midst of a three-dimensional grid extending infinitely in empty black space. This grid (a reference to the Cartesian

xyz coordinate system) functions as an orientation site for becoming familiar with the breath and balance interface. The immersant will soon realize she is buoyantly "floating" as if gravity-free, rising and falling according to the rhythms of her own breath, and that she is able to intentionally ascend by deeply breathing in, and to descend by breathing out, or hover in "mid-air" or even glide, shifting her centre of balance to change direction.

The Clearing:

A few moments after entry, the Cartesian Grid fades away, leaving the immersant in the middle of a Clearing. Gazing around, she sees, or perhaps first hears, what appears to be a large sienna-hued oak tree, near a small pond into which is flowing a stream of luminous particles, and all around, an encircling circumference of dark forest. Once within the Clearing, the immersant becomes aware she has entered a non-Cartesian place, very unlike the "real world", for here, everything is semi-transparent and dematerialized: there are no opaque surfaces, no distinctly separate objects in empty space. Instead, the immersant can see *through* everything, into the trunk of the Tree, down to its roots in the Under-Earth below; she can not only float among these semi-transparent elements but can bodily *pass through* them as well. And, as she does so, habitually-assumed relationships between things – between figure and ground, between her own self and the surrounding environment – become confused, and all that was recognizable becomes uncertain and ambiguous.



Semi-transparent Tree in the Clearing, Osmose *Tree at Dusk in the Clearing, Osmose*
Digital images of 3-D virtual environment captured in real-time through HMD
during live immersive journey/performance, 1995

The immersant may choose to drift into the Tree, and with sufficient skill in terms of using her own breath, can rise among its streaming particles. Or she can float into its branches, only to find herself passing briefly through a previously unseen leafy canopy (consisting of digitally scanned leaves, lasting only a moment, as if it were a "veil" of surface appearances) and into the interior of a Leaf. The realm of Leaf, comparatively more abstract than the Clearing, contains brightly blazing particles streaming through green space, accompanied by high-pitched sounds, suggestive of the process of photosynthesis.

The Clearing itself has been made to cycle, transforming through day and night, its ebb and flow of light and dark accompanied by subtle visual and aural changes. These include the nocturnal

appearing of fireflies, and a haunting melody which cycles over and over (created, like every other sound in *Osmose*, from digitally altered human utterances.) In comparison to the other realms of *Osmose*, the Clearing with its spatially-anchoring tree is the most recognizable, and, placed as it is at the center of *Osmose*, is intended to provide a relatively stable "place" for immersants to return to before setting off again to explore the more abstract realms all around.

Forest:

From within the Clearing, if the immersant breathes shallowly (so as not to ascend or descend dramatically) and leans to alter direction, she can also glide horizontally towards the encircling Forest. As she nears its edge, in response the Clearing will fade and the Forest realm will begin to appear all around her. With skill, it is possible to hover in a strange liminal zone – literally a spatial *intermingling* of both realms simultaneously – before moving deeper into the Forest.



Forest with Cartesian Grid, Osmose
Digital image of 3-D virtual environment captured in real-time through HMD
during live immersive journey/performance, 1995

Once within the Forest, the immersant will find herself among a thick mass of semi-transparent leaves (created primarily by digitally scanning actual leaves). As she floats among these leaves, they not only tremble in response to her wake (i.e., her passage through them), but they also continually re-assemble themselves around her, with those she has just passed by reconfiguring themselves in front, thus creating an endlessly recurring space. (This never-ending forest was my response to a comment made by Descartes: he advised that if ever one finds oneself lost in the middle of a forest, one should head in a straight line and where ever one ends up will be better than being in the middle of a forest...²⁸) Thus, heading in a straight line will only cause the forest to recur endlessly, while moving too quickly will summon in the Cartesian Grid. (We deliberately bring in the Grid to remind immersants to slow down.)

²⁸ Descartes' full comment, quoted by Robert Harrison in *Forests: the Shadow of Civilization*, reads as follows: "In this I would imitate travelers who, finding themselves lost in the forest, ought not to wander this way and that, or, what is worse, remain in one place, but ought always walk as straight a line as they can in one direction and not change course for feeble reasons, even if at the outset it was perhaps only chance that made to choose it; for by this means, if they are not going where they wish, they will finally arrive at least somewhere where they probably will be better off than in the middle of a forest." 110.

It is possible to leave the Forest by following a stream of luminous particles to the Clearing's Pond, or alternatively, by remaining in one place. Such deliberate "non-action" - more difficult than one might think in terms of controlling one's breath and balance to motionlessly "hover" (as new scuba-divers discover when learning buoyancy control in oceanic space) - will cause the Forest to gently fade and the Clearing to reappear.

Pond, Abyss & Life-world:

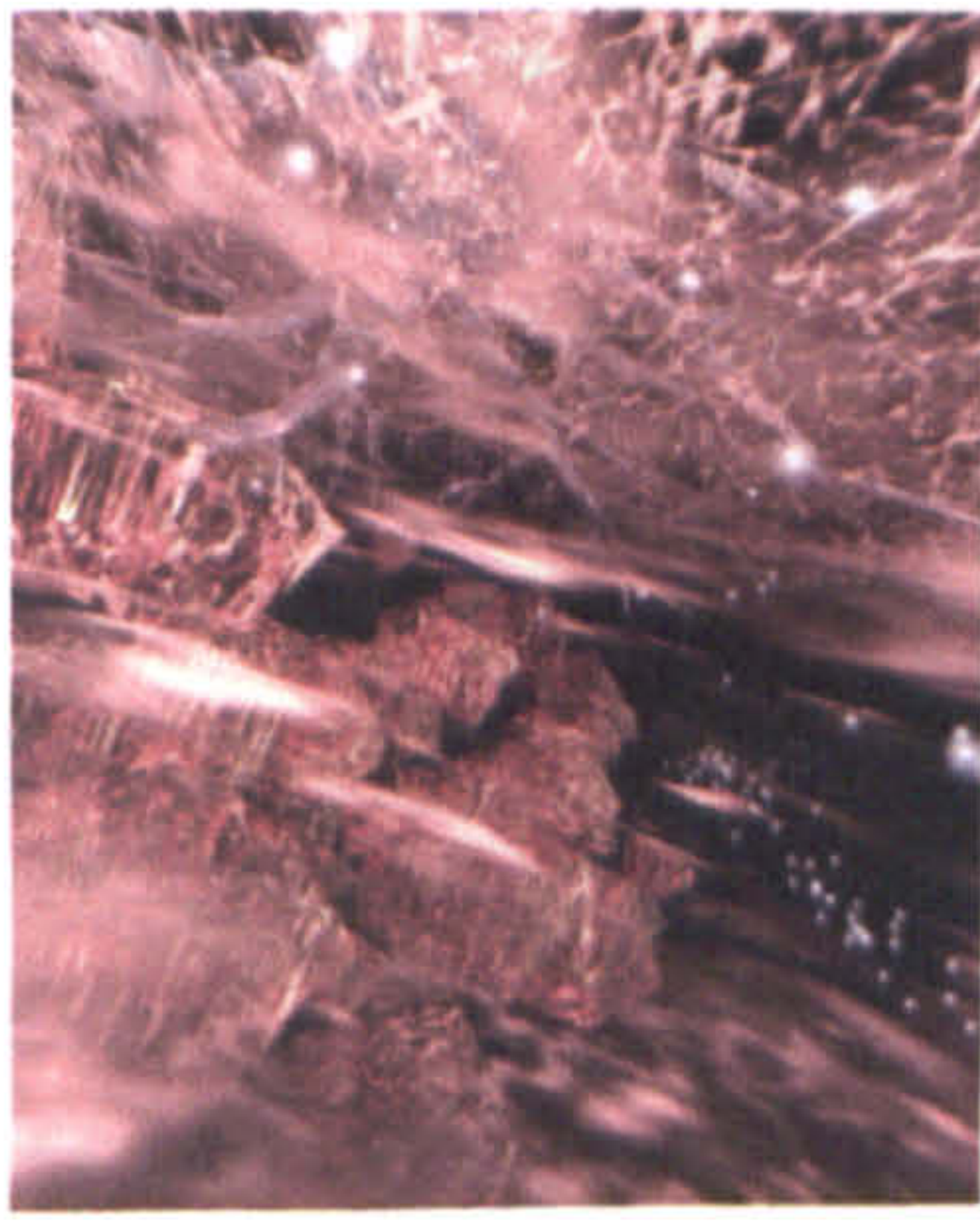
From within the Clearing, the Immersant can also float towards the Pond, guided to its location by its emitting of chirping and frog-like sounds. Once "hovering" above its transparent surface (involving the careful coordination of one's breath, balance, and bending the knees to adjust speed, all while looking beneath one's body to see where one is going, very much like a scuba-diver engaged in vertical descent) the Immersant can drop down through the Pond's murky semi-transparent depths; and then, if desired and bodily capable, even further, to an oceanic Abyss with a vertical wall extending further out of sight. This seemingly vast Abyss is dimly lit, and filled with echoing melancholic sound. It is populated far below by barely visible streaming particles, representing schooling fishlike entities.

From within the Abyss, the Immersant will eventually hear a distinctive tinkling behind her: If she turns towards that sound and the reference-less blue space beyond, in response, the luminous translucent ovoid-sphere of the Life-world will appear. (This notion, of having to turn away from the security of the wall into "reference-less" blue space originates in diving.) The Life-world, whose ovoid-spherical shape first occurred in my paintings, has already been mentioned in the previous *Osmose* working notes.

As the Immersant moves towards the Life-world, it simultaneously tumbles towards her and engulfs her within: Here, the translucent veil-like outer surface of the Life-world serves as a *threshold* through which the Immersant must pass (and equally which passes through her). After this startling event, she realizes that the Life-world was, in fact, the Clearing *seen from without*, and now, she is back *inside* the enveloping landscape of the Clearing, hovering above its central Tree. This perceptual sleight-of-hand - which many Immersants miss because they never reach the Abyss, and therefore never encounter the Life-world (except at the ending of the work, when they cannot enter it because it immediately retreats) - could be considered the hidden treasure of *Osmose*. From the Abyss, after passing through the Life-World and back into the Clearing, the Immersant can then continue to explore for the remainder of her Immersive time-span.

Under-Earth:

From within the Clearing, the Immersant can also look down into the Under-Earth because the "ground" itself is semi-transparent. It is thus possible to gaze through such ground to see the sienna-hued roots of the Tree below as well as rocks and boulders in the subterranean depths. If the Immersant exhales deeply, she can vertically descend into this realm, and explore its aurally-resonant spatiality, drifting through its roots and luminous particle streams, and floating among its semi-transparent, semi-abstracted rocks and boulders. Close attention will reveal more subtle particle flows, intended to suggest life processes at a more microscopic level.

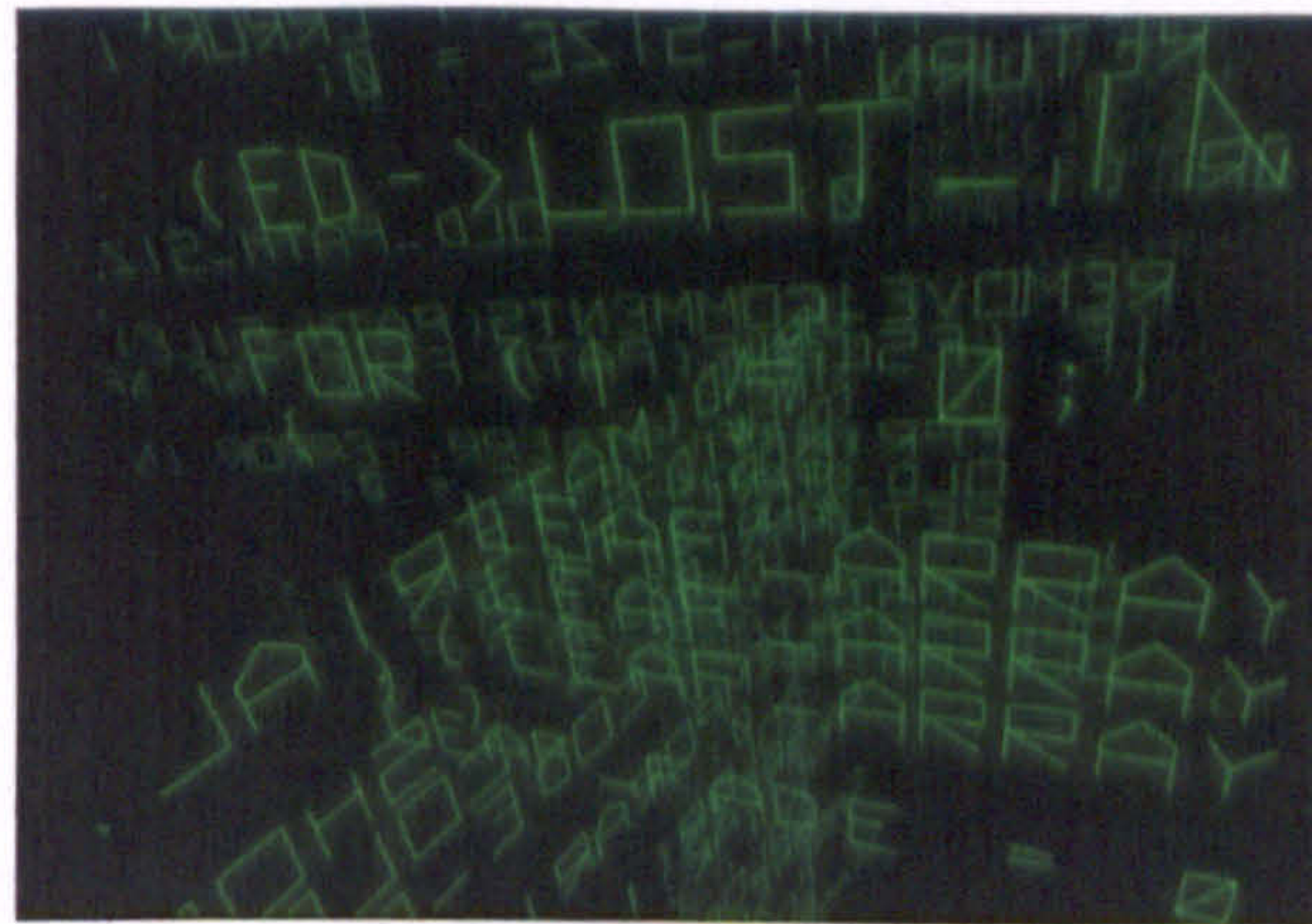


Roots, Rocks and Particle Flows in the Under-Earth, Osmose
Digital images of 3-D virtual environment captured in real-time through HMD
during live immersive journey/performance, 1995

By using breath and balance – or bending her knees to increase speed – the immersant can float almost effortlessly throughout this realm as long as she so desires, or she can depart, by drawing in a deep breath to ascend vertically to the Clearing above. Or, if she exhales fully, she can descend to yet another realm below, of software Code.

Code:

In the realm known as Code, there are thousands of lines of phosphorescent green text scrolling upwards in “empty” black space. These lines of green text are the actual code John Harrison programmed to construct the work. It is possible for the immersant to float among this data, while reading the walls of code that extend infinitely in every direction. Also visible here is a constantly updating vertical list of numerical data which represents, in real-time, the immersant’s breathing, according to motion-capture of the expansion and contraction of her chest.



Scrolling Walls of Code, Osmose
Digital image of 3-D virtual environment captured in real-time through HMD
during live immersive journey/performance, 1995

The Code realm was intended to serve as the conceptual substrate of *Osmose*, drawing attention to the computer-generated artificiality of the experience. (This was not intended to suggest a mathematical underpinning to reality.) My decision to make such direct reference to the

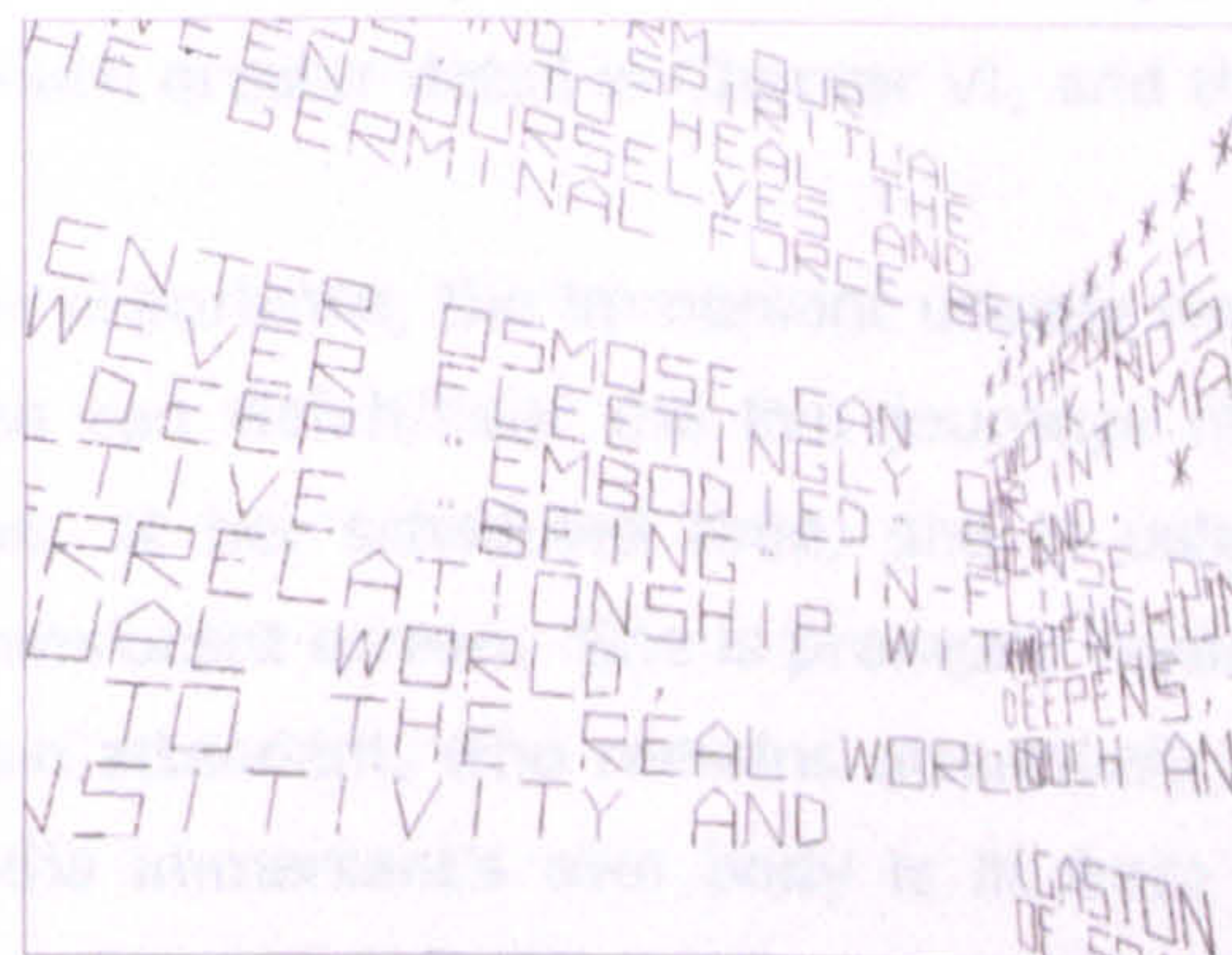
software language used to create the work was deliberate: I wanted to draw attention to the fact that, "at bottom" the *Osmose* virtual environment was not idealized nature, but rather technology.²⁹

From the Code realm, the immersant can, if she so desires, rise up back into the Under-Earth (although this may be physically difficult because of an intentional spatial confusion introduced by the *upward* scrolling of the walls of code). Alternatively, the immersant can drop down through the bottom of the code, in which case she will find herself "recycled" and drifting down through the higher reaches of the Clearing.

Cloud & Text:

Back in the Clearing again, it is also possible to ascend, through breath, upwards through a thick ceiling of white translucent Cloud: the deliberately minimalist, very abstract visuals here are compensated for by the wind-like sounds which whistle through this space. Horizontally this space goes on without end; however if the immersant continues to rise upwards, she will eventually find herself immersed in a pale fog within which float hundreds of lines of vertically-scrolling text.

The Text realm contains many passages of text (in a simple font we designed to minimize rendering time) from writings on perception, space, nature, the body and technology by philosophers and poets such as Heidegger, Bachelard and Rilke, as well as contemporaries like Drew Leder and Verena Conley, whose ideas have encouraged me in the past decade. (Almost all of these quotations have already been integrated into this dissertation.) There are also brief excerpts from my own early writing about *Osmose*. The immersant can, if she chooses, drift among these scrolling and intersecting columns of text (all rising upwards in dense white fog), reading the words contained therein while listening to accompanying aural effects. These sounds were designed to resemble choral voices, even though, like all the other sounds in *Osmose*, they are derived from a male and female voice uttering phonetics.



Scrolling Walls of Text, Osmose
Digital image of 3-D virtual environment captured in real-time through HMD during live immersive journey/performance, 1995

The Text realm is intended to serve as the conceptual superstrate of *Osmose*: along with its counterpart of Code as substrate below, these two realms provide a conceptual framework around

²⁹ My desire to reveal the illusion of virtual space by drawing attention to the technology of its production was purely intuitive: it was only after the completion of *Osmose* that I became aware of the Brechtian notion of doing so, through Carol Gigliotti's 1993 analysis of Brecht in regards to the design of virtual environments. See Carol Gigliotti, *Aesthetics of a Virtual World: Ethical Issues in Interactive Technological Design*, and "Aesthetics of a Virtual World".

the entire work. The Immersant can, if she so desires, spend her entire journey within the Text, reading its various passages as they scroll upward, and even return to it several times within the time span of her Immersive session (as she can also do with any of the other realms except the Life-world³⁰). If, on the other hand, the Immersant Inhales continually so as to rise higher and higher within the Text, she will eventually find she has re-entered the deepest depths of the Under-Earth. Alternatively she can, by exhaling deeply, drop directly downward, back down through the Cloud into the Clearing to find its Tree and Pond below.

Life-world as Ending:

After 15 minutes have elapsed, no matter where the Immersant may be within the dozen spatial realms of *Osmose*, (we limit the Immersive session to this length even though one could remain in *Osmose* indefinitely) the experience is brought to a close. The ending is signaled by a recurrence of the Clearing's cyclic nocturnal melody, and the accompanying emergence of the Life-world (which Immersants may or may not have previously encountered in the Abyss). Now, the Life-world appears as a translucent form superimposed over the Immersant's visual field; but rather than spatially engulfing and enveloping the Immersant (i.e., as a *place* she can be within), the Life-world remains an ovoid-sphere, a "volumetric entity" seen from without, and almost as soon as it appears, begins to recede, withdraw, irretrievably, irrevocably, until it has shrunk to a tiny speck and then disappears altogether, leaving a few drifting particles in its wake and the Immersant floating alone in empty dark space. The last moment of Immersion is marked by aurally, by a single click, and then the experience is over.

Osmose as a physical installation

Immersive experience of *Osmose* is intended to be intimate and solitary. However, when the work is exhibited as a physical installation in a public context, the experience takes on a performative aspect. I will discuss this in much greater detail in Chapter VI, and therefore, here, will explain only briefly.

Before undergoing the experience, the Immersant usually waits in the darkened public area of the installation, where she can watch/hear the live journeys of one or two other individuals before her own begins; then, at her scheduled time, she is ushered into an adjacent private chamber situated behind a translucent screen. She is promptly "suited up" in the required interface vest and mask-like HMD by an attendant, who remains attentively nearby throughout the ensuing session. During Immersion, the Immersant's own body is lit from behind by an intense orange-coloured light so as to cast a warm fire-like glow and shadow-silhouette on the translucent screen: this shadow-silhouette is seen by everyone assembled in the larger darkened space adjacent to the chamber. Simultaneously, via a large-scale data projection on a facing wall and multiple audio speakers located around the public area (as well as stereo headphones placed on nearby benches), these visitors can "witness" the Immersant's trajectory or journey as it unfolds in real-time, as

³⁰ I have watched a very skilled and experienced Immersant, an Australian museum attendant who had been in the work dozens of times over a four month period, return deliberately and repeatedly to the Abyss and the Life-world in order to re-experience the surprise and pleasure of diving into the Life-world/Clearing.

experienced from the immersant's own point-of-view. The enabling technology (computers and sound processors, etc.) is located in a separate area, out of public view.



Osmose Equipment with SGI Onyx, 1995



Immersant Chamber



Shadow-Silhouette Screen

First Osmose installation at the Montreal Musee d'art Contemporain, August 1995

As I will explain in Chapter VI, there are two reasons for such a strategy: the first being privacy for the immersant while enabling an audience to vicariously observe and listen to the experience; the second being the desire on my part to emphasize the relationship between the immersant's *living* body (actively involved in breathing, balancing, looking, leaning, crouching, gesturing) and the resulting work, thus drawing attention to the central role of the immersant's subjective body as both ground and medium for the experience. This strategy also relates to what I have earlier described as the doubled-point-of-view, which I will revisit in Chapter VI.

5. Beyond Osmose

When *Osmose* premiered in 1995, the work was arguably considered to be a breakthrough in the field of interactive or new media art. In this context, it was received as presenting an alternative to conventional approaches to VR, subverting hard-edged photo-realism with transparency and ambiguity, and countering disembodied interface methods by grounding the experience in the participant's own body through breath and balance. Additionally, the work became widely known (revered by some, reviled by others) for its intense emotional or psychological effects on many participants, evoking feelings which ranged from euphoria to sadness and loss, and in doing so, collapsing critical detachment and aesthetic distance. Nevertheless, many of the original goals and intentions as laid out in the *Osmose* white paper had yet to be realized: Mostly because of the time constraints we faced while making the work, such goals were necessarily postponed for the future. And so, soon after *Osmose* went out into the world, I began to conceive another work with the intent of furthering what had already been accomplished. Below I will briefly summarize what we thought we had accomplished with *Osmose*, and where we wanted to go next.

For example, we considered *Osmose* to be quite effective in its presentation of breath and balance as an alternative approach to conventional "user interaction", providing a relatively intuitive means of navigation whereby it becomes possible to experientially "be" in the work instead of having to "do-*this-to-make-that-happen*". By dispensing with conventional hand-based methods of interaction in favour of a no-hands approach combined with deep, rhythmic breathing and balance, the *Osmose* interface also tends to encourage a calm and receptive attitude in immersants, arguably reducing habitual tendencies to speed around and control things. Additionally, by relying on breath and balance, the work powerfully reaffirms the role of the immersant's own subjectively-inhabited physical body in immersive virtual space. Accordingly, for us, further development of the

Osmose interface was not a major goal for new work. (We did go on to optimize the sensitivity of the breathing device, but this was a more of a technical improvement.) I will the implications of this interface in chapter VI.

Originally however, as stated in the *Osmose* white paper and in various charts in the working notes, we had wanted to develop additional kinds of interaction (or "inter-relation" as I preferred to call it), between certain responsive elements and the Immersant, involving voice, gesture and certain interior body processes. We did not explore these in *Osmose* due to lack of time (nor did we explore my idea of linking the work to external phenomena). Neither did we explore the use of gaze as first mentioned in the Brittany notes: Accordingly, the use of gaze, as a means of evoking response through calmly focused attention, became one of our goals for the future.

While *Osmose* does contain many of the spatial realms and recurring elements that I had envisioned – such as the central Clearing with its so-called archetypal Tree, and Interior Leaf engaged in processes of photosynthesis; a surrounding Forest and subterranean Under-Earth; a Pond with an oceanic Abyss serving as a means for the participant's self-extinguishment and recycling through a symbolic Life-world back into the world; as well as a dying out-of-the-world at the Ending (and a tiny luminous window which follows along after the Immersant) – there were other realms, other elements, that we did not have time to construct. For example, even though there are some abstract and very subtle suggestions of fireflies, birds, worms and fish as streaming particles, the various realms seem relatively empty of any evidence of "life-flow". As suggested in both the Brittany notes and the *Osmose* white paper, as well as in various charts and diagrams in the *Osmose* working notes, additional missing aspects include the dynamic interiors of seeds and blooms, stones and boulders, and the subjective interior body with its retinal eye tissue, flowing bloodstreams, pulsing organs, luminous bones, cellular interiors and even DNA. Accordingly, I wanted to revisit these and explore them further.

In terms of its other limitations, *Osmose* could be described as primarily static and non-responsive (with the exception of the sound which transforms in real-time in response to the Immersant's behaviour). The structure of the work itself is relatively stable and permanent, consisting of spatial realms situated around the central Clearing, to which visitors can return at will. (Many Immersants, however, have told me that being able to return to the Tree in the Clearing provided them with a sense of security, whereby they could get their bearings and then float off again to explore the more abstract areas of the work – so perhaps this is not a limitation after all, and indeed supports the notion of the Clearing as Heidegger's *lichtung*.)

There are, however, many aspects of the work which do provide a sense of motion (in addition to the sound) such as the flowing particles that rise up through the Tree or ricochet through the Leaf, and float within the Forest's stream, Pond, and Under-Earth; as well as the scrolling lines of Text and Code; and the cycling of light through day and night in the Clearing. Most significantly, there is a continually fluctuating variability in the Immersant's perceptual field, caused by looking through a depth of more than 20 semi-transparent surfaces at a time, all in constantly shifting spatial relationships in accordance with the Immersant's ever-changing point-of-view as she moves among and through them. (This is why we required a computer with an extremely powerful graphics capability, i.e., to render this *in real-time*. In 1990, this could only be achieved with a high-end Silicon Graphics machine, whereas now, a decade later, it is possible on a PC.) Even so, in

Osmose there are no seasonal transformations as I had originally envisioned; there is no growth, no blooming or decay.

On a most fundamental level, *Osmose*, like its name suggests, was intended to explore the dissolution of boundaries and the *osmotic* intermingling of subject/object, interior/exterior, self and world, an interlacing or intertwining of spatialities which comes to the fore when we truly experience ourselves as being "in place". At its most ambitious – and here I want to emphasize that I am speaking only of *intent* rather than effect (for analysis of demonstrable results is outside the scope of this text) – *Osmose* is about transforming perception. In this context, it is intended to serve as an experiential context for facilitating a (temporary) release from habitual, culturally-learned assumptions about the world as a collection of separate objects – and alternately redirecting attention to awareness of being itself. Interestingly however, more than one immersant has commented that their experience was about *dying*, in that they were able to experience floating through an immaterial world in which their presence went unnoticed as if they were invisible or immaterial themselves – an experience some people described as very comforting, in that they felt they had had a glimpse of what they imagined it might be like after death.

Soon after *Osmose* was finished, I began feeling that what we had created was essentially incomplete: I mean this in the sense of Merleau-Ponty's comment about the painter's quest ("... what [she] has found [she] does not yet have. It remains to be sought out; discovery itself calls forth still further quests".³¹) As originally proposed in the *Osmose* white paper – in addition to communicating my sensibility of the world as *being-in-the-world* in terms of an osmotic intermingling of subject/object, interior/exterior – I had wanted to present the world as engaged in perpetual transformation, as a "mobile continuum",³² as Heraclitian flux and flow. Indeed, I wanted to make a work about coming into being, lingering and passing away; I wanted to make a work about the ephemerality of our own lives passing through such fluxing splendour. This work became *Ephémère*.

³¹ Ibid.

³² Bryson, in reference to Nishitani, 97.