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LIVING LITERACIES TEXT OF THE
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The Cultural Phenomenology of Literature

by William Irwin Thompson

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PART FOUR: IMAGES

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Introduction

First of all, I would like to thank you for inviting me back to York for this conference, for this is a particularly appropriate time for me to return. If I were still on the faculty at York, this would be the year of my compulsory retirement, so I look upon this as my Last Lecture or Swan Song. It is doubly appropriate for me to give this lecture here, for it was in this very room in 1971 when I was an Associate Professor of Humanities that I organized a conference entitled "Thinking on a Planetary Scale," to which I invited the global theorist Bucky Fuller, the ecological architect Paolo Soleri, and Richard Falk, Professor of International Law at the Woodrow Wilson School at Princeton. The conference was my effort to express to my colleagues that business as usual was not enough and that we were living through a radical juncture in history in which a new planetary culture was emerging, a culture that was distinct from the internationalism that had characterized the world-system since the end of World War II.¹

Wissenschaft und Wissenskunst

Since B. W. Powe has asked us in this conference to think about the meaning of literacy in an electronic age, let me take a moment to address myself to this, the central question of our gathering. In my own writings of the time when I was here at York – in works such as *At the Edge of History and Passages about Earth* – I tried to use the structure of Romantic "Poems of Description and Meditation," as the internal structure for non-fiction essays.² In this work, I was also trying to respond to the challenge of Marshall McLuhan's work. I first met McLuhan at a faculty seminar at MIT in the sixties, and then when I moved to Toronto, I attended one of those legendary meetings at the Coach House at the U. of T. McLuhan had challenged scholars to be more sensitive to the implications of the new electronic era in which we were living and not simply hide out in academic reservations of literacy. I responded to this challenge by seeking to turn non-fiction into a work of art on its own terms. Rather than trying to be a scholar or a journalist writing on the political and cultural news of the day, I worked to become a poetic reporter on the evolutionary news of the epoch. Of course, I was not alone in this impatience with novel and newspaper, as other writers then also felt the lift of the zeitgeist and were not content to write more realistic novels or more confessional poems – writers such as Lewis Thomas, Carlos Castaneda, Stanislaw Lem, Norman Mailer, and Tom Wolfe. McLuhan pointed out to us that a new technology obsolesces a present technology and retrieves a previously obsolesced technology, and I instinctively felt that the new electronic technology was not simply obsolescing print and melting down the alphabetic mentality but was retrieving animism in all its variants – from Yaqui shamanism with Carlos Castaneda to Celtic animism at Findhorn in Scotland. The traditional academic lecture also became for me an occasion to transform the genre, to present not an academic reading of a paper, but a form of Bardic performance – not stories of battles but of the new ideas that were emerging around the world. So I would run off to Cape Kennedy to talk to the astronaut Rusty Schweickart, and then rush back to Toronto to write a lyrical essay of description and meditation on Apollo 17 for the entire op-ed page of *The New York Times* for New Year's Day, 1972. Then I would riff on this material in a talk for my freshman humanities class here at York. In this same New Year's break, I also went to talk to Werner Heisenberg, C. F. von Weizsäcker, and Gopi Krishna in Munich, and then came back to talk to my students about yoga and quantum physics. In Germany, after my conversation with Heisenberg, I felt I needed a new word for this essay-narrative that was not simply "non-fiction," but something more artistic for a

culture that was no longer simply orally bardic or academically literate. Since I was in Germany and could find no word for it in English, I coined the term *Wissenskunst* – as opposed to *Wissenschaft* – and I am happy to report that the Germans have taken the word into their language, as you will see if you type the word with the Web search engine *Google* and see what comes up on your screen.

The course I was teaching here at York was a large freshman humanities course of over two hundred students, because only at the freshman level could one avoid specialization and look at the Big Picture. My big picture was to consider the entire panorama of cultural evolution. The course was called “The Transformations of Human Culture,” and it went from the “Hominization of the Primates to the Planetization of Humanity.” The course was meant to be a performance of the very reality it sought to describe. In trying to understand the cultural shifts of the past, the course performed the presence of the cultural shift we were living through and it explored the myth of the future as the new horizon of human identity. For this sort of intellectual work, I felt that both the lecture and the essay needed to be transformed into more of a performance of pattern-recognition than the unfolding of a single line of academic indoctrination. For *Wissenskunst*, the mode of discourse is more polyphonic and fugual – more of a moiré than a line, the wave and not the particle; it was more of a risk-taking venture in which multiple disciplines came together in the Humanities Division here at York than it was a secure assertion from within the traditional confines of an English Department.

The New Historicism

Now in this study of mythic horizons of identity, I was building on the historical study of my first book in which I looked at the way in which the myth of the Irish past affected the identity-formation of the revolutionaries in the Easter Rising of Dublin, 1916.³ In seeking to study the role of the imagination in history, I was breaking away from the New Criticism that was popular when I was an undergraduate, and the Structuralism that was popular when I was a graduate student. I broke away from the New Critics to study the historical context of the literary work, because I felt a personal loss of history in growing up in Los Angeles in the post-war era. As the public transportation system of the red Pacific Electric trains was replaced with freeways and smog, and as orange groves were replaced with subdivisions, I looked around at the new theme-park approach to historical quotation in the form of a movie-set restaurant or apartment house, and wondered what was real, what was historical reality. I imagined that Ireland must be a real country, the true homeland, the mythical country of Yeats and Joyce. I became drawn to Yeats’s romantic mode of rejecting industrialization to posit an imaginary landscape with its exaltation of the mystical peasant. I was drawn to Yeats’s edge between Irish agricultural and English industrial because I was living through the transition from Eastern industrial to Western post-industrial. I had an old, used 1940s car in high school that I used to navigate through the cloverleaves instead of the shamrocks, and I went to Disneyland soon after it opened. But I wanted none of it. I wanted the Land of Heart’s Desire in a nostalgia for Ireland. My grandmother Margaret O’Leary was born in Ireland (another O’Leary like one of this conference’s sponsors, John O’Leary), but she died in Chicago when my mother was only a year old, so she was an imaginary relative, an ancestor, and not a visible member of the family.

Posthistoric L.A. was a landscape of gas stations looking like space stations and hotdog stands shaped like hotdog buns; object, sign, and symbol were all jumbled up together as one dined and lived in moviesets of historical fantasies. I wanted to be real. And when Dylan Thomas came to America and became in the fifties what a rock star was to become in the sixties, I wanted to be Celtic and not Californian. The Celtic Renaissance wasn’t over for me, and the literate world of Dylan Thomas, Yeats, and Joyce called out “Come away, O

human child!" So there was something Celtic, something literary and mystical that called out to me in the midst of the postliterate electronic world of L.A. – that fake world that was about to become everybody's reality as movies, television, and advertising would spread out from Hollywood around the world.

So when McLuhan addressed himself to this cultural transformation, I knew he was talking to me. In fact, at the small faculty seminar at MIT, where I first met McLuhan, the faculty became enraged at his metaphoric and aphoristic mode of thinking, but I was absolutely enchanted. In his final work, McLuhan pointed out that when one technology is obsolesced, a previously obsolesced technology is culturally retrieved. If New York and Boston were rational and sensible, L.A. was not, and the occult and mystical were everywhere to be found. But for the Jews fleeing Hitler's Germany and re-establishing themselves as the new intelligentsia of New York, the occult was Hitler and the mystical *Bruderbund* of the S.S. If there is one thing that is not allowed in academic circles it is to be interested in the mystical. But what the Jewish intelligentsia of New York did not realize about the new American reality of growing up in L.A. was that mysticism was being retrieved in the new electronic meltdown of print and what Jean Gebser called perspectival consciousness. But even within the world of print, as a high school kid in the fifties, I read Emerson and Whitman, and this American mystical and transcendental tradition was democratic, safely middle class, and as far away from fascism as L.A. is from Nürnberg. Since my uncle had died on the beach of Normandy, I did not grow up enamored with fascism, and my favourite philosopher in high school was Whitehead, not Heidegger. I went from lectures at one occult society to another, and hung out in the occult and esoteric section of Pickwick Books up on Hollywood and Vine, and so when it came time to read Yeats's *A Vision* at Pomona College, I had already encountered those cosmologies that so befuddled my professors. In graduate school at Cornell, in Meyer Abrams seminar, I soon learned that you were not to take *A Vision* seriously. George Orwell called it "that tomfoolery of wheels and gyres," and W. H. Auden dismissed it as "the Southern California side of Willie Yeats." Well, having grown up in Southern California, Yeats's mysticism did not seem so dark to me, but when in my first book I took it, and the ideas of A.E. seriously, I got mightily slammed down in *The New York Review of Books*.⁴ To be accepted as an intellectual in the US you have to be Marxist, or at least neo-Marxist, and always anti-mystical. When I wrote *At the Edge of History* and appeared to be only a detached observer, Christopher Lehman-Haupt raved twice about the book in a single week in *The New York Times*, but when I actually went to spiritual communities like Findhorn in Scotland and Auroville in India, and wrote sympathetically about them in my next book, *Passages About Earth*, Lehman-Haupt refused to review the book. It was as if I had fallen off the edge of history and become a Scientologist or member of some other crazy cult.⁵ So the new historicism that I was articulating in 1967 would have no effect on English departments, and when the New Historicism finally came into attention in the 1990s, it would be another expression of Marxist materialism as led by Professor Stephen Greenblatt at Harvard. Greenblatt's work fits nicely into the academic fashion of deconstructing the canon of what used to be called "Greats" at Oxford – the old lineage of dead white males of Chaucer, Shakespeare, Milton, Pope, and Eliot – for in the New Historicism one takes an obscure and quotidian work of the chosen period and reads "the lesser" in the light of "the greater" only to find the greater work to be lesser.⁶ For the new location of culture by Homi Bhabha at Harvard and Gayatri Spivak at Columbia, subaltern studies are the approved means of showing that a proposed "work of genius" is merely a work of cultural oppression in a discourse of domination. A masterpiece is a cultural erection, a logophallogocentric projection in a constructed discourse within a patriarchal system of capitalist oppression. But in my new historicism way back in 1967, I had shown how history was a weapon, and how the English had erased Irish history to write their own as an apology for empire. Unfortunately, however, I had shown how important the role of imagination was in the creation of identity for the rebels, and I talked about how important

the mysticism of A.E. was in formulating an alternative to the industrial materialism of England. I did not just talk about the Great Strike and Lock-out of 1913. And I did not talk about ideologies as expressions of the means of production or myth as the false consciousness of the oppressed.

The imagination is a motive engine on its own, and in a revolution it has the power to unite the bottom of the top with the top of the bottom as intellectuals and artists come together with rural peasants and urban working classes. In the 1950s – following the publishing innovations of Penguin Books that were designed for the backpacks of soldiers in the two world wars, Signet Classics in New York began making classics and masterpieces available in cheap thirty-five cent paperbacks, so as an Irish working-class kid earning my own money in a grocery store after high school, I could afford to start buying books. I found the *Tao Te Ching* and the *Bhagavad Gita* in a wire rack in my local drugstore, and once accustomed to the habit of buying books and going into bookstores, I bought an inexpensive, hardbound Modern Library edition of *Moby-Dick* and read all of it. Joyce's *A Portrait of the Artist* became my bible in breaking away from the Catholic Church and exploring the Vedanta that Christopher Isherwood talked about in his introduction to the *Gita*. For privileged Ivy League professors struggling for tenure, the Canon may seem oppressive, but for working-class kids it was liberating. To escape South Central L.A., where it was unsafe to go out in the schoolyard if you were an intellectual, and to be able to sit under a tree in Marston Quad at Pomona College and read Dylan Thomas and Gerard Manley Hopkins was not to be oppressed by a discourse of domination. (Though I do notice that although Spivak questions the canon, she has a canon of her own and always privileges any mention of Marx or Foucault.)

You can see the positive side of the canon in George Steiner's autobiography, *Errata*. Steiner attended the University of Chicago in its most charismatic time. After the end of the Second World War, when America had joined with Europe to defeat fascism, there was a need to articulate "Western Civilization," both to prevent the United States from retreating back into its isolationism and "know nothing" contempt for European scholarship and culture, and to prevent McCarthyism from eliminating a new and ambitious meritocratic class. Robert M. Hutchins created his Great Books curriculum at Chicago, and Harvard began to transform itself from a New England college for gentlemen into a great and greatly ambitious university. Like *Levis* and *Coca-Cola*, Harvard became an instrument of American corporate globalization and is today the world's most recognizable brand-name university. But back in the late 1940s, the new "Western Civ" curriculum was basically a miniaturization of civilization aimed at enculturating a whole new and expanding middle class. My parents were not educated beyond the eighth grade, because in industrial and immigrant America, "high" school was high because it was meant for the clerical and not the working class. University was only needed for the professional class of doctors, lawyers, and clergymen. But when FDR pulled America out of the Depression and saved the American capitalist system, he did so by extending government credit to the manufacturers. After the war, when a whole generation of hitherto unemployed men returned home with the new skill of having been trained to kill, there was a general fear of instability. The G.I. Bill, in essence, followed FDR's move, but this time credit was extended to the consuming and not just the producing class. The soldiers went to college, and were given grants to buy homes, and out of that subsidy came the suburbs, the automobiles, the freeways paid for by the National Defense Act, and finally the shopping malls of a new postindustrial economy of credit cards and a Cold War-supported California aerospace defense industry. Along with that social experiment came the University of California, the largest experiment in public education in the history of the world. York University is basically a Canadian copy of this post-industrial innovation.

But hardware requires software, and universities require a curriculum. Just as once before in "Western Civilization," the Irish monks miniaturized Graeco-Roman civilization in the form of a curriculum for medieval European civilization, so now the Hutchins and the Conants miniaturized Western European Civilization to make it into a curriculum for American post-industrial civilization. The same thing happened in the Sui and Tang dynasties in China, when the Confucian classics were turned into a cognitive foundation for the imperial unification of China.

George Steiner was blessed to be at the University of Chicago in the greatness of its *kairos*; mine was a different *karma*, and I was in California at the time when a completely post-European American culture was emerging, and it sent me scurrying for cover in safe havens like Pomona College and Cornell. At Cornell, I sat around the table of Robert Martin Adams's seminar on James Joyce with Gayatri Spivak. She chose to follow the lead of Paul De Man, who was also at Cornell then, into the deconstruction of Yeats; I chose to go to Ireland in a mythic quest for the symbolic meaning of the construction of Yeats's tower – a construction that allowed him to pace upon the battlements and stare at the breathless, starlit air. De Man had erased his own traces of the fascist and anti-Semitic articles he had written in Belgium before the war, and was then using decentring and deconstruction as ways of covering his own lack of values and an inner center. I went to one of his lectures, read his reading of Yeats's "Among School Children," and was revolted. In my revolt, I published my own reading of that poem,⁷ and decided I would go to Ireland and take Yeats at his word.

When I returned from Ireland to take my first teaching position at MIT, L.A. went up in flames in the Watts riot, and the Vietnam war escalated to the point that the faculty became split between the Hawks, with Ithiel da Sola Pool in Political Science, and the Doves with Noam Chomsky in Linguistics. My department was taken over by a cabal of Maoists who wished to eliminate the canon and replace Wordsworth with Eldrige Cleaver. I quit MIT and came here to York in 1968. That year was the year of Paris, when Foucault's star was on the rise; it soon became a sun that blanked out all the other constellations of thought in literature departments in North America.

Dr. Spivak went on from Cornell to play St. Paul to Derrida's Jesus; together, their success in transforming literary studies in North America was indeed a remarkable millennial movement. But now that we are into this new millennium, we can see that their success was bittersweet, because the economists and businessmen who control our universities have taken deconstruction to heart and have deconstructed English as the foundation for a liberal arts education – the kind of education I experienced at Pomona. The administrators are now doing to English what a previous generation did to Classics as the foundation for a Western Civ curriculum. There are now no jobs for Ph.D.s in English, the number of graduate students is shrinking, and the few required classes of English that remain for the freshmen headed for law and business schools are being staffed by post-doctoral lecturers who are forever denied full benefits and access to tenure. In the new disliterate culture of the United States – one in which sports, politics, and the celebrity arts are glorified in the spotlights of the State of Entertainment – the economists and businessmen have found that the deconstruction of the critical liberal arts and the construction of costly sports facilities provide a greater return on their investment for the enspirited alumni who will become future donors.

Jesse Jackson – a good and charming man who should know better – now chants at demonstrations and assemblies, "Hey Ho! Western Civ has got to go." But the question remains, if we erase the post-war curricular movement of Hutchins and Conant, with what do we replace it? Do we replace it with the equivocating vacuity of Homi Bhabha and an

endless teetering back and forth between an ironist metropole and an enraged subaltern former colony? Or do we locate culture in something deeper than the constructed discourses of domination?

Planetary Culture and Complex Dynamical Systems

When I was here at York in 1969, I was invited to one of the Couchiching Conferences in Southern Ontario, where I met Ivan Illich for the first time. He gave one of the most mind-altering lectures I have ever heard. I became fascinated with his idea of the "counterfoil institution," and when my time for sabbatical came up in 1972, I decided to look at all these intellectual alternatives to corporate globalization that were appearing around the world. I went to the Research Foundation for Western Science and Eastern Wisdom in Germany, met with Paolo Soleri at Arcosanti in Arizona, White Bear Fredericks in Old Oraibi in the Hopi Nation, and with Carlos Castaneda in Los Angeles, and visited Esalen and Zen Center in California, Auroville in India, and Findhorn in Scotland. When I returned to York in 1973, York generously promoted me to full professor at the tender age of thirty-five, but I knew I could not continue to work within the post-industrial form of the suburban university, and York was becoming less open to intellectual innovation and more committed to its economic niche, what I snarkily called at that time "Yorkdale University." So I quit and went down to New York to establish my own counterfoil institution.

To escape the old split between the two cultures of the sciences and the humanities that I had experienced at MIT, and to escape the countercultural split between spirituality and intellectuality that I had experienced at Findhorn, I decided to work to build a bridge between the university and the ashram or spiritual community. Basically, I pulled the two DNA strands of the humanities apart by energizing meditation and mysticism in place of scriptural hermeneutics, and energizing Pythagorean science instead of scientific and technological materialism. (Clearly, my old love for Whitehead during my high school days resurfaced.) I had used Gregory Bateson's *Naven* in my Pomona College Honors Thesis as a way of trying to support my efforts to articulate systems of mutual causality, and so when I met Gregory Bateson at an Esalen meeting in New York, it was a small step to invite him to become our first Scholar-in-Residence at Lindisfarne in Southampton. Gregory came to live with us and wrote his book, *Mind in Nature* in one of our small cabins on the shore of Fishcove in Peconic Bay. Together, Gregory and I organized a small conference of the same title and invited Francisco Varela, who then became our next Scholar-in-Residence. And then "the pattern that connects" was in place, and a self-organizing dynamic emerged that was far beyond any "conscious purpose" I had in mind when I founded Lindisfarne in 1972. In 1981, I invited James Lovelock, Lynn Margulis, Heinz von Forster, and on, and on for twenty years, from the Chaos Dynamics of Ralph Abraham's work of the middle '80s to Complex Dynamical Systems and Stuart Kauffman's work in the '90s. Like Bauhaus or the Macy Conferences before it, Lindisfarne became a gathering in which a new world view was being articulated. We became one of the institutions that was performing the shift from the linear Galilean Dynamics of European modernism to Complex Dynamical Systems and a new planetary culture. Tibetan Buddhism and Cognitive Science were brought together, and the work of Francisco Varela in Paris and Evan Thompson in Toronto was supported by Lindisfarne.⁸ My point in reviewing all this personal cultural history is to show that when my work slipped beneath the horizon of notice of English departments, this is what I was working on at the same time that my colleague from Cornell, Gayatri Spivak, was deconstructing "English" in particular and literature in general in a new kind of textual sociology. "English," as I knew it as an undergraduate at Pomona has disappeared, with deconstruction pulling in one direction, and media studies pulling in the other. For teachers intimidated by Derrida, Foucault, and Spivak, pop culture and media studies have provided a way for them to be popular with students by lecturing on myth in *Buffy the Vampire Slayer* or moral conflict in *The Sopranos*. Lindisfarne has also disappeared, for the general

movement of complex dynamical systems is now world wide, and the Dalai Lama himself is continuing to direct and support conferences on meditation and neuroscience. It is not the calling of an intellectual or artistic movement to become a permanent institution; it is more like a crocus of spring signalling a change of season than a permanent and enduring institution. So Lindisfarne is gone, but York is still here, and in my beginning is my end. But let me end by giving you another way of looking at literature that is also not "English."

The Cultural Phenomenology of Literature

To consider the whole cultural phenomenology of literature, one has to shift levels of perception. Think of it in terms of a Landsat satellite view of the Earth below; at that level from above all kinds of configurations are visible, but you don't see the warring ideologies, though you do see the impact of human cultures on the biosphere. My generation, I guess because of the dramatic break with conventional history marked by the explosions of nuclear weapons, was drawn toward interdisciplinary macrohistory. But, as the ancient Taoists say, "reversal is the movement of Tao," so the younger generation is more interested again in single disciplines and microhistorical studies that have more compatibility with "les petits récits" that Lyotard says is characteristic of postmodernism. I am not now, nor have I ever been, a postmodernist, and my 1968 humanities course here at York tried to look at history through the quantum steps of cultural evolution. My course looked like this:

- I. Hominization, 2,000,000 BCE
- II. Symbolization, 200,000 BCE
- III. Agriculturalization, 8,000 BCE
- IV. Civilization, 3500 BCE
- V. Industrialization, 1500–1851 CE
- VI. Planetization, 1945 CE

As you can see, the chronology presents us with a logarithmic progression in which the rate of change contracts from millions of years with the hominization of the primates to decades with the planetization of humanity. The transformation is now visible within the time scale of the individual life, so the students' consciousness of historical unfoldment could affect the coming unfoldment of history, or so I thought at the time that I designed this course for York students.

Ralph Abraham, a chaos mathematician from U.C. Santa Cruz and a Lindisfarne Fellow, and I have been collaborating on various projects through Lindisfarne for over twelve years. In response to Ralph's papers and book, *Chaos, Gaia, and Eros*, I developed a theory that there were five archetypal literary and mathematical mentalities in cultural history from the Ice Age to the present.⁹ These mentalities are based upon a configuration, in which objects are articulated in a constructed space, and a configuration of time, a narrative, in which identities are unfolded. The former is a world, the latter, a self.

- The Arithmetic (Ancient)
- The Geometric (Classical)
- The Algebraic (Medieval)
- The Galilean Dynamical (Modern)
- The Complex Dynamical (Contemporary)

The Arithmetic Mentality arises in the Ice Age and reaches its climactic formation in Sumerian civilization; the Geometric, which arises in Egypt and Babylon, reaches its climactic formation in the classical civilizations of Greece, Rome, Persia, India, China, and

Mesoamerica; the Algebraic, which arises in Islamic Baghdad, reaches its climactic medieval formulation in the Mediterranean cultural ecology; the Galilean Dynamical, which arises in Renaissance Italy, reaches its climactic formation in the late nineteenth century; and, finally, the Complex Dynamical Mentality arises in Paris in 1889 with Poincaré, and has now become a widespread mentality among a scientific and artistic avant-garde. For each of these mentalities there is a cultural ecology in which it was embedded at its emergence, and for each there is an archetypal object that embodies the unique character of its performative life in the new culture.

Cultural Ecology	Mentality	Archetypal Object
Riverine	Arithmetic	The List
Transcontinenta	Geometric	The Temple
Mediterranean	Algebraic	The Esoteric Code
Oceanic	Galilean Dynamical	Currencies/Ballistics
Biospheric	Complex Dynamical	Self-Consciousness

If we go back to the beginnings of art and signs in the Chauvet Cave of 35,000 BCE – this is double the age of Lascaux – we can observe that the beautifully painted image of the European bison is superimposed upon the spot that had already been selected by the cave bear as the place of its clawed markings. Here we can see that Derrida was right, that the engraving, the *gramé*, is coeval with ritual or chant, and there is no archaic privileging of the oral as prior to the engraved.



One can imagine the numinosity of the cave for paleolithic humans. One enters the cave and discovers the huge and hibernating bear and kills it when it is utterly vulnerable in its winter trance. Either out of awe or remorse, these ancient humans set up an altar to hold the bear's skull and mandible, and put on the skin as a ceremonial cloak for the shaman. In other words, "We slay with technology, and save the victim with art" – which is my own aphoristic way of responding to McLuhan's tetrad, or his aphorism that the sloughed-off environment becomes a work of art in the new and invisible environment. The trance state also becomes the chosen medium for the shaman to leave his body and take on the body of the animal spirit in rituals of animal possession. In sculpture and painted images on the cave walls, we see just such half-man, half-animal iconography.



Humans have two hemispheres, and two modes of archaic expression – sign and sound – and both co-evolve together in the causal process that the Buddhists at the time of Nagarjuna called dependent co-origination, *pratityasamutpada*. Similarly, tool manufacture and language also co-evolve and bring forth the emergent domain of archaic human culture: to make a rock conform to the class of fist-hatchets, a hominid's actions shift its membership from one class to another.

If humans have two modes of expression through sign and sound, we need to recognize that space is separating and sound uniting. Through chant or music, we feel exalted out of our isolated spatial condition; we become at one with the universe, transfigured in a Hallelujah Chorus. A chant in a place like Chauvet Cave or Lascaux would enhance trance states, and for the archaic self, which was probably much more labile than the modern ego, entry into these states was probably not difficult. And here we also need to recognize that there is more to Mind than consciousness; consciousness is the phase-space of the perceptual-motor system, but, as every mystic knows, there are forms of Buddhistic-mind that are first of sound, then of light – that are not figure-ground constructed in the perspectival syntax of self and world. This is difficult for non-meditators to understand, but a more accessible example of non-conscious participation in an ambience of sound has been reported recently by scientists doing research on neonates in a hospital in Helsinki. The scientists put little electroencephalograph bonnets on neonates and discovered that while the infants were sleeping their brains were still at work processing the sounds and phonological distinctions of their native language.¹⁰ So, when a nursing mother is singing a lullaby to her infant, the infant is taking in language along with its mother's milk in precisely the way Wordsworth described in *The Prelude*.¹¹ The origins of language do not come from Man the Hunter, who needs to be silent as he stalks his prey, but in the humming and nursing mother at the home base, where mothers and grandmothers, through nursing and gathering, contributed far more to human evolution than the excessively celebrated man the hunter – the great meat-eating, killer ape of the narratives favoured by male, suburban, barbeque-cooking anthropologists.

Other research on neonates has discovered that they recognize faces, can mimic gestures – such as the sticking out of the tongue – and that they move their arms and legs on their backs in rhythm to the pulses of the sound of the mother's speech. Music and dance are therefore not representative arts, but ontic arts; they are performances of our basic ontology, and we start to dance and babble within days of our birth.

What we also can see from the image of the bison in Chauvet Cave is that this art is fine right from the start. Leroi-Gourhan's notion from the 1960s that there was a developmental progression from primitive to advanced, no longer computes. Chauvet Cave is as advanced as Lascaux, which comes almost 14,000 years later.

Now, let's pause for a moment to consider my axiom: "We slay with technology and save the victim with art." In paleolithic cultures, the victim is the animal. In neolithic cultures, the dying male is the victim that is saved in art, as we see in the images of the male placed in the vulture shrines of death at the Çatal Hüyük of 6,000 BCE. In the shift from prehistoric

matristic cultures to ancient patriarchal societies, there is a shift in sexual valuation and woman becomes the victim – as we see in the classical mythic stories of Persephone and Eurydice, or of Tiamat in Babylon. In industrial societies, nature and traditional religion become the victims saved in art, and so we have romanticism, or, in the medieval court of the Crystal Palace of 1851, the Gothic Revival in which industrial society becomes fascinated with the middle ages – with Catholicism in the Oxford movement, and with Pre-Raphaelite visions of Arthurianism and the age of faith. Potted plants and ferns are moved inside living rooms and iron sewing machines are decorated with vines. In the shift from industrial to post-industrial through television, the mind becomes the victim, as politics, sports, pop culture, and entertainment become one in collective media feedlots where our minds are prepared for slaughter. And now in the realm of artificial intelligence, Ray Kurzweil of MIT prophesies that by the year 2030, humans will be passed up in evolution by machines. According to this commercial for MIT, we humans will become the house pets or potted plants of “the Age of Spiritual Machines,”¹² or, if we are lucky, like the tiny mitochondria that moved inside the eukaryotic cell and were able to keep some of their ancient DNA. In this shift from evolution by natural selection to evolution by cultural intrusion through genetic engineering, artificial intelligence, and inserted nanotechnologies, the human genome becomes the victim. Expect to see an art that crosses genes, DNA spirals, music and vibration into some new form of installation art. In fact, the poster that came with the publication of the guide to the human genome in *Nature* was already suitable for framing and placement on a wall. In the terms of McLuhan’s famous tetrad, now it is human sacrifice that is being culturally retrieved. Kids unconsciously sense this and can feel that they are now evolutionary waste, and so they microwave their brains with long conversations on cellphones, insert metal all over their bodies, and turn their tattooed skin into elegiac broadsides marking the dehumanization of the primate, homo sapiens.

If we place McLuhan’s progression of cultural change alongside Jean Gebser’s structural transforms in the evolution of consciousness, we can see that both the Canadian and the German scholars were noticing isomorphic patterns of cultural change.

McLuhan: Communications Media

1. Oral
2. Image to Script
3. Script to Alphabetic
4. Print
5. Electronic

Gebser: Structures of Consciousness

1. ARCHAIC (Prehistoric, but also Ever-present)
2. MAGICAL (Neolithic)
3. MYTHIC (Ancient Civilizations)
4. MENTAL (Classical to European Civilizations)
5. INTEGRAL (Emergent)

For some reason unknown to me, North American scholars of literature ignore Gebser, which is rather strange since Gebser was a friend of Lorca and Picasso and was intensely interested in artistic works as markers of the process of the evolution of consciousness.¹³ As someone who has spent the last forty years moving in and out of various cognitive domains, artistic, spiritual, and scientific, it does seem to me as if academic scholars live in an intellectual ghetto in which they rarely leave “the hood.” But here again the case may be simply one in which Gebser is guilty of having written sympathetically about Zen or Sri Aurobindo.

In the isomorphism of Gebser’s and McLuhan’s narratives we can see that both these cultural historians were sensitive to a complex dynamic in which the later stages recapitulated earlier structures of consciousness. McLuhan called this process “retrieval,” and Gebser called it “diaphony,” and both recognized that the foundational stage – oral or

archaic – had not been eliminated but abides as an Ever-present Origin in the contemporary transformation that Gebser saw as Integral and McLuhan saw as a Dantean vision of the reintegration of humanity in the Mystical Body of Christ. Clearly, this is a grand narrative and not one of “les petits récits” favoured by the postmodernists in English departments.

In Gebser’s terminology, when a new structure of consciousness emerges, the old becomes deficient as the new becomes efficient. Shamanism is the efficient structure in archaic societies, but in the shift to civilized societies based upon myth and archaeoastronomy, shamanism becomes the deficient form of sorcery, black magic, and human sacrifice. The battle between the magical and the mythic structures of consciousness is registered in the stories of Orpheus in Greece and Quetzalcoatl in Mesoamerica. For our times of emergence from industrial to planetary culture, postmodernism is the deficient form of the perspectival consciousness of the Mental structure and not the emergent form of the Integral. This understanding of emergence and complex dynamical systems enabled both Gebser and McLuhan to avoid the political slips to left and right that characterized those academics who became caught by the fascism of Heidegger or the Stalinist apologetics of Althusser.

The old mental structure of perspectival consciousness – of a single individual in his book-lined study looking out at the world from the perspective of an ideology – is now being replaced by a more complex ecology of consciousness in which, as Niels Bohr once said of wave and particle, the opposite of a fact is a falsehood, but the opposite of one profound truth is another profound truth. This new planetary culture emerges where several cognitive domains cross and interpenetrate, as in the Dalai Lama’s Mind Life Conferences in which Tibetan meditation masters and neuroscientists come together to explore the nature of consciousness. The university department becomes the anaerobic dark where the old methane atmosphere of poisonous ideologies hides from the light and the wide blue sky of the planet as a whole. So although textual sociologists like Gayatri Spivak and Homi Bhabha speak of subaltern studies and giving a voice to the voiceless, they ignore the cognitive domains of contemporary spirituality and the contemporary sciences of complexity. Since they cannot change, and English departments are now followers of this ideological movement, there is no likelihood that the shift to an appreciation of complex dynamical systems will occur until after this generation has retired. As Max Planck said of the physicists opposed to the new quantum mechanics, old scientists do not change their minds; they simply die, and new and younger scientists come along for whom the new paradigm is not so threatening.

Peter Drucker has also commented on an even more entrenched academic mentality in the medical schools at the time of the French Revolution. So committed were the professors to Galenic medicine and so resistant were they to clinical medicine, that there was absolutely no hope of introducing clinical medicine in the education of doctors. So the French Revolution closed the medical schools and started all over again. We, however, won’t have to close the English departments because they are already going through their own process of capitalistic deconstruction, but I do hope that new colleges can arise in which the Dalai Lama’s program of contemplative studies and the process of cultural phenomenology I am outlining here can become the basis of a new curriculum. What Hutchins did for the University of Chicago at the time of George Steiner needs to be done all over again, but this time not just for the culture of Western Civilization, but for the whole world. As a step in this new direction, here is one way of miniaturizing the cultural phenomenology of planet Earth into a four-year curriculum for a liberal arts education.

The Literary Milestones of the Arithmetic Mentality:

Formative: Sumerian, "Inanna's Transfer of the Arts of Civilization from Eridu to Erech" (This work shows the archetypal and generative power of the list.)

Dominant: "Inanna's Descent into the Netherworld." (This work shows the cultural shift from village agriculture to the city-state in which a priestly class develops astronomy as a mythopoeic system of knowledge.)

Climactic: The Gilgamesh Cycle, both the Sumerian cycle, and the Akkadian epic. Lao Tsu's *Tao Te Ching*. (The Gilgamesh epic shows the war of the sexes and the tension between matristic systems of prehistoric authority and charismatic military leadership with its new heroic system of values. *The Tao Te Ching* is the swan song for the anarchic, pre-state values of the Eternal Feminine and the creative and generative power of the Tao.)

The Literary Milestones of the Geometric Mentality:

Formative: The Babylonian Creation Epic, "Enuma Elish"; the Egyptian play "The Triumph of Horus." (The Babylonian text shows the destruction of the prehistoric Great Mother and the shift to the military patriarchal state. The Egyptian text shows the rise of the power of the Father and dynastic succession with the son and the consequent displacement of power from the mother's brother.)

Dominant: Aeschylus's *Oresteia*, the Chinese *Book of Odes*. (These texts are supreme examples of the shift from prehistoric blood rituals to rationality, temple formation, and patriarchal succession.)

Climactic: Plato's *Timaeus*, Confucius's *Analect*, the canonized *Old Testament* (these documents become "classics" and therefore lock in patriarchy and geometrical order as the system of civilization for temple and state.)

The Literary Milestones of the Algebraic Mentality:

Formative: The *Koran*, *Wis and Ramin*, *The Story of Layla and Majnun*, Jayadeva's *Gita Govinda*. (One interesting feature of the shift from the concrete to the abstract is expressed in the shift from sexual love – the kind we see expressed in Horace, Ovid, and Catullus – to romantic love and erotic mysticism. This shift seems to start in India and Persia and soon spreads across Western Europe and reaches a climax in the elaborate behavioural code of courtly love in the high Middle Ages.)

Dominant: *Tristan et Iseult*, *The Quest for the Holy Grail*, *The Death of King Arthur*. (*The Quest for the Holy Grail* is a prime example in which the concrete landscape becomes an allegorical code. For me the medieval Algebraic Mentality is an algorithmic logical operation that says: If the daughter does not belong to the father, she belongs to me because I love her (the Persian poem, *Layla and Majnun*). If the wife does not belong to the husband, then she belongs to me, because I love her, (the Persian *Wis and Ramin*, and the Celtic *Tristan et Iseult*). If God is not a vengeful and frightening patriarchal Yahweh who belongs only to the Ark, the temple, and the high priest, then God is the Beloved and belongs to me as my heart's desire (Rumi and Sufism in general).

Climactic : Dante's *Divine Comedy*. (Dante and Fra Angelico are great artists whose imaginations can carry them beyond the limits of the mentality of their times. In his "Letter to Can Grande," Dante shows how the allegorical mode is transcended by the hermeneutic of the anagogic, and with Dante, courtly love becomes cosmic love: "*l'amor che muove il sole e l'altre stelle.*"

The Literary Milestones of the Galilean Dynamical Mentality:

Formative: *Lazarillo de Tormes*, Cervantes's *Don Quixote*, Descartes's *Discourse on Method*. (The picaresque narrative celebrates the new non-heroic individualism of the common man, and shows life as a process of learning a new science and wisdom through trial and error.)

Dominant: *Faust* (all versions as performances of the European myth). Faust shows man challenging sacerdotal authority to gain power over nature, which is the dominant scientific myth of modernism. Melville's *Moby-Dick* goes back to the *Gilgamesh* epic in its vision of male bonding and slaying the beast of nature.

Climactic : James Joyce's *Ulysses* is a conscious recapitulation of literary history, from the Homeric epic to the modern novel, and a brilliant performance of the shift from the linear narrative of a single hero to the complex dynamical system of an ecology of consciousness – a movement that he completes with *Finnegans Wake*.

The Literary Milestones of the Complex Dynamical Mentality:

Formative: Virginia Woolf, *The Waves*; James Joyce, *Ulysses* and *Finnegans Wake*.

(The characters in Woolf's *The Waves* seem like a coral reef of consciousness, as we pass like an ocean current from one mind to another. In this shift from the stream of consciousness of a single mind to an ecology of consciousness, Woolf, along with James Joyce, was one of the major artists articulating the emergence of complex dynamical systems in literature. We are still only in the early stages of this cultural shift. We saw the shift from text to cinema at the beginning of the twentieth century, and the shift from cinema to electronic media in the middle, and the multi-dimensionality of hypertext at the end of the century. God only knows what "krypton crystals" technology is next.)

For each of these literary-mathematical mentalities there is a charismatic object that embodies the uniqueness of its world view. For the Arithmetic Mentality, it is the list, and the recitation of the list carries a performative magical power that captures the mystique of generation – of the many from the One. Originally, the One is the Great Mother, but in the patriarchal shift to a male priesthood, the generative power is contained within the geometrical form of the temple and a new class of specialists begins to dedicate itself to mythic narratives and astrological observances. For the Geometrical Mentality, the characteristic object is, therefore, the temple. When the alphabet arises to liberate writing from the exclusive possession of temple scribes, and when the Aramaic alphabet is transformed into the new lightness of the Indian numeral system, then calligraphy and a celestial code begin to be the new charismatic vehicle of the divine. This entrancement with a celestial code of the Algebraic Mentality introduces a new mysticism, as well as a new erotic mysticism, and the feminine returns in a new cultural system of retrieval in poetry and rituals of courtly love. But as the Taoists of the *I Ching* comment, "Reversal is the movement of Tao," so the introverted mysticism of the medieval mentality is succeeded by the extroverted mentality of modernism in the Galilean Dynamical Mentality. With the fall of the fortress of Byzantium in 1453 from heavy artillery, ballistics introduces a new era of

moving objects in space – from cannonballs to sailing ships to currencies in capitalistic world trade to the calculus of motion for Galileo, Newton, and Leibniz. This era of single causes, linear narratives, and individual perspective comes to an end in the a-perspectival world of complex dynamical systems – the new world view of Poincaré, Picasso, and Einstein.

The Literary-Mathematical Mentalities and their Contradictory Polarities

I. Arithmetic	I. Sacrificial, or carnal/excarnal
II. Geometric	II. Bellicose, or constructive/destructive
III. Algebraic	III. Mystical, or transcendental/erotic
IV. Galilean Dynamical	IV. Materialist/Abstract
V. Complex Dynamical	V. Node/lattice– cloud/atmosphere – or neuronal/discarnal

The first year of a given college's core curriculum could be devoted to the Arithmetic and Geometric mentalities; the second year to the Algebraic; the third year to the Galilean Dynamical mentality, and the final year could focus on complex dynamical systems in multi-generic arts and the emergence of a new planetary culture. Those familiar with St. Johns College in Annapolis and Santa Fe will recognize that mine is simply a more global approach to their Graeco-Roman, Western Civilization, Great Books curriculum. My recommendation to Ontario would be that a college within York University, or Trent University in Peterborough, should try this out as an alternative to what they already have in place.

We are now in the time of bifurcation in which we experience the shift to a new world-system – intellectually and politically. As we shift out of modernism, we are experiencing the return of the seventeenth century's age of religious wars and the emergence of novel mathematical mentalities that we went through at the time when Western Civilization truly broke away and began to pass up the Ottoman Empire.¹⁴

From the influence of Dutch capitalism on England in the Glorious Revolution, England founded the Bank of England and began to use indebtedness to expand the phase-space of its economy. In the debates in Parliament, the old Tory lords defined the gross national product of England as the sum of all the rents of the land of England, and thus they showed that they did not understand the new economy and were still locked into a classical geometrical mentality.

This new economy involved a shift in the perception of value from the past to the future and from an unchanging and fixed Platonic order to a world view of motion and change. Ming Chinese society was based upon ancestor worship and the mandate from heaven to the Emperor in the past. The Ming Court was locked into a single center, suspicious of peripheries and foreigners, and unable to understand the shift to the new mathematical mentality, and so it ordered the contraction of Xeng He's naval world projection, moved the capital from coastal Nanking to inland Beijing, and imploded in a tightly geometric Confucian world view with its rigid and unchanging social order. Xeng He was a Muslim eunuch Admiral and not a Confucian lord. Had Ming China – then the world's most advanced civilization equipped with print, monetary currency, and gunpowder – been able to complete the shift from the geometric mentality to the algebraic and dynamical mentalities, we would all now be speaking Chinese instead of English. The projection of a civilization into a new world economy fell to Europe, and Western Europe, reinforced by the new mentality in mathematics and capitalism, projected energetically in a complex and mutually competing polycentric civilization. The new economy in the Anglo-Dutch Glorious Revolution shifted sovereignty from the sovereign to the parliament, created the Bank of England based upon

the model of the Bank of Amsterdam, and unconsciously shifted their sense of value from the past to the future when one's ship came in and the risk paid off. Interestingly enough, at this time, children begin to be seen as carriers of the value of the future in Dutch domestic and genre paintings – such as those of Jan Steen and Judith Lester.

If we wish to tell the truth about the cultural phenomenology of humans on planet Earth, then Asia and Africa have to take their medicine and swallow the bitter pill that the reason we are now living in a Eurocentric projection is because Europe effected not just one, but two world cultural bifurcations. The first was the Galilean Dynamical Mentality, reinforced by the mathematics of Newton and Leibniz and Anglo-Dutch capitalism; and the second was the Poincaré bifurcation and the emergence of complex dynamical systems, reinforced by American globalizing capitalism. Trying to erase these embarrassing facts in a PC and po-mo ideological shift away from Eurocentric narratives does not explain why these Asian and African cultures feel dissed in the first place. After all, Gayatri Spivak teaches at Columbia not Calcutta, and Homi Bhabha teaches at Harvard not Bombay.

In the first European world projection, ballistics and currencies became the charismatic object that expressed the uniqueness of the new world view. Money became a dominant theme in the English novel, and the new narrative of motion described the path of the individual, released from bondage in medieval serfdom, from rags to riches. In the second European projection, identity is no longer exclusively based upon land or class but on consciousness and knowledge. Consciousness becomes the new charismatic object or vessel that carries the uniqueness of the new world view. Consciousness is to us what soil was for an agricultural society; it is the ground of our being. For those students of history who like events sharply perceived in dates – such as 1453 – we can date this emergence of the shift from the industrial nation-state to the noetic polity to 1889.

In the year 1889, Poincaré discovers the homoclinic tangle and realizes that the solar system is not the neat, elliptically revolving system of Kepler, but a chaotic system. It is also the year of the Universal Exhibition in Paris, when, for the first time, a human structure is built that is higher than the Great Pyramid. It is the year when Indonesian gamelan music comes to Paris, and Satie is enthralled and realizes that time is not a mechanical unit measured out by the metronome, but an extensive tonal *durée*. And in these studies of human phenomenological time, Bergson and Proust are also at work in the excavations of past time and human consciousness. There is not simply one mind at work here on the problems of matter and memory but a larger mind whose phase-space is the city of Paris, and this is precisely what I mean by the emergence of a noetic polity. Poincaré will influence Einstein, and both will influence Picasso, and from Picasso's retrieval of African masks, a-perspectival space, and Einsteinian relativity, art and science will begin a process of parallel processing that is characteristic of a noetic polity. Small wonder that Walter Benjamin called Paris the capital of the nineteenth century.¹⁵

A noetic polity is a culture in which identity is based upon participation in an ecology of consciousness. In tribal societies, identity is based upon blood – upon a sanguinal identity in which we are known as the children of Abraham. In a kingdom or empire, identity is based upon land and location – a characteristic feature of the Geometrical Mentality. In an industrial nation-state, identity is based upon economic class, language, and parentally derived accent. In a noetic polity, culture is generated by the mutually interacting causal systems of art and science, and a new kind of personal, post-religious spirituality that we see prefigured in the Rosicrucianism of Satie, the theosophy of Kandinsky, Mondrian, and George and William Yeats, and in the scientific cosmic mysticism of Einstein. In this personal and fractal (self-similar) metabolism of unique mind and Universal Mind, identity is based

upon the participation through conscious experience more than doctrinal belief. This ecology of consciousness is more like a cloud than a clod, a circulating atmosphere more than a fixed continent.

Notice now in our contemporary war between globalization and terrorism that neither one is an expression of a territorial nation-state. Both multinational corporate globalization and Al Qaeda hold nation-states hostage to advance their cause. Al Qaeda uses global-positioning satellite phones, launders money and moves it around globally as effectively as any multinational corporation. It camouflages itself with medieval Islam, in precisely the same way that globalization camouflages itself with Enlightenment rhetoric and democratic values. Bush talks about free markets and free trade, but everywhere his anti-democratic putsch seeks to control populations for the benefit of corporations and has sought to eliminate environmental protection and worker safety in factories. He speaks out against terrorism but reserves the monopolistic right to apply violence to advance his party's aims to control critical resources and maintain American military-industrial supremacy. This Bush-Bin Laden planetary civil war is not a war between nation-states, but a war of identity between two competing noetic plasmas struggling to become world polities.

We are no longer living in the inter-national world system that came into being after World War II and the formation of the United Nations. Small wonder that both NATO and the UN are in disarray. National noise is drawing the world-system toward a new basin of attraction. It is in the nature of a complex dynamical system that tiny initial conditions can create a cascade of effects that makes the outcome of a chaotic system totally unpredictable. No one knows how this new world-system will play itself out. Certainly, I don't.

But precisely because world civilization is at stake, we need to appreciate the positive side of the values of the European Enlightenment – the spirit that freed artists and scholars from being the domestic servants of aristocrats – the spirit that enabled Schiller to defy the Duke of Baden's demand that he be a military doctor and not a playwright and encouraged him to escape his feudal imprisonment for a freer life in a larger world. To move from an eighteenth century European Enlightenment to a twenty-first century planetary Enlightenment, we are going to have rethink the nature of education, to shift it from job-training for a globalizing economy to a new form of contemplative education that empowers the individual's sense of value within a curriculum that situates the enlightened self in a planetary culture greater than that of warring tribes, races, nations, economic classes, and religions.

Endnotes

1. This conference at York University proved to be only the beginning of a whole series of conferences that I would continue to organize for a generation from 1974 to 1994. See *Earth's Answer: Explorations of Planetary Culture at the Lindisfarne Conferences*, eds. M. Katz, W. Marsh, and G. Thompson (New York: Harper & Row/Lindisfarne Books, 1977). See also *Gaia, A Way of Knowing: Political Implications of the New Biology*, ed. W. I. Thompson (Hudson, NY: Lindisfarne Press, 1987), and *Gaia Two: The New Science of Becoming*, ed. W. I. Thompson (Great Barrington, MA: Lindisfarne Press, 1991).
2. At Cornell, I had written my Master's essay on poems of this genre. See W. I. Thompson, "Collapsed Universe and Structured Poem: an Essay in Whiteheadian Criticism," *College English*, Vol. 28, No. 1, October, 1966, 15–39.
3. This was *The Imagination of an Insurrection: Dublin, Easter 1916* (New York: Oxford University Press, 1967).

4. Throughout my career, I have been hammered by leftist critics, from Conor Cruise O'Brien in *The New York Review of Books* on *The Imagination of an Insurrection* in the '60s, to Paul Zweig on *Darkness and Scattered Light* in *The New York Times Book Review* in the '70s, to Jean Bethke Elshtain's review of *The Time Falling Bodies Take to Light* in *The Nation* in the '80s.
5. For the rest of my academic career, I would remain beneath the horizon of scholarly notice for Departments of English. Interestingly, even at the Living Literacies Conference, to which I was invited to give this talk, mine were the only books that were not present outside in the bookstall of the presenters at the conference or at the reception for the speakers in the university bookstore.
6. See Catherine Gallagher and Stephen Greenblatt, *Practicing New Historicism* (Chicago: University of Chicago Press, 2000).
7. See endnote 2. The reading of Yeats's "Among School Children" was republished in Paul Engle's textbook, *Reading Modern Poetry* (Glenview, IL: Scott, Foresman, 1968).
8. This work was published and became the book, *The Embodied Mind: Cognitive Science and Human Experience*, F. Varela, E. Thompson, and E. Rosch (Cambridge, MA: MIT Press, 1991).
9. This work was given as the Marvin B. Anderson Lectures at the Social Science Research Institute of the University of Hawaii at Manoa; it was subsequently published as Chapter 3 in my book *Pacific Shift* (San Francisco: Sierra Club Books, 1985). The final development of this theory, "Literary and Archetypal Mathematical Mentalities in the Evolution of Culture" will be published in 2003 or 2004 in the *Journal for Consciousness Studies*.
10. See M. Cheour et al., 2002, "Psychobiology: Speech Sounds Learned by Sleeping Newborns," in *Nature*, 415, 599-600
11. Book One, ll. 269-281.
12. See Ray Kurzweil, EDGE [online], March 25, 2002; see also his *The Age of Spiritual Machines* (New York: Viking, 1999). Also Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge, MA: Harvard University Press, 1988).
13. There is one edition available in English. See Jean Gebser, *Ever-present Origin*, trans. Noel Barstad with Algis Mickunas (Athens, OH: Ohio University Press, 1991). There is a German paperback of selected works, *Jean Gebser, Ausgewählte Texte* (München: Goldmann Verlag, 1987); and the complete works are available in a boxed set as *Jean Gebser, Gesamtausgabe* (Schaffhausen, Switzerland: Novalis Verlag, 1986).
14. See Bernard Lewis, *What Went Wrong? Western Impact and Middle Eastern Response* (New York: Oxford University Press, 2002, p. 118).
15. See Walter Benjamin, "Paris, die Hauptstadt des XIX Jahrhunderts," in *Illuminationen: Ausgewählte Schriften* (Frankfurt am Main: Suhrkamp, 1974). Surprisingly, Patrice Higonnet, in his *Paris: Capital of the World* (Cambridge, MA: Harvard University Press, 2002) misses the significance of Poincaré and chooses the year 1889 to mark the end of the mythic era of Paris. His point of view is too narrowly political and literary, and a much more sensitive understanding of the importance of science to art is to be found in Arthur I. Miller's *Einstein and Picasso: Space, Time, and the Beauty that Creates Havoc* (New York: Basic Books, 2001); see especially his Chapter 4, "How Picasso Discovered *Les Desmoiselles d'Avignon*," pp. 85-127.

William Irwin Thompson

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