



Virtual Space

by Char Davies

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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, *Cézanne*, quoted by Merleau-Ponty, "Eye and Mind"



Figure 1: Char Davies, *Forest Stream*, from *Ephémère*, 1998.

Digital image captured in real-time through head-mounted display during live immersive journey/performance.

I have been working in "virtual space" for nearly 10 years, and during that time have produced two major works, the virtual environments *Osmose* (1995) and *Ephémère* (1998)[\[1\]](#). Integrating full body immersion,

interactive 3D digital imagery and sound, and navigation via a breathing interface, these works embody a radically alternative approach to immersive virtual space, or what is commonly known as "virtual reality" or "VR". Rather than approaching the medium as a means of escape into some disembodied techno-Utopian fantasy, I see it as a means of return, i.e., of facilitating a temporary release from our habitual perceptions and culturally-biased assumptions about being in the world, to enable us, however momentarily, to perceive ourselves and the world around us *freshly*.

It should be noted that when I say virtual space, I am referring to *immersive* virtual space, i.e., a computer-generated artificial environment that one can seemingly, with the aid of various devices, go inside. I think of virtual space as a spatio-temporal "arena" wherein mental models or abstract constructs of the world can be given virtual embodiment (visual and aural) in three dimensions and be animated through time. Most significantly, these can then be kinesthetically explored by others through full body immersion and real-time interaction, even while such constructs retain their immateriality. Immersive virtual space is thus a philosophical *and* a participatory medium, a unique convergence in which the immaterial is confused with the bodily-felt, and the imaginary with the strangely real. This paradox is its most singular power. The firsthand experience of being bodily immersed in its all-encompassing spatiality is key: when combined with its capacity for abstraction, temporality, and interaction, and when approached through an embodying interface, immersive virtual space becomes a very potent medium indeed.

Between 1995 and 2001, more than 20,000 people [approximately 35,000, as of November 2007]† have been individually immersed in the virtual environments *Osmose* and *Ephémère*. A common response to the experience is one of astonishment: many "immersants" have described their experience in euphoric terms while others have inexplicably wept. As one participant wrote six months afterwards: "[This experience] heightened an awareness of my body as a site of consciousness and of the sensation of consciousness occupying space. It's the most evocative exploration of the perception of consciousness that I have experienced since I can't remember when."

Such responses suggest that immersive virtual space, when approached in an unconventional way, can indeed provide a means of perceiving freshly. The medium's paradoxical qualities may effectively be used to redirect attention from our usual distractions and assumptions to the sensations of our own condition as briefly embodied sentient beings immersed in the flow of life through space and time.

Virtual space and King Logos

Many centuries after Copernicus' and Galileo's dismantling of the terra-centric universe, we still refer to the sun rising and setting on the horizon as if the earth were flat: similarly, many decades after Einstein's relativity theory, in everyday life we continue to conceptualize the world around us in terms of the old Newtonian/Cartesian paradigm, i.e., as an aggregate of solid separate objects in empty space. As Roger Jones wrote in *Physics as Metaphor* (1982):

The modern notion of space is a compound metaphor that embodies all our concepts and experiences of separation, distinction, articulation, isolation, delimitation, division, differentiation and identity. The laws of perspective and of geometry for us are a codified summary of our normal experience of alienation, unique identity, and un-relatedness. It has all been abstracted, externalized, and synthesized into the cold, empty void we call space. This metaphor of space is our modern mechanism for avoiding the experience of oneness, of the chaos, of the ultimate state of unity to which the mystic seers and philosophers of all ages have

referred.

Conventional ways of thinking about and producing immersive virtual space faithfully mirror this metaphor. 3D computer graphic techniques, as commonly used in VR environments, tend to rely on 3D Euclidian geometric models, Renaissance perspective and the xyz coordinates of Cartesian space, all applied in a never-ending quest for visual realism. The resulting aesthetic/sensibility (what I call the "hard-edged-objects-in-empty-space" syndrome) reflects a dualist, objectifying interpretation of the world. When these techniques are combined with what have already become conventional methods of user interaction (such as hand-held joysticks, pointers, gloves, etc.) the effect—regardless of content—reinforces a particular way of being in the world in terms of mastery, domination and control.

It is important to understand that virtual space is not neutral. The origins of the technology associated with it lie deep within the military and western-scientific-industrial-patriarchal complex. It should not be surprising then if the medium not only reflects these values but by default, reinforces what Henri Lefebvre, in *The Production of Space* (1991), calls 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.

In its most prevalent form, virtual reality can thus be considered a "literal re-enactment of Cartesian ontology" as Richard Coyne wrote in "Heidegger & Virtual Reality: The Implications of Heidegger's Thinking for Computer Representations" (1994). In conventional VR, the participating human subject is represented as an omnipotent, disembodied and isolated view-point, maneuvering in empty space (and often, at least in terms of increasingly immersive computer games, looking for something to kill...). Numerous other writers have analyzed the cultural bias inherent in the medium. For example, Ziauddin Sardar, in "alt.civilizations.faq: Cyberspace as the Darker Side of the West" (1996), has called virtual reality a product of the collective unconscious of Western culture, suggesting it issues from "a techno-Utopian ideology ripe with subconscious perceptions and prejudices", in which "liberation from the body is sought by dissolving into the machine".

VR's tendency towards disembodiment should not be surprising either. As a realm ruled by mind, virtual reality—as conventionally constructed—is the epitome of Cartesian desire, in that it enables the construction of artificial worlds where there is the illusion of total control, where aging mortal flesh is absent, and where, to paraphrase Laurie Anderson, there is no "dirt". I believe such desire to escape the confines of the body and the physical world is symptomatic of an almost pathological denial of our embodied embeddedness in the living world. It is tempting to suggest that belief in artificial intelligence and silicon as a means of delivery into immortal omni-potence on some other Eden is but a testosterone-induced dream.

In the virtual environments *Osmose* and *Ephémère*, I have proposed an *alternative* approach to virtual space, intended to resist the cultural trajectory described above. With this intent, we have developed strategies such as an embodying user-interface which grounds the immersive experience in the participant's own breathing and balance. We have also employed semi-transparency in the visuals so as to create a perceptual ambiguity which might serve to dismantle the Western "mis-perception" of the world.

My desire to accomplish this task, to propose an alternative, is rooted in my own particular experience of being in the world. Most importantly, this desire, and the strategies developed, have evolved through many

years of artistic research into my own perception of light and space. I should also add that a decade spent within the software industry (1987-1997) as a founding director and head of visual research at a world-leading software development company (Softimage, whose software tools were used in Hollywood movies such as *Jurassic Park* and *The Matrix*) made me acutely aware of the technology's bias towards reinforcing a traditional Western worldview. This awareness further fueled my desire to push the technology and prove that it could indeed be used to express a different sensibility.

An alternative sensibility: a spatiality without things

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

(Merleau-Ponty, *Signs*)



Figure 4.2
Char Davies, *Blue World-Space*, 1985.

Oil on canvas.

I came to the medium of immersive virtual space as a painter, seeking a more effective means of communicating my sensibility of the world. My lifelong artistic project (now stretching over 25 years) has been to re-present the world as I have intuitively sensed it to be—*behind the veil of appearances*— as immaterial, interrelated and dynamic flux. Within this all-enveloping flux and flow, habitually perceived distinctions between things dissolve, and boundaries between interior self and exterior world become permeable and intermingled. This quest, to further understand my intuition and to effectively articulate it to others, is the driving force behind my work: *Osmose* and *Ephémère* are the most recent fruits of this endeavor.

Many of the strategies and aesthetic principles I have employed in my work are grounded in my own

physiological experience of vision. My eyes are extremely myopic (at 17 "diopters", in layman's terms they require a thickness of 17 corrective lenses to see the world in focus with close to the same 20/20 "Mc-vision" acuity as everyone else). When "uncorrected" through prescription lenses, I encounter a radically different spatiality, in which normally perceived boundaries between objects and surrounding space are dissolved in light. Here, all semblance of hard edges, all sense of solid-surfaced separate objects, and all distinctions between things, including figure and ground, near and far—the usual perceptual cues by which we objectify the world—simply disappear, dissolved into an ambiguous enveloping spatiality of soft, semi-transparent, intermingling volumes of varying hues and luminosities. This unusual spatial sensibility bears a striking resemblance to Merleau-Ponty's description of night in *The Phenomenology of Perception* (1962):

When, for example, the world of clear and articulate objects is abolished, our perceptual being, cut off from its world, evolves a spatiality without things. This is what happens in the night. Night is not an object before me; it enwraps me and infiltrates through my senses, stifling my recollections, and almost destroying my personal identity. I am no longer withdrawn into my perceptual look-out from which I watch the outlines of objects moving by at a distance. ... it is pure depth without foreground or background, without surfaces and without any distance separating it from me.

In my own experience, such withdrawal of visual acuity—which so dominates our habitual perception of space—allows another way of "sensing" to come forward, just as Merleau-Ponty suggests. This is essentially a spatiality without "things", in which the threshold between interior self and exterior world becomes porous, and the separation between "out there" and "in here" is transcended. Whereas visual acuity tends to keep attention focused on what lies in front or ahead (i.e., the future), when it dissolves into a non-focused blur, one becomes aware of space as *all around*, bodily-enveloping as if one were immersed in the sensuous liquidity of the sea. Merleau-Ponty, in *Eye and Mind* (1964), also describes such space:

no longer ... 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. It is, rather, a space reckoned starting from me as the zero point or degree zero of its spatiality. I do not see it according to its exterior envelope; I live it from the inside; I am immersed in it. After all, the world is all around me, not in front of me.

When visual acuity is decreased, one also becomes more aware of sound: and sound, as an all-encompassing flux which penetrates the boundary of the skin, further erodes the distinctions between inside and outside. As the Australian sound theoretician Frances Dyson said at a conference in 1994, "metaphysically, sound has an ontology that challenges the solid world. Sound, like soft vision, also returns us to what I have come to call the 'presence of the present'". In this perceptual state, rather than being mentally focused on the future and thus inattentive, even absent, to the present, one becomes acutely aware of one's own embodied presence inhabiting space, in relation to a myriad of other presences as well.

Many of the key characteristics associated with my work, such as full-body immersion in an all-surrounding visual and auditory space, and the semi-transparent, dematerializing quality of the visuals, are thus grounded in my own experience of vision. While I could defer to various theoretical analyses of spatial perception, it is really through years of artistic investigation into my own bodily experience of space, through painting, that I have gained such insights.

From painting to immersive virtual space

While I began my career as a realist painter, taking great satisfaction in depicting the hard-edged boundaries between things, a chance turning of artistic attention to my own perception of space led me to acknowledge, in 1981, this alternative sensibility. Subsequently, I began making studies from life without wearing corrective lenses. Over the years, this led to the development of the visual aesthetic of semi-transparency and semi-abstract/semi-representation used in *Osmose* and *Ephémère*. Below are several images I produced during that time, beginning with an example of one of my last realist works. In the still-lives, I was exploring the dissolution of form through light, and the ensuing erosion of perceivable boundaries between things. These studies culminated in paintings of glass jars on mirrors in which I was essentially painting the flow of light in voluminous space.



Figure 4.3
Char Davies, *Logger & Tree*, 1981.

Oil on canvas.



Figure 4.4 Char Davies,
Still Life & Glasses, 1981.

Chalk on paper.

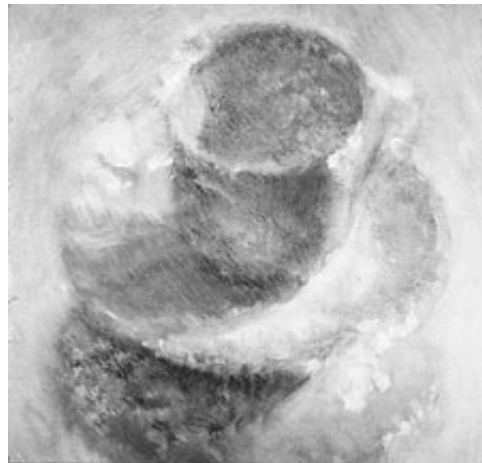


Figure 4.5
Char Davies, *White Cup*, 1984.

Oil on board.



Figure 4.6
Char Davies, *Glass Jars & Mirror*, 1985.

Oil on canvas.

This research eventually led to another, more abstract, body of work created between 1985 and 1987 and exhibited as *Espaces Entrelacés (Interlaced Space)*. I considered these paintings, some included below, as landscapes even though they were not created "from life". In these images, I was attempting to convey the experiential intermingling of the exterior flowing world and the interior perceiving embodied self, as well as communicate the subjective sensation of being enveloped in all-encompassing space.

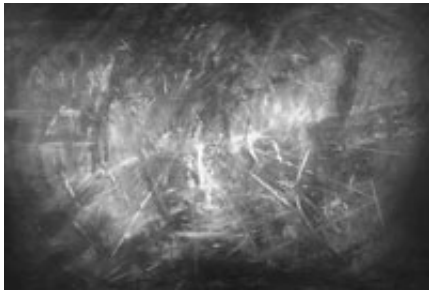


Figure 4.7
Char Davies, *Blue World-Space*, 1985.

Oil on canvas.

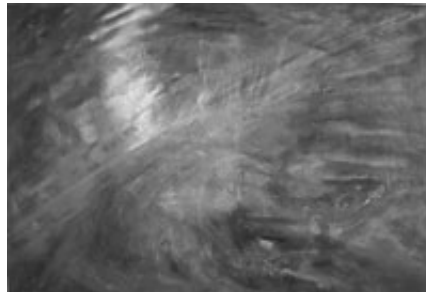


Figure 4.8
Char Davies, *Beyond the cave*, 1987.

Oil on canvas.

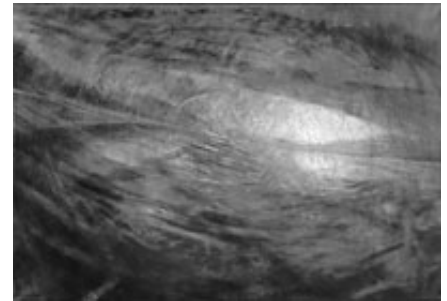


Figure 4.9
Char Davies, *Lake*, 1987.

Oil on canvas.

Eventually however, the two-dimensionality of the painterly picture plane posed an insurmountable limitation, because I could not effectively articulate the sense of being all-enveloped, nor could I convey flux and flow. In the mid-80's, I saw an example of early 3D computer animation, consisting of phosphorescent green vector graphics against black space. In that short clip, I recognized the potential of the medium for my own purposes, and by the end of 1987 had become a founding director of the software company Softimage. I was interested not in the computer technology itself, but in the possibility of using it to create on the "other side" of the picture plane.

Within a few years, I produced a series of 3D digital images, collectively titled *Interior Bodies* (1990-1993), which explored the metaphorical co-equivalence of nature and body. In these images, I adapted my previous painting techniques and used the software's lighting and transparency effects to circumvent the hard-edged polygonal models so characteristic of the technology and to create instead the soft spatial ambiguity I desired.

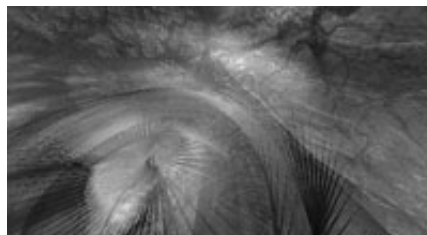
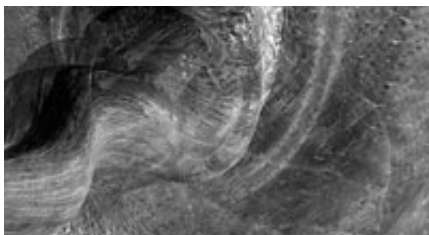


Figure 4.10
Char Davies, *Root*, 1991.

Digital image made with 3D software.
Duratrans colour transparency in
light box, approx. 4 ft x 5 ft.

Figure 4.11
Char Davies, *Seed*, 1991.

Digital image made with 3D software.
Duratrans colour transparency in
light box, approx. 4 ft x 5 ft.

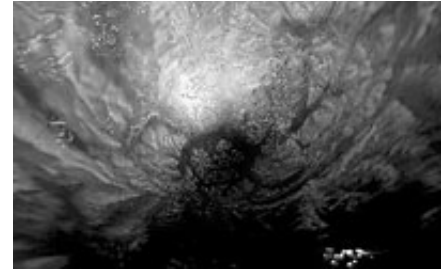


Figure 4.12
Char Davies, *Yearning*, 1993.

Digital image made with 3D software.
Duratrans colour transparency in
light box, approx. 4 ft x 5 ft.

While these works were created with a 3D software, they were reproduced as two-dimensional and static images, thus defeating my original intent. Intuiting that the immersive space of virtual reality might offer a more effective means of articulating my sensibility—and provide a way of enabling my audience to "cross over" the 2D picture plane with me, in 1993 I began to conceptualize an immersive virtual environment and put together a team. This work became *Osmose*.

The virtual environments *Osmose* and *Ephémère*

In the following pages, I will describe *Osmose* and *Ephémère*. But first, a caveat: these are bodily experiential works. As such they cannot easily be described in words or documented by the two-dimensional images that accompany this text: rather they are a mode of access to an ephemeral yet embodied experience of self and space, or rather *self in place*. To understand, one must really experience them firsthand: just as the sensations of becoming wet and buoyant can only be known by the swimmer, so these works can only truly be understood through subjective bodily participation.

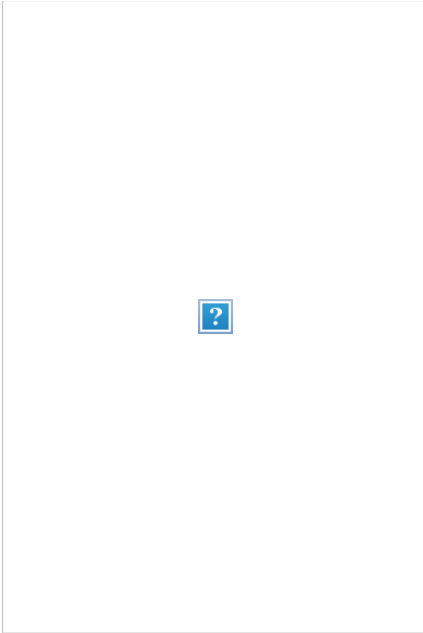


Figure 4.13
Breathing and balance interface
 for *Osmose* and *Ephémère*.

To access their virtual spatio-temporal realms (at least in the current era, for the following methods will evolve as technology develops) one must dress in specific gear, as divers do. This includes donning an interface vest and a stereoscopic viewing helmet (known in the field as a head-mounted display or HMD). Inside the helmet are two small LCD screens which together create a stereoscopic effect, as well as stereo headphones. The vest and HMD are linked through various cables to a computer and digital sound synthesizers/processors. As one looks around (including behind one's back and below one's feet), the computer calculates one's point of view and relative changing spatial position within the virtual realm via motion-tracking sensors in the interface vest and helmet, and, in response, generates the appropriate visual elements and aural effects in real-time, i.e., *on the fly*.

To navigate within *Osmose* and *Ephémère*, all one needs to do is breathe—breathing in to rise, out to fall—and shift one's centre of balance and lean in order to change direction. More technically speaking, we accomplished this by placing motion sensors on the participant's vest, to: a) track the expansion and contraction of one's chest as one engages in breathing, and b) to track the relative tilt of the spine as the participant leans one way or another.

This strategy, of having the immersive experience dependent on the intuitive visceral processes of breath and balance, was intended to counter conventional ways of navigating and interacting in virtual space. (Such techniques, by relying on hand-based devices such as joysticks, pointers or data gloves, tend to reinforce an instrumental, dominating stance towards the world.) Our approach was intended to counter the medium's bias with a vision of the medium as a channel for "communion" rather than control.

Our use of the participant's own breathing and balance for interface has many implications. As Drew Leder wrote in *The Absent Body*, (1990):

Breath is a potent tool of overcoming dualism. Physiologically, respiration stands at the very

threshold of the ecstatic and visceral, the voluntary and the involuntary... inside and outside, self and Other are relativized, porous, each time one takes a breath. The air is constantly transgressing boundaries, sustaining life through inter-connection. One may have spent years studying the mystics on the unreality of dualism and this remain an abstract idea. But in following breath, one begins to embody this truth.

And, as David Michael Levin wrote in *The Body's Recollection of Being: Phenomenological Psychology and the Destruction of Nihilism*, (1985): [Note: this quote was not correctly attributed in the book.]

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 center 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 a presence that is deeply responsive. Coming home to our true center of being, we can begin to relax our egological defences, and begin to experience things outside the subject/object polarization.

In *Osmose* and *Ephémère*, the experience of breathing in to rise and out to fall facilitates a convincing sensation of "floating", as if the participant's body were gravity free. This un-usual sensation is intimately known by scuba divers, who use breath and balance to subtly control body buoyancy and maneuver in oceanic space. In *Osmose* and *Ephémère*, the sensation of floating tends to evoke euphoric feelings of disembodiment and immateriality, which we intentionally amplify through our enabling the participant to see through and virtually float through everything around them. At the same time, however, we deliberately confound these sensations by paradoxically grounding the experience in the participant's own body, i.e., in his or her own breath and centre of balance. In this way, *Osmose* and *Ephémère* seek to reaffirm the presence, often overlooked or denied in conventional VR, of the subjectively-inhabited body in immersive virtual space.

As a means of subverting the conventional VR aesthetic of hard-edged-objects-in-empty-space, we use semi-transparency and translucency in the visuals, an approach developed long before in my painting. Thus, when an "immersant" is within *Osmose* or *Ephémère*, everything he or she sees is semi-transparent. Just as in my own un-"corrected" vision, there are no sharp distinctions between solid bounded objects in foreground and background, and no empty space, but instead, ever-changing abstractions of semi-transparent forms. The effect for the immersant is of floating within a world which is neither wholly representational (i.e., recognizable) nor wholly abstract, but hovering in between. As the participant moves within the virtual space, the ever-changing spatial relationships between the various semi-transparent forms (one can see through more than 20 layers simultaneously, a major technical challenge at the time) create a constantly changing variability of the perceptual field. This generates semiotic and sensory fluctuations or what I simply call "perceptual/conceptual buzz". Based on a painterly strategy of maintaining a "razor's edge" between representation and abstraction, whereby multiple associations or interpretations are deliberately evoked (rather than a single meaning being literally illustrated), our intent was to heighten ambiguity in order to refocus the participant's attention on their own act of perceiving, or rather of *being*.

In *Osmose* and *Ephémère*, the immersive experience is also significantly affected by our use of sound. As one journeys throughout the spatial realms, one is immersed in constantly changing sound coming from all directions. (In *Osmose* the sounds are derived from a male and female human voice uttering phonetics, and in *Ephémère* from a viola, digitally altered to create a vast range of aural effects.) The sounds have been "localized" in three-dimensions and have been designed to transform, like the visuals, on the fly, in real time, in response to the immersant's ever-shifting position, speed, direction of gaze, and various other events. In

both works, the sounds have been composed to oscillate between melodic form and mimetic effect in a state somewhere between structure and chaos.

In terms of content, both *Osmose* and *Ephémère* are based on nature and landscape as metaphor. As such, their realms are populated with trees, roots, rocks, streams, etc., all iconic elements which have reoccurred in my work for 25 years. It is outside the scope of this essay to discuss the reasons for and implications of representing the natural world in virtual environments. However, I do want to emphasize that my intention has been to use the medium's unique qualities to present nature beyond the veil of surface appearances, while grounding such perception in the subjectively lived body. In this context, my work could be interpreted as an ongoing attempt to articulate a vision of nature perhaps closer to how Heidegger (in *Heraklit*) described the Greek's "physis"—as "outside of all specific connotations of mountains, sea or animals, the pure blooming in the power of which all that appears and thus 'is'".

Before going on to describe immersive journeys through *Osmose* and *Ephémère*, I want to emphasize that they are spaces, or rather places, for perceptual play. They do not contain a predetermined linear narrative. In these works, each participant's experience is unique, unrepeatable, dependent on one's own behaviour, on one's whim or will. In the following pages, I am going to describe *Osmose* and *Ephémère* as if I were leading you on a journey: but it is important to remember that I could take you on many different trajectories through these two works, because they are places, virtual landscapes, among which the participant may roam, engaged in solitary reverie.

A journey through the virtual realm of *Osmose*

Osmose: derived from "osmose" (Fr.) "osmosis" (Eng.) from "osmos" (Grk) "to push"; a biological process involving passage from one side of a semi-permeable cellular membrane to another. *Osmose as metaphor*: a transcendence of difference through mutual absorption; a dissolution of boundaries between inner and outer; an inter-mingling of self and world.

Osmose consists of nearly a dozen realms, of forest, pond, subterranean earth and so on, all situated around a central clearing. The spatial structure of the work has a strong vertical axis (rather than the conventional horizontal plane of most VR works)—amplified by the use of breath to buoyantly rise or descend. Vertically, there is a kind of spatial recycling, whereby if the participant ascends to the very heights of the space she will be returned to its depths, and vice versa.

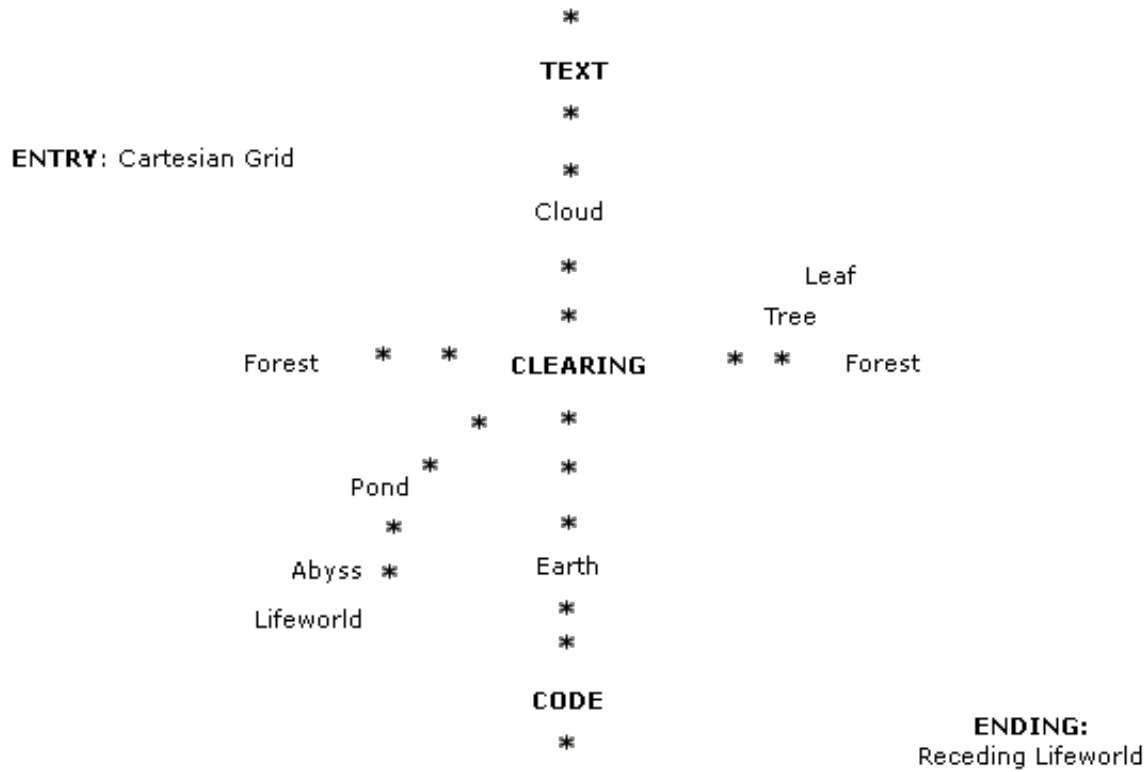


Figure 4.14
Spatial Structure of *Osmose*.

When an immersant first "enters" *Osmose*, he or she will find him/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 can hover in "mid-air" or glide, as well as change direction by shifting her centre of balance.

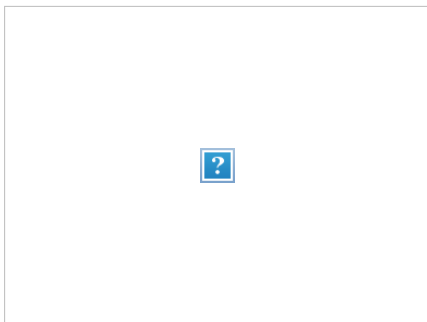


Figure 4.15
Char Davies, *Tree Pond*, from
Osmose, 1995.

Digital frame captured in real-time

through head-mounted display during live performance.

A few moments after her entry, the grid soon fades, leaving the immersant in the middle of a clearing. Gazing all around, she sees, or perhaps first hears, what appears to be a sienna-hued oak tree, near a small pond into which is flowing a stream of light particles, and all around, a circumference of dark forest. The clearing cycles through day and night, its ebb and flow of light and dark accompanied by subtle visual and aural changes. These include, at night, flitting firefly-like lights and a nocturnal melody repeating over and over (created, like every other sound in *Osmose*, from phonetic utterances digitally altered.)

The immersant will realize she has entered a non-Cartesian place, very unlike the "real world": here, everything is dematerialized and semi-transparent—there are no solid surfaces, no hard-edges, no separate objects in empty space. Instead, the immersant can see through everything—through the body of the tree, the ground, the roots below.

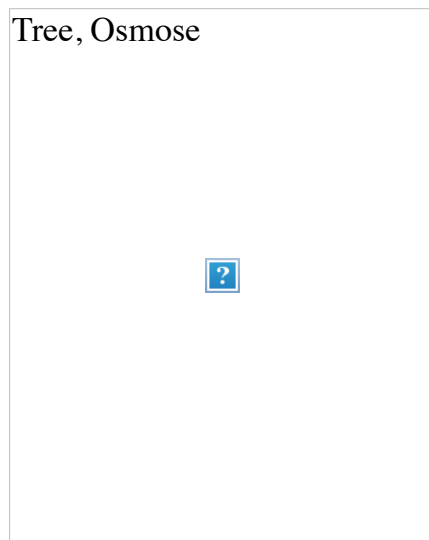


Figure 4.16
Char Davies, *Tree*, from *Osmose*, 1995.

Digital image captured in real-time through head-mounted display during live performance.

She may choose to drift into the clearing's tree, rising with its streaming particles. Or she can float into its branches, only to find herself passing through a previously invisible leafy canopy and into the interior of a leaf, consisting of brightly blazing lights streaming through green space, accompanied by high-pitched sound. From within the clearing, if the immersant breathes shallowly and leans forward, she can also glide towards the encircling forest. As she nears its edge, the clearing will fade and the forest realm will begin to appear all around her. For several moments, she may find herself in a non-Cartesian spatial intermingling of clearing and forest, in which she is paradoxically enveloped by both realms at once (with skill, it is possible to remain within this strange liminal zone, although moving forward or back will summon in one realm and cause the other to fade).

Forest grid, Osmose



Figure 4.17
Char Davies, *Forest grid*, from
Osmose, 1995.

Digital image captured in real-time
through head-mounted display during
live performance.

Once within the forest, the immersant is surrounded by a thick mass of large semi-transparent leaves (created by digitally scanning real leaves—the only use of the "real" in the entire work, all else is digitally constructed). As she floats, these leaves constantly re-form themselves around her, creating an endlessly recurring space. In the *Osmose* forest, heading in a straight line will only cause it to recur forever (and moving too quickly will summon in the Cartesian grid). It is possible to exit the forest by following a stream of flowing luminous particles back to the clearing's pond, or alternatively, by remaining still and hovering in one place: this causes the forest to fade and the clearing to reappear.

From the clearing, the immersant can also approach the pond (perhaps guided to its location by its emitting of frog-like sounds) and hover above its transparent surface. If sufficiently deft in use of breath and balance, she can descend through its lowest depths into an oceanic abyss. This seemingly vast space is populated only by dimly visible streaming fishlike entities far below, as well as echoing calls all around. Eventually the immersant will hear a distinctive tinkling sound behind her. To leave the abyss, she must head towards that sound into the reference-less big blue. In response, a translucent pod-like entity, the "lifeworld", will appear. As she moves towards it, it also tumbles towards her until she is engulfed within it: she may realize that the lifeworld was the clearing seen from without as a miniaturized globe, and that now she is back inside it, hovering above the clearing's tree.

The immersant can also look down directly into the subterranean earth, because the ground too is semi-transparent. If she exhales deeply, she can descend vertically into this realm, aurally resonant and populated by the ghostly forms of semi-transparent, semi-abstracted roots and boulders and luminous particle streams. The immersant can glide through this realm, floating among and through its various elements, and she can depart simply by taking a breath to ascend back to the clearing.

Subterranean Earth



Figure 4.18
Char Davies, *Subterranean Earth*,
from *Osmose*, 1995.

Digital image captured in real-time
through head-mounted display during live
immersive journey/performance.

If the immersant so desires, she can descend even deeper to another realm below the earth, of software code. Represented here are thousands of lines of phosphorescent green text in black space, the actual code John Harrison programmed to construct the work. It is possible to float among these scrolling walls of code, including the constantly changing measurements of the immersant's own breathing. The code realm was intended to function as the conceptual substrate of *Osmose*, drawing attention to the computer-generated artificiality of the experience.



Figure 4.19
Char Davies, *Code World*, from
Osmose, 1995.

Digital image captured in real-time
through head-mounted display during
live immersive journey/performance.

The immersant can also ascend from the clearing through a thick ceiling of whistling cloud into a realm of pale fog within which float scrolling passages of written text. These are excerpts of writing on perception,

space, nature, the body, and technology by poets and philosophers such as Rainer Maria Rilke, Gaston Bachelard, and Merleau-Ponty, whose ideas have accompanied and encouraged me in the past decade. It is possible to float in the gray fog among these scrolling texts and listen to their accompanying aural effects, which sound somewhat like choral voices even though, like all the sounds in *Osmose*, they are derived from a single male and female voice uttering phonetics. The text realm functions as the conceptual superstrate of *Osmose*, and together with the code, its twin in the underworld, provides a conceptual framework around the entire work.

After a certain amount of time has elapsed (we limit the immersive session to 15 minutes, even though one could stay in *Osmose* indefinitely) the journey is gently brought to a close. The ending is signaled by a reoccurrence of the clearing's nocturnal melody, and a gentle reappearing of the lifeworld. Immediately, however, the lifeworld begins to recede, irretrievably, until it has shrunk to a tiny speck and then disappears altogether, leaving the immersant floating alone in empty dark space.

A journey through the virtual realm of *Ephémère*

In comparison to *Osmose*—which I think of somewhat as a perceptually mesmerizing stage set (whereby motion is primarily derived from the immersant's buoyant passage and resultant ever-changing spatial relationships throughout)—I think of *Ephémère* more like a virtual "opera". For *Ephémère* is a temporal space, whereby every element, every form, has been choreographed (within a range of randomness) to engage in constant transformation, in an unceasing ebb and flow, wax and wane of visibility and audibility. As the name *Ephémère* suggests, this work was intended as an evocation of ephemerality: of the fleeting quality of our own lifespans as mortal beings, embodied among an unfathomable myriad of other beings, all engaged in coming-into-being, lingering and passing-away in the flow of life through spacetime.

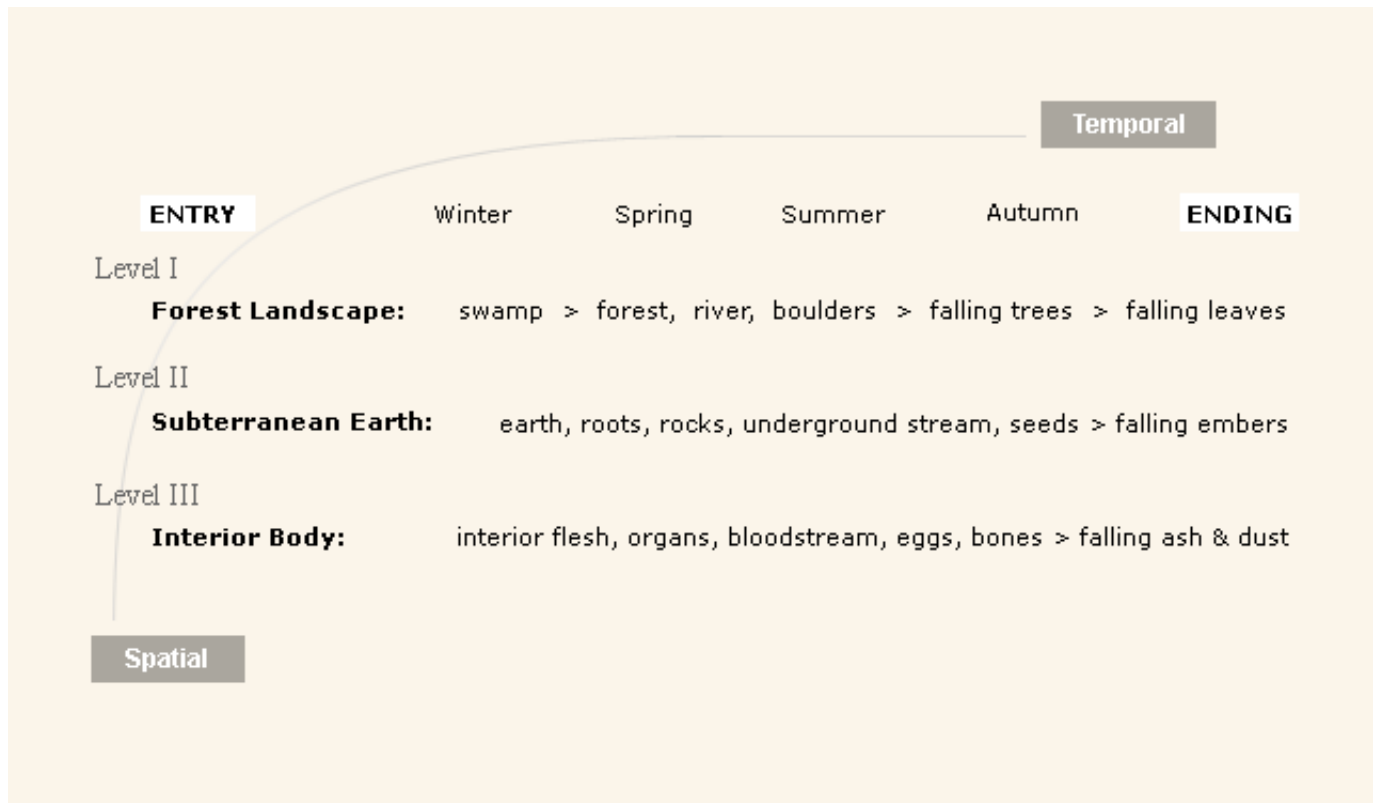


Figure 4.20
Spatial and temporal structure of *Ephémère*.

Ephémère is structured spatially on a vertical axis, with three horizontal levels: forest landscape, subterranean earth, and interior body. Accordingly, the work's iconographic repertoire has been expanded beyond *Osmose*'s trees, boulders, pond and stream to include flesh, bloodstreams and bone. However, even as the immersant roams among all three realms in *Ephémère*, no realm remains the same. The forest landscape changes continually, passing through cycles of day and night, and transforming through the seasons. Deep within the earth, huge boulders transform into pulsing body organs, and within the body, eggs appear, while aging organs give way to bone. Throughout the duration of the experience, the various elements of rocks, roots, seeds etc., come into being, linger and pass away: the timing of their appearances and disappearings is dependent not only on the temporal progression of the work, but on the immersant's vertical position, proximity, slowness of movement, and steadiness/duration of gaze. (For example, when gazed upon, boulders summon phantom landscapes, and seeds germinate, inviting entry into the luminous interior of their blooming.)

Here too, there is a stream or river, but unlike the stream in *Osmose*, the one in *Ephémère* has a gravitational pull and provides an alternative means of navigating within the space. If the immersant floats too near, the river will suck her into its force and carry her along. It is actually possible to experience much of *Ephémère* by passively submerging oneself in the swiftly flowing and noisy stream/underground river/artery: for if the immersant remains within it for a sufficient amount of time, it will respond by randomly transforming the surrounding spatial realm into one of the other realms of *Ephémère*.

When a participant first enters *Ephémère* (wearing the same gear as worn in *Osmose*), she will find herself floating among star-like points of light in dark space. As she becomes accustomed to breathing in to rise and out to fall, the particles of light begin to fall like snow, and the darkness gives way to fog, filled with aural effects of wind and rattling wood. Far below are dark slender forms of trees. Upon exhaling, the immersant may drift down among them, their branchless shapes suggesting they are but relics, no longer living. There are also semi-transparent boulders. By now she will have heard, and then perhaps turned to see, a darker horizontal ribbon with bright particles flowing within it, intended to suggest a winter stream. The immersant, still enveloped in ebbing gray light and falling snow, is in the winter swamp, the "prologue" of *Ephémère*.

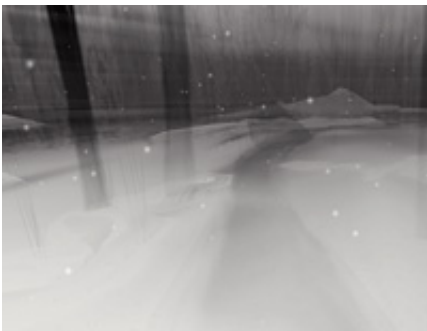


Figure 4.21
Char Davies, *Winter Swamp*, from
Ephémère, 1998.

Digital image captured in real-time
through head-mounted display during
live immersive journey/performance.

In the winter swamp, everything is more abstract than in the *Osmose* clearing, as well as being in black and white rather than in colour. Here (unlike *Osmose's* spatially-anchoring tree to which immersants can return for reassurance and to regain their bearings) no place remains the same: every element is engaged in a constant process of coming into being, lingering, and passing away, both visibly and aurally. It is almost as if the immersant has floated down into a ghostly realm engaged in its own processes of becoming and un-becoming. If the immersant chooses to float towards a tree and passes through its slender trunk, in response she will hear a cry like distant ripping wood as an almost transparent white tree (the *Osmose* tree making a cameo) slowly falls and crashes. If she passes through other trees, this ghost tree will fall again, and again.

If the immersant slowly approaches one of the boulders (which like the trees are engaged in their own appearings and disappearings) and steadily gazes at it from a tactful distance, in response the boulder will summon in a phantom landscape. This landscape, with its encircling horizon of Arctic-like bergs of ice and snow, and its accompanying sounds, will briefly appear all around her, then fade, leaving her in the swamp. Meanwhile, the ambient light is changing as dusk ebbs into night. The entire swamp has been "choreographed" as a prologue lasting several minutes, and the immersant is unable to move elsewhere until night eases into dawn.

After a certain amount of time has elapsed, the swamp transforms itself into the forest landscape realm, composed not only of trees and boulders and a river, but of abstract intermingling layers of various greens and vertical flows of luminous particles, all engaged in various rates of appearing and disappearing. As in the winter swamp, the forest's boulders are also "sensitive" to the immersant's behavior, and, if approached in a certain way, will summon in another phantom landscape which fades almost as soon as it appears. The forest itself is transforming constantly, irrepressibly engaged in a seasonal progression from the snowy pale of winter through spring and summer to the climatic decay of autumn. The immersant can choose to spend her entire journey on the forest, but if she leaves it perhaps to return later, it will continue to progress over time.

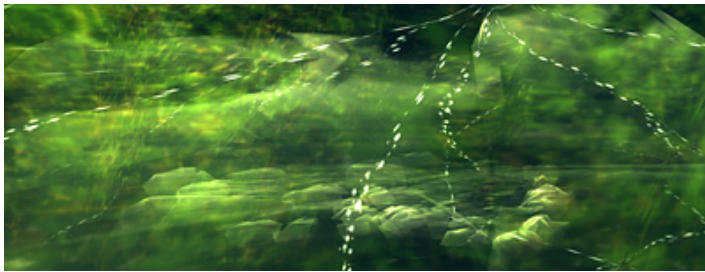


Figure 4.22
Char Davies, *Summer Forest Landscape*, from *Ephémère*, 1998.

Digital image captured in real-time through head-mounted display during live immersive journey/performance.



Figure 4.23
Char Davies, *Autumn Forest Landscape*, from *Ephémère*, 1998.

Digital image captured in real-time through head-mounted display during live immersive journey/performance.

As in *Osmose*, if the immersant exhales deeply, she will descend vertically through the semi-transparent ground, past the spreading roots of trees into a vast subterranean earth. Here she can hear deep rumbling sounds of shifting rock, as seemingly gigantic boulders drift, and slowly appear and disappear. The comings and goings of these rocks have all been choreographed, some in groups, some individually, at different

depths. They are richly hued in ochres and siennas, and like everything else are semi-transparent, enabling the immersant to see through them and float through them as well. As the immersant looks around, she may see the river again but manifested here as a swiftly flowing underground stream, a luminous green ribbon suspended in space, issuing its own distinctive sounds. If she approaches, its gravitational pull will seize her as did the forest river, and carry her along, while summoning in either the forest or the body realm below. Perhaps she will surrender to the underground stream (for it takes bodily effort to move away from its pull) and find herself back in the forest landscape, its various abstractions now engaged in the lushness of summer green or the ochres and siennas of autumn.



Figure 4.24
Char Davies, *Seeds*, from
Ephémère, 1998.

Digital image captured in real-time
through head-mounted display during live
immersive journey/performance.

The immersant may, however, choose to remain longer in the under-earth, seeking the inter-responsive "seeds". Suspended among the subterranean rocks, at a certain depth, and appearing only at certain times within the temporal progression of the work, are pod-like seeds (which, like all other elements in *Ephémère*, are engaged in visibly and audibly coming into being, lingering and passing away).

If the immersant gazes at a seed from a certain distance, it will begin to flicker in acknowledgment that it has "sensed" her presence, and will consequently begin to germinate. If the immersant is able to approach before it completes this process and withdraws, she can enter inside and experience its luminous blooming while enveloped within its translucent veils. After the seed reaches its climax, it will fade and she will find herself alone again in the subterranean realm. Some immersants never notice the seeds, some do not gaze long enough to initiate their germination, while others effortlessly enter their blooming.

Below the subterranean earth is yet another realm, the interior body, intended to suggest the internal pulsing frothing rhythms, aural and visual, of a subjectively-inhabited body engaged in the processes of living (referring not only to the immersant's own body, but to all living flesh bodies). This realm has been placed at the "bottom" of *Ephémère* to function metaphorically as the substrate or foundation, under the fecund earth and the lush bloomings and witherings of the land. Recalling the words of Joseph Campbell in *The Inner Reaches of Outer Space: Metaphor as Myth and Religion* (1986): "Myths and dreams. are motivated from a single source—namely the human imagination moved by the conflicting urgencies of the organs..."

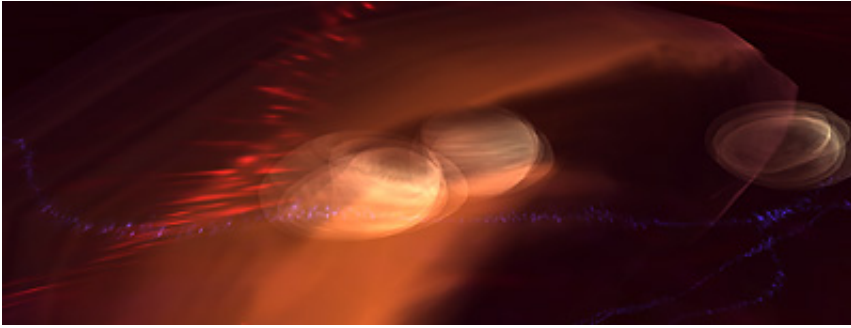


Figure 4.25
Char Davies, *Body (Egg)*, from *Ephémère*, 1998.

Digital image captured in real-time through head-mounted display during live immersive journey/performance.

As in the other realms of *Ephémère*, here all organ, artery and vein-like elements are semi-transparent and semi-abstract, and are engaged in carefully choreographed yet random appearances and disappearings. If the immersant floats to a certain depth within the body realm, she may be surrounded by a slow raining of blazing white egg-like forms, which eventually drift by and fade away. In this realm too, there is the river, but manifested here as a bloodstream or artery from which issues forth the sounds of calling voices. Sampled from recorded animal cries—the only non viola-derived sounds in the work—these are intended to subliminally reaffirm embodied presence.

From within the body, the immersant can descend even lower, passing through a transitional realm of thorn-like forms whose color shifts from blood red to green as she is returned to the upper foliage of the forest landscape. Similarly, if the immersant rises steadily in the forest, she will pass through the thorns until she is again in the body. In this way, it is possible to cycle endlessly vertically through *Ephémère*: if the immersant attempts to seek its horizontal limits her quest will reveal that each realm is endless as its elements constantly reconfigure themselves around her.

There are several "endings" in *Ephémère*, all dependent on where the immersant is during the last phase of her journey. If within the forest landscape a dozen minutes into the work, she will be enveloped by brightly-hued orange space with dark tree ghosts screaming distantly and falling all around (again, the *Osmose* tree). If she chooses to remain within this autumnal burning, eventually all that will remain are single ochre leaves falling in dark space. If she is within the under-earth at this late phase, she will experience a distinctive shift in its sounds as its various elements begin disappearing one by one, until there are only embers falling. And if she is within the body realm, she will experience the flesh around her slowly giving way to luminous filaments of bone which in turn will also fade out, leaving only embers and ash drifting through space, ending the journey in dissolution.

The immersive experience

Immersant



Figure 4.26
An Immersant in *Osmose*, seen
through the Shadow Silhouette
Screen.

The immersive experience of *Osmose* and *Ephémère* is designed to be intimate and solitary. During public exhibitions, however, the experience takes on a performative aspect. In this context, the immersion chamber is located adjacent to a large dark space where visitors assemble. Here, the immersant's journey is projected on a wall in real-time, i.e., as it is being experienced live by the immersant. This space is also filled with the sounds being generated by the immersant's behaviour. In addition, the shadow silhouette of the immersant's body is cast on another wall as he/she moves and gestures within the work. The use of this shadow-silhouette alongside the real-time projection is intended to draw attention to the body's role as ground and medium for the experience.

Since 1995, more than 30,000 people [approximately 35,000, as of November 2007]† have been individually immersed in *Osmose* and *Ephémère*. We have had an opportunity to observe many of them and have noticed certain patterns of behavior. After becoming accustomed to using the interface of breath and balance, most participants are first intent on "doing", i.e., travelling around at high speed to see as much as possible, in what appears to be an extension of everyday goal-oriented, action-based behaviour. However, half way into the fifteen minute experience, most people undergo a change: their facial expressions and bodily gestures loosen, and instead of rushing, they begin to slow down, as if perceptually mesmerized. In this final phase, attention seems to be increasingly directed towards the unusual sensations of floating and seeing through things, in what becomes a kind of slow-motion perceptual free-fall.

Based on participant responses gathered through written comments, correspondence and video interviews, it appears that many people experience a heightened awareness of self-presence—paradoxically consisting of both a sense of freedom from their physical bodies and a heightened awareness of being in their bodies at the same time. Often, people experience intense feelings of euphoria and/or loss when the session is ending, causing some participants to cry afterwards and others to even exclaim they are no longer afraid of dying. What is going on here? As I have suggested in earlier essays (see [Further Reading](#)), a partial answer may lie in the words of the French philosopher Gaston Bachelard:

By changing space,
by leaving the space of one's usual sensibilities,
one enters into communication with a space
that is psychically innovating. ...
For we do not change place, we change our nature.

(Gaston Bachelard, *The Poetics of Space*)

Bachelard was actually referring to the perceptually and psychologically transformative potential of places like the desert, the plains and the deep sea—immense open spaces which are perceptually invigorating because they are unlike the environments to which most of us are accustomed. Bachelard's insight has been echoed by psychologists researching the effects of traditional methods of achieving altered mental states. In such practices as meditation (which involves deep breathing as do *Osmose* and *Ephémère*), as well as chanting, dance, and the ingestion of psychotropic plants, the intent is to foster psychological conditions which lead to an "undoing" of habitual perceptions in favour of alternative sensibilities. While these may be less efficient in terms of biological survival, psychologists believe that they permit experience of aspects of reality previously ignored. According to Arthur Deikman in "Deautomatization and the Mystic Experience" (1990), the conditions fostered by such practices involve a de-habituating or "de-automatizing" of perceptual sensibilities, which leads to perceptual expansion.

Conclusion

If the responses of those who have experienced the environments *Osmose* and *Ephémère* are anything to go by, then it appears that immersion in virtual space can be "psychically innovating". That this may be so, is, I believe, due to the paradoxical nature of the medium. Here, ephemeral virtuality can coexist with an apparent "real" three-dimensionality of form, and feelings of disembodiment can coexist with those of embodiment (given the use of an embodying interface). These experiential paradoxes, when combined with the ability to kinesthetically interact with elements within the space, can create a very unusual perceptual context, providing a unique means of "changing space".

I want to emphasize, however, that the medium's perceptually refreshing potential is possible *only* to the extent that the virtual environment is designed to be *unlike* those of our everyday experience. When designed in ways that merely reflect our habitual perceptions and culturally-biased assumptions, such environments forego their transformative potential and serve to reinforce King Logos and the status quo. It is only when such environments are constructed in ways that circumvent or subvert the medium's conventions, that immersive virtual space can be used to convey alternative sensibilities and worldviews, potentially functioning as a perceptually and conceptually invigorating philosophical tool.

At the present time, I am beginning a new work in immersive virtual space, and consider *Osmose* and *Ephémère* as only early steps in what I hope to accomplish with this medium. Ultimately, what I am seeking are even more effective ways to use this technology to provide an experience for others whereby it is possible, however momentarily, to slip through Aldous Huxley's "doors of perception" and glimpse reality, as I have intuitively sensed it, and so deeply long to know it, beyond the Cartesian divide.

Notes

1. *Osmose* (1995) and *Ephémère* (1998) were constructed with the dedicated participation of the following individuals: John Harrison, custom programming; Georges Mauro, graphics; Dorota Blaszcak, 3D sonic architecture; and Rick Bidlack, sound composition.



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This article may include minor changes from the original publication in order to improve legibility and layout consistency within the Immersence Website. † Significant changes from the original text have been indicated in red square brackets.

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