Mysteries of The Lotus Maiden

An Artist's View of the Enigmas of the World

by Jonathon Earl Bowser

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For Alphonse Mucha and Thomas Moran,
who taught me about painting;

For Carl Sagan and Joseph Campbell,
who taught me about thinking;

For my Mom, my Dad, and my Wife,
who taught me everything *really* important that I understand about the world...

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A trillion-trillion electron-volts of creative energy, the Big Bang, and the stupefying immensity of space-time: the universe came from *something* or it came from *nothing*. Both propositions seem equally absurd, but one of these impossible origins must actually be true. It is no simple matter to find meaning in the baffling beauty and horror of the world…

* * *

The businessman regards his chosen vocation as the most interesting and consequential endeavor humans pursue. This is analogously true for research scientists, who gather often in academic forums and talk effortlessly for hours, even with complete strangers, about their adventures in scientific inquiry. I expect this is also true for athletes and politicians, chefs and home-builders, and so on. It is perhaps not surprising that humans, who give so much life-force to a chosen profession, should reflexively inflate its importance in global affairs. It is also not surprising that so much of the establishment media landscape is populated with industry mandarins shouting into bullhorns, sharing a portentous worldview of problems and solutions with the similarly-minded. The lawyers and bankers applaud. There's a cable channel for almost every job, telling you what the world looks like from this perspective or that. The soldiers and the protesters nod in agreement. But none of those many influential, apparently incompatible opinions describes life as a simple painter sees it. Where, then, are we to hear about the *artist's* view of the Enigmas of the World?

What follows is a collection of artwork, and a few words of description about this artwork. If the imagery herein is interesting to you, then I invite you to enjoy these paintings as they are, without further reference to any other material present in these pages. Viewing instructions are not required, and you can and should interpret these images - or not - according to your own natural inclination. I strongly believe that art is the resonance that happens *between* a painting and an observer; it is only when people are able to bring their own life-experience to a picture that meaning can enter into it. My understanding of a particular picture may not be relevant to a different but equally valid understanding.

I am often asked, as I suppose most artists are, where I get my ideas. Inspiration is a difficult concept, and I'm not really sure *where* these images came from, but many of them were discovered in my search for conceptual patterns that make apparently dissimilar kinds of things also, in some unexpected way, strangely similar. Perhaps it is because the job requires me to spend so much time alone (and solitary people can make friends with strange things), but I delight in finding a secret bridge between distant ideas. I am fascinated by the mysterious repetition of common motifs and patterns that appear in the natural world around us, in our behavior and biology, in our societies and religions, and even in the ethereal worlds of mathematics and physical law. Seeking to understand these mysterious connections is an integral part of my creative process. It is perhaps unrealistic (or even foolish, many would say) to expect a painting to have that kind of explanatory power, but writing helps *me* - to clarify and focus my creative objectives. This personal inclination, however, need have no bearing whatsoever on your experience of these artworks. These writings are important only in as much as they have made a significant contribution to the evolution of these images. They are included here to document that process. And if, when viewing a particular image, you find yourself wondering just what the heck I'm trying to say, you may find the companion writings edifying - and perhaps even interesting.

I am often similarly asked what these paintings are about, and the answer to that question is also what this book is about. Joseph Campbell, the great scholar of comparative mythology, once observed, "The best things cannot be told, the second best are misunderstood. After that comes civilized conversation…" As I write these words, I have been working alone for about 25 years now, and I confess that my skills with "civilized conversation" are rarely used and not well developed. Alone in my studio, hunched over my easel all day every day, I am free to ponder, at considerable length, these mysterious *best things*, and how to portray them. Musings on such lofty matters inevitably tend to the pompous and self-important; it is indeed presuming a great deal to suppose we can know much more than our own mind, but surely it is legitimate to ask a deeper version of the simple *what-is-it* question we routinely ask of every other thing we encounter: *What* is the cosmos and *what* am I? Answers to beguilingly big questions are not easily told, but my contemplations, visual and literal, fill these pages in an attempt to examine and understand the nature and philosophy of Goddess Mythology in the Age of Science.

That sounds like a contradiction in terms: in contrast

with the crude Neolithic mentality from which Goddess mythology first emerged, the modern world now possesses vast knowledge about neural processes and perception, nature and evolution, the world and the universe - an understanding of natural systems unimaginable to our ancestors. The Goddess spirituality dreamt up by early planter cultures about 10,000 years ago is a comparatively simple way of thinking - uselessly limited, many would say. What possible message can stone-age primitives have for we sophisticated inhabitants of the nuclear/space/information age? And can this ancient way of thinking find any new inspiration in the 21st century, any reason to endure and yet enrich our experience of the world? I believe it can, as I hope to show.

The artworks in this collection defy easy classification. They often have a landscape, but they are not just simple landscapes. They have figures, but they are not classical figurative works in the academic meaning of the term. Some people call such works fantasy, but I dislike that description also because it seems to exclude any thoughtful examination of the "real" world - which I certainly endeavor to do, albeit with images that do indeed seem, at first glance, rather unlike the usual world of common experience. The term "visionary art" is somewhat accurate, in the sense that these images are derived from insights of some kind, but the word visionary is burdened by the baggage of its wider overuse in matters not at all related to art. I do like the term "spiritual art", and feel the closest creative kinship with those ancient traditions of imagination seeking to see beyond sight, reach beyond the limits of rational sensory cognition, to the supporting forms and ideas upon which the material world precariously dances. Five hundred years ago in the high renaissance, art was the contemplation of nature and the struggle of life and death, amplified in the collision of gods and demons. I too am pondering that same cosmic drama and unseen wellspring of creation, finding inspiration in the spiritual traditions of East and West, and also in philosophy, psychology, physics, mathematics, and my own personal experience of the world. Everyone gets a bit damaged by the countless lurking hazards of life, and that damage inevitably affects our perceptions of it. And so art is, I suppose, a fleeting glimpse of something eternal and beyond...seen through the broken glass of an artist's life.

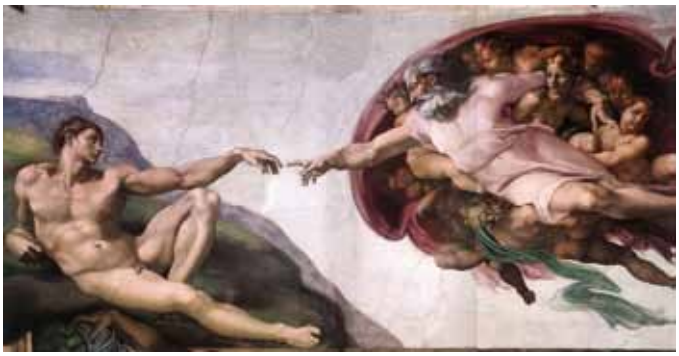
I wanted to make images that would address the questions *I* have about the world - and maybe even answer a few of them. It seems to me that there are only two primary modes of inquiry available. One is directed *into* the world - science - and asks questions like "What is the world made of and how can we bend it to our purposes?" The other is directed *beyond* the world - religion - and asks questions like "Where did the world come from and what is it for?" Both modes of inquiry are equally valid, equally essential, but the tools of one mode are invalid in the other. One system distills down to the fundamental assertion that "the world came from *nothing*," and the other to "the world came from *something*" - it's a leap of faith in either direction but you can't jump both ways. Science and religion, it seems, are bound like the circumference and radius of a circle: some intimate bond clearly obtains, but the irrational relation between them prevents you from defining one with the terms of the other; you can pursue one mode of thinking or the other, but a deep understanding of *both* is not possible.

The world is obviously here, and both sides agree it wasn't always, *so some cause made it*. One view says "God made the World," the other asserts that "Natural Processes made the World" - and each then asks of the other, "but where did this mysterious *cause* of yours (god *or* natural process) come from?" *Neither* frequently blustering opinion addresses the philosopher's intractable but inescapable question: *Why is there something rather than nothing*? I believe it is the artist's job to build bridges between these distinct and limited modes of inquiry - the *mythic* and the *naturalistic*. And so, seeking to bring another (less regarded) perspective to the debate, I invented my own art classification, which I call *Mythic Naturalism* - the artist's assertion that the world must be, divine machination *and* natural process *and* irresolvable paradox...and something else: *poetry*.

Poetry is commonly thought of as interesting words assembled into short, rhythmic lines and verses...that almost nobody reads. But it is much more than that. When some unexpectedly resonating moment integrates the individual into a larger macrocosmic order, *that's* poetry. When some transcending experience achieves a consonance and coherence such that you and some other part of the world are suddenly, briefly, *one thing*, that's poetry. It could be the enjoyment of dance or music or other creative interpretations of the *poetic moment*. It could be an experience with your children or your spouse or your parents. It could be a view from a mountain or a beach or a building. It could be a thought or a feeling or a sensation. If, in a moment of sudden revelation, you have gasped involuntarily and felt your hair follicles twitching, you have experienced poetry, and know

that it is not always a happy experience. The poet's immortal words - *And what rough beast, its hour come round at last, Slouches towards Bethlehem to be born?* - arrest our attention, not because they are warm and fuzzy, but because the message suddenly reminds us that we all have a slouching darkness waiting somewhere in our future. Of course, there isn't actually a hairy werewolf lumbering around the holy land; but there is indeed an existential danger lurking nearby: violence, apathy, hatred. William Butler Yeats' poetic image seems to say, "That threat out there that I can easily picture as an external predator, seems like it must be similar to an invisible threat in here, an *internal* predator, that's not easy to picture at all." That's poetry.

Michelangelo's *Creation of Adam* is an iconic image that everyone knows. The world tries to sell us on all manner of nonsense as great art, but I trust that 500 years of review is sufficient to confirm that there is something *genuinely* extraordinary about this particular artwork, something that speaks not just to catholics and protestants, but to people of many religions and races. Perhaps Michelangelo actually believed the literal truth of the poetic story that informed his wonderful vision of anthropogenesis, but the triumph of this artwork is that it works equally well as a poetic interpretation of the natural processes that gave rise to astounding minds like Michelangelo's. Competing descriptions of the source of our unknown and improbable origin, supernatural or otherwise, both vanish equally into inexplicable mystery; whether one keeps a divine or naturalistic explanation for our existence, in either case, *Creation* seems like a kind of magic. This magic informs our own creative spirit, and so too our understanding of one's best and proper place and function in the larger dynamic of ultimately unknowable forces. *Whatever* it was that began the drama of life and consciousness, Michelangelo's painting is a stunning *image* of poetic truth: we have been touched and anointed by *something* (intentional god or capricious natural process) to achieve a dignity and potential for greatness beyond all other creatures.



It must also seem that it is presuming a great deal to suppose that one could learn something useful about the world from a mere painting. But science effectively uses analogical pictures all the time to demonstrate aspects of the world not directly apprehensible to the senses (ball models of the atom, flow models of electricity, tree models of evolution, etc.). Michelangelo's poetic image says, "This piece of the world I can see (a man and the parental agent that set him to becoming) seems like it must be similar to another piece of the world I *cannot* see (the *cosmos* and the causal agent that set *it* to becoming)". The scientist might say the analogical picture is deceiving because reality is not actually like that; it's just a device to help people who are incapable of understanding the phenomena directly. It will be a common theme in this book that there are a good number of different ways to understand things - and *all* of them are limited.

Poetry is the concentrated contemplation of our interaction with the world, the distillation of human experience to its fundamental, irreducible magic; what it seeks is the rapid dilation of consciousness that happens when some primal aspect of mind collides with some corresponding primal aspect of world. And when we bring this expansion of humanness to ordinary experience, poetry enlarges the way we subsequently understand our small decorative part in the bewildering intricacies of a much larger design. Poetry is a search for, *and experience of*, the unseen unity and meaning of the world; it is in this sense that I use the word. And, as long as we remember that the elusive abstractions of poetry are not tangible things themselves but only nebulous connections *between* real things, it is in this important sense also that there is a continuing cognitive benefit to be gained from the poetic insights of previous eras.

Even in the Age of Science, it is still the job of the artist to find this mysterious poetry of which the world is made, always striving to know the world as it actually is, not merely as it *seems* to us, based upon the dubious second hand testimony of our unreliable senses. Even perception is a kind of unreal metaphor that our brain makes to help consciousness understand what it's experiencing. The artist tries to sink down below the obscuring din of conscious thought into a rarified and unrecognizable silence, sometimes finding there a rare and fleeting glimpse of Truth

beyond the veil of illusion that is our thoughts and perceptions of the world. This unknown mytho-poetic foundation of the world seems to me to be made of two irreducibly fundamental aspects: one is tangible, aggressively pushing out into the ever-changing dynamic processes of the brutal cosmos; the Other is intangible, gently beckoning inward to an eternal tranquility that, in its infinite perfection, *never* changes. There is only *That which moves* and *That which does not*.

In my work (generally speaking), if it is hard and sharp and craggy, if it is gnarled and bent and growing, if it is blowing, surging, falling, if it is bright and shining and burning, if it is objects we can touch and actions we can observe, then it represents the masculine dynamic immanent in nature and the cosmos. Ever aspiring, ever dying, ever reborn again and evolving in new form and ambition. *Action and Power*.

But there is another presence here, an ethereal, unseen reason to exist that compels the manifest world to action, an essential catalyst and guiding motivation around which the universe revolves on its epic journey, a silent invitation into discovery that dwells in the heart of existence. Mathematics and geometry, logic, archetypal forms, the Laws of Nature. In my work, the Mystery of the Cosmos and the Mystery of the Woman are the same: Source, Destination, and Purpose of all things. *Stillness and Beauty*.

In the guiding philosophy of these artworks, all the diverse energies and intentions of the world are *incarnations* of a fundamental duality, the living will of the protean omnimorphic Parents from whom all forms of the cosmos have inherited their form. To me, these contemplative dreamscapes are images of a sometimes beautiful and sometimes monstrous romance: of hope and despair, of desire and fear, of beginnings and endings...

* * *

The underlying ideas from which these images emerged, a kind of personal mythology or poetic interpretation of the world, changed and evolved over the years it took to create this collection, but there seemed to be a direction from the very beginning, a final ambition toward which the paintings would journey. The climactic painting in the series, created in 2003, first came to me as a startling, geometric dream-image in 1990. Those vague, early inspirations fermented unpredictably over the next decade before taking any concrete form, and yet it now seems that the creative destination I contemplated for so long was the inevitable consequence, not just of those initial visions, but also of all the earlier images in the Mythic Naturalism collection. And so these postcards from the dark continent of the human dreamscape are presented in (mostly) the same order in which I encountered these strange and unusual things - the order in which they were created.

(I feel compelled to offer a small *mea culpa* for the narrative inconsistency in this book. The paintings collected here document the development of my visual ideas over a period of about 25 years, and this is also true for the associated essays. Rather than significantly revise these writings, which are an authentic attempt to understand my creative objectives at the time, I have left them in more or less their original form. This means the devotionally viscous style of writing in the beginning noticeably improves as the years go by; I hope you will plod through the early chapters to get to the more interesting second and third acts.)

The first painting in the series, *Goddess of the Vale*, was first painted (poorly) in 1989. It hung on my studio wall for three years, waiting for revision. One day in May 1992 it came down onto my easel and was completely repainted in a single 40-hour session. I have always worked slowly, and so it was a significant event to realize an entire painting in so short a time. Although I was aided in this effort by a pre-existing (and unusually colorful) underpainting, it was nevertheless an act of some creative courage to obliterate an existing artwork. And so an act of will, and considerable effort, brought into the world the most interesting work I had yet done. I would not claim now that this is one of my better works, but at that time the main visual motifs in the image - a prominent Goddess-figure morphologically integrated with a fully-realized landscape - suggested so many other interesting ideas that I knew I had discovered my artistic voice. Within this conceptual framework, I would try to make images that express a hope that there might be something soft and nurturing in the world - and a fear that there is not...

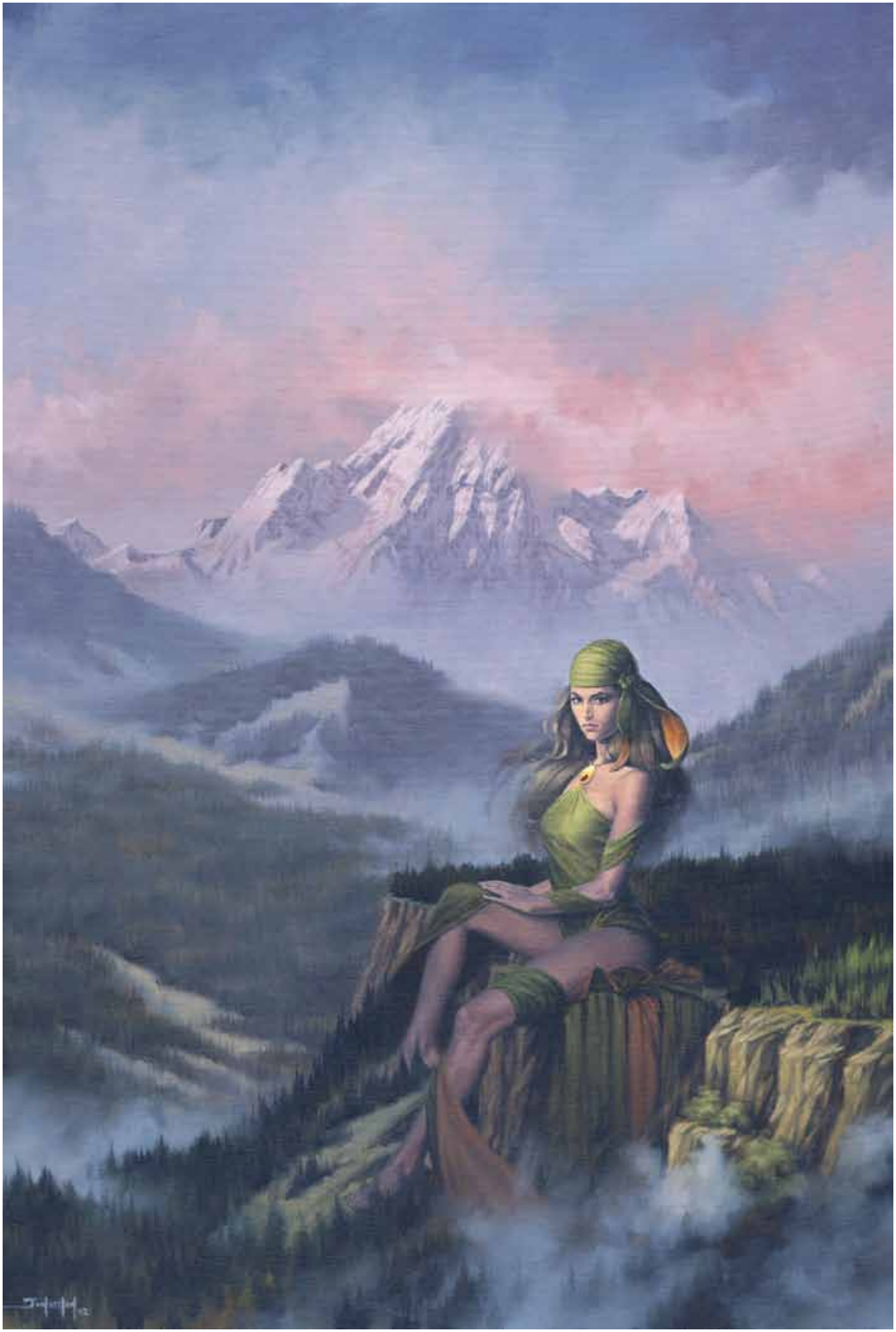

~ Goddess of the Vale ~
Copyright 1992 - Oil on Canvas - 35 x 24 inches

He's the burning light that shines
o'er boundless rolling lands
I'm the hidden forest where
the wild creatures go

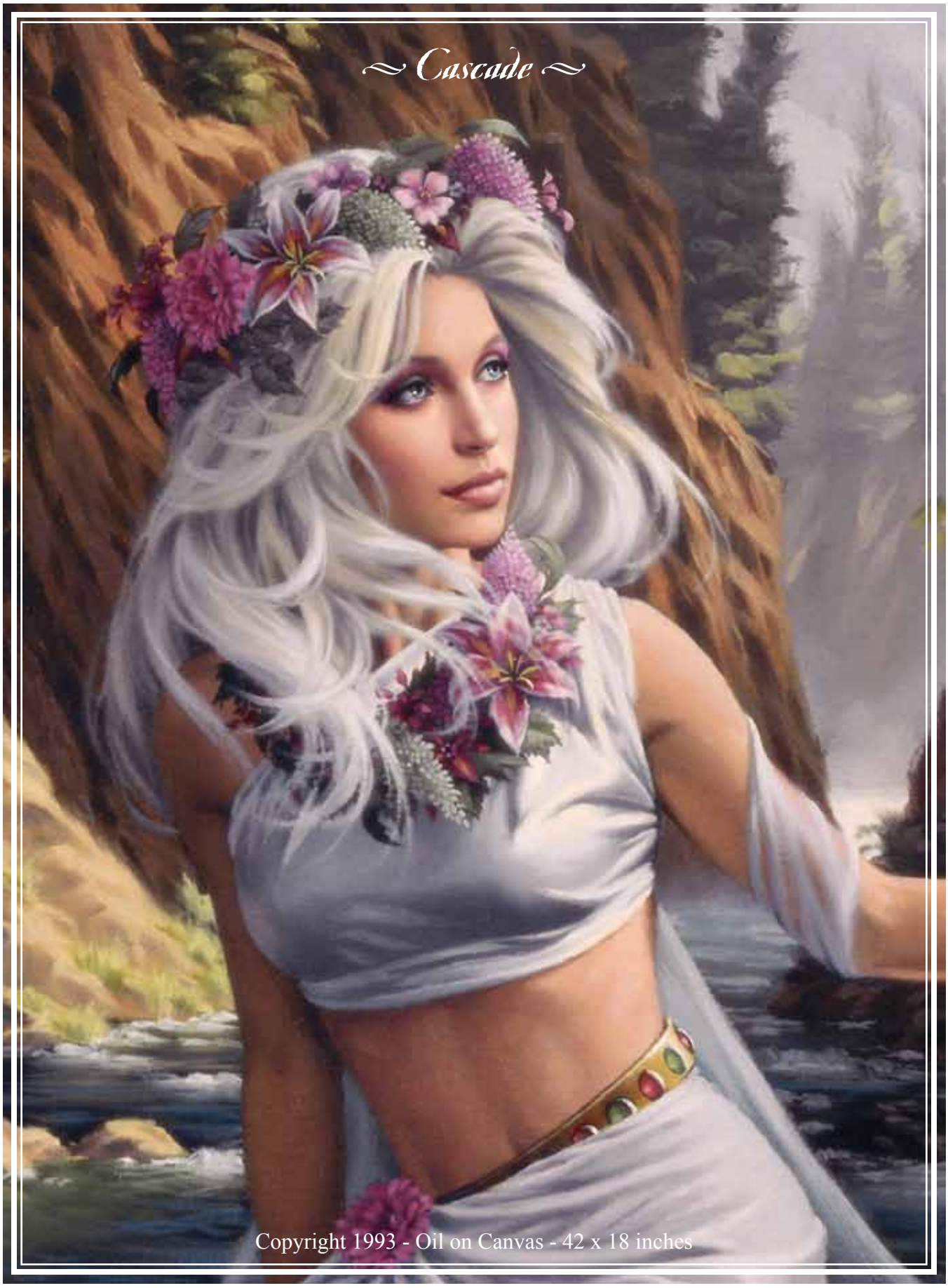
He's advancing near and far
by wit and skillful hands
I'm the unknown shadows
only wild creatures know

He's exploring every vale
for noble knowledge lost
I'm the silent beckoning
that wild creatures heed

He's the ever-dying life
who pays the mortal cost
I'm the secret treasure found
by wild creatures' need...



Right
Sanctuary - © 2004
Oil on Canvasboard - 24 x 16 inches


~ Cascade ~
Copyright 1993 - Oil on Canvas - 42 x 18 inches

A fluid blade
has slashed deep wounds into his ragged face
The long cascade
and torrent cuts toward its distant place
And so they know
a brief caress and interlude of sleep
but soon she'll flow
to others lost in darkest ocean's deep

He makes to her
an offering, a lonely bloom of red
to thus confer
his longing, shall the Earth and Sea be wed?
Some rainbow smiles
the Water gives, but will not be his wife
He falls for miles
impaled on her flowing river knife...


~ Goddess of the Tides ~
Copyright 1993 - Oil on Canvas - 30 x 48 inches

Who am I that lifts the sea,
that draws the tides, and draws on thee?
I am all that no one sees,
yet brings the mountains to their knees

Who am I whose will ordains
the rising sun and falling rains?
I am all which none defy -
not earth, nor moon, nor endless sky

Who am I that dwells beyond,
where all are drawn, but none have gone?
I am that which holds the void -
where worlds are made, and stars destroyed

I am here within the sphere
forever far, yet touching near
Who am I where all things go?
Not space, nor time, nor cosmos know...


~ Invariance and Enlightenment ~
Copyright 1994 - Oil on Canvas - 72 x 48 inches

When the rays of enlightenment first fell upon the intellectual foundations of western civilization in ancient Greece, an inviting path was shown from the paralysing shadows of ignorance and superstition. But those tenacious shadows returned to eclipse that beckoning light, leaving only a hidden legacy of knowledge. Europe slept for centuries before this classical treasure was rediscovered.

The medieval era was a time when Europe mostly *forgot how to remember* what it had learned before. Fortunately, that intellectual heritage was preserved by Muslim scholars who never lost their profound admiration for the great minds of classical antiquity; the ancient books, after a thousand-year journey through the Islamic world, eventually found their way again into European hands. In the ages that followed - Renaissance, Reformation, and the Age of Reason (or Enlightenment) - those ancient descriptions of science and philosophy slowly evolved into an idea more powerful than monarchs or nations: modern liberalism.

In three paroxysms of reform, the social revolutions in Britain, France, and America (represented here by the red, blue, and white flag-colored gown), released political, scientific, and (eventually) social liberty into the light. And yet, even though this liberty has given the West unprecedented freedom and prosperity, genuine enlightenment remains elusive. We yet long for the wisdom that so inscrutably escapes us, and are neither satisfied nor content. How much *more* liberty can we possibly need?

As the enlightenment - the philosophy that human endeavor should be subject only to a guiding principle of logic and reason, and not to any irrational superstition - continues to propel social evolution, perhaps we become correspondingly overwhelmed by the bewildering complexities of a perpetually changing world. Twentieth-century modernism has created a society that depends for its existence upon hyper-accelerated growth and development - the Damoclean imperative of relentless material acquisition. We are instructed - from cradle to grave, in ways obvious and covert - that we are in all ways *insufficient* and so must possess the newest incarnation of every conceivable object and experience. This is the lure and *snare* of modernity. And so we sometimes seek the safe and simple comfort of things known and familiar, like the woman (an avatar of civilization) who is leaning to the *right* upon the stable edifice of history. Even while she reaches for the liberalizing light of the *left*, she rests upon conservative tradition and the past.

This painting depicts what we all *hope* is the endeavor of civilization: the human quest for wisdom. But it seems that whether we design our social and political structures to the ethereal and subjective left or the material and objective right makes no difference. Societies can be dynamic, constantly redefining themselves in the pursuit of some nebulous, idealistically defined objective, or static, relying on the well-established concrete precedence of history. Either way, people don't change much: we feel joy and misery, hope and despair, just as people did 500 or 5000 years ago. It is, apparently, far easier to reinvent society, than ourselves.

In Raphael's great painting, *The School of Athens*, we see a timeless illustration of the problem. Plato, full of idealistic fervor, gestures heavenward: "The proper aim of all thought is upon the eternal forms of divine mind!" The pragmatic, moderating hand of Aristotle, however, gestures toward the earth: "The proper aim of all *action* is the *here and now*." Idealists, like the cleansing forest fire, clear away the corruption and decay of old growth; but builders, like all new growth, are always fixed upon the practical matters of immediate need. How can either way be the only path? It seems the debate - Plato's hand or Aristotle's - will remain with us for some great time.

Until individuals, and not just the society around them, change in some fundamental, perhaps biological, way, the realization of our aspirations will never be found in this or that administrative mechanism. Some believe in strength and fear the failure of weakness; some believe in compassion and fear the failure of cruelty. But every child understands that *two parents*, providing both strength *and* compassion, provide the greatest benefit. And so, we shall always be lost in wandering shadows of mist-shrouded ignorance until we abandon the comfortable security of invariance and venture alone through the forbidding labyrinth of the forest darkness - our own unknown and unrealized potential. Enlightenment is found neither left nor right, but at a distant place through and beyond the wilderness...

Right
Blue Invariance - © 2000
Oil on Canvas - 39 x 26 inches


~ Earth Autumn Winter ~
Copyright 1994 - Oil on Canvas - 48 x 30 inches

When the universe was young, it was a comparatively simple and homogenous stew of hydrogen and a little helium. At first glance it might have seemed that very little interesting could happen. But matter has a fortunate affinity for itself, and so, over billions of years, great clouds of gas coalesced into the large-scale structures we see in the evening skies: stars and galactic clusters of stars. All that proximity makes things a little warm, and the resulting heat cooked up some *very* interesting things. Actually, it was when the pot explosively boiled over that the stew congealed into a teeming multitude of new and astoundingly versatile ingredients: the elements.

The heavy elements of the cosmos are all the handiwork of dying stars. When a star exhausts its supply of the hydrogen fuel that sustains the stellar furnace, it begins to collapse under its own colossal weight. In the process, the doomed star crushes its component atomic parts into larger, heavier atoms: carbon, nitrogen, oxygen, and all the other naturally occurring elements. (Actually, this stellar process of atomic fusion through gravitational contraction - as it is currently understood - stops at element 26, iron; the mysterious process which fashioned the other 66 naturally occurring elements, up to uranium, remains the subject of much speculation.)

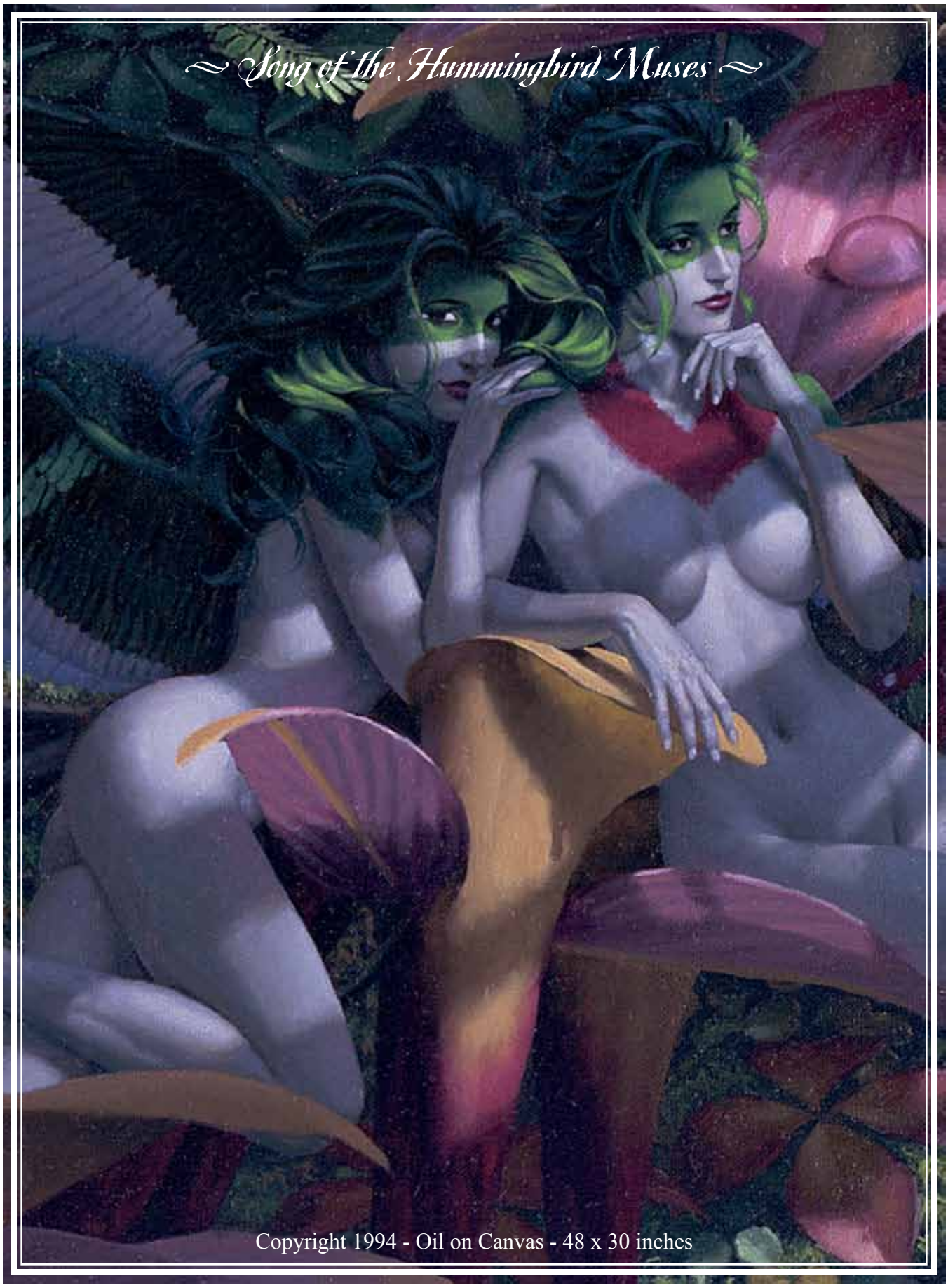
And so the earth beneath us, mountains, rivers, forests, and you and I, are all made of the same celestial ash. By what magic does this blast-site detritus reconfigure itself into such wondrous things? What sorcery manipulates the electro-chemical bonding that results in near infinite diversity? Whence came and where reside the instructions that allow carbon to perform its stupefying interactions? Most of us can only look up at the sky and wonder.

The ancient Egyptians, who had an intuitive sense of the cosmological, imagined a creator god who fashioned the earth and sky - the first Parents from whom all the children of the cosmos descend. The Egyptian vision of Earth and Sky is a rare and wonderful mythological motif - and rather different from the familiar western notion of Mother Nature (earth) and Father (in) Heaven.

In Egyptian mythology, the ethereal womb of cosmic creation up above is feminine: *Nut*, the Sky. Down below, hard and violent and ever reaching up in arousal to the nurturing sky, is masculine *Geb*, the Earth. Geb and Nut knew a brief and forbidden tryst before the air god, *Shu*, divided them forever; one of the children of that divine union of Heaven and Earth was the goddess *Isis* - the Elemental Mother of all Life. Even five thousand years ago, Egyptian wise men had the intuition that Life - the progeny of Earth and Sky (of material form and ethereal idea) - was the magic that happens when the tangible and the intangible (when the power of body and the spirit of mind) mysteriously come together.

In the modern era, we now understand that the earth revolves annually around the sun in an ellipse, that the earth rotates daily upon an axis, and that this axis is tilted relative to the orbital ecliptic at an angle of 23 degrees. The changing attitude of this axial tilt relative to the sun, as the earth progresses in its orbit, affects the apparent trajectory of the sun across the sky each day, and thus the duration of light and darkness. This annual cycle of changing sun-position and amount of daylight has four cardinal points: equinox 1 (*equal-night*, day and night are of equal duration), solstice 1 (*sun-stops* and reaches its highest point in the sky on the day of longest duration), equinox 2 (day and night are again of equal duration), and solstice 2 (sun reaches its lowest point in the sky on the night of longest duration). Because the changing angle and intensity of sunlight changes the meteorological conditions on earth each quarter cycle, creating four distinct periods of weather (and life-cycle) within a year, we say that the sky is divided into four equal parts. We call these four modes in which we experience the sky *seasons*.

In this painting I have chosen to represent only two seasons because that is as much of the sky as we can see at one time (the unseen two quarters of the sky lie on the far side of the sun). Winter follows Autumn, as the sky benevolently caresses the earth on its lonely journey through space. I have alluded to the presence of Spring, beyond the domain of Winter, by the use of dawn colors upon the distant clouds. Summer exists in front of the extreme foreground, where the bull elk looks to approaching Autumn, for him the time of the annual ritual that perpetuates life. And everywhere, the earth (the symbolic husband), and life (the symbolic child), reach up with an unquenchable need to embrace the maternal sky...



Copyright 1994 - Oil on Canvas - 48 x 30 inches

Sometimes when walking through the forest I make very slow progress, not wanting to miss any foliaceous treasure hidden within the forest undergrowth. As dancing rays of sunlight search through the shimmering vaults of the forest cathedral, one almost seems to hear the windy voices of a choir, angels of nature, permeating that sacred place with song. Who is it that sings with such irresistible beauty, inviting the intrepid into discovery?

I call these mythological beings *Zoanthropia Musaicum* (animal-human mosaic), and they represent the unseen bond between us and the rest of the natural world. The hybridization of forms is a way of portraying the invisible integration that binds all living things together into a larger entity: sometimes called the biosphere, or *Gaia*. We are beginning to understand the astounding genetic unity in the apparent morphological diversity of nature; someday perhaps we will actually *feel* the intimate kinship we share with all terrestrial life. We might even find, in that profound perception, the picture formed by all the perfectly interlocking jigsaw pieces of the world's living puzzle: the image of the true poetry of the world and a compelling apprehension of the destiny of life and consciousness in the cosmos.

But poetry, the distillation of experience to its essential magic, is a mysterious form of perception, often happening, it sometimes seems, of its own deeply hidden volition, and only in accord with its own inscrutable objectives. Where then shall we look for the ethereal messenger that brings the miraculous boon of *inspiration*?

The ancient Greeks believed that all ideas were created by gods. When moved by sympathy (or other less noble motives) for the travails of humanity, Apollo (a solar deity representing the burning light of understanding) would bestow upon a meritorious individual a precious gift of divine knowledge delivered upon the wings of a divine messenger. One of nine muses would fly down to earth and silently whisper a little bundle of wisdom directly into the mind of the beneficiary. She would leave no trace of her presence, except the vague feeling that the new idea in one's mind was discovered, and not invented - almost as if it was pre-existent elsewhere, and was merely unknown until encountered.

Each muse is meant to represent an aspect of human creative expression: Terpischore - Muse of Dance, Thalia - Muse of Comedy, Eutere - Muse of Music and Lyric Poetry, Polyhymnia - Muse of Sacred Hymns, Urania - Muse of Astronomy, Melpomene - Muse of Tragedy, Calliope - Muse of Epic Poetry, Erato - Muse of Love Poetry, and Clio - Muse of History. The muses are arranged here in the configuration of their number: nine.

Why nine muses? Well, the *root* of 9 is 3 (3 X 3 = 9). That is, the root - that which connects the living to the source of nourishment (physical food or spiritual *wisdom*) - of the nine muses is three: the Trinity. In different places in the world there are different representations of the Trinity. In Hindu belief, there is Brahma, Vishnu, and Shiva. This is just one example of many.

Of course, the Trinity with which the western world is most familiar is the Father, the Son, and the Holy Spirit. Christ and the Holy Spirit are sometimes described as the right and left hands of the Great Mind between. A symbolic reading of these words refers to a divinity with two complimentary natures. Christ is the physical manifestation and form, objective and representative of the conscious rational mind. The Holy Spirit is the ethereal will and idea, subjective and representative of the unconscious intuitive mind. And in the center is the third aspect of mysterious totality, the transcendent union of the two. This is one interpretation of the Holy Trinity, and in this sense the nine muses are symbolic of the connection between us, and the divine fire that generates and sustains the cosmos.

The Trinity is also here in this image: the subjective aspect is portrayed as feminine - the wisdom-bearing hummingbirds; the objective aspect is portrayed as masculine - the phallus-like crimson columbines which die each autumn only to rise again in spring. And Nature is the unity of the two wherein masculine and feminine are merely component parts, incomplete halves that are subsumed into a greater entity, a supra-personal unity of which the constituent parts are (mostly) ignorant.

And so, like many people who walk too slowly through the forest, I feel like I have made a connection to something grand, beyond comprehension. Perhaps those little muses have whispered something in *my* ear...


~ Isis - Child of Earth and Sky ~
Copyright 1995 - Oil on Canvas - 48 x 30 inches

In the beginning, all was darkness in *Nin*, the primordial ocean of chaos. And there came a great fire in the heavens and his name was *Ra*. He created *Shu* (the air), and *Tefnut* (the moisture); they in turn created Heaven and Earth. Nut, diaphanous Goddess of the Sky, and Geb, adamantine God of the Earth, were filled with desire for each other,

knowing that with the union of the ethereal womb of the heavens and the material seed of the earth, all things might be possible. Ra, master of the cosmos, was envious (and fearful) of the great potential they possessed, and so forbade the union. But they disobeyed his edict and soon came together in a brief but passionate embrace. When Ra learned of their defiance, a consuming rage came upon him, and he ordered Shu to stand eternally between them. To this day, the lonely earth reaches up with desire, seeking to embrace his beloved sky once more.

Ra was too slow, however, and their brief union was fruitful: Nut gave birth to four children - brothers *Osiris* and *Set*, and sisters *Isis* and *Nephthys* - who became the four cardinal deities of the cosmos and sovereigns over all therein. Of these four, Isis, Goddess of Life, is quietly supreme. She is the mother of the Eternal Spirit of Egypt: He who wears the mighty pharaohs like a succession of robes - taking them on when they are young and new, and replacing them when they are old and worn - for it is ever the same undying soul of Horus behind the eyes of each ruler of the Nile Kingdom.

Isis is Mistress of the (archaic) Four Elements: terrestrial *earth* and *water*, and celestial *wind* and *fire*. As the living fabric of the fundamental forces of nature, She is Mother to all living things. It is Her transforming magic that binds the timelessly still and ethereal (sky - mind), with the fleetingly active and physical (earth - body) into the singular miracle of life and natural regeneration. Isis beckons Geb's stony bones (earth) upward that Her blood (water) might flow down to nourish the four corners of the world, and the seeds of the earth are born upon Her breath (wind) that they might find a home in the desert, and thereby bring the spark (fire) of new life to that once desolate place. The efflorescing natural world, a tiny fragile globe lost in the endless interstellar wastes, is like *the oasis in the desert*: it is life and hope and joy and beauty...where there should be none. Only the elemental energies of the Goddess that suffuse this place make it so. The life-and-death-and-life rhythm of the seasons is the rhythm of the Goddess.

Isis holds next to Her breast the Egyptian symbol known as *ankh*. The word translates as "life" or "vitality", but the symbol is also a pictograph of man (head, arms, and body). Isis gently cradling the ankh is the image of Mother and Child. Like all mothers, She struggles to protect Her children - and cannot. As children grow and wander far from their mother's gentle protection, they must eventually suffer. And like all mothers, Isis suffers the pain of Her children, and suffers in Her helplessness to prevent it.

But a deep, nurturing compassion is also a component of the life-force that She provides to the world. The Mother Goddess beckons us into the mystic center, a still sanctuary of transformation wherein the weary spirit is revivified by Her life-giving benevolence. The infinite mercy of Her beauty, manifest in the glories of nature, is a promise that the great pain and suffering of life - as innate and inescapable as gravity - is for a great and noble purpose. There is, in this ghastly slaughterhouse of misery and death, a reprieve: She ever heals our wounds, replenishes our strength and resolve, fills our hearts with love for our children, and inspires us to stand against the ravenous horrors that ever rise from the depths of chaos.

As the physical feminine brings forth physical life, so too does the spiritual feminine bring forth *spiritual* life. It is through this aspect of the Goddess that we are reborn: not merely physical, but somehow spiritual beings. When one has learned to resonate with and thus unify those divine elemental vibrations of earth and sky (that is, join gross reason with subtle intuition, the primal with the rational, the profane with the sublime), they are then invited to fly upon the wings of enlightenment up to the summit of a great pyramid of light upon which awaits the Creator of the cosmos...


~ Angel of Capricorn ~
Copyright 1995 - Oil on Canvas - 29 x 48 inches

We have crossed the frontier of not only a new millennium, but also a new era of man and civilization: the Aquarian Age. The symbolism of the Ages of Man tries to articulate the aspirations of humanity - our hopes for the future. But these same zodiacal symbols also indicate the price of failure in these endeavors.

The Age of Taurus (4000 - 2000 B.C.) is symbolic of origins: the collective origin of civilization in the Middle East, and the individual origin of consciousness. This is the winter of infancy, when our experience of the world is limited to physical sensation. Taurus is an earth symbol.

The Age of Aries (2000 B.C. - 0) is symbolic of the split into opposites. Collectively, this division can be interpreted as the distinctions between the linear-thinking west and the cyclical-thinking east; individually this represents the division of mind into the conscious and unconscious domains. This is the spring of youth, when developing emotions both construct and distort our view of the living experience. Aries is a fire symbol.

The Age of Pisces (0 - 2000 A.D.) is symbolic of the opposites in conflict: ideology against ideology, nation against nation, brother against brother, man against woman, and the conscious mind against the unconscious. This is the summer of maturity, when the developed rational intellect attempts to impose its will upon an unyielding nature. Pisces is a water symbol.

The Age of Aquarius (2000 - 4000 A.D.) is symbolic of the union of opposites: all those things rent asunder shall come together in harmony and co-operation. It is imagined as a utopian era free of the unceasing conflict that characterized and traumatized the Piscean Age, a time of revolutionary miracles when ideas, nations, men and women, and the unified mind all work together toward an objective *so* wonderful that it defies the Piscean imagination. This is the autumn of old age, when wisdom - tempered by knowledge and experience - can at last make the intuitive leap to conceive of a new way of existing in absolute empathy with ourselves, our neighbors, humanity, and the planet earth itself. The Aquarian Age is an archetype of paradise where the four cardinal virtues (Temperance, Justice, Fortitude, and Prudence) mediate every interaction from the individual to the global. Aquarius is an air symbol.

This is a quite extraordinary ambition, and most people harbor grave doubts as to whether such a future is even possible, let alone probable. But the hope we have for such a future is pervasive, persistent, and ancient. In fact, there are many people who believe the world once knew an Aquarian civilization: Atlantis. Nobody knows for certain whether Atlantis really existed or not - the skeptically inclined aren't prepared to accept Plato's musings on the subject without genuine evidence. The question that always arises is: Why have we never found even the faintest archeological trace of Atlantis?

There are many unsatisfying answers in reply. But there is at least one plausible explanation, enigmatic in its eerie accordance with symbolic prediction: Atlantis, and every record of its existence, was scraped from the face of the earth in the last ice age.

Symbolically, these Ages of Man are analogous to the seasons, and with each new year the whole cycle of life (or civilization) must begin again. A utopian epoch in an autumnal age must necessarily be followed by a great winter. Modern geology suggests that the earth's history is punctuated by just such great winters: glacial ice ages. Just as the last autumnal epoch, Gemini, was followed by the Winter of Taurus, so too must the Age of Aquarius be followed by Capricorn - an earth destiny sign, and an age of winter.

In this image, that poorly understood force of nature that initiates such glaciation is seen as an Angel upon the symbolic top of the world. She looks to the heavens (where the zodiacal position of the sun at the vernal equinox determines which Age it is) waiting for a sign, some indication that her time has come, and that she must now render a terrible celestial judgment upon planet earth. The warning to mankind is clear: we do not have forever to realize our Aquarian objectives. The certainty of annihilation - by a miles-high continent of ice - imposes a time-limit on our aspirations to succeed and live, rather than fail and die, like Atlantis. Will humanity work together and triumph? The celestial clock is ticking and the messenger of cosmic will is waiting...

Personal Notes on *The Journey thus Far*

Perhaps the first real experience I had with genuine inspiration, that mysterious tumbling of the cognitive wheels that allows a previously locked door to open upon an important secret beyond, was in 1989 with *Invariance and Enlightenment*. I saw a woman in a park waiting beneath a statue of some kind, and I had the sudden idea of repeating the same gesture in a living figure of the present and a stone figure of the past. I pursued the idea with many sketches over the next 3 years, but I was missing some essential component - which I eventually found in Plato's *Republic*. It wasn't the philosophy that inspired the image so much as Plato's sense of *humor*. I don't recall the exact passage now, but I think Socrates was humiliating poor Thrasymachus with withering sarcasm, and I was suddenly struck by the timelessness of humor. In retrospect, I'm not sure why it came as such a revelation, but I was astounded that this 2400 year-old book should still be *funny*. Some things change completely and some things stay *exactly the same*.

That simple revelation, sometime in 1993, is where the resolution to *Invariance and Enlightenment* came from - a sudden flash of cognition when two isolated ideas forged a connection. In my experience, that seems to be how inspiration works: bits and scattered pieces from many sources somehow get unconsciously assembled into new and strange formations in the brain. I did all the heavy lifting (painting), but it certainly *feels* like some *other* agent did the important part by providing the requisite instructions: "You there - build *this*!"

By that time I was already working on the "Goddess Series" of images, which came to be the main thrust of my subsequent work. These mostly pastoral images emerged out of two simple ideas that I borrowed from the ancient Egyptians.

From the first instant I encountered it, I liked the (almost forgotten) idea of a Goddess of the Sky and a God of the Earth - or a feminine deity representing the transcendent and eternal (which I came to equate with Law) and a masculine deity representing the immanent and temporal (which I came to equate with Nature). I never liked the idea that men (the inventors of murder, every weapon from clubs to atomic bombs, propaganda, war, torture, genocide, game-shows, etc.) should be naming hurricanes after women; one of the most destructive forces in terrestrial nature really seems a lot more like Genghis Khan than any woman I ever heard of. Mother Nature, in the "Wrath of the Weather" way that we usually use the term, seems backwards to me: the hard and brutal aspect of nature must surely be masculine. And if that is so, then the quiet and beautiful aspect must therefore be feminine. The obvious and simple part of the world, the hunting and killing and building and destroying, is (like the man) the *expendable form*; the secret and mysterious part of the world, the creation and transformation and beauty and purpose, is (like the woman) the *essential function*.

The second powerful idea that shaped my early creative development was the notion that the Pharaoh was a garment, merely a living coat worn briefly and then discarded by an ethereal and eternal presence. The ancient Egyptians understood that their God-King was a man of flesh and blood, born of a woman, and destined to die like all other men. But it was the God Horus (slain Osirus, resurrected) who was ever the divine mind looking out at the world through the pharaoh's eyes. The Egyptians believed that the immortal spirit of Horus would slip into the pharaoh at birth, wear him for the duration of that human life, cast him off at death, and then put on the new cloak of yet another human body, the next pharaoh, after that. That which is visible is merely clothing for the divine. This idea seemed to have enormous visual potential, and so I began to think of pictures of the invisible *will* that wears the appearance of the world like a robe. The ever-changing garments come and go, but the unknown Wearer and unseen Watcher is ever the same...

In ancient times, the wise men and women that conjured such elaborate systems of philosophy and spirituality (many of which persist to the present day) did not think they were randomly inventing meaningless nonsense. They made the best observations possible, and made coherent models of the world consistent with the level of understanding available to them. In a world

without science, it was the penetrating intelligence of shaman-poets that revealed wonderful and *useful* insights into the true nature of things. And something *still* valuable that the ancient mind brought to the process of discovery, a vaguely irrational ethos that is almost entirely disregarded by modern thought, was the moral certainty of the *interconnectedness of everything*.

Spatial connections are easily seen by everyone; temporal connections - the infinite causal threads of history that attach the phenomena of the present to a vast 4-dimensional sculpture of all past events - require a little more effort to discern. And sometimes the connections are so strange and mysterious, it seems the binding aspect must run through some *other* domain entirely apart from space and time. This plausible idea shines light on some of the persistent enigmas of the world, and has real explanatory power on matters about which 400 years of Scientific Enterprise has been mute.

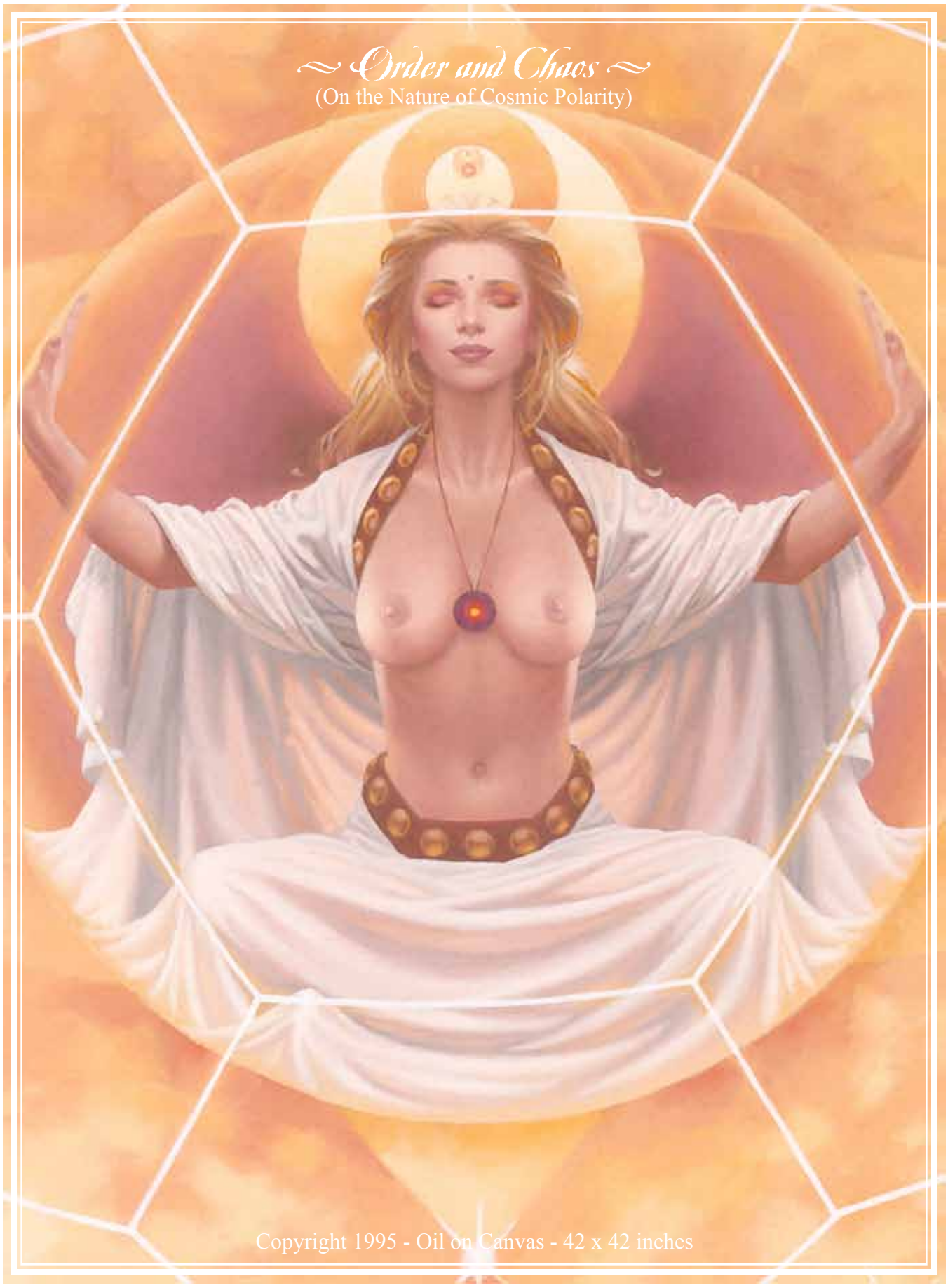
The modern corpus of knowledge offers a far more accurate and comprehensive understanding of the world than that known by antiquity, but it is important to remember that we are *not* more intelligent than them. We have more data - not more brainpower. In fact, they may have been smarter than us: it certainly requires a Herculean level of cerebral fitness to carry an entire library around in one's head. In a world of few books, such practice was obligatory for any scholar. Whether one is reading Plato or the Bible, one can hardly fail to notice the impressive erudition of the best ancient minds. The expanse of their knowledge was very much smaller than ours, and so their attention to it could be far more concentrated and intense. We have vastly more and better observations than the ancient world had, but they *knew* their observations far better than we know ours. That intimate relationship with knowledge inexorably led them to see the world as a sacred web of purposeful design, a manifold diversity bound by the unity of divine thought and intention.

I wanted to look at the world with that same ancient ethos, but bring that better data - the discoveries of modern science - to the exercise. One of my early experiments in this regard was *Isis - Child of Earth and Sky*. The ancient world had hundreds of sacred symbols (many of these also persist to the present day), and nearly all of them, in addition to some unique particular meaning, generally mean *The Way of Eternal Life*. I believe there is a beautiful geometric shape, more universal and scientifically valid, that could (and perhaps should) replace all these others: the double helix of the DNA molecule. It seemed appropriate that Isis, the Goddess of Life, should somehow evoke or suggest the living geometry of the DNA spiral. After several unsuccessful attempts with headgear and the flowing gown, I began to play with the wings, and quickly realized this was the answer: the very wings that might (symbolically) carry us to the heavenly freedom of eternal life are here displayed in the helical geometry of eternal regeneration.

I began to think of geometry more seriously in 1995. The ancient understanding of the eternal forms as an ethereal and transcendent *Realm of Will and Idea* was very much in accord with my own reckoning of the divine. And the timeless mathematical nature of geometry makes it *the* archetypal visual representation of the Laws of Physics - the predicating code of the universe sometimes referred to as the *Mind of God*.

Following my guiding ideas, I wanted, somehow, to visualize an immanent (within nature) builder God and a transcendent (beyond nature) designer Goddess, geometrically integrated within a spiritually and scientifically satisfying design. This brought me to *Order and Chaos*. This painting has some design weaknesses and interpretive errors, but it still holds very special meaning for me. The long journey from initial inspiration, through months of visual and scholarly research, to final design and execution, clarified many of the things I now believe about the world. It is my *Damascus Moment*.

And while contemplating platonic duality (The Good and the Demiurge, Yin and Yang, south and north polarity, static and dynamic) those many months, I came to believe that the fundamental opposition in the universe is *not* good and evil - a notion that is a necessary but artificial artifact of civilization. The answer finally became clear to me as I walked through a neighborhood where I had played as a boy, thinking about the aspirations of children. What aspect of the man is it that inspires the boy, and what aspect of the woman is it that inspires the girl? And what possible relevance could such mundane concerns have to the biggest questions imaginable...


~ Order and Chaos ~
(On the Nature of Cosmic Polarity)
Copyright 1995 - Oil on Canvas - 42 x 42 inches

Yin and Yang

The transcendent absolute and the immanent contingent. The infinite and the finite. Eternal perfection and temporal process. The ethereal sublime and the material profane. Static and dynamic. Beauty and power. *Order and chaos*.

The primary visual motif in this image, the *T'ai-chi T'u* ("diagram of the Supreme Ultimate"), is said to have been revealed to *Fu Hsi* (c. 2850 B.C.), the legendary first emperor of China. His system of philosophy and divination was later elaborated in the *I Ching* (Book of Changes), one of the oldest and most venerated books in the world (roughly the cultural equivalent of the Bhagavad Gita or the Bible). Fu Hsi saw that for every concept there is an opposite concept, and that the entire universe is an endless interaction of such opposites in mutually interdependent tension. The Chinese called these general principles that together define all the specific forms and processes of the world, *Yin and Yang*. This simple duality represents the self-regenerating rhythm of all things and, as we shall see, the origin and fate of creation.

Yin is the *Archetype of Stillness and Beauty*: creative and nurturing, quiet, intuitive and compassionate. It is the Lunar ethos of endless cycles, the enduring collective, and eternal regeneration. The dark and mysterious *Passive Principle* is a quiescent state of being - a timeless, immutable resolution. The *motivator* beckons inward, attracting and receiving. The grace and purity of repose is absolute, because eternal necessity is perfectly self-contained and infinitely self-consistent.

Yang is the *Archetype of Action and Power*: protective and challenging, aggressive, rational and strong. It is the Solar ethos of linear will, the fleeting individual, and the impulse to conquest - before conquest by death. The illuminated and obvious *Active Principle* is a dynamic process of becoming - an aspiration, evolution, and change. The *motivated* pushes outward, penetrating into the unknown. The hard experience of action is relative, because motion is contingent upon the relentless change of everything everywhere.

The T'ai-chi depicts these universal energies in perfect and harmonious balance, each disappearing into the other in the eternal dance of the living cosmos. And within the heart of each distinct aspect lies the seed of the other: there is no exclusively negative or positive polarity - there is only the balance of the two in a timeless rhythm of expansion and contraction. All things of the cosmos are a manifestation of the pull and push tension between two interdependent and interpenetrating halves of a single whole. Each exists only in relation to and by virtue of the existence of the other. To endure, *power needs beauty and beauty needs power*: without protection, one part is consumed; without purpose, the other part consumes itself. This philosophical view - of the world as an ontological ballet of two universal principles (of which woman and man are merely *partial* incarnations) - has become, after centuries of refinement, a fundamental constant of Chinese and East Asian thought.

The Western View of the Two

The philosophy of a fundamental and universal duality has taken several different forms in western thinking also. Plato believed that the world was a projection, a degraded shadow-world within a beautiful Realm of Ideas beyond the threshold of our gross perceptions. Only concentrated contemplation, he believed, could reveal the true nature of the domain of eternal forms. He called such contemplation *philosophy*: "love of Sophia" - the mysterious Goddess of all Knowledge and Wisdom, who is like a bottomless well that contains all the unknown secrets of the world. In contrast with that compelling image of intellectual desire, Plato believed, was the *Demiurge* ("half-cause"), a brutish builder-god who labors away within the processes of nature, building, destroying, and building again, the illusory world of the here and now.

Duality took another form in ancient Persia, when Zoroaster (6th-c. BC) gathered all the consumptive aspects

of creation - the creeping decay that is an inevitable consequence of life, the myopic avarice that festers in times of want, the sudden brutality that explodes when mortal interests collide (between men or between nations), the casual cruelty that paranoiacly metastasizes in an isolated and indolent leadership, etc. - into a ravenous and bloodthirsty god of suffering and death. That was Angra Mainyu - the first god of *evil*. Standing against him was a luminous god of limitless virtue, Ahura Mazda - the *good*. This idea, of a supernatural pain-eater somehow infecting and affecting the actions of man to satisfy his curious dietary requirements, clearly has considerable emotional power. From a purely political standpoint, the idea is so useful to the ruling class that its widespread success was assured. Regardless of whether the idea is valid or otherwise, it is certainly true that the concept of evil provides a directionless leader with all the rhetorical ammunition they need to distract an angry mob from the failures of a poor domestic policy: "Those deviant people over there are working for the Pain-Eater; they want to satisfy their unholy hunger by feeding upon the suffering of our children! We must crush them! (And steal their land and gold and women...)"

This idea - of a cosmic battle between good and evil (between us and *them*) - did indeed seep into the fertile imagination of the Middle East, and subsequently into the religious systems that have expanded over half of Asia and Africa, and all of Europe and the Americas. This model of the universe (of a destroyer aspect that derives nourishment from human suffering, and a creator aspect that does not) does, in some ways, look like the poorly-fed, disease-infested, crime-ridden, war-torn world we see. But it presents some paradoxes too. Is evil a cause or an effect? Is it an infection that causes rapacious behavior? And if so, what is the source of the infection and can it be medically treated or removed? Is there a vaccine? Or is it a congenital condition among all sentient beings capable of exercising choice? And if so, how then do we explain the "non-evil" choices of the overwhelming majority of us? Or is one who is not evil then virtuous simply because they are fortunate enough not to live under the murderous compulsions of an evil despot? Is one forever tainted by a single evil act, or can one bounce back and forth between good and evil at will? Is evil necessarily an action, or can it exist purely as a state of mind? Is it OK to scheme and plot the torture of children, reveling in the thought for decades, as long as a paralyzing cowardice prevents any actual violence? And if evil exists even in mere impotent thought, is imagining a murder as evil as committing a murder? Saying that everyone is evil but only a few choose to act on it, doesn't really explain very much, and suggesting (by omission of alternative explanation) that it can be imbibed and then, as suddenly, dispelled by a moment's reflection says nothing interesting at all. But surely the monstrous acts with which we are all familiar *have* an explanation?

We have come together in the great community of civilization and found some partial refuge from the predatory truth of primal nature (of which we are still a reluctant part). We have seen that such isolation from the rest of nature has many benefits, and so we have said, "There are certain things that are in our mutual interest; we will *protect* this mutual interest from certain nature-made inclinations by imposing our own *man-made* rules. Anyone who breaks these rules by pursuing a personal interest inimical to the mutual interest is *evil* and will be stopped." It's a good system for the administration of human affairs, but less successful in its attempts to explain *why* the world is the way it is...

What is Evil?

A brief digression might be useful here, to address a difficult subject that has inspired much writing in the sad history of civilization - brief because this much used and abused concept does not seem, upon thoughtful examination, to actually correspond to any *real* phenomena immanent in the world. In fact, the way we commonly use the word is almost entirely oblivious to the maddeningly elusive meaning it nominally intends. *Evil* is certainly a useful word, and it does indeed simply and effectively describe the unpleasant events we see on the evening news, but it has no more reality than Santa Claus or the Easter Bunny, and about as much explanatory power.

If I am killed and eaten by a jungle beast, we do not call such an act evil; the hungry animal is compelled by nature to eat and it must act accordingly. We accomplish little by calling acts that *must* happen, evil. But what if the beast in question is a chimpanzee - with

whom I share more than 98% of my DNA? No, we still say the chimp cannot choose to live in any state other than a state of nature and so cannot be evil. Not even a really smart chimp. How about a really dumb person? But how dumb do you have to be to get off the hook? At what precise IQ-score does one become capable of transcending from the state of nature where evil does not exist, to the state of civilization where it does (or so it is often said)? Whatever evil is, it seems to come bundled with intelligence.

How involved in the crime must one be to bear the burden of evil? I live in North America. Life is good here. We have an abundance of space and natural resources. But this is a stolen land, taken by European colonists from the indigenous people who lived here before. It is generally believed that those white-skinned settlers killed off as much as 90% of the local population in the Americas when they arrived here 500 years ago, with guns and European diseases to which native Americans had no immunity. Slavery and indentured labor built the early infrastructure of this land. And still, we purchase mountains of cheap consumer products made in the third world under appalling conditions; the desperately poor and underfed workers of the world drudge tirelessly to keep us in the fat and pampered lifestyle to which we have become undeservedly accustomed. Large commercial interests created the awesome wealth of western civilization and a surplus of resources so great that even the average person has the means to casually buy something as frivolously non-essential as art. The comfortably smug (and willfully blind) First World tries very hard to imagine itself as a paragon of virtue and nobility, but it is common knowledge in most parts of the Third World that these private financial empires often achieve their ambitions of power by bribery, theft, murder, and even war. Their money knows no loyalty, however; it likes to move around and may even eventually end up in the hands of a modest painter…who thus profits from their faraway crimes: union-busting, agricultural deforestation and ecosystem devastation, industrial toxic-waste dumping, expropriation of natural resources, usury and protectionist trade embargos, weapons sales, anti-democratic insurgencies and coups d'état ("Because all communists are *evil*, and *everyone* who disagrees with me is a communist!"), etc. So who am I to point my accusing finger at somebody else? The circle of culpability is large indeed, but it is not interesting to say *everyone* in the developed world is evil.

I think most of us understand that most of us are capable, in a moment of rage, of questionable behavior. A sudden crime of passion in the heat of the moment can be explained psychologically or sociologically, and so there's no need to invoke the machinations of some invisible causal agent to make sense of the crime. The law-abiding citizen who kills after a lifetime of exemplary action certainly deserves to be punished for their crime and restrained from commiting further socially destabilizing acts, but we don't call them evil. Their brutal act was an unacceptable lapse into a primal state of nature - a state that we all accept is utterly incompatible with civilized society - but they might be redeemed after appropriate punishment.

I can easily imagine a situation in which I might kill: I believe I could kill to defend myself and my family, and I can even imagine killing in retaliation for some great injustice or an intolerable affront. But I would not *enjoy* such violence and would quite likely feel profound remorse afterwards; some creatures, however, are not similarly limited, and this is the critical distinction. We can understand killing *for a reason* (and there could be many, good and bad); it is *purposeless* killing - slaughter for the shear wanton joy of it - that we seek to explain with this elusive and slippery concept.

Although we do not forgive one-time crimes of passion, we can certainly understand them and cannot truly consider ourselves to be more moral than some accidental criminal in whose place we could have been had the circumstances of life been different. It is by good luck far more than good planning that most of us avoid such moral Rubicons, and so it is pointless to invoke mysterious spirits to explain lapses in judgment of which everyone could be guilty, in an appropriately challenging or desperate situation. The civilized part of us is merely the small exposed tip of a great unseen iceberg of nature below, and any honest person can imagine descending to that primitive state in a moment of extreme duress. We see the ordinary people of a civilized society collapsing into an anarchic state of nature every day on the evening news. It is the crimes we *can't* imagine that are at the heart of the matter.

Evil is a word we properly reserve for those crimes we can't explain any other way, for brutality that is entirely beyond understanding or redemption. What motivates a person who derives pleasure from the pain of others, who tortures and kills those who are innocent of any crime? How do we explain serial killers? Invoking the existence of a supernatural pain-eater is one way; invoking the *chaos in complexity* is another.

An automobile has several thousand parts. My experience with such complicated machinery (and yours too, probably) has demonstrated that such complex systems rarely work at optimum efficiency. Most cars are merely functional, and very few operate at the level of racecar performance because there are just too many things that can get misaligned in day-to-day use. Without constant care and attention, *things fall apart*. It is often the case, however, that cars are able to go on about their people-moving business oblivious, keeping their increasingly misaligned parts hidden away under the hood, until some fragile piece finally exceeds its tolerance and fails under the strain of overuse. One hundred billion brain cells bound in a neural network of a thousand-trillion synaptic connections is unimaginably more complicated than any fallible machine of human design. We should be astounded that people work as well as they do. Mostly.

There was a story some years ago about a man named Jeffrey Dahmer, who had tortured, killed, and eaten at least 17 children. Such monstrous brutality is beyond comprehension and seems to qualify as evil, but a far more informative and useful explanation is that serial killers are simply *defective*. Some are born defective and others are made defective by their experience of the world, but either way, they're broken and can't be fixed (unless we one day figure out how to "open up the hood" of these wrecks). A mechanistic - psychological or neurological - description of the condition has far more explanatory power than supernatural causation. And supernatural causation is indeed what we are claiming if we cannot explain the mechanism by which evil compels human action - and we cannot. It is much simpler to say Jeffrey Daumer's brain, like those of other even more bloodthirsty mutants, wasn't assembled right - which is certainly the case.

Which brings me to the most difficult example. We understand that nature - weather, geological processes, hungry beasts that kill to survive - reacts the only way it can to present conditions; it is machine-like and devoid of intent. But men *do* have intent, and so we are entirely justified in our bewildered desire to understand the age-old question: what causes war? Why do millions of people rise up full of wrath to annihilate other millions? What causes *nations* to become machine-like, grinding up human life as blindly as any tsunami or earthquake? The volcano has no choice or awareness in its actions, but the genocidal despot and his soldiers seem to have both choice and awareness. And yet, these makers of life nevertheless become bringers of death.

Surely *this* is evil? Perhaps. But I think something else is at work, a gruesome compulsion written into the very operating code of the cosmos, one that is apparent at every scale of observation. In human physiology this universal imperative is manifest in the cellular destruction caused by cancer. This consumptive dynamic, even present in processes smaller than cellular, also compels the destiny of much larger systems: nations, worlds, stars, galaxies, and whatever other cosmological processes there might be beyond that. It is a subject to which I will return in the final essay of this book.

Are Two Gods better than One?

Most of the facts we experience in the world are highly variable things that could have been other different facts. Facts are *so* variable that, if we were able to go back in time and do *The History of Earth* over again, we could not reasonably expect events to occur in the same way twice. Any proposition of fact that is derived from, influenced by, or subject to external factors that could be (or could have been) different, is called *contingent*. The features and processes of Nature are contingent propositions.

There are some facts, however, that can only exist as they are and cannot be otherwise. Any proposition of fact that is impervious to external influence, is immutable (it cannot change over time), and explains itself without reference to any other external fact, is called *necessary*. The etherea of mathematical equations, and quite possibly the timeless Laws of Nature they define so well, are necessary propositions.

From contingent propositions only contingent propositions follow; likewise, from necessary propositions only necessary propositions follow. It is logically impossible to derive a fact that can only exist in one way from a fact that can exist in an infinite variety of ways; it is equally impossible to get contingency from necessity. Something is either changeable or it is unchangeable; it cannot be both. These two classes of propositions, then, are mutually exclusive and cannot be integrated into a single proposition - like the cosmos. Nature cannot issue from natural law; nor can natural law be an extension of nature. And yet, surely they are indivisible: the eternal laws that govern the behavior of everything in the universe cannot be imagined to exist without something material in which they can become manifest; and the material universe cannot be imagined to exist without the conceptual foundation that makes the existence of such material possible. The two distinct sides that are definitely *not* each other, nevertheless seem to have been brought into peculiar unity by some bizarre Mobius-twist in the cosmic loop of being.

The universe came from something (but what?) or the universe came from nothing (but how?). It seems there is no escape from the paradoxes inextricably attached to the condition of our existence in the *uni*-verse. But there is a solution to the problem of a cosmos that must somehow be both *ever*-changing and *never*-changing: perhaps the cosmos is not *one* thing, but *two*, an indivisible weave of two aspects - an infinite domain of Truth, Beauty, and Quiescence, and a finite domain of Illusion, Power, and Struggle. *One Dance of Two Gods*.

A Domain of Activity and Change

A moment's consideration will confirm that the cosmos is a chaotic place. In the deep of the celestial ocean, great suns half the size of our entire planetary system can either explode with a radiance that outshines whole galaxies, or implode with such catastrophic ferocity that they crush themselves to infinite density and right out of existence. The universe is a *violently* chaotic place. In fact, the laws of quantum mechanics (rules that govern the interactions of subatomic particles like electrons, protons, and photons) state that the material of the universe is *fundamentally* erratic and random. Existence in the domain of the very small is a probabilistic, intermittent, and "fuzzy" property. But we do not need physicists to tell us that all we see is, in essence, chaos; all we have to do is look around us to know that this is a crazy, unpredictable world. The only certainty seems to be change. Whether one views the world as progressing or retrogressing (that is, ascending toward or descending from a single perfect moment of Unity), it is indisputably in a perpetual state of flux, always evolving in one direction or the other.

From the free particles created in the infinitely hot explosion of the Big Bang, to the heavy elements forged in the supernova deaths of stars, to the complex organic compounds cooked up in the boiling cauldrons of volcanic pools, to reasoning consciousness and civilization built upon the war-ravaged ruins of our predecessors, the entire history of the universe has been a story of violent activity - one kind of thing subordinated and made to serve within structure of a larger, different kind of thing. Everything in the universe is in a process of becoming - changing from one state to another over time. The cosmos itself is expanding dynamically as it charges ever outward from the explosive point of its creation, penetrating ever deeper into the oblivion that waits eternally to receive it. It is brutal and ambitious, aggressively building structures of greater size and complexity, always aspiring to some distant objective, ever seeking some higher purpose in an unknown future. For these reasons, I have chosen to represent the chaos of the material universe as the *Earth-Father* - a manifestation of the *Yang principle*.

A Domain of Eternal Stillness

There are other things quite near to our universe that *never* change. The fundamental particles of matter and energy exist in a timeless, eternal state of being: at the instant of their creation they are all they will ever be. These dimensionless points have mass, spin, and charge, despite the fact that they have no size, and seem to sit upon the boundary between this world and womb of eternity that lies beyond. Quanta possess no component parts subject to change or revision. The mysterious electron - which is reckoned finite only by the mathematically dubious process of renormalization (multiplying by a negative infinity) - can

never evolve or modify in any way. From its birth at the beginning of time, through the hundred billion-year journey around the universe, to its final consumption at whatever form of cosmic resolution might prevail, it shall remain infinitely identical to itself, and all other electrons in the cosmos. (So identical, in fact, that Nobel Laureate Richard Feynman once suggested that it might be meaningless to think of them pluralistically: perhaps they are just *one* electron - a single speck which zips back and forth through space and time to give the *appearance* of a cosmos assembled of many!)

Of course electrons combine with other particles to make things that do change, but the *method* by which these accumulations of matter-stuff transform themselves does not. The laws of physics are immutable, and thus unerringly predictable. The mathematical rules of gravity, time, thermodynamics, chemistry, electro-magnetism, etc., are always regulating the affairs of the world exactly as they always have. Why should these laws be the same all the time? Why do they not degenerate over time like every aspect of the *material* cosmos? Where did these laws come from? Why should a notion as numinous and abstract as *number*, be able to describe and predict the mechanical "nuts-and-bolts" operation of the cosmos with such success? How can it be that we find such delightfully ordered and harmonic relationships in the idea-world investigation of quantities? Where do these eternal, mathematical truths exist? And why should these subjective, incorporeal truths manifest themselves in every chaotic part of the objective, physical world?

We are obliged, it seems, to address such unanswerable questions with a concept that is in marked contrast to the hard experience of the senses: we have a soft and nebulous notion that there must be some mysterious *source* from which all things came. This one concept is known by many different names, and each one is merely a mask toward which we might direct our awe and bewildered questions. It seems that we are not permitted to look behind the mask and experience the presence of this celestial prestidigitator directly. We can only observe little islands of inexplicable order in an endless sea of chaos and thereby infer the existence of a divine order-*maker*. And beauty - the pleasurable harmony of patterns of symmetry - is the highest expression of order.

This Creator is thought of as the Architect-Designer of the universe, yet transcendent and beyond it. This Watcher is not changing or evolving in any way, for the Absolute is utterly whole and complete. The inviolable laws of nature are limitless in the perfection of their design and infinitely durable - they are flawless and eternal. The empyrean dimension of geometry and mathematics is mysterious, alluring, beautiful, sublime. And this Divine Way of Archetypal Forms, this maternal womb from which physical nature emerges, is clearly antecedent and external to such nature. All that is in the cosmos is temporal and temporary and will return to that nameless Eternity whence it came. In the distant future when all energy is spent and time has consumed even itself, the Force in the Void that has drawn existence ever forward - as gravity draws all things toward the center of the sphere - will receive the seed of the cosmos. The genealogical sum of all that has ever been will pass into the incubating embrace of Cosmic Resolution - that realm where Ideas gestate before realization. For these reasons, I have chosen to represent the ethereal order that creates the material universe as the *Sky-Mother* - a manifestation of the *Yin principle*.

Sky Mother?

In the religious tradition of the west, the Creator of the universe is understood as all-powerful - *Omnipotent*. This is an entirely reasonable expectation of the masculine God-in-Heaven that much of the world recognizes. In the ontology of the Divine Feminine, however, the transcendent plane is *not* the dimension of power; it is rather the immanent, material universe that is all-powerful. Power dwells in the here-and-now, in the active processes slowly building the cosmos through bloody, unrelenting labor. The Eternal Creatress (beyond space and time, beyond energy and matter, beyond action and power) is all-beautiful - *Omnibellus*.

The laws of nature possess no substance, no innate power, of any kind; and yet it is She - Law Incarnate - who is the guiding influence over all things in the cosmos. She is the Essential Catalyst that *empowers* power, mediating every action of matter and energy in the field of space and time. By Her will, it

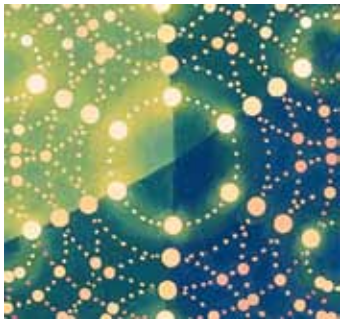
is *we who possess power* to employ in the service of Her objectives: Life, Evolution and the Building of the Cosmos. She is inviolable, immutable, irresistible. It is Her beautiful perfection that motivates the evolving universe to aspiration and transformation. She is the Primary Impulse to Action that waits silently for the resolution of Her great and terrible task...

When first contemplating this notion, it may seem that a transcendent God made of Law and Number is rather cold and impersonal. How could such a God have a mind and unique identity? How can *Idea* be alive? How can pure geometric form have will and intent? *Chemicals* don't possess a "mind and unique identity" either, and yet here we are: bags of thinking, feeling, chemicals. The human body is a collection of simple particles - bits of energetic matter with positions, velocities, and trajectories - that dreams and imagines. Apparently, a sufficiently sophisticated arrangement of simple forms allows for the emergence of complex forms infinitely beyond the reckoning of the simple, constituent forms. How much greater, then, is the sum of all Law, all Number, all Form, all Idea? Something grand and beautiful enough to dream and imagine a universe.

And if there is one who imagines what is possible, then there is another who will build it: the gravity of Her Sphere of Perfection permeates the body of the living cosmos like a thought, suffusing His limbs with longing and resolve, beckoning the Warrior-Builder to His task of constructing the Cosmic Temple. As in the story of The Grail, She is the Inspiration, the Quest; He is the one who seeks...

The Realm of Chaos

In this painting the circle of the T'ai-chi, which encloses Yin and Yang, reads clockwise. Time begins with the Big Bang at 12 O'clock. The trail of Yang is meant to correspond to the evolution of the universe. These concentric rings within the tail of Yang represent the vibrations of the dimensionless particles of which all matter is composed. These particles exist in lattice-like quantum fields that permeate all of space; therein they form - with impenetrably complex (chaotic) interactions and vibrations - everything that is (atoms, molecules, brain cells, you and me). The warm colors of these vibrations - painted against the cool, background colors of chaos - mirror the way of order. Cold, dark blues and purples seemed the natural choice to represent the cold, dark universe. Yet these colors are, appropriately, in the more energetic wavelengths of light. The rings also symbolize the laws of physics. In the same way that the colors seem to progress and interact in a random fashion but upon closer inspection yield the pattern that allows one to predict what should happen next, so too is this the way of the rules that govern the universe. Superficially inscrutable, the way in which the laws of physics interact to form a comprehensible whole is actually discernable - when we discover the proper way to perceive the pattern.



Within the sphere of Yang (the universe), existing perpetually at the extremity in dynamic asymmetry, is *Lord Chaos*. He is the manipulator, the changer, the destroyer. He is power, action, mover, builder. He is also entropy - the second law of thermodynamics - compelling all things to degenerate from an initial state of order to a final state of chaos. He is pictured here as the forces that determine a stellar lifetime. The star at the center is the Seed of Order in the domain of chaos. As the source of heat and light (which allows order - life, for instance - to flourish and grow), and the forge of the naturally occurring elements heavier than helium (thus providing the necessary materials for order to propagate), a star is the natural symbol for order. This star, however, is nearing the end of its existence. Under the wrathful ministrations of chaos, its fuel is being siphoned off by a black hole. On the T'ai-chi clock, this *Big Crunch* is at the bottom of the cycle: 6 O'clock - the end of space, the end of time, the end of the cosmos.

Traversing the Impregnable Divide

Modern cosmology describes our 4-dimensional universe (three dimensions of space, and one of time) as space-time, and even in an endless and unbounded cosmos, there is an edge of space and an edge of time. The boundary of space can be thought of as the Planck-Wheeler length (1.62×10^{-33}cm). At most places in the macroscopic (large-scale) universe, the shape of space is thought of as generally flat (that is, light travels in a straight line, the shortest distance between any two points is a straight line, and the laws of Euclidian geometry apply); or it is only locally warped, as when distended by some massive object such as a planet or a star. At the Planck-Wheeler length, however, the predictable, linear geometry and topology of space explodes into a probabilistic effervescence called *quantum foam*. The secrets that wait in smaller realms than this we shall never know, for the laws of physics break apart with the space-time continuum at this scale. The infinitesimally small is another domain: contained yet containing, connected to and supporting, yet separate and removed from the cosmos. And this spatial boundary, this edge of existence, is every infinitesimal point in the entire universe: in your hand, in the earth, and in the sky.

The boundary in time can be thought of as Planck time, or 10^{-43} seconds after the big bang explosion that created space-time. At that moment, differentiated space, time, gravity, energy, and matter exploded as the infinitely hot, but quickly cooling fireball of material reality. But our knowledge shall never venture prior to that moment, to the perfect symmetry of the unified forces (the strong and weak nuclear forces, electro-magnetism, and gravity) that existed before. Our understanding of physics requires a time at (or in, or perhaps even *on*) which an event takes place, and it requires a cause that preceded that event in time. But physics comes into being *with* time. The magnificent mathematical equations that have produced the scientific and technological miracles of our age can only theorize back to Planck time and then say: *there was nothing before*. Once again the threshold of physical law will forever forbid our inspection of the absolute.

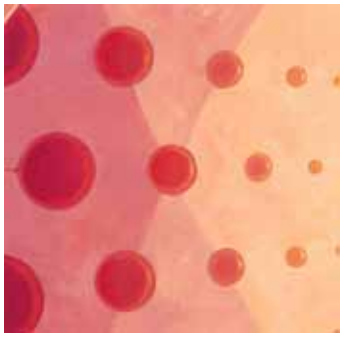
And there are more dramatic boundaries. When a star of sufficient mass (many times larger than our sun) uses up its available hydrogen fuel, it can no longer generate enough heat to counteract the attractive force of gravity. It begins to violently contract under its own weight with so much power that, at the end of this process of contraction, gravity will overwhelm the electro-magnetic force (that keeps electrons apart) and the nuclear force (that keeps nucleons together but in close proximity apart). In fact, the star will actually collapse, dragging space and time along with it, creating an infinite distension of the fabric of existence. The *event horizon* is a spherically shaped region of intense gravity (around a *singularity*, where matter has been crushed beyond the Planck-Wheeler length to zero size) from within which nothing - not even light - can ever escape. The event horizon might have a diameter of ten miles, but its radius - the distance from the perimeter to the center - is *infinite*. If a celestial explorer wished to leap off the edge of the universe, this is the only place it can be done.

(Among Einstein's many important realizations is the fact that the effect of gravity is equivalent to acceleration. The mass of the earth creates a distention in space-time, that we feel as gravity. The gravity-field of the earth is equal to a certain acceleration; one needs to exceed a certain speed upward to escape the downward accelerating gravity of the earth - a speed known as *escape velocity*. For earth, this speed is more than 25,000 mph. To escape from the much smaller gravity-well of the Moon, the speed required is only about 5,300 mph; for much larger Jupiter it is over 133,000 mph, and for the sun it is 1,381,600 mph. The enormous mass and density of a collapsed star creates a depression in space-time that is so deep, and the corresponding acceleration is so fast, that escape velocity is actually *faster than the speed of light* - about 670,000,000 mph! And nature does not allow anything to go faster than this universal absolute. This is why light cannot escape from a black hole.)

General Relativity (Einstein's field equations that describe the geometry of gravity) explains that mass bends our 3-dimensional space, or more accurately, our 4-dimensional space-time. In the same way that one cannot bend a 2-D piece of paper within the confinement of two dimensions (any bending can only be specified by a third set of co-ordinates perpendicular to the other two - our *third* spatial dimension), the sug-

gestion that our universe is warped by gravity demands that there is something greater beyond it, *into* which it bends. For example, a 2-D piece of paper is completely contained by a third dimension that surrounds it on all sides, and touches it at all points - in fact, any and every point on the plane is the edge of that 2-D universe. So, too, must it be with a 3-dimensional universe: any infinitesimal point anywhere in the vast cosmos, exists at a precipice - *the abyss at the end of the universe*. If a 2-D being could just look "up" (a direction that simply does not exist in his universe), he might discern that a 3-D "space universe" surrounds his 2-D "plane universe." If we could look "up" into *hyperspace* (the fifth dimension, beyond 4-D space-time) what might we see? A black hole is a place where we get to look "up." When our imaginary explorer finally leaps off the edge of the universe, into *what* will he fall?

The Realm of Order



We cross that boundary at the edge of the universe as we move into the left side of the painting - the domain of *Goddess Order*. The rows of spheres that diminish in size as they get nearer to the sphere of Order are meant to be a stylized representation of quantum foam - the turbulent end of space-time. At the Planck-Wheeler length near the singularity inside the black hole, space-time begins to boil and froth. Once an apparently seamless continuum, space-time now starts to rip and pull apart. The laws of quantum mechanics forbid physical investigation, but in a purely *meta*-physical idealization we can imagine zooming down to inspect the haphazard topological features of a speck of quantum froth at, say, 10^{-100} cm. And then we might zoom down, even smaller, to the froth fizzing above the froth at, say, 10^{-1000} cm. At this infinitesimal, *sub-physical* scale, Order acquires supremacy over Chaos, and imposes Her will upon the chaotic bubblings of space-time at the Great Boundary between the fleeting immanent and the Eternal Transcendent. (This sub-quantum imposition of order upon vanishing chaos is represented here by the geometric regularity of the receding/diminishing quantum-foam spheres.)

Yin and Yang represent the fundamental polarities in the dance of the cosmos, but Yin is thought of as unchanging stillness. For this reason, *another* way to read the T'ai-chi T'u (as opposed to the customary reading of two swirling or rotating "tadpoles") is to place the center of the diagram in the heart of Order. Yin is the *still center* around which Yang, the *moving periphery*, revolves in the cosmic dance. When the resulting pattern is perceived in the right way (one 360 degree rotation, captured in 24 distinct increments, with the overlapping arcs of circles making petal-like forms), the *Lotus* becomes apparent.

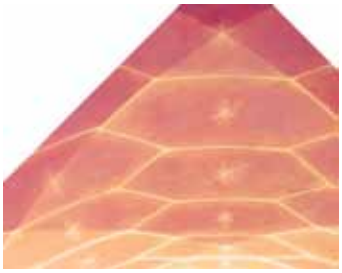
The Lotus is a symbol associated with mythogenetic creation in all eastern mythology, from ancient Egypt and Persia to Modern China and Japan. It is the golden flower, the flower of light, the cosmic womb, beauty incarnate. The Lotus grows out of the unknown water's depths, like the universe grew out of the primordial sea of nothingness. The Lotus, like an elemental union of earth-water (matter) and sun-fire (spirit), represents self-regenerative totality. Because it opens with the sunrise, and closes with the sunset, it suggests creation, renewal, and immortality. Like the First-Being, the Lotus is believed to be the creator of its own creation. Rising from the murky depths of timeless darkness to unfold with perfect enlightened beauty in the sunlight, it symbolizes the awakening of awareness, the understanding of the true nature of reality. And within the unfolding petals of the Lotus, is pictured the Creator of the cosmos, seated in blissful repose. Enthroned upon the Lotus in eternal paradise is Order the Infinite, She who wears the starry robes of the universe as a cloak to conceal Her mystery.

In India, a tripartite nature of divinity, a Holy Trinity, is represented by Brahma the Creator, Vishnu the Preserver, and Shiva the Destroyer. And they are popularly shown in this aspect: Shiva, as the ouroboric (self-consuming) World-Serpent, is coiled around the

feet of beautiful Vishnu. The serpent which sheds it skin and is reborn anew - like Life which consumes life and is reborn anew, like the moon which is consumed by darkness and is reborn anew, like the earth which is consumed by the solar coil of the seasons and is reborn anew in spring - is symbolic of the cycles of time, which consumes all things, and yet is also the source of their renewal. And from Vishnu's navel grows a lotus blossom upon which is seated a tiny Brahma. We know that things do not grow from navels. Navels attach us to *that from which we are grown*. And so, in this beautifully symbolic representation, it is not the Lotus that grows from Vishnu's navel, but rather Vishnu that grows from the Lotus: *Devi* - Mother of space, time, and the entire universe. She is the source of all things, of all the Gods. And all the Power of the Gods of Space and Time grow from, and labor in the service of, her Eternal Beauty.

The Perfection of Number

Returning now to the image, the lotus petals expand outward into the composition, and are meant to indicate the transcendent realm that is both within and beyond the material universe. The within and beyond regions are tiled in this representation by a hexagon field, the geometry of which is specified by the revolving T'ai-chi. The resulting three lines that intersect at a common axis create the hexagons. The three lines symbolize the quantum fields that permeate all of space. There are many interpenetrating fields, but they can be classified in three main categories: the lepton field (which forms electrons and neutrinos), the quark field (which forms protons and neutrons), and the boson field (which forms force-carrying particles: photons for electro-magnetism, gluons for the strong nuclear force, W and Z particles for the weak nuclear force, and gravitons). It is this matrix, this "trinity" of particle/wave fields, that gives substance and form to the shape-shifting universe, and prevents it from falling into the emptiness of which it is almost entirely made. This quantum veneer of dimensionless points, this shimmering foundation of mathematical ethereality, is the exquisite skin of the *LotusMaiden*. And upon Her is draped the ever-fluttering Robes of Chaos - the universe itself.

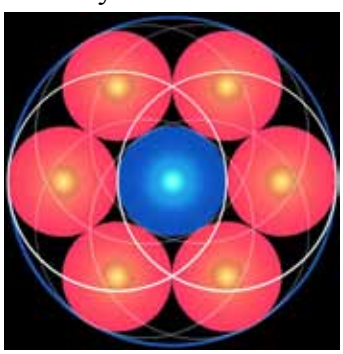


The glowing light in the center of each hexagon serves two functions: one, it represents the potential for another axis, another particle (or virtual particle); two, it is the light of eternal order which exists at the center of all things: every protean atom, every living cell, every contemplating consciousness.

In this painting, the center is always circumscribed by a six-sided structure. The number six has, since early pre-history, been associated with utility in the service of order. Because of its many divisors, six and multiples of six were the ideal, easy-to-use values with which to quantify the affairs of man, and map the dominions of space and time. This predisposition to the number six, to in fact see a basic "sixness" in the structure of the world, was prevalent across Eurasia and Africa, as well as in the Americas. In places all around the globe, man sought to emulate the mathematically ideal order of the cosmos, by re-creating its essential sixness on earth:

12 inches to the foot, 36 inches to the yard, and 6 feet to the fathom. 360 degrees to the circle of the horizon, 60 minutes to 1 degree, and 60 seconds to each minute of arc. In our reckoning of time there are 60 seconds to the minute, 60 minutes to the hour, and 24 hours to the day. 30 (6 x 5) days to the month, and 12 months to the year (and 12 zodiacal divisions in the sky).

The atomic number of carbon - the element of life - is six, and its crystal structure is hexagonal. The bible describes God creating the universe in six days (or rotations of the earth), and resting upon the seventh. This became the model for the western week: six days of activity enclose a passive seventh day in the center. This human-made reckoning is a reflection of a simple geometric truth: six perfect circles (or rotations of a line) arranged edge to edge in a larger perfect circle, exactly circumscribes a seventh circle of equal size. That is, a six-fold



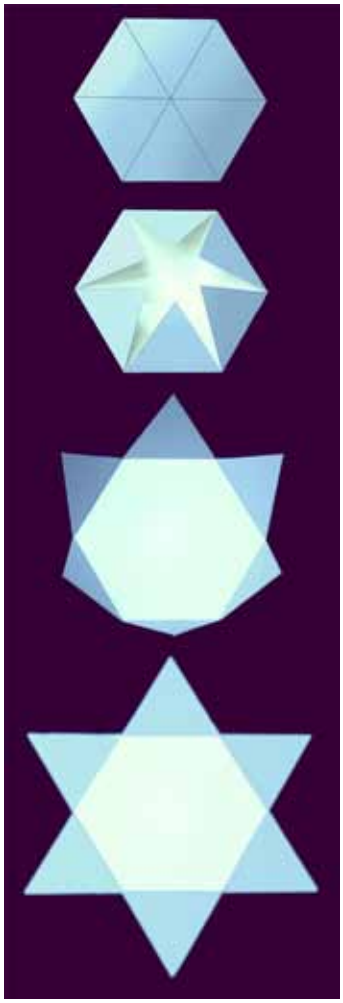
structure surrounds the master seventh component in the center. (And we shall see that there is something strange and wonderful about this *6-around-1* motif.)

Lucky seven (statistically, the most likely roll of two six-sided dice) is a divine number in many ancient belief systems around the world. Light, the most enduring symbol of divine creation, is composed of six visible colors: red, orange, yellow, green, blue, and violet (the three primary and three secondary colors seen in the rainbow); when combined, these six colors of light make a glorious seventh - pure and luminous white. All that we will ever see is a combination of these six colors (white is all visible light together; black is the absence of light, and not a color).

Symbol Loops

The receding hexagonal field spherically surrounding the Goddess is a geometrical idealization of an infinite plane contained within a finite region (known as Lobachevskian, or *hyperbolic* geometry). When viewed in the right way, the arced lines of this hexagonal tiling form the diagram of a lithium atom, the international symbol for things atomic (and sub-atomic). Furthermore, the three ellipses that comprise this symbol also form a Star of David (or Seal of Solomon). This symbol - the union of the downward-pointing (vaguely yonic) triangle of feminine repose, and the upward-pointing (vaguely phallic) triangle of masculine action - is yet another symbolic representation of the mysterious and the manifest in harmonious conjunction. (This diamond-shaped painting is also the union of two oppositely-oriented triangles). The six-pointed star, a multi-national illustration of the same philosophy contained in the T'ai-chi T'u of eastern Asia, is also found in ancient Persia (the *Star of Ishtar*), and Tantric Buddhism (the *Shri Yantra*). In India this symbol is known as the *Mark of Vishnu*. It is also the symbol for the *Anahata*, or heart chakra (the central of seven mystical energy centers in the body - a balancing point of transformation between terrestrial and celestial energies).

Whereas the line is representative of the bi-directional experience of beasts, who know only the pursuit of reward or the flight from pain, the *triangle*, the first polygon pushing out into the new dimension of the plane, is representative of Man, whose free will pushes out into greater dimensions of experience utterly beyond the lives of beasts. Two distinct and separate triangles, one oriented to things above and the other a mirror-image oriented to things below, becomes a beautiful new *unity* when they find the delicate balance of those otherwise conflicting orientations. The perfect radial symmetry of this difficult entanglement, the 6-pointed star, is a representation of Life - the awkward but precise union of inanimate matter and animating spirit. And this lotus of geometry (like the blossom it so resembles) is an unfolding seed: the central hexagonal emptiness *within* the star is a 6-pointed introversion of the 6-around-1 extroversion of creation that surrounds it, a *singular* potential that opens up to become *many* realizations. The divided, variegated manifold around the center of origin, is the Creator… *in bloom*. We will encounter the interesting symbolism of this geometry again.



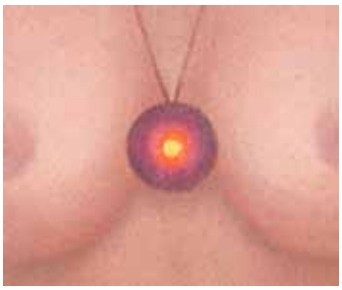
These self-referential, auto-causal loops contain patterns within patterns, symbols within symbols, worlds within worlds - each existing only by virtue of all the rest. A first component creates another, which, in turn, creates the first component; remove a single part, and the entire edifice comes tumbling down - creation and destruction, beginning and ending, all interwoven into a single cosmic tapestry. By indicating a succession

or hierarchy of meanings, of interdependent levels of interpretation and understanding, symbols sometimes look very much like the inscrutable cosmos itself.

The LotusMaiden of Eternity

Within the star of transformation is the Goddess Order, residing in perfect symmetry and eternal tranquility. Around Her head is a halo centered upon the sixth chakra - the chakra of visualization. The halo itself is a divine imagining of all creation, an infinite regression wherein God and the Universe are *auto-catalytic* in their own creation: the Creator dreams of a creation which has a Creator dreaming of a creation that, in turn, has a Creator...

The axis of the entire composition is the little purple amulet between Her breasts. There at the heart chakra of transformation is the seed of Chaos (the tiny Brahma) within the domain of Order. Here is where the inward-oriented *noumenal* becomes the outward-oriented *phenomenal*. Although the stillness of eternity does not act or change, She possesses in the seed of Chaos an agent of potential, a *proxy* for action and change. Here is the ghost of contingency within the Absolute. Here is the engineer that would build the Architect's dream. *Here is the Power that Beauty needs to create Power*. In this view of the universe, there is no beginning, no ending - they are the same Place, the same Moment. This is the Eternal Cycle: Order creates Chaos, Chaos creates Order, which creates the Chaos that created the Order...



It is only from our tiny and remote vantage point that the Two Domains - the Immanent and the Transcendent - appear separate and distinct, divided by the Gulf of Infinity. In some unknown, even greater aspect, they flow through one another like a river in the desert: an emptiness that beckons, and a fullness that ventures forth. There are two Dancers, a Question who seeks and an Answer who waits, but there is only one Dance...

* * *

Personal Notes on *Order and Chaos*

Whew! OK, this is not one of my better paintings. If I were to paint this image again (and who knows what crazy thing I might do someday?), I would certainly *not* make the mysterious aspect of the cosmos the illuminated half of the painting, leaving the manifest aspect of the here and now shrouded by shadow. And it's so *orange*...what was I thinking?

I had some fun in the execution though. I designed an elaborate compass that was anchored to the canvas upon a small piece of plastic that I attached to the canvas between the breasts of the Goddess. By rotating either a piece of wood or a length of string, each equipped with a paint-loaded brush, I could make fairly confident strokes to establish with some precision the basic geometry of the section I was working on. Once the geometry was roughed in correctly, I could refine the painting as required, freehand. And it seemed like I spent *weeks* painting those Yang dots!

For some strange reason, my initial idea with this painting was to paint *both* figures as women. There wasn't going to be any science and philosophy (which, come to think of it, might have been better). It was just going to be a simple representation of a refined, dignified Order and a crazy, wanton Chaos (or something like that). And then a few debates about science and religion with my brother and my best friend led me in another direction. "You should paint about this stuff," they said. It seemed like a good idea at the time...

Right
The Blue and the Red - © 2004
Oil on Canvasboard - 24 x 16 inches


~ Pastoral Symphony ~
Copyright 1996 - Oil on Canvas - 30 x 48 inches

Encounter

The music began and, suddenly, I was overwhelmed by an irresistible force. The world, the cosmos, and myself, all dissolved into the formless presence that embraced me, caressed me, *crushed* me. There was no preparation, no defense, no escape. All thoughts and perceptions of my existence vanished. I knew nothing - not where I was, not who I was, not *that* I was. In those moments, Jonathon Earl Bowser no longer existed. I was consumed by something that was utterly unbearable - simultaneously both torment and rapture. A doorway had opened, through which my humanity fled, and something *other* entered.

What was it that happened to me? What force knocks a 14-year old boy to the floor, coiled and gasping, racked by sobs of violent anguish? And how could it be that in that moment of profound suffering, I could yet laugh with joy and even more profound ecstasy? This very private experience (and embarrassing to reveal here, I assure you: somebody I know might read this) occurred only once in my life, and the memory of it - astonishingly potent to this day - still fills my imagination. There is no going back; forever after I know that the stable foundation of the world is an illusion that can endlessly fall away beneath you once you learn that it's not really there...

I am aware that this music leaves many people entirely affected. But there are other doorways for other people - perhaps one private door for every individual that has ever lived. I have read that upon entering the Sistine Chapel some people suddenly faint, as though some sort of neurological overload had compelled their minds to briefly shut down before restarting. What *kind* of experience is this?

Revelation?

I think this is the moment I became an artist - the existential crisis where all other cognitive doors closed tight and I was thereafter compelled by some defect of my interior nature to forever follow just one path only. This event did not make me more creative or intuitive or intelligent or sensitive or poetic…or any of the other artistically useful things people generally think artists should be. But in that curious seizure of incapacitating psychic violence, I somehow learned that nothing else a human can do has the potential to affect humans so profoundly. I do not mean that this is universally true for *all* humans. Theoretical physicists and brain surgeons and architectural engineers, or even basketball players or captains of industry, all have, I suppose, their own inspiring Messiahs, their own devoted followers. But *whatever* it was that Beethoven was saying to me…was true for *me* - more *true* than anything I've heard before or since. "This is," the message somehow explained to me, "the way *Jonathon Earl Bowser* is going to find his most animatingly potent and meaningful experience of the world."

It is the deep unquenchable *need to make art* - to speak of the grave and solemn things about which there are no words that can be spoken - that makes someone an artist.

We generally think of a *revelation* as something significant; a formerly mysterious aspect of the world becomes suddenly clear in the mind. But it is much more than merely learning an interesting fact we did not know; it is an acquisition of keen understanding that we did not previously possess, a comprehension of something not universally known that subsequently changes one's way of viewing life and existence. It *feels* like a *personal communication with Truth*. We, each of us, exist at the center of a sphere of perception upon which flickers our sensations of the world. Just beyond that opaque veneer of self-projected illusion is the unknown. Sometimes, when the dirt on the inside of that sphere is wiped away, by inspiration or concentrated thought, when it is made transparent to the transcendence beyond, the burning light of that mystery shines through.

Of course, we usually think of revelation in *religious* terms: the revealed truth is the *Word of God*. Religious experience is not well regarded by science. Nor should it be; skepticism is required for no other reason than our recorded history, where there is an overwhelming preponderance of conniving charlatans in this curious arena of human experience. Modern neurology has been even less kind to the notion of supernatural communication. Detailed experiments involving the superior parietal lobe have provided an entirely naturalistic explanation for divine seizure. We

can *impose* religious encounters in the laboratory.

That is indeed intriguing, and quite possibly helps explain the otherwise inexplicable experience of a few solitary men who may have wandered around in the open expanse of the burning desert for too long. But just because there is a region of the brain that corresponds to a certain kind of experience does not invalidate the legitimacy - or reality - of that experience. No one is suggesting that because there is a region of the brain that corresponds to our *visual* perceptions, that somehow those perceptions do not correspond to any real phenomena out in the exterior world. No one is suggesting that because we can manipulate the visual center of the brain and alter the normal function of vision, that therefore what we perceive visually is only the mere product of brain activity. That there is a region of the brain that seems to be responsible for sensing the presence of the divine may very well indicate that such apprehensions are entirely internal; and it may also mean that such sensory apparatus has evolved in response to real phenomena immanent in the world. This particular *sixth* sense - if it exists - seems rather undeveloped in most of us. How are we to know if it is leading us astray? Everybody believes that the data we gather with our other five senses corresponds to a real world. How can we know if these comparatively rare perceptions of something numinous do not *also* correspond to a real presence out in the world as it actually is? To what other authority can we direct our inquiries? Fortunately, spirituality is not the only method by which we might, as Blake entreated, "cleanse the windows of perception."

The Four World-Views

Once upon a time there were four inquisitive blind men: a *theologian* (exoteric mythological mind), a *scientist* (exoteric logical mind), a *philosopher* (esoteric logical mind), and an *artist* (esoteric mythological mind). They were wandering along a country road when they came across an elephant that, of course, they could not see. The theologian, feeling the ear, said (too loudly), "*It seems like a bat*!" The philosopher, feeling the leg, said (too abstrusely), "*It seems like a tree*." The scientist, feeling the trunk, said (too concretely), "*It seems like a snake*." The artist, walking around the mysterious object, said (too poetically), "*It seems noble...*" (but the other three ignored him because artists *never* have anything useful to say).

There are many ways to see the world, many ways to assemble in the mind a coherent model of our surroundings to, in some small way, understand it. And understanding is always better than ignorance. There are four fundamental ways in which we can see the world and seek to understand it: science, philosophy, religion, and art. What do these four distinct disciplines offer us?

The focus of science and philosophy is directed almost entirely *into* the world. Science (and its operational language, mathematics) examines the materials and processes of nature, seeking to provide a mechanistic, cause-and-effect description of how it does the things it does. Many early seekers of knowledge preferred to *think* about nature and intuit its secrets based solely upon some model in the mind. It has, of course, turned out to be much more effective to actually *observe* the world to see how it works. The data-*gathering* ethos of science has collected vast libraries of information about the phenomenal universe and discovered amazing secrets about how things work; this knowledge has given humanity real power to affect and even control our world.

The data-*processing* ethos of philosophy hopes to assemble the data provided by scientists into usable and helpful strategies. The scientist says, "These are the facts of the world"; the philosopher says, "Then this is what we should do about it." In many ways, what the philosopher seeks to accomplish is less tangible than the "experiment and observe" technique used by the scientist. But a mathematically-based logic determines (one hopes) the direction of their thought: "It has been observed that *A* is beneficial to *B*, and that *B* is beneficial to *C*; it has *not* been observed that *A* is beneficial to *C*, but we know, logically, that this must be true and should act accordingly." The relation between *A* and *C* is, of course, often complex and much more difficult to discern than in this simple syllogism. The philosopher organizes the discoveries of science into systems of action, and determines the proper method and extent of their deployment in our service.

Science and philosophy, however powerful and effective they may be at describing and exploit-

ing nature and natural processes, entirely miss some significant aspects of our existence here…like *our existence here*. Our experience of ourselves as somehow separate and distinct from the environment in which we live is (it seems) a unique phenomenon in nature. There is a cause-and-effect part of us in flesh and bone, to be sure, but our most *human* aspect is emphatically *not* cause-and-effect. We, our interior selves that experience this place entirely from behind the impenetrable window of our eyes, are something *other*, ontological castaways marooned in a cosmic machine, and seized by the mesmerizing mystery, the beauty and horror, of being.

The focus of religion and art is directed almost entirely *beyond* the world, to questions of origin and meaning - things that are of no concern to science and philosophy whatsoever (although occasionally entertained by practitioners of such disciplines). Artists are the data-gatherers of the *noumenal* world. The intoxicating allure of a woman's body, the inspiring mania of a man's ambition, the brutal power and pitiless resolve of the predator, the nourishing bounty of the earth in flower, its terrifying fury in storm, the joy and misery of life and death, the hope and despair of struggle and defeat: these are the essential experiences we have here, the simple but highly variable parameters that define the challenges we face and the triumphs we seek. Mechanistic, cause-and-effect descriptions of human experience are not meaningful to us; mathematics is of no use in the quest for meaning and purpose. But, just as the phenomena-watchers devised a useful mathematical language appropriate to their *logical* work, so too did the noumena-watchers invent a special operational language appropriate to their *mythological* work. We call it poetry, and have used this enigmatic language on countless occasions through long ages of man to tell great stories of great lives. But these stories are not about *other* lives: *the mythological kingdom is a place where we discover the poetry of our own lives*.

The problem with poetry, however, is that only poets understand it (the incomprehensibility problem encountered by all special languages, it seems). And that's why we have religion, the data-processors of the noumenal world, assembling the observations of poets (painters, writers, musicians, visionaries) into useful systems of thought for the benefit of the greater Community of Man. Notwithstanding the fact that some theologians (and philosophers too) can metastasize a profound observation into a cancerous system of thought, this fourth form of interpreting the world is clearly important. There can be no civilization without extensive constraints on our behavior, and no way to impose such constraints (which must be voluntary to function over the long term) without some cognitive framework within which the average person can comprehend a greater purpose in the world than mere satiation of the primal appetites nature gave us. As French theologian Henri de Lubac observed: "It is not true...that man cannot organize the world without God. What is true is that, without God, he can only organize it against man."

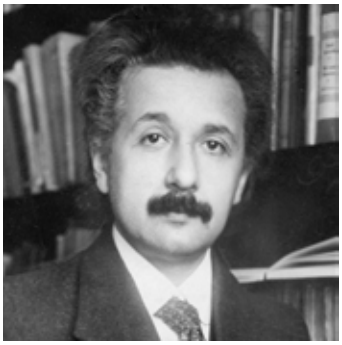
It is a competitive world, with only finite attention (and resources, which invariably follows our fickle attention) available for each of our many endeavors. We should not be too surprised by the frequent and acrimonious tension expressed between these Four World-Views upon the public stage. But, in the honesty of our own thoughts to ourselves, it is important to understand that these four perspectives are all interdependent and, more importantly, limited. One view cannot claim an understanding of the whole picture, anymore than a one-legged table can claim to stand. Only a four-legged table is a useful one.

And so these are the four disciplines by which we approach the enigmas of the world. It's not that these disparate descriptions are inaccurate, but their incompleteness reveals little of the true nature of the enigma - Kant's "thing in itself", what Hindus call Atman, the Truth beyond the illusion. These four methods of exploration are rather like the Four Elements: it is only in a miraculous union that they might achieve Quintessence. All religions, all science, all philosophy, and all art, are merely shallow interpretations of the same infinitely deep mystery of existence. The repetition of patterns - in nature and natural laws, in mathematics and the forms of logic, in the poetic reverence by which we find silent communion with these mysterious things, and in our sacred books that hope to extend that personal resonance with the world to an interconnecting unity among men - is evidence of an ineffable presence. The universal motifs are

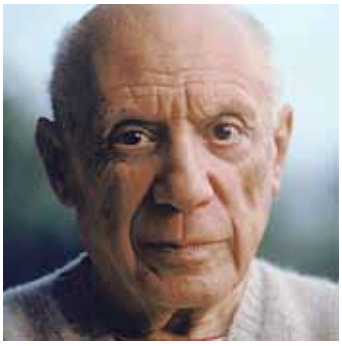
Beacons of Divinity, and Einstein, Plato, Beethoven, and Buddha all perceived the same revelatory light; they simply communicated their experiences in different languages. (But perhaps only someone with an "esoteric mythological mind" would think so.)

The Final Word?

If this line of thinking is valid, then another interesting aspect of revelation is, well, revealed. Einstein saw something new in the universe, something that Newton did not explain, and great schools of science evolved from that seminal idea. Einstein certainly did not imagine black holes, although it did not take long for clever scientists like Schwarzschild and Chandrasekhar to realize there were some interesting and unexpected implications within general relativity. The original revelation was stunning; the larger truth continues to emerge and is even more startling. Einstein himself did not see the whole picture.

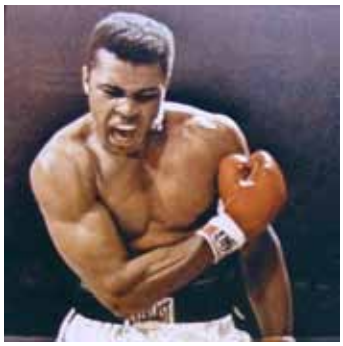


Picasso saw something new in art. I don't know if he ever described it as such, to himself or anyone else, but his revelation might have come in the form of a question: What does the psyche look like? And, at an even more primal level, what does *instinct* look like? These are interesting questions, and, despite my unfavorable opinions of modern art in general, he found interesting visual answers to them. Previous artists had sought to depict tormenting situations; Picasso depicted torment - and many other subjective experiences that cannot easily be defined. I also do not know what he thought of the modern art genie's adventures once he had released it from the bottle. But he - a rogue and scoundrel it's true, and yet a master craftsman in his youth - must surely have at least raised an eyebrow to see the hurlings of urine and feces elevated to the same status as Michelangelo's Sistine Chapel. Picasso saw a wide new world of creative opportunity, but he did not see all of it.



The English philosopher-poet Samuel Taylor Coleridge correctly observed that "everyone is born either a Platonist or an Aristotelian," and Plato and Aristotle did indeed do an impressive job of defining the basic parameters of philosophical debate: Do we aspire to a subjective ideal or do we accept an objective reality? Is it conservative stoic discipline or liberal epicurean sensuality that will guide us to the answers we seek? Philosophy remains an exercise in extolling the virtues of one or the other; after 2400 years of scrutiny and analysis, refinement and elaboration, these basic forms of thought from the classical world are still sufficient to express the range of human experience in the 21st century. One might have thought that by now, surely, we should know all the implications of such well worn systems…that have inevitably lead to Auschwitz and the Gulag. Monty Python was right: no one expects the Spanish Inquisition.

Which brings me to Mohammed - or Moses, or St. Paul, or Joseph Smith, or L. Ron Hubbard, or any other man who has staggered out of the desert with the Word of God in his hand and a maniacal ambition to deliver it to the world (Lao Tzu, who had no such ambitions, left *his* book, the *Tao Te Chin*g, with a lonely frontier guard on his way *into* the desert - the emptiness of Tibet, whereupon he vanished from all knowledge). In a cave in Mt. Hira on the outskirts of Mecca, a contemplative wanderer encountered a divine message that there was to be, in addition to the two other Books of God (the Torah of the Jews and the Gospels of the Christians), a third Book: the Koran - the final, complete, and emphatically *non-revisable* set of instructions for Mankind, as dictated by God (or



his proxy, the archangel Gabriel), word by unalterable word, to Mohammed. Such events are so rare, and the power of the messages so profound, that one is inclined to say that *something* mysterious and amazing is afoot. But Mohammed himself said the message was like "the reverberation of bells" and one is also inclined to say that interpreting "bells" does involve significant risk of errors in translation. When these divine bells of the desert ring of unknown things, of the deep ocean of night and the Cloak of Orion flaring wide to expose its luminous heart to the envious cosmos, what do these denizens of the dunes hear? And what would Mohammed now say if he could see the celestial wonders we lesser souls have beheld? *Nobody* gets a view of the world entire; the elephant is just too big for one blind man's hands. The modern world needs a new prophet to interpret the Bells of Discovery now reverberating through the lofty vaults of our Cathedrals of Science.

Apprehending the Conductor

What distinguishes complex revelations from the simple encounters many ordinary people experience is the Herculean will (or is it reckless abandon?) needed to maintain a mental grasp of the moment. Only then can an aspect of that infinitely-faceted Jewel be integrated into one's identity, thereby allowing the experience to be *shared*: as science, philosophy, art, or spiritual insight. When I saw that exquisite flame, I held back, struggling to hold onto a sense of self threatened (or so I thought) by an overwhelming assault; some rare individuals, it seems, are able to abandon the security of the ego and release their grasp over that ravening chasm of oblivion. What would that be like, to leap off the world into the glory of the Divine Fire and seize hold of the terrifying Infinite, *refusing* to let go?

The paradoxes and enigmas of existence are a relentless contradiction to every belief, every assertion, every confidence, every certainty. We are here by virtue of forces beyond our control, beyond our knowing. Galley slave or Alexander, we are all simply along for the ride - driver and destination unknown. And yet, in a sudden, fleeting moment of illumination, I was touched by *another*. A silent and unseen Will ferries us across the river, the Conductor of a cosmic symphony calls from yonder shore with the melody of an inscrutable promise...

Beethoven's Sixth Symphony (the first 14 tones of which are seen here as bluebird-notes fluttering upon a musical staff of light) remains one of the more exquisite human expressions of Absolute Beatitude and Eternal Perfection. This painting is my interpretation of that same Truth that dwells within and beyond the universe: the Mother Goddess as the Conductor of the Symphony of Nature.


~ The Return ~
(On the Circle of Twelve)
Copyright 1998 - Oil on Canvas - 36 x 54 inches

The Anthropological Truth of the 12

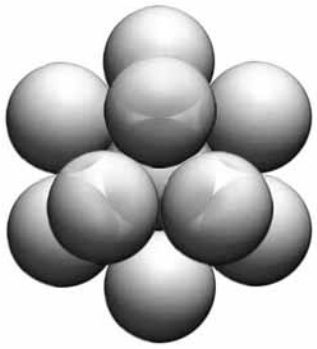
The Twelve that circumscribe the Center. This is one of the primary Archetypes of the Sacred, and is found everywhere in the world: Celtic Western Europe, Norse Northern Europe, Homeric Greece and Mithraic Rome, Egypt, Anatolia, the Levant, Arabia, Mesopotamia, Zoroastrian Persia, India, China and Southeast Asia, and in the pre-Columbian empires of South America. This ancient spiritual motif has endured from remote prehistory, and is still an integral component of modern faiths: Judaism, Christianity, Islam, Hinduism, Buddhism, and Taoism.

And this archetype is always seen in similar forms: 12 labors around the triumph of Gilgamesh (from the oldest document in the world, c. 3000 BC), 12 Vedic nobles around the Aryan King (Raj), 12 Norse counselors around Odin, 12 Inca Emperors around the lineage of the Sun, 12 Imams (descendants) around the Shiite tradition of Ali, 12 Namshan advisors around the Dalai Lama, 12 Paladin advisors around Charlemagne, 12 knights around King Arthur and the Round Table, 12 Olympian Gods around Zeus, 12 Disciples around Mithras, 12 Retainers around Osiris, 12 ships around the voyage of Odysseus, 12 Generals around George Washington, 12 tribes around the Nation of Israel (and 12 fruits around the Tree of Life), 12 nerve meridians around Ch'i (energizing force), 12 Gates around the Underworld, and 12 gates around the City of God. The list goes on and on...

In all places, in all times, all civilized peoples have experienced a primal apprehension of the divine in the mathematically ideal order of the cosmos, and they sought to emulate that heavenly order in human society. The numerical Truth we have believed for more than 5000 years is *twelve*. And so we have always reckoned space and time accordingly: 12 hours around the clock, 12 months around a year, 12 heavenly houses around the universe. But why not some other number? Where did this fascination with the number twelve - more ancient than written history - come from? Are there some real truths associated with twelve that are more than merely our *interpretation* of Nature, or might we have revered some *other* number? Does all this fascination with twelve represent more than just random human whim?

The Natural Truth of the 12

God created, or so it was long said, the universe in six days, and rested upon the seventh. As I mentioned in *Order and Chaos*, this became the model for the western week of seven days. Such human-made reckonings are a reflection of an absolute truth: six perfect circles arranged side by side in a larger perfect circle, exactly circumscribes a seventh circle of equal size. This might be described as the Master Template implicit in The Center. There is a three-dimensional corollary to this geometric truth: *twelve perfect spheres of equal size exactly circumscribes and encloses at twelve points of contact an equal central sphere*. The Twelve surround The One.



The ancients also saw a natural "twelveness" in the heavens above. The full moon is a luminous disk shining out into the dangerous night. Little by little it is consumed by the black sky, until it finally disappears into the death of non-existence. There it remains in some otherworld darkness (so they thought) for three days. And then this guiding beacon overcomes death, and gradually re-emerges into illuminating existence once more. In one solar year, this lunar resurrection will occur twelve times - with twelve days left over.

The mathematics of the electro-magnetic spectrum is made visible in the artist's color-wheel, which has twelve colors (three primary, three secondary, and six tertiary hues). Another art form, music, is mathematics made audible because it consists of precise numerical relationships of frequency: doubling the frequency of a tone produces the same tone one *octave* higher (a vibrating

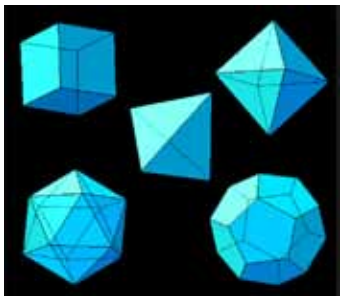
string divided into 1/3-2/3 parts produces the interval called a perfect fifth, and a 1/4-3/4 division produces a perfect fourth, etc.). One octave consists of twelve notes, the *chromatic* scale, which contains the familiar *diatonic* scale of seven tones: *Do–Re–Mi–Fa–So–La–Ti–* (with the final *Do* being the first note of the *next* octave). Against the fixed stars of the heavens, the ancients saw seven points of light that were not fixed, and appeared to move about the sky in whirling patterns when observed over many successive nights. By the Greeks they were called *planetes* ("wanderers"), but the Romans gave them their familiar names: Mercury, Venus, Luna, Mars, Sol, Jupiter, and Saturn. Seven Celestial Deities representing seven celestial spheres revolving through the twelve constellations around the earth, which corresponds to the seven-tone scale melodically dancing through the octave of twelve notes. The supreme Deity in this pantheon of Gods was Jupiter (Latin form of the Greek Zeus). Its orbital duration is twelve years.

Consciousness pulsates contemplatively in its cerebral dreamworld of flashing bits of electrical impulse, but when mind makes a determination that requires action, it activates the appropriate commands in the varying processing regions of the brain. There are twelve *cranial nerves* - radiating around consciousness like a halo - that deliver these instruction to the nervous system of the body.

All these factors, in addition to its obvious arithmetical utility (12 is the first and smallest number with 6 divisors - 1, 2, 3, 4, 6, 12), conferred upon twelve a significance above other numbers; it is the cyclic rhythm of space and time, of heaven and earth, and the living progeny of this heavenly order. It represents a totality: the quest for, and fulfillment of, destiny - the terrestrial human and Celestial Divine.

The Four Elements

The ancients came to see twelve in the actual material of which all the universe - including Man - is made. They recognized that there are only four kinds of natural phenomena: things that are hard, things that are vaporous, things that are fluid, and things that possess force or energy. These "categories of phenomena" they called the *Four Elements*: Earth, Wind, Water, and Fire. And each element will exist, they believed, in one of three qualitative states: Cardinal-Immutable, Fixed-Transitional, and Mutable-Volatile. This produced the *Twelve Forms of the Phenomenal Cosmos*.



The Four Elements were thought to correspond to four of the Platonic *perfect solids*: tetrahedron, cube, octahedron, and icosahedron. The last of the five perfect polygonal solids is the dodecahedron. It represents Quintessence, the miraculous Fifth Element that was imagined to be the origin and destiny of the Four Elements. The dodecahedron has twelve sides.

In fact, the Four Elements were seen to correspond to many things, like a Divine rhythm pulsing through the universe (which they called the *Music of the Spheres*). The Four Directions: North, South, East, and West. The Times of Day: The Dawn which grows through the gentle innocence of Morning, to maturity in the Afternoon sun, only to decline into evening Twilight and the unknown darkness of night. The Four Seasons: The regenerative Spring which grows to maturity in the efflorescence of Summer, only to descend into Autumn infirmity and Winter death. And ancient peoples recognized that such macrocosmic patterns are a reflection of the human condition: The four Periods of Life (Infancy, Youth, Maturity, Old Age) and The four Aspects of Mind (Sensation, Thinking, Feeling, Intuition).

Once this conceptual and numerological correlation between the Elements and Man had been established, it was then easy to identify the qualities that meaningfully described both the world of man within and the world of nature beyond: dry or wet, hot or cold, active or passive, ascending dominant or descending submissive, penetrating outward or receiving inward. Earth (dry-cold) and Water (wet-cold) are the terrestrial Elements. Air (wet-hot)

and Fire (dry-hot) are the celestial elements. It was thought that the relative amount of an element present in something determined its nature, all in accord with its elemental character. And so, just as there are Four Elements of *world* nature, so too are there four elements of *human* nature, the *Four Humors*: melancholic earth (physicality), sanguine air (intelligence), phlegmatic water (emotions), and choleric fire (intuition). And in the same way that the Four Elements interact - as immutable, transitional, or volatile - to create the twelve Forms of Phenomena, the Four Humors interact to create the *twelve Psychological Types*.

Over time, all this analysis evolved into an extraordinarily complex system of interrelated descriptions, an impenetrable maze of temporal correspondences and spatial associations - both real and imagined. We may now recognize this "reading of the elements" as unscientific, but it remains true that the most brilliant minds of those past ages were obsessed with the "elemental" composition of the world, and the cosmic Zodiac that contains it. Great scholars, with incisive minds and encyclopedic memories, devoted their lives to the study of this religion within religions. And this deeply analytical philosophy of nature has descended to us from remote times, where it continues to inform the fundamental assumptions of the modern mind. Perhaps more than any other human endeavor, these misguided early thinkers established the cognitive foundations for the reductive method and thus the entire enterprise of science.

To ancient reasoning, it was different elements in different quantities that produced all the diversity of nature, and all the variety of human character and behavior. And thus the relative motions found in the flux and flow of this diversity determines every subsequent event. The Twelve Houses of the Cosmos (4 Directions X 3 levels) correspond with the Twelve Forms of Phenomena (4 Elements X 3 levels), which correspond to Twelve Types of Man (4 Temperaments X 3 levels). The repetition of this twelve-fold pattern found from one level of the cosmos to the next, the descriptive similarities in the phenomena of the very big *and* in the very small, necessarily means that observations of one stratum tell you something about the other two. Our fates are written in the heavens, in the world around us, and even in ourselves. Or so it was believed.

Astrology

Such beliefs seem curious to most of us now - deluded medieval superstition. It is difficult for us to understand how a view of reality so obviously erroneous could achieve so much devotion. How can the distant sky, plus a collection of manufactured correspondences, determine one's fate way down here?

The reductionist science that created and sustains the modern world isn't very effective at describing holistic relationships, but holistically was precisely how the ancients were obligated to perceive their universe. In a world without conveniently printed calendars, when a particular star rising with the vernal sunrise heralds the planting time of the crops and thus ensures for the community another year of survival, macrocosmic events seem very immediate to the microcosmic concerns of man. When your only clock is the sky, and you live or die by a proper reckoning of the heavens, you feel quite profoundly the penetrating threads that bind you into this vast cosmic tapestry of interdependent energies. When seen in this context, one realizes there is indeed an intimate relation between the order of the universe and the order of Man: *as it is above, so too is it below*. The order of the Heavens is twelve, the order of Nature is twelve, and the order of Man is twelve. The ancient knowledge of the Zodiac recognizes this ontological relationship, and is thus meant to represent a comprehensive description of the cyclical pattern of universal laws.

This insight into nature, gathered over thousands of years of observation, was eventually codified into an empirical science; in Latin it is known as *Astrology* - "Knowledge of the Heavens." The study of *The Twelve* has been a source of both scorn and reverence for a long time. By rational objectivists rooted in the material world who

can only accept what is concrete, it has been entirely dismissed as preposterous and irrelevant: "How can the position of a star 100 trillion miles away possibly affect events on earth? How can everyone born the same day have the same destiny?" By intuitive subjectivists on a quest in the ethereal domain who can *never* accept what is concrete, it has been entirely embraced as Divine Word: "All children possess the traits of their lineage, carry the history of their environment, and are subject to the same patterns of force that affect all things everywhere. We are the progeny of the heavens, and are bound to them, as all children are, to their parents."

Perhaps there is some truth at each end of this single continuum. No rational argument can be made for the veracity of astrology, and yet as a typology of human behavior and potential, it is surprisingly (and amusingly) informative. Beliefs can persist only so long as they provide something of importance and relevance to the believer. Otherwise old systems of thought are dispensed with as easily as the music of the previous generation. And so the study of The Twelve endures: *a clockwork mural of creation and destiny painted in the sky by the gods* - the image does have some appeal.

The Zodiac Mandala

The Zodiac is an illustration of this Twelve-fold Principle of Nature, a pictorial representation of the cosmic process - from initiation to resolution, from the beginning of the cycle, to its inevitable end. By ascribing to each step a distinct, defining quality, the ancients revealed a twelve-stage *Process of Transformation* to which everything in Nature is subject: phenomena begin in one form, over time become other forms, and end as yet other forms - which is, in turn, the beginning of new phenomena. Spirit becomes matter. The One becomes many. Idea becomes realization. And Involution, the materialization of things, becomes Evolution, the spiritualization of things.

The Zodiac describes not only the cosmological conditions that together constitute the Wheel of Time, and the natural conditions that together constitute the world, but also the personalities that together constitute a community. And, most relevantly, the Zodiac was meant to instruct an individual along the journey of spiritual development, by articulating the changes in body and spirit that together constitute a life. In this way, the Zodiac is equivalent to a *Mandala* (Sanskrit for magic wheel): a labyrinthine circle that serves as an aid to meditation. And the object of meditation is *The One in The Center*.

If the entire universe is revolving (as it very much appears to do from our small perspective here on the rotating Earth), and everything is perpetually in motion toward what it is becoming, then nothing can be seen for what it actually is. What meditation seeks is contact with that which is not revolving, not moving, not becoming. And if the universe is revolving, then somewhere there must be a stationary point in the center that is eternally motionless. This is the Lotus, the Axis Mundi, the World-Mountain, the World-Tree, the Immovable Spot - the infinitely quiescent, focal nucleus of existence to which is fixed the entire whirling hurricane of the universe. This is where the answer is found: Clarity where all was blurred, Eternity where all was evanescent, The Absolute where all was relative, One where all was many. Stillness and Silence, Immortal Beauty, *Truth*.

The Great Cycle

There is another important cycle to which the Zodiac refers: the *Great Year* (sometimes called the Platonic Year). For the last two millennia it has been the constellation of Pisces that has witnessed the vernal equinox (the first day of Spring, March 21). Before that, the vernal sun rose in the constellation of Aries. On March 21, 2000, however, it rose in the constellation of Aquarius for the first time in more than 20,000 years. A slight wobble in the Earth's axis causes a phenomenon known as the *Precession of the Equinoxes*. The apparently fixed heavens in fact slowly move in a great circle, shifting 1 degree of arc every 72 years. And because each House of the Zodiac covers 30 degrees

of arc, the vernal sun rises in a new constellation every 2160 years. (This number is, coincidentally, the exact diameter, in miles, of the moon. At the moon's closest approach to the earth, called the perigee, the distance from the surface of the earth to the surface of the moon is 2160 X 100 (216,000) miles. The sun, in its great orbital journey through the galaxy, travels at 2160 X 10 (21,600) mph. And in silent recognition of these interesting astro-arithmetical truths, our 24 hour day contains 2160 X *forty* (86,400) seconds.)

One degree of arc every 72 years - roughly, one *very* long lifetime by ancient reckoning. It seems impossible that the civilizations of early antiquity could have made observations with sufficient precision to detect this surpassingly small variation in stellar orientation. And yet, we know they did, because the geometry of the Great Pyramid (and other ancient structures) possesses many repetitions of these very precise precessional numbers. It was, for some reason, very important to the first architects that the geometry of their sacred structures reflect the geometry of the Transformation of the Cosmos - a 12-stage journey that occurs one 2,160-year step at a time, in a 360-degree cycle of 25,920 years. (This number corresponds to the ancients' calculation of the diameter of the earth in miles. The mile was said to measure 1000 paces of the Roman Legion; it is, in fact, a far older measurement. It was designed to be of a length such that 25,920 of them would circle the earth. A later readjustment of this unit caused its former accuracy to deviate by 4%: the diameter of the earth is 24,902 modern miles.)

These twelve zodiacal epochs are called *The Ages of Man*, and the character-forms of the Zodiac describe them as well. The most recent Age, Pisces (a water sign) is the last sign of the Zodiac. It symbolizes an ending, a dissolution, a time of sleep before reawakening in a new form. Some believe this must mean the impending end of time, and disastrous geological changes and meteorological catastrophes will eradicate the human infestation of the world (or perhaps only the impenitent sinners, depending upon what you read). Others believe only that our current form of civilization will disappear, as a new one emerges. What kind of world might that be? Two thousand years ago, Someone told us - and we have been waiting for an *Arrival* ever since...

The Return

Very near the beginning of the Age of Pisces, a small Child was born in a manger on December 24, three days after the winter solstice, three days after the solar year had disappeared into winter death. The world of antiquity also died on that winter solstice, and after three days in the underworld, it witnessed the Birth of a Savior - whose emblem was the sign of the Fish: Pisces. The Child grew to be a King of kings, and in His court were twelve Apostles. Through His Supreme Love, a way of liberation was shown from the inertial chains of the physical world, a way to the Domain of Infinite Spirit. And He gave His life that we might know His Truth. He was planted in the ground (like a seed) upon a four-pointed cross - Divine Man nailed there upon the symbol for the union of Heaven and Earth. In that moment of moments, where the destiny of the next 2,000 years was decided, time stood still. The universe stood still. All creation was transfixed on the center of Cosmic Destiny: there, on a shaft impaling the earthy flesh of Golgotha, was a man who became God, bleeding on the Axis of the Universe.

He is said to have died at the vernal equinox, on a Friday. His body was taken from the cross, and hidden reverentially in the dark womb of a cave. There, just as Life sleeps in the winter darkness for three months, just as Moonlight sleeps in the new moon darkness for three days, so too did He remain in the underworld shadow for three days. And when the moon was full, He walked upon the Earth once more, soon ascending upward past the Summit of the Cosmos, through the Gates of Eternity to Paradise beyond. With that Vernal Resurrection, so too, was born the New World - the world of God's Promise of Salvation, of God's promise to the many that they shall touch The One, of God's promise to *return*...

That Seed, planted upon Calvary so long ago, is still waiting to bear fruit... It seems that it was not meant to germinate in Piscean ground, and must sleep a while longer. But perhaps our Age of History will be the last primitive epoch in human development. Perhaps our human rapacity will finally sleep, and

that Piscean Seed of Idea, will fructify in the *Aquarian Womb of Realization*.

There is a cleansing and purification that must transpire before such an *awakening* can occur; some process by which the avarice and malevolence of humanity is removed. The symbolic mechanism by which this objective is achieved is well known to all the religions of the world; it is another of the Primary Archetypes of the Sacred: *The Flood*. In more than 500 ancient stories from around the world, that which is old and worn out is washed away and destroyed by a global deluge. And yet, when those consuming waters recede, there is new fertility in the soil, a spectacular new potential for Life. Thus the old world is but the seed of a new. The Flood is the Earth itself returning to the waters of the womb for regeneration and rebirth.

And so we see here a cleansing of the Piscean world, with a few artifacts of that Age still visible beneath the Aquarian overgrowth. Swimming in two's are *forty* fish - one for each night and day it rains. New apostles gather in the Sacred Grove wherein they seek communion with the Keeper of Knowledge. The aurora of a transcendent beacon then shines through from the center of existence, and illuminates the pastoral tranquility of their ocean temple. And from that blinding light comes a shimmering Apparition of iridescent perfection. The curving arcs of great sheltering wings form the *Vesica Piscis*: two circles that, like a conjunction of worlds, only intersect around an irresistible spiritual gravity. And thus, with a gesture, Heaven and Earth are united. Where there was only the burning desert of the world, now there is an infinite Oasis of Spirit. Where there was merely nature, now there is Absolute Quintessence. Divine Idea is Realization, and all the labors of the cosmos are done. *The terrestrial and the Celestial become One Garden in Transcendent Paradise.*

But this is *not* the end. As God sustains the Cosmos, the Cosmos, too, sustains God. As one thing ends, yet another begins. And so, as we are told in the sacred stories, the will of the universe shall be done: even in Paradise, *someone must break the unbroken circle*; someone must *turn away* to embrace a new and unknown future...

* * *

Personal Notes on *The Return*

I chose my favorite number at young age, long before I knew anything about the spiritual import of such things, for a pretty mundane reason: my favorite hockey player (Ivan Cornoyer of the Montreal Canadiens) wore it on the back of his jersey (and so did my favorite football player - the great Terry Bradshaw). The length of time I worked on this painting (from first design-sketches to finished painting): twelve months. In the chronological sequence of Mythic Naturalism paintings, *The Return* is number twelve. The time required to complete the Mythic Naturalism series: twelve years. I know it is an easy matter to find such correspondences, if you really want to find them, but it still *feels* like temporally distinct events are bound by some larger entirely unseen and unknown plan or intention.

I don't remember what I was thinking about when the inspiration for this painting happened, but I remember the inspiration itself quite vividly. My mind was elsewhere and was at first rather reluctant to yield any attention to a curious and amorphous image bubbling up from some unknown depth in my mind. I pushed the image down once or twice, but it was insistent and eventually pushed through whatever had occupied my thoughts previously. And then I saw it: a formless blue universe with a circle of 12 presences illuminated from the center by an otherwordly, iridescent light. I had been contemplating a mermaid painting of some kind, and I knew at once that this blue, Zodiacal circle was the solution I was looking for. It was, however, just a little more complicated than that: I drew well over 100 mermaids before I found astrologically relevant gestures that looked right within the apostolic "broken circle" design...


~ Celestial Apparition ~
(On the Miraculous Insemination of the Unseen Fourth)
Copyright 1998 - Oil on Canvas - 36 x 24 inches

The Trinity

The Trinity. This is another of those universal motifs that are found in sacred stories all over the world. In Hinduism, there is Brahma (Creator), Vishnu (Preserver), and Shiva (Destroyer). In ancient Greece, there was Zeus (Lord of Heaven), Poseidon (Lord of the Sea), and Hades (Lord of the Underworld). In Buddhism there is the Triratna: Buddha (Consciousness), Dharma (Divine Way), and Sangha (Order). Of course the West is most familiar with the Christian Trinity: Father (Power), Son (Intelligence), and the Holy Spirit (Love). There are many such examples; the earliest known representation of a Trinity is in a French cave at Angles-sur-l'Anglin: three Goddesses (the spectrum of feminine wisdom - Maiden, Mother, Crone - each with prominent pubic *triangles*) carved in rock about 15,000 years ago.

Three seems to have a special significance in the spiritual imagination, inspired perhaps by its importance in the exterior cosmos. Three is the totality of time (past, present, and future) and the totality of space (length, width, and height). It is the domains above, the domains below, and the world in between. It is the Macrocosm of the incomprehensibly big, the Microcosm of the impenetrably small, and the Mesocosm of our everyday experience. But this painting is not about the trinity.

In these dream-world *and* real-world examples of the trinity, in these reckonings of the dimensional totality of things, there is an implicit, *unspoken* question: this abundant three-fold cosmos - where did it all come from? *Whence the gods of space-time, great and small*? Interestingly, the motif of the Trinity actually seeks to address this question - and in a very *quiet* way...

Resurrection of the Moon

After noticing the sun up in the sky, humanity's first celestial reckonings were of the moon - that life-sustaining beacon of light in the predator-filled darkness. Archeological evidence indicates that worship of the moon dates back at least 25,000 years. And if we can read anything into the nocturnal activities of coyotes and wolves (and many other animals), our response to Luna (from which we get the word "lunacy") may be far older and even more primal than we imagine.

There are three visible phases of the moon: first quarter, full moon, and last quarter. But of course there is *another* phase of the moon, the new moon - *the unseen fourth*. The moon comes into being, achieves full being, goes out of being, and hides in non-being for three days before it emerges once more into the starry sky. And as the moon regenerates in, and resurrects anew from, an unknown place of eternal mystery, so too does Life: within the *Domain of the Goddess*.

It may be useful to pause for a moment here and reflect upon these ancient reckonings of things, made by ancient people. It is easy for us to suppose that we are very far removed indeed from those wretched creatures. We now live in our comfortable Tower of Babel, well insulated from the rigors of nature. We are warm in the winter, made well when we are sick, entertained in the comfort of our own home, and able to communicate in an instant across spectacular distances. Surely we are far above the primitive savages who howled at the stone-age moon?

Homo-sapiens - *man the wise* - first emerged as a distinct species about 100,000 years ago (or more, according to some sources). If the entire biological history of our species were a journey of one mile, then the 5000-year span of written history would be a distance of only 80 yards. And the span of what has really elevated us above the sufferings of our ancestors - our technological history - is a mere eight feet; eight feet of ease at the end of 5280 feet of misery. In the 5000 generations of Man (20 yrs/generation X 5000 generations = 100,000 yrs), some 4994 of those have been lived bereft of the opiate embrace of technology. I think it is clear that 4994 iterations of natural selection have shaped the architecture of the human psyche to a significantly greater extent than the last six. We are genetically equivalent to the pitiful beasts

who attacked wooly mammoths with stones and sticks - with an equivalent capacity for kindness or brutality, wisdom or ignorance.

Of course we now know that the moon does not venture off to some other universe to be reborn, but our capacity for awe in the face of *The Unknown* remains. What troubled us for those many tens of thousands of years, in some mysterious way, troubles us still...

The Unseen Goddess

In all the examples of the trinity listed above there is an unseen fourth, which represents the *Mysterium Tremendum* - the Infinite Unknown that is the dimensions of existence beyond the knowable universe. In Hinduism, She is Devi - the Source of all the Gods. In Greece, She is Gaia - the Body of the Earth (and in some traditions, the Cosmos itself). In Buddhism, She is Maya - the Veil that is our thoughts and perceptions of the world. In time, She is Eternity - the timelessness from which time grows. In Space, She is hyper-space - a transcendent spatial existence inside of which our universe resides, and into which gravity inexorably beckons all things.

And so I have endeavored in this image of the Unseen Fourth to give a face to The Mystery, and there are several unseen fourths in this image. There is a trinity of lilies, with a single red rose. There is a trinity of small diamonds in Her sapphire necklace, with a larger diamond in the center of Her twelve-sapphire brooch. And of course there is the trinity of doves, fluttering around the angelic apparition in the center: *Mary - Mother of God*.

The Miraculous Conception of the Redeemer

Perhaps the most significant feature of this mythology is Mary's supernatural purity - Her virginity. This motif of the Miraculous Conception is also found in all times and regions of the world. In the Hindu tradition (dating back some 3500 years), Devaki is the Virgin Mother of Krishna - the human incarnation of Vishnu, the Preserver of the Universe. In the Buddhist tradition (dating back some 2500 years), Queen Maya is the Virgin Mother of Gautama Buddha - the living incarnation of all-knowing Buddha Consciousness. In the Arthurian tradition the Sage-prophet Merlin is conceived of a Virgin Mother and a "golden being of light". (Chretien de Troyes' seminal masterwork - *Li Contes del Graal*, c. 12th Century - is a Christian interpretation of far older Celtic stories that may date back 2500 years or more.) There are many such examples of the virgin birth in the sacred books of the world, including a story at least *5000 years old*:

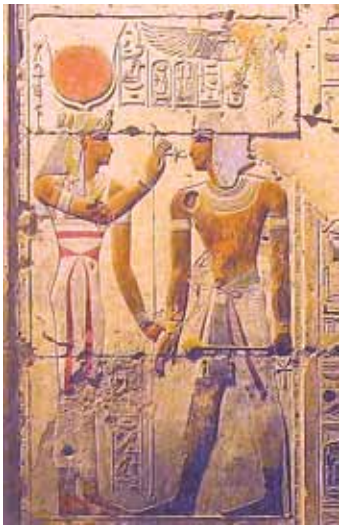
Heaven and Earth adored each other from across the great distance between them, longing for the day when they might be together. Ra - He who had fashioned the cosmos with His own hands - lived in terror of their longing, for prophecy foretold the union of Celestial Spirit and Terrestrial Matter: from their love must come beings even greater than Ra. Despite His efforts to keep them apart, Nut, Goddess of the Heavens, and Geb, God of the Earth, found each other for a single, eternal night. When Ra returned from His nightly sojourn of regeneration in the Underworld, He found them together and an inconsolable rage came upon Him. He cast the lovers apart until the end of time, but His fury was in vain, for the prophecy was true: Nut gave birth to Four new Divinities, and they were indeed far greater than Ra. Brothers Osiris and Set, and Sisters Isis and Nephthys became the new regents of the cosmos; it was they who brought Life to the endless emptiness of Ra's creation.

Nature is a double-edged sword. It is the golden luminance of dawn, seen through incandescent lotus blossoms on the Nile. And simultaneously, it is the ravenous lion raking the living flesh from a screaming antelope. And so, where Osirus sought to bring life into the world, Set wished only to drag it back into the earth. Where Osiris dreamed of what might one day become of the children basking in His gentle light, Set schemed in darkness to keep them savages. Such animosity could not long endure, and at a gathering of the Gods one night, Set murdered His Brother. He

hacked Osiris' body into 72 pieces, and scattered them to the ends of the earth. And then He sat back upon His throne - the new demon-king of the fearful gods.

Set had miscalculated, however, and it would prove to be His undoing: He had not expected the extraordinary devotion of Osiris' Wife. Isis, Goddess of the Elements, was overcome by sorrow. She left behind Her sacred task as Goddess of Life so that She might seek the lost remains of Her beloved Husband. And as She searched those many years, Set's dark putrefaction slowly crept over the earth. After a long series of adventures, Isis finally ventured to the dismal Underworld - the Land of the Dead - passing through the seven Gates of Hell to find the 71st and last extant piece of Osiris. His corpse was now complete but for one irretrievably lost component: His reproductive member.

Even the Goddess of Life requires a seed to make life, and so Isis lay down beside the lifeless Osiris, content to dwell there in the Underworld with the empty husk of Her Beloved. But in that moment a wonderful *metaphysical union* occurred, as the wandering spirit of Osiris found Isis and entered into Her womb. In that transcendent conjunction of The Ethereal and The Material, a new and miraculous force entered into the universe. He was soon brought forth into the living world again as Horus: Father resurrected as the Son, the Eternal Life-Force of Egypt to whom all the Pharaohs were but garments. And by His eventual victory over the chthonic, life-negating will of Set, Osirus-Horus became the Redeemer of World.



We cannot fail to notice in this story an unmistakable similarity to Mary and Her world-redeeming progeny. It is apparent that the soul-nourishing waters of these many different stories have been drawn from the *same* ancient Well of Sacredness...

Spiritual Beings

What is this mythology of the Virgin Birth? For some, this is emphatically *not* mythology but *history*: the Virgin Birth is a journalistic account of events that actually happened in space and time - just like The Book said. If this is true, then the prevalence of this story in many sacred books from all over the world suggests that there is a significant amount of this metaphysical coupling going on, and the Creator of the universe is every bit as libidinous as the ancient Greeks imagined Zeus to be. Could there be *another* explanation for the universal distribution of the Myth of the Miraculous Conception?

To realize the awesome magic and beauty of the universe, and love the infinite mystery and *potential* manifest in all things is to transcend the changeless destiny nature granted us at birth. For most of us, when we walk the timeless dreamscape, drink from the Holy Grail, and touch the noumenal truth that dwells in the heart of the unknown continent of the human psyche, we awaken as though we are leaving a theatre where the make-believe world is left behind. But there are a privileged few who get their treasure past the dragon who guards the gates, and return to the land of consciousness still aware of - *still communicating with* - that primordial Will that *generates* the Eternal Dreamworld.

We come into this world by virtue of a physical act of union, and are born physical beings, slaves to the many contradictory instincts we require for survival. By a *metaphysical* act of union with *the genesis of all thought* we achieve a kind of rebirth, a *spiritual* coming into being. To achieve a *Virgin Birth* is to enter into a world of more than mere nature, a magical domain of new and extraordinary possibilities where our destiny is truly *ours* to determine. And we shall see that *free will* is a magic great beyond all compare...


~ A Beckoning Light ~
Copyright 1998 - Oil on Canvas - 30 x 17 inches

From the shadowland it led,
the Road of Daylight, straight ahead;
but he preferred the wood instead -
a shaken king's respite

There the winding pathway quails
to shrinking dim and dying trails
e'er vanishing through forest veils -
all-blackening of white

Yet the need within him grew
to gain the prize-eternal true,
where others seek the Grail too,
with reckoning of might

Dazed within a sudden squall
above the never-ending fall,
the mute condemned yet tried to crawl
to darkening of night

Gath'ring thunder all around,
constricting world now unbound,
approaching horror sucking down
the weakening of flight

Fall below the crushing beam
fall upon the flushing stream,
fall within the rushing dream
to wakening of sight

"Hush, my child, don't despair;
it's time to leave the timeless lair
so heed the invitation *there*,
a beckoning of light…"


~ The Awakening ~
(On the Prevalence of Spiral Seven)
Copyright 1998 - Oil on Linen - 48 x 30 inches

Introduction

This is the story of a nameless caveman who discovered the Holy Grail of molecular biology 20,000 years ago thus inspiring spiritual traditions on six continents, and of a mysterious relation between that simple stone-age discovery and the eternal, mathematical structure of the universe...

A Few Words on Symbolism

There is, perhaps, nothing that looms so large in the human psyche as symbol. They inform, in a silent and covert way, the structure of every aspect of our lives: the political and economic, the social and cultural, the personal and spiritual. They represent our ambitions and expectations: of our leaders and warriors, of our parents and children, of our lovers and companions, of the world around us, and especially ourselves. But what *is* a symbol? Some say symbols are not symbols at all, but actual things, actual events: that to which symbols refer are *historical and objective*. Some say that symbols are artifacts of the mind, and have no existence in the real world: that to which symbols refer are *poetic and subjective*. And yet, neither of these descriptions really gets to the heart of the matter.

There is no simple definition. We use symbols to express something that defies expression any other way. It's a way of putting into words or pictures, ideas that, by definition, *cannot* be put into words or pictures. When we encounter such inscrutable and indefinable ideas, we say instead, "The (insert mysterious quality here) *is like*...(insert symbol here)." For example: "Liberation *is like* a bird flying in the sky." A symbol is a crude analogy, a bridge, between something understood (like a bird), and something *not* understood (like liberation...whatever *that* might be).

A curious thing about symbols is that they are not arbitrary; they are, it seems, rather an absolute of the human condition. The persistence of the same symbols across time and geography indicates a biological connection: they are an inherited knowledge, an echo or reflection of some numinous structure of the human psyche. And as such, they inevitably determine the way we perceive the world, and thus color all we can know of it.

A symbol is distinct from a sign. Once the meaning of a sign is understood, it is unambiguous: it means what it means and nothing else. And a sign is arbitrary: a stop-sign could have been a purple triangle, and functioned equally as well. A symbol may be mysterious and enigmatic, but it is *never* arbitrary. Christ could not have spent, say, *five* days in the cave before ascending to heaven. Archetypal symbols always have their basis in nature - the same nature of which we and our brains are the product. So it is with the *three* days in darkness before the Resurrection - a universal motif far older than Christianity. The three days in the cave is a symbol that has its basis in the fact that the new moon dwells in darkness for three days before it reappears - before it is *resurrected* - as a solitary beacon to guide us through the unknown and forbidding darkness.

This lunar rebirth is itself a symbol. There is some part of us, some primal domain hidden in the depths of the human psyche, that *understands*... Out there, somewhere unknown, is some *thing* unknown, which activates this invisible appendage of the mind, and causes a profound resonance. Resonance, like the vibration of two strings in perfect harmony, is mysterious; all we can understand for certain is that somehow two *separate* things, mundane by themselves, are magically bound together into a sudden, unexpected, and sublime *unity*. And they are *bound by harmonic resonance*: one string is us; the other is...? Symbol, then, is a medium of expression that connects our manifest aspect to a *secret* aspect we cannot see and only rarely acknowledge.

The most ancient and primitive region of the mind, the proto-conscious *amygdala* (a little bulb at the very bottom of the brain, sometimes called the "reptilian brain"), is a foreign land with a foreign tongue. It does not communicate in the language of the everyday territory of consciousness. We know only that there is something we are *supposed* to know, but we cannot know the thing in itself. At the most profound level of our being we resonate with the Grand Mystery, and we seek to convey that mystery by saying, "the emerging moon *is like*..." Our conscious identities have no resolution for that

expression, but somewhere down deep, in the primal, dark-continent regions of the mindscape, *we know*...

The Symbolism of the Spiral

The visual motif of the spiral is one of the oldest and most enigmatic sacred images known. It is, in fact, among the very earliest examples of human creative expression, first appearing some 20,000 years ago. As millennia passed, this curious image found its way into the spiritual iconography of nearly every society in the ancient world: from Ireland to Japan, from Alaska to Tierra del Fuego. We see the sacred spiral in the totemic carvings of the Haida, the vast ground drawings of the Nazca, the megalithic monuments of western Europe, the classical architecture of the Mediterranean, Arabic calligraphy, Persian carpets, yogic diagrams from India, decorative Chinese porcelain, and Shinto rock gardens. Its ubiquity endures to our modern day, where we see at least some examples of it in literally every category of thing that has been decorated by man.

The spiral has a universal appeal, and this fact is a sure indication of some mysterious resonance with the human psyche. What does the spiral mean to us? Its early association with the Mother Goddess (it is often found with, or on, small, paleolithic-era stone carvings of the Goddess) suggests some kind of connection to the mysterious and miraculous process of life that is embodied in the Feminine - the door through which life enters this world. But why a spiral and not some other image? Anthropologists are still unsure about the origin of its use, but there are speculations:

1) It echoes the shape of animal viscera. Perhaps these early hunters saw the shapes found within living beings, and formalized this "animating force" as a spiral.

2) In an abstract sense, it is indicative of time. For early people, the passage of things was always around and around: day becomes night becomes day; the seasons come and go, but always return once again; lives come into being, and go out of being, but there is always new life coming into being.

A circle, movement revolving back on itself, is a common and useful symbol for time. But a circle, tracing the same arc again and again, is a static thing and doesn't really describe how we perceive time. We remember what happened last year, and the year before that; those past tracings of the arc are not erased by new tracings. The seasons come back upon themselves as they do, but all the ancient seasons are somehow still here...inside the new season. The cyclical rotations of time seem to wind around all the previous cycles, on an infinite journey to...whenever, or wherever, time is going.

So perhaps the first people saw in the dynamic movement of a spiral, the image of time - that direction of events that brings into being all things, beckons out of being all things, and then regenerates new being again. Just like the moon that comes into and goes out of being, but is always reborn again; just like the plant which dies, but in the dying yields a seed to be planted in the womb of the earth for regeneration - a source of nourishment for *our* regeneration. It was this regenerative aspect of the spiral of time that suggested the association with the Feminine.

3) It is an early Mandala, or meditative aid. The spiral certainly has a hypnotic, meditative quality, and has been often used in efforts to alter states of consciousness.

The ancient Eurasian variety of these early spirals had three interesting qualities: they were all associated with the Goddess, they often had *seven* winds or cycles, and they usually possessed a pronounced dot to mark the center.

The winding passage to the center - sometimes called the "labyrinth motif" in journeys through a maze-like underworld - is a prominent theme in sacred stories everywhere. In the *concrete* sense, the labyrinth spiral is like the caves in which early people lived. Those caves, sanctuaries from predators and ice-age weather, must have been revered, holy places. It is quite likely that the only peace and rest those early humans ever knew was found in the mysterious, winding recesses of those precious caves. It was there that food was prepared and eaten, there that clothes were made, there that the forces of nature were honored in ritual, there that new human life was brought into the world. Paleolithic man lived in the womb of the Mother Earth Goddess: caves of

regeneration and transformation.

But there is another, *abstract* sense of the labyrinth spiral that is important. It is evocative of the bewildering choices we must make to find our way in the world "out there", and the equally bewildering choices we must make to find our way "in here" - in the tangled maze of our own inscrutable psyches. And the *Mystic Center* of the maze represents a still and silent place or state of being; it is the motionless heart, the focal nucleus around which spirals the whirling storm of space and time. It is the source from which all things come, and to which they endeavor to return for regeneration. The Mandala Spiral is a symbolic representation of a spiritual journey to a place beyond the visible world...

The Symbolism of the Serpent

There is another ancient symbol as old in the human imagination as the spiral: the serpent. And like the sacred images of the Goddess and the spiral, the serpent has found its way into every spiritual tradition in the world. (There are islands in Oceania that possess no snakes, and thus no serpents in their traditions; curiously, they are often replaced by the best local approximation: eels.)

The symbolism of the serpent operates at several levels, but one of the most obvious characteristics of the snake to ancient peoples was its curious ability to shed its skin. From the dried and cracking gray husk of its former self, the snake emerges moist, colorful, youthful, revived...regenerated. It is known that on certain occasions the emerging snake will actually consume the skin he leaves behind - it is an excellent source of protein. What an extraordinary image that is: the old and withered is transformed into the young and vigorous by the act of *consuming itself*. This image is known as the *Ouroboros* - the self-consuming serpent.

In this way the serpent is exactly akin to Life itself: lives perpetually come into being, they consume and are eventually consumed, and from this process of consumption new lives come again into being. *Nature regenerates itself by a perpetual act of self-consumption*. So the serpent is a symbol of the primal, regenerating energy of nature, a suggestion of the sex and violence nature requires for such regeneration, and a reminder of our own instinctual need to *participate* in this Eternal Ritual.

The old world (still alive in the beliefs of the East) and the new world (characterized by the Christian West) have differing views on the serpent. What one thinks of the serpent (the primal, regenerating energy of nature) depends upon what one thinks of nature. Civilization provides an isolating barrier between us and the harsh realities of the world outside. The old world was far more intimate with nature than we. To know Nature was survival: they knew it, honored it, and feared it. Any other philosophy was inconceivable - and suicidal. The primal, regenerating energy of nature was, to them, Divine Power incarnate in the animals, in the plants, in the soil of the earth, in the swirling wind of the sky, in the swirling water of the rivers. Nature was a sacred, life-bestowing Goddess. It's difficult for modern city people to imagine the awe early people felt for Her and the cyclical periodicity of Her secret Plan for the world: something begins, endures briefly, and ends...only to begin again in new form. This is the *Wheel of Time*. It is the annual flood or monsoon, the rotation of the seasons, alternating night and day, the phases of the moon, the rhythm of a woman and its relation to birth and new life. It is the sun spiraling around the galaxy, the galaxy spiraling around the universe, and the universe spiraling around the Infinite Creatress who watches over it through the aeons.

The dominance of this "Cycles of Nature" religion lasted for thousands of years, until a man from the Mesopotamian city of Ur, Abraham (c. 2000 BC), imagined an alternative view of time, and consequently, of nature and divinity. What if time doesn't go around and around, with things rising and falling, only to rise and fall again? What if the apparent cycles are actually contained within a larger *linear* motion of time? Time is not a wheel, but a direction the wheel is traveling: this is the *Arrow of Time*.

The world-shaking import of this idea can hardly be overstated, for it is now the philosophy of the entire modern world - the forward-looking, ambition-driven civilization that it was instrumental

in creating. Abraham's revolutionary idea is basically this: If the consumptive phase of the cycle is not inevitable, then perhaps we have the capacity - through discipline, effort, and piety - to change our destinies. Perhaps our fate is not in the hands of nature, but is, rather, our own to determine. So if nature is not in control of us, and we are now in control of it, then divinity cannot reside in nature. Divinity must reside *external* to nature, external to space and time, in a transcendent domain. Through aspiration and achievement we might share in the glory of that Transcendent Paradise. And we will achieve our objectives by the conquest and subordination of that which is between us and the Place of God: nature.

And so, in the western tradition, the serpent became the architect of The Fall - primal nature luring us from the transcendent domain into the immanent. But that's another archetype, for another essay...

As I have said before, we should not quickly dismiss these ancient reckonings of things. There is no question that we know more about the mechanics of the world than they did, but even now we seek to find meaning and purpose in things. Meaning and purpose are spiritual questions, and every living faith on earth has its origins in a time well before recorded history. Christianity is an extension of Judaism, Judaism is an extension (in motif if not philosophy) of Mesopotamian spirituality, and the origins of Sumerian and Babylonian belief disappear into the impenetrable mists of distant antiquity.

Right or wrong, by virtue of our indefatigable persistence in spiritual longing, we remain intimately connected to the Paleolithic shamans who invented this uniquely human quest. It is only the material component of the human experience that has changed in the last 20,000 years; the ethereal dimension of life is no different: the ancient reckoning of the *mysterium tremendum*, is *our* reckoning too...

There are many dimensions to serpent symbolism, most of which are not germane to the purpose of this essay (although I will address many of them later). For now, I have just one final observation to offer on the serpent: when snakes rest, they coil up into a spiral.

The Symbolism of the Dove

Along with the Goddess, the spiral, and the serpent, there is one final element found on the earliest examples of human expression: the bird.

Early people must have looked skyward and wondered: "All things here are pain and suffering, all things here are challenge and strife, all things here are change and flow. Yet the stars do not change; if there is a quiet place of sanctuary from the violence of the world, surely it is there. If only I could be there, flying on the wind like a bird, up into the starry womb of night. I know I could find safety and refuge there. I know I could find peace..."

The bird is an obvious symbol for liberation, a breaking of the terrestrial shackles that bind us to the sorrows of life. Wings are the vehicle by which we might transcend this world, and attain new vistas, in new dimensions of existence. In time, the bird most often chosen to represent this longing came to be a white dove. White is the color of all light together, all the colors of the rainbow singing in one sublime symphony of celestial glory. White is undivided and undistorted by the colors of nature. It is purity, serenity, Divinity.

The ubiquity of this image in the modern world clearly demonstrates the enduring power of this symbol in the human imagination.

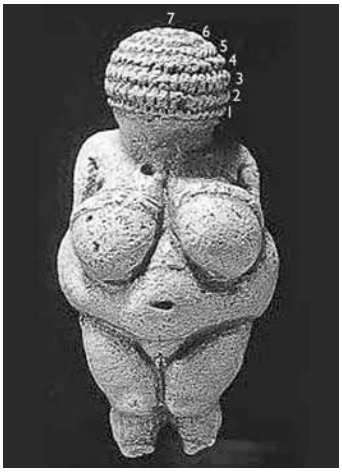
A Brief History of Symbolic Confluence...

22,000 B.C. - In the region that will one day become known as Landes, in France, a Paleolithic hunter carves a beautiful little head of a woman, known as the "Head of Goddess." This is believed to be among the very earliest examples of purely decorative object-making - Goddesses were the first pieces of art.

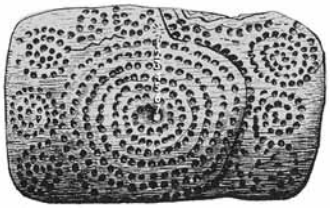
20,000 B.C. - The practice of sculpting stylized women has spread across Western Europe.

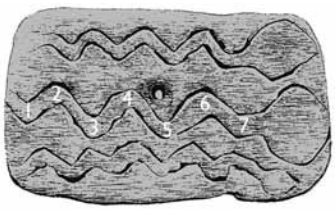
One sculpture (known as the "Goddess of Laussel" - also from France) shows an obviously pregnant woman standing. In her left hand she holds a crescent moon, upon which are incised thirteen notches. (Thirteen is the number of days the moon waxes to full, and the number of days it wanes to new. With the addition of the three days of new moon, one achieves the duration of one lunar month: 29 days.) With her right hand she gestures to her swollen belly, demonstrating a knowledge of the association between the lunar cycle and a woman's reproductive cycle - of the association between the self-recreating moon and the self-recreating womb.

18,000 B.C. - Sculptures of the Goddess start to appear in Eastern Europe. The famous "Venus of Willendorf" is carved in Austria. This profoundly pregnant female figure has upon her head seven curious circles - six concentric rings around a single central nodule. This is, perhaps, the first appearance of what will become a very significant feature in the mythologies of the world; it could be called the *Six around One* motif.



16,000 B.C. - Hunters on the planes of Siberia build a sacred site and decorate it with at least twenty Goddess figurines. With these figurines are small, carved plaques. On one side is a seven-whorled spiral; on the other, three undulating serpents - two of which possess seven curves. In the millennia that follow, the spiral motif moves directly onto the little Goddess figures that feature so prominently in the sacred rituals spreading across the entire Eurasian land mass.





4500 B.C. - The Serpent Goddess of Life, Death, and Regeneration is first represented in Neolithic Crete. In early representations, She actually assumes the form of a snake; in many later representations She is portrayed in a womanly form and the energy of Primal Serpent Power is something that extends from and serves Her will. In a famous Minoan sculpture, She is shown standing straight, arms apart; in each hand She holds an undulating snake (with a bird on Her head). The motif of the Serpent Woman becomes one of the most popular in the mythology of the Mediterranean and the Middle East (and will one day be *entirely* misinterpreted by a deluded genius named Sigmund Freud).

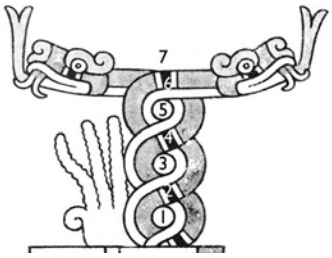
3000 B.C. - With the invention of writing comes the first stories of the Goddess, and the first names: Isis, Ishtar, Asherah, Cybele, Inanna...

2500 B.C. - Small bronze plaques start to appear in Mesopotamia, upon which is seen the Tree of Life - the cosmic pillar of the revolving universe. The Tree has seven branches. On either side are two Deities - one Masculine and one Feminine. And framing the

composition are two serpents, each with seven nodal points, or bends.

2000 B.C. - A ceremonial cup of bronze is made for the King of Lagash, one of the most important cities in ancient Sumer - the birthplace of civilization. For the first time the image of the undulating serpents and the image of the spiral come together in one image: two intertwining serpents wind around the Axis Mundi, and cross at seven nodal points - *Six around One*. This new icon is soon associated with the God who cures all illness. This same image appears simultaneously in India.

1200 B.C. - The Feathered Serpent - Master of Life, Death, and Regeneration - appears in Olmec civilization. This image evolves over the next 2000 years of Central American history to become, in Aztec civilization, two feathered serpents winding around a vertical axis - again with seven nodal points.



1000 B.C. - With the addition of wings at the top of the World Axis, the image of intertwining serpents is adopted by Greece and, subsequently, the entire classical world: Rome, Europe, the Middle East, Egypt, and North Africa. It is known as the *Caduceus*, the Staff of Hermes/Mercury: guide of souls to the underworld, and messenger of the knowledge of Eternal Life.

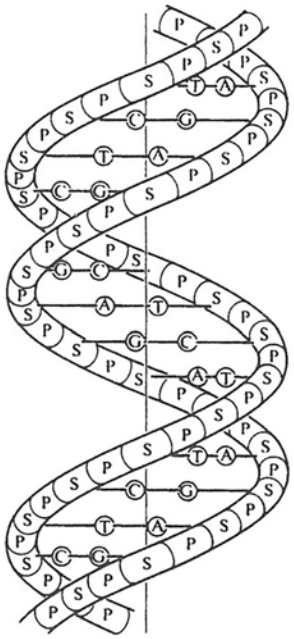
200 B.C. - The Yoga Sutras appear in India, and the teachings therein spread across the sub-continent and into China and Japan. The spiritual philosophy in these sacred books is called *Kundalini Yoga* - coiled serpent power. Kundalini describes, in elaborate detail, a *subtle* substance of body - in addition to the *gross* substance of flesh and bone - that coils around the spine in two separate "filaments". These two filaments - one of feminine energy and one of masculine energy - cross at seven nodal points, or energy bundles, which are known as *chakras*. Three lower chakras represent a "penetrating" energy, three higher chakras represent a "receiving" energy, and these 6 chakras are balanced by a mediating "heart" chakra between them - *Six around One*. The individual chakras are associated with specific elements (arranged on an evolving scale from profane matter to sublime spirit) that are believed to represent their essence: earth, water, fire, air, sound, light and thought. The chakras are also oriented to a heirarchy of essential human ambitions (again, arranged from the primal to the divine): survival, sex, power, love, communication, vision, and understanding. The objective of the yogi is to awaken the "primal serpent energy" dormant in the base of the spine, and bring it up - employing a complex process of meditations - through the seven successive chakras to achieve spiritual enlightenment and knowledge of eternal life.

1650 A.D. In Europe, mathematician John Wallis proposes that one complete rotation of a spiral helix become the symbol for infinity (and eternity). It is quickly adopted by mathematicians, alchemists, tarot readers, Qabbalists, Rosicrucians, Masons, and other esoteric disciplines.

1800 A.D. The medical profession adopts the Caduceus - and the closely related single twining serpent symbol of the *Staff of Aesculapius* - as its offi-

cial emblem. This Paleolithic symbol of health and well-being, of nature and eternity, of life and regeneration, is universally recognized as the definitive choice.

1953 A.D. At a medical lab in the United States, Nobel Laureates James Watson and Francis Crick discover the structure of DNA (deoxyribonucleic acid), the fundamental molecular building blocks of all life on earth: the spiraling double helix is not a *symbol* of Life and Regeneration, it *is* Life and Regeneration. Furthermore, DNA consists of four primary nitrogenous bases (adenine, guanine, thymine, cytosine), a sugar (2-deoxy-D-ribose), and phosphoric acid. That is, DNA is composed of *six molecules*, which are joined by the essential seventh component - a single, axial spine of hydrogen bonds - into a spiraling molecule of stupefyingly vast genetic potential - a potential that is perhaps infinite, like the symbol it so resembles. *Six around One*. And in silhouette profile, the DNA molecule looks very much like an undulating serpent...



The Lunar Connection

There seems to be a tendency in nature to subdivide wholes into four parts. The are four Cardinal Directions, which corresponds, not only to our own anatomy (front and back, left and right), but to the geometric reality of life on a two-dimensional plane such as the kind we experience on the surface of the earth. There are Four Seasons, which corresponds to four - and only four - nodal points generated by the tilt of the earth's axis, and its revolution around the sun: Spring equinox, Summer solstice, Autumn equinox, and Winter solstice. The ancients saw four kinds of phenomena, which they called the Four Elements: earth, water, air, and fire. This corresponds perfectly with the scientific reckoning of the Four States of Matter: solid (frozen matter), liquid (super-heated solid), gas (super-heated liquid), and plasma (super-heated gas). (Actually, plasma is an ionized gas stripped of its electrons; however, this most abundant state of matter - 99% of all matter in the universe is plasma - is almost always *super-hot*.) The ancients also saw four personality types, which they called the Four Temperaments: sanguine, choleric, phlegmatic, and melancholic. This corresponds perfectly with the modern psychological reckoning of the Four Functions of Psyche: sensation, intellect, emotion, and intuition.

Such divisions into four are not artificial; they are real aspects of the world. It is, no doubt, because of this prevalent "fourness" in nature that we have chosen on many occasions to manufacture somewhat arbitrary four part divisions of a whole. Think of four-fold divisions like the four times of day (morning, afternoon, evening, and night) or the four periods of life (childhood, youth, maturity, and old age).

The first cycle understood by man was of course day and night, but at the dawn of the Paleolithic era 22,000 years ago, an awareness of the lunar cycle is demonstrated by the first appearance of lunar tabulation on little sculptures of the Goddess. In some pivotal moment in that distant epoch, a simple hunter had what must have been the world's first genuinely religious experience: "The regenerative cycle of the moon, and the regenerative cycle of the woman are of *equal duration*. The two are connected, somehow the same...as though the moon was a Divine Woman - a Goddess of Regeneration."

Just as a solar cycle consists of four seasons, the lunar cycle consists of Four Phases: coming into being (first quarter), being (full moon), going out of being (last quarter), not being (new moon). And the average length of each phase? *Seven* days.

Mysterious Number 7

Babylonian Ziggurats had seven steps, as did the Temple of Solomon. The angle of the Great Pyramid is that of a seven-sided poly-

gon. Rome was built on seven hills. The Tree of Life has seven branches, *Six around One* trunk that is the axis of the universe. The ancient symbol of the Trinity, Borromean Rings (three rings which mutually interlock precisely through their centers), has seven sections - *Six around One* in the center. There are seven stars in the celestial crown of the Virgin Mary, like the seven rays of Justice that shine from the head of Liberty. In Persia there were seven gates that led to Glory of Mithras. Ishtar in Babylon and Isis in Egypt both passed through seven gates in the underworld to effect the resurrections of their slain husband-deities. In Zoroastrianism, there are the seven Immortals - six divine angels around the Creator, Ahura Mazda, in the center. In Sufism, the mystical aspect of Islam, it is said that Allah looks out into the world through the eyes of the seven Great Saints; and the saints are wise in the ways of *lata'if*, seven concentrations of spiritual power within the body that are explored through meditation. Buddha sought salvation for seven years before circling the Bodhi Tree seven times, thereby achieving enlightenment. The World Mountain has seven sides, each one facing one of the seven continents. In Tibet and Japan, the souls of the dead are said to tarry for 7 x 7 days before departing to distant, unknown realms. The constellation Ursa Major (the Big Dipper), by which early navigators found the North Star - and thus their way home - consists of seven stars.

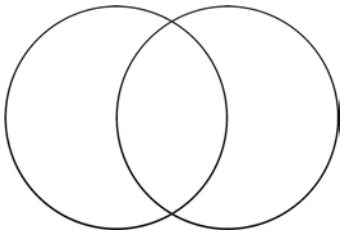
The ancients had a different, less-informed view of the structure of our solar-system. Their geocentric view reckoned seven worlds revolving around the earth: Mercury, Venus, Luna, Sol, Mars, Jupiter, and Saturn. We now know of course that they were entirely mistaken - nine (more or less) planets revolve around the sun - but this celestial appearance of seven was of enormous significance. From this perception of Seven Celestial Spheres came the idea of Seven Heavens (six outer heavens with the creator God in the center), and our reckoning of the week (six days of work around the Sabbath). *Six around One.*

There are Seven Pillars of Wisdom, seven Wonders of the Ancient world, seven circumambulations around the Ka'ba in Mecca, seven Liberal Arts, etc., etc., etc... There are literally hundreds of examples and this is but a tiny sampling of the available list; surely there is no more venerated number than seven. But what is the origin of our persistent fascination with this number? Numerology and Sacred Geometry are somewhat arcane endeavors. Is it all ad hoc and arbitrary, or does a *Sacred Number* really represent some deep and genuine connection between the phenomenal world and a great mystery beyond? Are all our "lucky seven" inclinations merely a recognition of the seven-day phase of the moon? Or is there something else at work here - a *numerological intuition* of some larger truth?

There are six colors in the spectrum, and in union they generate the master seventh color, white. *Six around One*. There are seven distinct tones in the *heptatonia prima*, or diatonic musical scale (*Do–Re–Mi–* etc.), and when the Pythagorean *Spiral of Fifths* is extended for seven octaves, the full chromatic scale of twelve tones is discovered (that is, when the *tonic* note seeks its *dominant* through a cycle of seven octaves of melodic possibility, the twelve Zodiacal houses of the musical universe are revealed - for example: C0 to G0 to D1 to A1 to E2 to B2 to F♯3 to C♯4 to A♭4 to E♭5 to B♭5 to F6 to the tonic again at C7). We have five senses. And while the *taste* of a fine Bordeaux, the *smell* of a forest meadow, or the *touch* of a woman's breast may all be sublime sensations, we do not call such expressions of perfection art. It is only through the senses of sight and sound that we experience art. And all the art we shall ever see or hear is a product of these two seven-fold realities: the spectrum of light and the octave of sound.

It is the mathematical and geometric properties of seven that are perhaps the most interesting. The ancients believed there were only ten numbers (as does our modern decimal system, for that matter); everything else is a mere repetition of the "true" num-

bers, but at a higher plane. And they knew that polygons of number contained within the "dekad" could be constructed with only three simple geometer's tools: stylus, compass, and straightedge. By using the geometry of the *Vesica Piscis* (two equal circles which pass through each others' centers), the triangle (3 angles of 120 degrees), square (4 angles of 90 degrees), pentagon (5 angles of 72 degrees), hexagon (6 angles of 60 degrees), octagon (8 angles of 45 degrees), nonagon (9 angles of 40 degrees), and decagon (10 angles of 36 degrees), could all be drafted with perfect precision without protractor measurement of any kind. The conspicuous exception was the heptagon. The angle that specifies its construction is 51.42857142857... This infinitely repeating decimal means that only an approximation of this polygon is possible; it cannot exist with precision in the real world. It is this mysterious otherworldly quality that led the ancients to associate seven with the Sacred Virgin - pure, untouchable, unattainable, transcendent and beyond - in the transcendent domain of idea.



This Six around One motif is also our own personal experience of the 3-dimensional universe in which we live, a cosmos consisting of seven domains: six directions (up, down, forward, backward, left, right - as defined by three and only three coordinates at right angles to each other) and the center...where one stands and observes the world beyond. And, as has been observed before, this is a reflection of a geometric and eternal Truth: six circles of equal size arranged in a perfect circle exactly circumscribe a seventh circle of equal size in the center. The center circle functions like the master template for the six-fold, external domains beyond. The center is simultaneously the circumference, and the circumference is *made in the image* of the center...

The Seven-Year Cycle

It is said that the cycle of events in a human life runs seven years, in accord with the duration of time nature requires to replace every atomic particle in the human body. (According to this difficult-to-prove theory, by the end of a seven-year cycle, every electron and proton in my body has been replaced by another particle, and nothing of my former self remains; even life-long neurons in the brain are entirely remade from constantly wandering atoms, and so where then is the "me" that lives behind my eyes, if it is not in the material of which I am composed?) Each new seven-year period of life, so the thinking goes, will present different challenges than the preceding one. I'm certain that many lives are not in accord with this mysterious seven-year cycle. But mine is. Exactly.

Age 7 - I am given my first taste of real freedom and adventure: my parents give me a bicycle. Thus begins a 21-year relationship with broken bones and emergency-room nurses...

Age 14 - I enter this year with a boy's body weight of 80 lbs., and leave it - only 12 months later - with a man's body weight of 160 lbs. (and my weight has not changed in the ensuing 30 years - although it has moved south a bit...). Now I can do some *real* damage...

Age 21 - I graduate from Art School, move out of my parents' house, venture out into the world, move in with my first love, and I do not have a clue what to do...

Age 28 - I suffer the last of an unfortunate series of serious injuries, and thus *ends* my relationship with the suture-and-plaster men. Perhaps I am meant to do something more *creative*...

Age 35 - I leave the mountain foothills I love, the landscape where I grew up, to find a new life with Elisabeth (a Veterinarian); she will take me to many flat and distant places, and it will be many years yet before I get back to my mountain home again...

Age 42 - I *finally* quit smoking (mostly), and also complete the *Mythic Naturalism* paintings for this book (mostly). I buy my first *new* automobile (after owning many well-used cars) and, more importantly, my first house (in which I have converted a 2-car garage into the best art studio I've ever had). Such domestic concerns are not dramatic when compared with having a pieces of tibia and spine removed, but the burden of a mortgage has certainly had a significant, if not altogether positive, effect on

the emphasis of my subsequent work.

A Sixth Sense?

Are such seven-fold reckonings real, or are they manufactured by the mind? Many of the interesting properties of seven would have been well known in Greco-Roman times, but the veneration of seven is older by at least 15,000 years. Paleolithic hunters could not have known any of the mathematically mystical qualities of seven - and yet they did. How? And how could they sense that the regeneration of life was in some way connected to the spiral - the same spiral that was revealed only in my parents' lifetime to be the structure of DNA - the *six around one* molecule that *is* the regeneration of life? The caduceus is an unambiguous diagram of the mechanism of life, a symbolic illustration of the eternally self-regenerating double-helix...first made *4000 years ago*! How in the world did those ancient mystics accomplish such a feat? There is some other mechanism at work here - a rare and poorly understood mechanism *of the mind*.

That Neolithic shaman "saw" something: an actual thing apprehensible by the mind, but invisible to himself, and unknown to everyone else. He didn't have words to explain his vision to his contemporaries, or the benefit of scientific literacy to explain his vision in a language that would make sense in our modern technological world; so he used the only tool of communication available to him: he drew a picture and said, "What I see *is like* this image I have carved on this rock."

There are modern equivalents to this kind of magical insight: Newton, Maxwell, Einstein, Heisenberg, and many others in the field of science, all had a sudden apprehension of a profound truth about the cosmos. But their "visions" were easily translated into the universal language of mathematics, and thus easily communicated to the many people conversant in that lexicon. The same cannot be said of all visions apparently, and thus we cannot easily confirm their veracity. But surely it is the same *mechanism of mind* that apprehends these numinous truths? If Einstein could venture out into the dreamscape and retrieve a little morsel of information like "gravity bends space," why couldn't our ancient hunter have done the same? I think he did. And not only did he retrieve that information, he invented a language to communicate it: we call it symbolism.

There are approximately one billion Christians in the world today, most of whom believe - in one form or another - that Christ was resurrected from the dead. This is an audacious claim. No one alive today ever met Christ, and neither did the men who wrote about his life (Paul, Matthew, Mark, Luke, and John). The earliest Christian documents, Paul's letters, were written about twenty years after the death of Jesus (if he truly lived; his existence is not coroborated by any other document), and the Gospels were written at least fifty years after that. These authors perhaps never even *met someone who met* Christ. St. Paul, the first Christian missionary whose efforts literally invented the Church, claims to have met with Peter and other apostles; perhaps he did, but Paul could be a bit of a *crank*: he also believed that women should *shave their heads* (I Corinthians 11:3-10). Christian legend holds that Peter dictated Mark's Gospel in a cave near Antioch...or in Rome, or Mark wrote it in Alexandria after meeeting Peter somewhere else - but that's pretty flimsy scholarship to base one's history on. So here we have this spectacular historical event (it is claimed), and no one who saw it wrote it down, or even talked to someone who wrote it down. If we were talking about anything else, the whole claim would be summarily dismissed without further discussion. And yet, *one billion people believe this happened*. Why?

These special insights into the unseen nature of things are surpassingly rare. Apparently only very few are capable of this "meta-vision" (to *see beyond* the illusion). But when a true vision *is* retrieved and shared in some way, many other people *recognize it as true* - even if they have not had the vision themselves. A visionary returns to the world from "parts elsewhere", shares the vision, and *it is accepted*. Others can also "see" something in the symbolic language by which the vision is shared - we too can apprehend the Truth. So this meta-vision is a faculty possessed by most - if not all - of us, but in a latent, dormant form. What if we could *awaken* this sleeping part of our consciousness, activate this seldom-used *additional* sense of perception? What Truth would we see if we could *focus our*

six senses to the contemplation of the Numinous One in the center?

What is the Nature of Truth?

We hear truth on the evening news each night: a politician retires to a Wall Street law firm and seven-figure salary, a labor union wants higher salaries for the rank-and-file, someone famous dies, two tribes - indistinguishable to everyone else in the world - consume themselves in a ritual bloodbath of mutual suicide, the local sports franchise loses a game because they didn't play together as a team. This form of information that is received passively - by television, newspapers, word-of-mouth, or whatever - is *historic truth*. We should demand much more from Truth than such banality.

But there is another view of Truth: the view of the artist, the writer, the philosopher. Dante's *Divine Comedy* is Truth, Shakespeare's *Hamlet*, Beethoven's *Ninth Symphony*, Michelangelo's *David*, David's *Death of Marat*. Did Elliot's *Wasteland* actually happen? Is Coppola's *Apocalypse Now* a literal document of an actual experience? And if not, *are these men liars*?

But are not observations of the world such as the kind mentioned above *more* True than the evening news? Will they not speak to people across generations and geography? Is it cookie-cutter stories of the corruption of the political class, or the sublime vision of William Blake that makes humanity greater than it was before? It's not that what happened on Wall Street yesterday is meaningless; but what meaning we ascribe today to yesterday's events will differ substantially from what meaning we ascribe ten years hence to yesterday's events. The dynamic universe obliges us to interpret past events *relative* to our immediate circumstances; truth, like everything in the Dominions of Chaos, is a pliable and evanescent quality. The Domain of Virgin Seven is something else entirely - something unachievably *absolute*...

This seemingly nebulous form of information can be more potent, more poignant, and in some ways more important, than mere historic truth because it requires the active participation of the recipient to become manifest. This is *Poetic Truth*. Where rote fact tells us where we have gone, creative inspiration tells us where we must now go. To paraphrase a famous saying: History is easy; Poetry is hard. And poetry is not only hard, it is *beautiful*...

What is the Nature of Beauty?

Flowers bloom in the gentle golden light shining on the morning meadow mist...and soon die. But that *quality* which they briefly possess *endures*. A blossom is a cloak Beauty fleetingly wears. Who is She, and where does She go, when the adornment falls away?

At the level of gross matter, the blossom is nothing more than a stationary carbon organism seeking to entice the complicity of a mobile carbon organism (bees and moths, etc.) - by employing the *compelling* qualities (like color and smell) of complex organic compounds - in its efforts to fornicate with another stationary carbon organism and thereby perpetuate itself. When we see the glory of the meadow in summer, we say that it is beautiful. And we think this beauty is highly evanescent: the winter will come and all beauty in this meadow will die (well, the *floral* charm, anyway). So the winter comes, and the gross matter of every blossom perishes. When we revisit the meadow in the Spring, we say that the beauty has *returned*. We understand that not even a single flower from the previous season survived, and yet it is *exactly* the same quality that the new meadow now possesses. Indeed She has returned, but where has She been during the long months of winter sleep?

There is a well-known riddle: If a tree falls in the forest but no one is there to hear it, does it still make a sound? If this riddle seeks to be some kind of inscrutable Zen Koan, in the style of *What is the sound of one hand clapping?*, it does not succeed because the answer to the question is simply this: the falling tree creates a physical disturbance as it falls, and this disturbance creates ripples of differential air pressure which radiate away from the epicenter at about 700 miles per hour. These ripples are *sound waves*. But sound waves are not sound. Sound is the *perception* of sound waves. Sound is a quality *we* bring to the falling tree. But in the case of sound, any perceiver in the forest will

do: raccoon, bear, or sparrow. The same is not true for beauty. The bee cannot perceive the beauty of the blossom; it sees only a satiation of its biological imperative to feed. Beauty is a quality *we* - highly sentient and conscious beings - bring to the blossom. She requires our participation to exist in the phenomenal universe. There is meaning of cosmic import in this fact: of all the species on earth, only we are capable of recognizing such extraordinary patterns (seemingly separate elements bound by an ordered relation into a mysterious unity) which are woven into the fabric of natural laws, and subsequently into the nature generated by these laws. What possible function can such patterns serve? We must concede that such patterns are entirely superfluous without the possibility of discovery and recognition. Beauty unseen...isn't. The universe may seem capricious, but it is never superfluous - at least not extravagantly so. In nature, things must be useful: form is subordinate to function - only humans find use for otherwise use*less* decoration. So what, then, is the purpose of pattern, of design in nature, if it was not intended to be seen and understood for what it is: *an invitation.*

She does not move; She waits eternally to be *discovered*...

Discovery

1 divided by 7 = 0.**142857**142857142857...
2 divided by 7 = 0.2857**142857**142857...
3 divided by 7 = 0.42857**142857**142857...
4 divided by 7 = 0.57**142857**142857...
5 divided by 7 = 0.7**142857**142857...
6 divided by 7 = 0.857**142857**142857...
7 divided by 7 = 1
8 divided by 7 = 1.**142857**
9 divided by 7 = 1.2857 **142857**142857...
10 divided by 7 = 1.42857 **142857**142857...
11 divided by 7 = 1.57 **142857**142857...
12 divided by 7 = 1.7 **142857**142857...
13 divided by 7 = 1.857 **142857**142857...
14 divided by 7 = 2

And so on, forever. *Any* non-whole divisor of seven will yield the same infinitely repeating set of *six* numbers (142857...) in the decimal expression of the remainder; six numbers forever revolving around the transcendent seventh number they seek to quantify. *Six around One*. Seven is unattainable, immutable, eternal. Its infinitude gives seven an otherworldly purity, hence its universal association with the divine dimensions of being forever beyond the grasp of the manifest world.

This explains the problem geometers had with the heptagon: the sides of the other polygons - 3, 4, 5, 6, 8, 9, and 10-sided structures - will divide evenly into the 360 degrees of the circle; the 7 sides of the heptagon cannot. You might reasonably suppose that the 360 degrees of a circle is an artifact of human design; this is, of course, correct. If those ancient geometers had reckoned a circle to consist of, say, 210 degrees, we would then be able to draft a perfect 7-sided polygon. But *all other polygons not consisting of a number of sides divisible by 7 would then be infinite*: we would only be able to measure 7-sided angles! All our buildings would have 7 sides, instead of 4. There would be no cardinal directions, because we could not measure four-ness. Mariners would never find their way home, and without the requisite trade and exchange of ideas, civilization would never begin. Twelve-based geometry is far more versatile than seven-based geometry, and *that* is why it was chosen. Seven-ness or Twelve-ness. You can know one or the other, but not both. As with the ratio of a circle's circumference to its diameter (the irrational number *pi*: 3.14...), or of a fundamental particle's position and momentum, we are presented here with an irreconcilable paradox: what very much appears to be a unity in nature is in fact a duality, and one half of this apparent unity does not exist in our universe. If twelve-ness is the proper way to reckon the dimensions of the universe - and it is - then *where* is seven-ness?

Such beautiful symmetries of relation are a timeless and eternal truth of nature, an inviolable fact older than the universe, waiting to be discovered. And how is it discovered? By action. We - *that which moves* - must be brought into resonance with Truth - *that which does not move*. Truth cannot venture to us; it is we, rather, who must bring ourselves into alignment with Truth. And we achieve that resonating alignment by action, by seeking the knowledge that changes *us*, so that we might know more of *that*

which does not change...

The Awakening

I cannot claim to have the same penetrating insight as those to whom I have referred in this essay. But I did have a fleeting apprehension of something numinous beyond the veil. This image *is like* what I saw:

The rising sun shines through the Gates of Eternity - a single mighty portal that rests upon six gold-capped columns. The perfect alignment between the sun and the Portal indicates a celestial reckoning - in this case, the Spring Equinox. The land beyond is obscured by a misty wood; it is an impenetrable boundary beyond which lies the unknown Source of Existence. It is through this Gate that Life enters the world, through this Doorway that She will come...

An Apparition emerges from the mist and approaches the Gate. Without hesitation She crosses the threshold between dimensions and enters a world lost in a dark and frozen sleep; instantly, the world is transformed. Her gown of blue and green - like a confluence of Heaven and Earth - is swept around Her by an unseen spiral energy, and She compels the dormant potential of nature to respond in like fashion. Her beauty flows out into the world like a river, gently gathering the sleeping things of the world into Her swirling current. The Boundary seems to fade as the world melts into Her, and this Union of Realms begins. In the wake of Her embrace of the world are 60 lotus blossoms of creation - 60 for the seconds and minutes that are blooming once again after having slept in timelessness for so long. Around Her is a luminous aura, in Her hand She holds a glowing blossom, and Her presence in the world generates waves of nourishing light that wash over the winter desolation to awaken the Spiral of Life. Upon this great helical aurora fly seven doves - one for each molecular component of the genetic alchemy they herald. And with the doves fly 180 butterflies - 360 fluttering wings of transformation spiraling heavenward into the swirling sky: one gossamer wing for each degree of rotation in the great spiraling cycle of Life and Evolution.

And in the foreground, as the celestial coils of the Goddess elevate the world to a new season of the living experience, the icy coils of the terrestrial serpent - the consuming Dragon of Winter - quietly unwind to recede and disappear into the vanishing night...

Maya

We perceive the world through our five senses, and try to find order in - make sense of - those perceptions by the use of the four functions of the psyche. But our thoughts and perceptions of the world - which is, of course, all we can ever know about it - *are not the world*. The exterior world is something fundamentally different - and fundamentally unknown to us. All that we know is contained in the mind, *isolated* from the world beyond it. It has been the objective of wise men and women, for the entire history of our species, to find a way to bring the mind into *direct* contact with the world.

There is a figure in Tibetan Buddhism known as *Tara* - from the Sanskrit root *tri*, which means to cross or traverse, and also to liberate or escape. She is a divine apparition of gentle loveliness who will deliver us from the shackles of our fears and desires, from the illusion that is our thoughts and perceptions of the world, from *Maya*. The word Maya comes from the Sanskrit root *ma*, which means to construct or display. We encounter Maya in three different ways:

1) Maya is the Veil that hides the essential nature of things from conventional perception.

2) Maya is the Transcendent Will that generates the veil of illusion.

3) Maya is the Meditative Way by which this

illusion may be penetrated and Truth revealed.

There is a Buddhist saying: *Of all the forms of Maya, the World-Illusion, woman is supreme*. And yet, through Her beauty we have come to apprehend something other: There is the silent winter that waits for vivification by the efflorescent Spring. There is the dark night that waits for liberation by the illuminating Dawn. There is the lonely soul that waits for redemptive union with another companion wanderer. There is the aged generation that waits for the joyful *re*-generation of new birth and young life. And this motif of consumption and renewal, of death and resurrection, is repeating itself all over the universe: waiting in the gaseous husks of dead stars are the slowly coalescing embryos of new stars and new worlds, promising new life and evolution. In some distant epoch 80 billion years hence, even the vast spiraling universe must wind down and finally stop...with a bang or a whimper. But perhaps the structure of time itself, like all the things of the universe carried in the flow of its irresistible current, is a great spiraling cycle: *with every ending there comes a new beginning, compelled by a Will beyond knowing*.

I know that I am asleep; but perhaps awareness of sleep is also an awareness of *Awakening*...

* * *

Personal notes on *The Awakening*

I saw a small stone bridge crossing over a pool of water in the forest; *The Awakening* came to me - very nearly complete - in a sudden flash of inspiration. My initial inspirations are not always detailed: *The Return* first came to me as nothing more than twelve dim lights surrounding an iridescent thirteenth in the center. But this time it was all there: the Gates of Eternity through which shines the sun, and the Goddess of Spring/Dawn walking across the water as the cold and darkness recede from Her.

Mythologically speaking, Spring and Dawn are equivalent: both are that part of the Wheel of Time which ends the period of sleep and heralds the transformation and renewal of the world. I immediately recognized this component in my vision, but I saw other things too - in unusually specific detail. She wore a swirling gown with a strange sloped neckline, held an auto-luminous blossom to Her breast, and with Her other hand made the "boon-bestowing" gesture (familiar in Buddhist iconography and in my work). And trailing from Her boon-bestowing hand were...*rose petals*?

I have come to trust these visions - even when I don't know what they are meant to represent; I know at least part of their meaning will become clear in the fullness of time. And so I made a few preparatory sketches of my vision, and then moved on to other projects. Months passed, and a beautiful day found Lizzy and I spending the day in Waterton National Park. We were wandering through the forest looking for a nice place to have a picnic, when we came into a clearing that looked ideal. Lizzy moved into the sunlight and, suddenly, hundreds of little purple butterflies rushed up around her from their hiding place in the tall grass.

My mind had been on more recreational matters, but when I saw those fluttering specks of glowing color, my vision came back with renewed vigor: they were not rose petals at all, they were butterflies - archetypal symbols of transformation - swirling around the Goddess in a Great Helix. Even the Gown made sense: the sloping neckline and swirling gown were visual reinforcements of the spiral aspect of the Goddess that generates the Spiral of Life and Regeneration.

It wasn't that I found a better visual solution that I preferred: I had a spontaneous vision, and I saw it *wrong*. Only with a subsequent vision, *of the same thing*, was I able to correct my earlier misinterpretation. But how can something that doesn't yet exist be seen wrong? This seems to suggest a pre-existing and external reality to this image. I had spiral design elements in the composition before I consciously knew that there was to be a helix of butterflies. I also had several *Six around One* elements before I knew any history of its relation to the spiral, or of its intimate connection to DNA. How could I know what I did not yet know? If this were a randomly generated hallucination, an artifact of my imagination and

nothing more, how could it possess a counterpart (of which I was not yet cognizant) in both the tangible world of microbiology and the intangible world of mathematics and geometry?

And then there's that chthonic ouroboros in the ice at the bottom. I drew and painted only an arm of ice receding away from the advancing figure, intending the shape to echo the helix shape I had established with the butterflies. I included a little hole in the ice (I thought) only to break up the monotony of the surface texture. About 14 weeks passed between the time I drew the ice on the blank linen, and the time I painted it. It was only at the end of the day when I painted the ice, when I was leaning back to scrutinize my efforts that I saw it: the serpent, jaws open as if in the act of consumption. You have no reason to believe me - I can offer no evidence - but I know *I did not put that serpent there*.

I believe that a transpersonal part of me (which is a transpersonal part of all of us) knew what to do where I did not: some part of that Paleolithic hunter-shaman still wanders restlessly in the ancient caves of the human unconscious. How such a thing can be, no one knows; by what mechanism such knowledge is transmitted, no one can say...

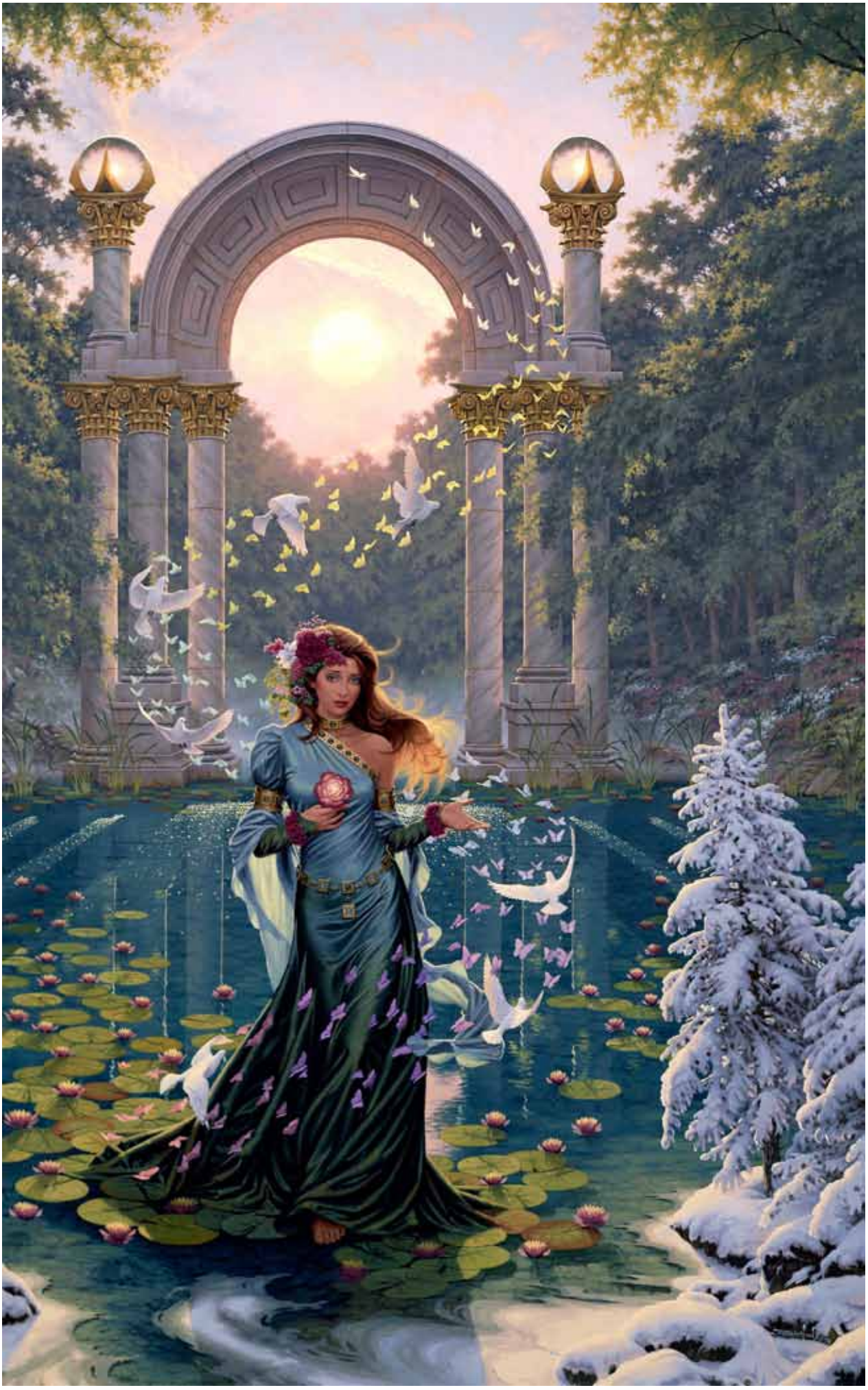
Postscript

It's not really relevant, but I could hardly include this image and not mention the strange real-world events that briefly surrounded it in 2001. The New York Times ran a story about an allegorical novel by the former dictator of Iraq, Saddam Hussein, which was being studied by the CIA for any possible insight into the thinking of the unpopular leader. The story included the cover art of Mr. Hussein's novel - which was, imagine my shock, *The Awakening*. I certainly did not authorize such use of my work; nor did anyone from the Office of the Dictator contact me with any such inquiry. I suppose what happened is that someone at the government publisher found the image on the internet, Saddam (who had a predilection for fantasy art) approved its use, and thus it found its way onto the cover of more than 1 million copies of the best selling book in Iraqi history (although it seems rather likely that his favor-seeking sons purchased most of them).

I was interviewed by dozens of news agencies from all over the world, including the New York Times (which, as Noam Chomsky says, *is* the news). For one day, I was on the cover of every newspaper in Canada; I even made the national evening news on TV. It was fun to be in the media spotlight...for 15 minutes.

Advice from several lawyers confirmed my initial assessment that legal action was impossible. I don't know much about the law, but I certainly had not heard anything about courts of the world being clogged with the cases of millions of people with a complaint against Saddam. And it was fairly obvious that my grievance was rather small compared with the many others that could be made.

Saddam is now gone (President Bush owed me a favor and, well, the rest is history...), his theft of my work all but forgotten. And so what remains for me is an absurd, ridiculous story about a murderous tyrant who liked the work of an unknown painter of peaceful, mysterious women.




~ Forest Light ~
(On the Messengers Nine)
Copyright 1999 - Oil on Canvas - 42 x 28 inches

The Ninth Symphony

There is a memorable scene in the film *Immortal Beloved* in which Beethoven lies immersed in a watery mirror of the heavens as the melody of his *Ode to Joy* resounds in his mind. It is an extraordinarily powerful image of union with the cosmos. Perhaps this is what Beethoven actually meant with this music; we shall never know because the only description of Beethoven's vision is found in the music itself (and who would want to read an *interpretation* of an artist's work?). What we can say for certain is that the Ninth Symphony (just like many other examples of "nine-ness" found in our expressions of the sacred) unfolds as an incredible journey that is finally rewarded by an unspeakable glory. This *Prize at the end of the Quest* has been described in many ways; I see something different in conjunction with this sublime symphony...

Falling from astounding celestial heights, starlight rains upon a lonely terrestrial oasis in the empty wastes of the interstellar desert. And falling too are black and terrible mountains of iron, shredding the stony flesh of the fragile sphere with world-cleaving fury. Burning continents collide and explode, heaving miles into the sky, ever churning, collapsing, and colliding again as they writhe upon a globe-shaking vortex of boiling rock. Vast oceans lurch and spasm, belching out a choking exhaust that rolls inexorably into a globe-enshrouding smog; a blazing turbulence whips it into thundering island reservoirs in the sky. These air-born seas founder on towering shards of stone and break open to release tectonic avalanches of mud and rock and steam, which hack and pulverize every feature between the horizons. Oceans fall, fire blows, continents flow...

That paroxysm of creation was the Wrath of Chaos and the Making of the World. And yet, to the implacable tumult of that global firestorm, something silently *other* has come - a benediction and promise of possibility toward which that empty devastation had looked with great longing and expectation. Her arrival and long sojourn in the molten land is something strange, wonderful, and utterly beyond comprehension - Life on earth is as *foreign* as a flowing crimson gown in the green primordial forest...

Nine and The Trinity

As discussed in *Song of the Hummingbird Muses*, our identical words for the *root* of a tree and the *root* of a number, in fact mean the same thing. A root is that which connects a growing thing to that from which it grows. As a tree grows from the earth, nine grows from three. The square root of 9 is 3 (3 x 3 = 9): the root of nine is the *Trinity*.

The Trinity is an ancient idea found in the spiritual traditions of people from every part of the world; it is a prevalent but still difficult concept. Whence comes the pervasive fascination with the notion that, somehow, God is a tripartite entity? As I mentioned in *Celestial Apparition*, there are three dimensions of space (length, width, and height), and three dimensions of time (past, present, and future). This "threeness" in the form and duration of our cosmic house is, perhaps, part of the meaning, part of what we hope to explain with a godhead of three aspects. The Trinity is the fundamental unit of perpetuating life: Mother, Father, and Child. It may be that this is another component of the influence this archetype has upon us. Perhaps a more arcane illustration of the Trinity is found in the complementary polarities of existence (one-many, up-down, rest-motion, dark-light, pull-push, etc...) that in conjunction become mysterious *unities* within the dance of the living cosmos (not pull and push but *tension*; not dark and light but *gray*, not rest and motion but *rhythm*, etc.). For example: male is one form of phenomena, and female is a second form of phenomena; in union they are together a third form of phenomena - Life - a unity of which male and female are merely component halves. Stated (not very) simply: The universe is the Two that become Three, that is truly only One.

Nine is a very common number in the sacred stories of humanity, and it always appears in the same guise. Fortunately, that guise has very little to do with nebulous contemplations of the Trinity. We shall see that the significance of nine rests in its proximity, not

to the *smaller* root, but to something *greater*...

The Nine and The Quest

In ancient Egypt (land of the Nine Gods), their name for nine was "Mountain of the Sun." The hieroglyphic symbol for nine was also a component of the glyph for both "sunrise" (new sun), and "new moon." In fact, many languages within the Indo-European complex derive their word for "new" (Latin, nova) from the Sanskrit word *nava*, which means nine. In sacred stories from across Eurasia, nine is very often the guide that leads us to the edge of something *new*...

The Aztecs, in accord with all Central American belief, constructed temples of nine stories to match the nine heavens. To ascend the mountain-like nine-level pyramid was to imitate the nine-step crossing of the sun; it was a symbolic rehearsal of the nine-stage journey into the afterlife wherein one finds eternal rest.

In the philosophy of ancient China, there were nine heavens above, and nine springs in the land of the dead. In emulation of this cosmic order, there were nine steps that led to the imperial throne, and nine gates that insulated it from the exterior world. We see another reflection of this "guiding nine" in the Taoist classic, Lao Tzu's *Tao Te Ching*, which has 9 X 9 (81) chapters.

That he might drink from the infinite depths of Mimir's well, Odin (Ruler of the Nine Worlds in Norse mythology), sacrificed an eye to achieve knowledge of all things past, present, and future; ever after one empty socket looked inwards, while the remaining eye looked out. Odin was then left to hang for nine days on the world-tree Yggdrasil, learning the secrets of the runes, until finally beckoned by the Prophetess into the Wisdom of Eternity.

Christ hung upon the Holy Rood for three hours; in his aspect as one third of the Godhead we may say that the Trinity entire hung upon that world-axis for nine hours (3 aspects X 3 hours each). "And at the ninth hour Jesus cried in a loud voice, 'My God, my God, why hast thou forsaken me?'"(Mark 15:34) This then is a final expression of humanity made by a man standing at the horizon: behind him is the temporal world of suffering and strife, forever limited by fear and desire; before him is the Holy Spirit (imagined as feminine in many early Christian traditions) beckoning him into limitless one-ness with the Kingdom of Eternity.

Demeter (Greek Goddess of the bounty of nature, and She who wears the nine stalks of wheat) was the Sister of all-powerful Zeus, and the Mother of Persephone. Demeter adored Her young daughter, but did not know that Zeus had promised Persephone to their brother, Hades - Lord of the Underworld. When Persephone disappeared from Mount Olympus, Demeter searched the earth for nine days, before learning of the abduction of Her daughter. In anger and sorrow She withdrew Her regenerative grace from the world; the crops, forests, and grasslands soon withered. Demeter was inconsolable, and so eventually a deal was made: each year Persephone - the Daughter of Nature - must dwell in darkness with Hades for 3 months. There, while the earth sleeps a barren winter sleep, Persephone will remain until ushered by Demeter Herself back into the world of life, brought forth as the 3 Living Seasons: 3 seasons of 3 months each = nine months.

The Greeks summarized the pursuits of human intellect - our arts and sciences - with the Nine Muses. These nine sisters were the daughters of Zeus and Mnemosyne (memory); they represented the living incarnation of all knowledge. By proper action and contemplation, the adept would communicate with each muse in turn, each time ascending to another level of comprehension and sphere of existence. From the dim and opaque depths of the human realm, successive raptures would summon the spirit to ascend into ever higher planes of being until, from the vantage of Urania's starry vault, one might bask in the transparent incandescence of Unbounded Knowledge.

Dante was nine years old when he first beheld the terrifying spiritual glory of divine grace. Her name was Beatrice, and he writes of her in *La Vita Nuova* (The New Life): "...at the beginning of her ninth year she appeared to me...clothed in a most noble color, a modest and becoming crimson [.] At that instant, I say truly that the spirit of life, which dwells in the most secret chamber of the heart, began to tremble with such violence...and trembling, said these words: 'Behold a God stronger than I, who coming shall rule over me'" Many years later (long after Beatrice Portinare had died at the age of 24), Dante's muse appeared to him again and lead him on an extraordinary spiritual journey through the nine rings of hell, and the nine spheres

of paradise. And from that ninth firmamental sphere, Dante, with lovely Beatrice at his side, witnessed the empyrean beauty and perfection of *The Infinite*.

(There is a heavenly counterpart to this beautiful, archetypal image of decent and ascent. Venus/Ishtar (Goddess of Love), in Her celestial incarnation as the *Evening* Star, follows Apollo's solar chariot (the Sun) into the West, seeing to His nightly rest and regeneration in the underworld darkness before the great morning hunt. And when He is prepared again to smite the vast wandering star herds of the celestial veldt with His blazing spears of light, She rises from the East as the *Morning* Star, to guide Him into luminous consciousness...)

The Odyssey

The Trojan War waged for nine years. After the final victory of the Greeks, Odysseus, a vigorous but unwilling participant in the battle, attempted to find his way home; his journey took nine years. A soldier, like a child, is always subject to the will of another, and to make the essential transition into proper and complete life, the *boy* must break from parental authority and exercise his own will as a *man*. This is the objective of *The Odyssey*. And just as we have seen in the examples above, Odysseus' transformation was mediated by The Feminine. In his travels he encountered three nymphs (and we shall see why a trinity of Goddesses is always a nine), each one representing a different aspect of the Goddess of Many Names:

Circe (an incarnation of Aphrodite) is the seductress and temptress, the irresistible invitation to abandon the innocent games of youth. The erotic dimension is the first motive impulse to the Ritual of Life. She guides Odysseus on a harrowing trek into the underworld and back again, followed by a celestial journey to the God of the Sun. This narrative (one of the most common in mythology), we may say, is like a journey from consciousness into the unconscious, and then returning again - somehow *more awake*; it is a voyage to the primeval depths of the unknown mystery whence all life comes, and an aspiration for the illuminated knowledge that lies only at the summit beyond the far side of darkness. To a soldier of Odysseus' time (and all too often in our time as well, it seems), women were nothing more than the spoils of war. Circe introduces Odysseus to a grander view of the world in which women are equal partners in the eternal dance.

Calypso (an incarnation of Hera) is the wife and mother, the call to productive responsibility. The second motive impulse in the Ritual of Life is the will to achievement. Calypso is that force in the feminine that compels an aspiration to power and authority that is sublimated in the service of life. She is the imperative for which stable and prosperous societies are erected, so that new life is nurtured and protected. Calypso represents the terrifying knowledge that, contrary to boyhood fantasies, there is only power in the service of Life, and power in the service of death. There is no third way.

Nausicaa (an incarnation of Athena) is the enchanting virgin daughter, the beautiful miracle of the Ritual of Life. She is the reminder that the Wheel of Life churns ever onward, and that as new life comes into being, so too must old life diminish and depart. Athena is also the matron saint of heroes; so, paradoxically, Nausicaa is also the Prize for which those little boys fight - whether they know it or not.

In this symbolic reappearance of the three goddesses from *The Iliad*, we may say that *The Odyssey* represents a kind of redemption for man. In *The Iliad*, we encounter - in the soldiers' contemptuous disregard for women - the misogyny of frightened boys. Paris humiliates the life-bestowing mystery that is the Goddess, but we can see him for the boyish puppet he is. Odysseus and *The Odyssey* represents that next bewildering step into true manhood, after all the sticks and stones are thrown. The Goddess' essential action is existence; it is man who must act and be found worthy of that which *transcends* action.

What is common to all these references to "nineness" is a recognition that nine is the last number, the threshold. In the sacred stories briefly described above, we have seen that it is nine that brings us through the limited dimension of existence to a point of new departure into the *un*limited. To step beyond this boundary of the nine single-digit numbers is to ascend into the higher realm of infinite repetitions and reiterations of the principles and relations established in The Nine. The Greeks called nine "The Horizon." Nine is the end of the quest, the expectation of transition and

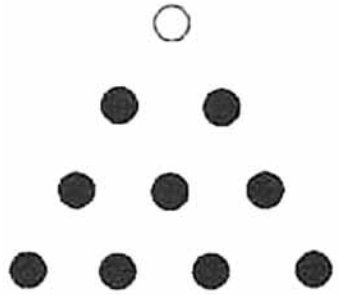
transformation from one phase to another - the expectation of The Prize. The Chinese use the same word for both "nine" and "gift." There are some interesting reasons why our sacred stories identify the beckoning gift-bearer as feminine.

Sacred Tetraktys

Of course, the first step from nine into the boundless ocean of spirally-cycling number is ten. Nine is the last number with its own distinct identity; ten is a composite number, for it is considered (in our system of *decimal* notation - from the Greek *deka*, for ten) one collection of tens, just as twenty is two collections of tens. Ten is a return to unity because it is *one cycle* of number. Virtually every form of numerical notation in the world has distinct symbols for each successive accumulation of ten. In the West these accumulating "hierarchy of tens" are called *orders of magnitude* (10, 100, 1000, etc...). From ancient Sumer (the birthplace of writing some 5000 years ago) to Egypt, Greece and Rome, India, China and Japan, and right into the modern world, we have chosen to count with our fingers. We are able to ascertain very large numbers very quickly because we *count by tens.*

This may seem rather obvious and banal, but there was a time in the development of man when there was only *many*. The realization that we could quantify the world in a precise and therefore meaningful way - that we could *count* things - was almost certainly the inspiration that lead to the invention of writing. (We can easily see that the first surpluses enjoyed by the early city-states made possible a new human endeavor: *commerce*; and trade and exchange requires *accounting*.) That a meaningful and intelligible model of the world could be constructed with something as ethereal as *number* was a source of awe among wise men in those ancient times (and still is among physicists and mathematicians). Many schools opened to pass on the mysterious secrets of *quantity*; the foremost of these ancient schools was that of *Pythagoras*.

The Pythagoreans called ten - the first step into the empyrean cosmos of infinity - the "Perfect Number." From this "holiest of numbers" they constructed a mandala-like glyph known as the *Sacred Tetraktys*, which was the foundation of all Pythagorean philosophy. It is a triangular symbol which consists of ten dots assembled in four rows: a bottom row of four, a row of three, a row of two, and a crowning summit of one.



They related the four rows to the dimensions of geometry: the absence of dimension is a point, one dimension is a line, two dimensions is a plane, and three dimensions is a volume. And in this geometric model they saw a reflection of nature itself, growing in four distinct stages: seed (0-D), stalk (1-D), leaf (2-D), and bloom (3-D). They established the close geometric relation of the Tetraktys to the five regular polyhedra. The four numbers of the Tetraktys - 1, 2, 3, and 4 - are the only numbers required to generate the ratios which determine the musical scale: the fractional lengths 1/2, 1/4, 3/4, and 2/3, sound as the octave, double octave, perfect fourth, and perfect fifth - the essential notes that establish the fundamental frequency relations between all the notes of the diatonic scale.

Pythagoras believed that sound, and specifically the geometrical nature of musical sound, was fundamental in the creation of the universe. In this philosophy there is a resonant frequency that is in harmony with the very structure of space and time, vibrating through creation as the "Music of the Spheres." In India this sound is known as Aum; in China it is called Kung. Pythagoras called this first note of creation "A", and set a value of *432* for it (more than two millennia later, mechanical measurements established the frequency of A4 only slightly higher at 440 vibrations per second). There is, perhaps, even a counterpart to this notion in modern physics: the cosmos still echos gravitationally from the Big *Bang* of creation.

The Pythagoreans even explored philosophical associations between the Tetraktys and the Four Elements. In the Tetraktys, as "the many" ascend toward the infinite One, it becomes ever more rarefied; as the

elements ascend into the luminous heavens they too become ever less dense: solid earth, fluid water, vaporous wind, and ethereal fire. Esoteric traditions, to this day, encourage the contemplation of this divine triangle.

We see in this simple graphic another representation of the Egyptian *Mountain of the Sun*: this upward-pointing triangle is an image of the World-Mountain. We can also see that its summit rests upon the threshold of nine: 4 + 3 + 2 = 9. And in this trinity of numbers (4, 3, and 2) there is an extraordinary *celestial* dimension...

Celestial 432

In the Poetic Edda (the sacred books of Norse mythology - c. 900 A.D.) it is said that 432,000 warriors will engage the Wolf in the battle before Ragnarok - the end of the world. In the Hindu Puranas (c. 400 A.D.), 432,000 years is the duration of the current cosmic epoch, the Kali Yuga; it is the last and shortest of four such epochs which define a specific lifetime (known as the Mahayuga) for the universe: 4,320,000 years. At the end of the Mahayuga, the entire universe will be consumed in a cosmic deluge. The Maya and Olmecs, too, reckoned the heavens by cycles of vast duration, and the end of a cycle heralded the end of all things. These cycles were counted by *Tun*. One Tun equals 360 days. 20 Tun make a Katun, and 20 Katun make a Bactun. And one great round of 6 Bactun consists of 4,320,000 days.

We find other references to this number in the equally eschatological Book of Revelations (c. 100 A.D.). The size of the City of God is described as "12,000 stadia; its length and breadth and height are equal." Now 12,000 x 12,000 x 12,000 = 1,728 billion cubic stadia, which divided by 4 equals 432 billion. Furthermore, we are told that "the number of the name of the beast ...is [666]." 6 x 6 x 6 = 216, which doubled is 432.

The earliest *written* reference to 432 is found in a compilation of ancient Babylonian myth and history assembled by a Chaldean priest named Berossos (c. 280 B.C.). He describes a line of 10 kings who ruled the land of Sumer for 432,000 years before the world was destroyed by a terrible flood. Although the *earliest* reference to the flood of which he speaks is found in a small cuneiform tablet found in the ruins of the Sumerian city of Nippur (c. 2000 B.C.), we cannot fail to notice an unmistakable similarity to the *biblical* story of the flood. In Genesis 5 we read that there were 10 antediluvian Patriarchs, forming an unbroken chain of succession, between Adam and Noah, of 1656 years.

The great Rabbi Akeva, and the other men who compiled the Old Testament (c. 300 B.C.), were of the generations after the Jewish exile to Babylon. They knew those ancient Sumerian stories too, and they employed an interesting mathematic trick to disguise the inspiration they found in them. (Mesopotamia was a powerful and ancient land; it is not as surprising as one might think that even prisoners of Babylon would admire and seek to emulate its greatness.)

There is a substantial difference between the Babylonian reckoning of 432,000 years for the Reign of the 10 kings, and the biblical reckoning of 1656 years. But there is a common factor of 72 in each number. 72 is the number of years it takes for the zodiacal wheel of the "fixed" stars to advance 1 degree of arc in its long rotation. If, as mentioned in *The Return*, the zodiacal year is 25,920 years, then 72 years is a *zodiacal day* (72 x 360 = 25,920). So if we divide 1656 by 72, we arrive at the number of zodiacal days in 1656 years: 23. Then we substitute a zodiacal day for a Jewish year: in 23 years of the Jewish calendar, plus the 5 leap-year days within that span, we find that there are 8400 days, or 1200 weeks. We now re-multiply 1200 weeks by the common factor of 72 to discover the number of 7-day weeks in 1656 years: 86,400 - which is double 43,200.

Perhaps the most enigmatic reference to Celestial 432 is found in the construction of the Great Pyramid of Khufu (in Greek, *Cheops*), one of the earliest and largest stone structures ever built. The most significant geometrical dimensions of a pyramid are its height and its perimeter. We find here, in the relation of the Great Pyramid's height to its perimeter, an extraordinary ratio: 2*pi*. This is precisely the same ratio we find between a circle's radius and its circumference, and also a *sphere's* radius and circumference. So this eternally astonishing monument is the pyramidal analogue to a hemisphere: in both instances we can determine the perimeter by multiplying the height by 2 X the transcendent number *pi* (3.14...). This image of the World-Mountain, with its many air shafts *exactly* targeting the traverse of certain mythologically significant stars, with its 4 corners

exactly oriented to the cardinal directions, and with its location *exactly* on 30 degrees N latitude (*exactly* 1/6 of a complete circle around the earth measured from the north point of axial rotation), very clearly demonstrates that it is not merely a model of any hemisphere, but is, in fact, a model of a *terrestrial* hemisphere. And the scale of this model? The earth is larger than Khufu's Pyramid by a factor of *exactly* 43,200.

Wherefore art thou 432?

At the dawn of human history, civilization was very much closer to nature than we are now. The ever-present threat of consumption by the surrounding chaos of nature was the most prominent danger known to those early, tentative societies. And then someone discovered an underlying order in the heavens: the relative motions of the moon, the sun, the planets, and the fixed stars, are of *regular periodicity*. And this eternal, celestial order can be known by *number*. This realization was one of the most significant in human history, for if there is order in the heavens, man can *emulate this order on earth*. This powerful idea spread like wildfire across Eurasia and meso-America.

In ancient Sumer - the primary mythogenetic zone on earth - this emulation of celestial order found expression in sexigesimal numeration: base 60. A circle, that without beginning or ending, is the archetypal image of the Creator. And just as six circles of equal size issue from and exactly circumscribe a seventh circle of equal size in the center, so too are all *rounds* properly quantified by six. A single beat of a human heart is the fundamental unit of time, so 60 beats shall make a minute (which is 43,200 beats for day, and 43,200 beats for night), and 60 minutes shall make an hour. The solar year is 6 x 60 days long (plus 5 intercalary days of regeneration); thus the circle of the terrestrial horizon shall be 6 x 60 (360) degrees.

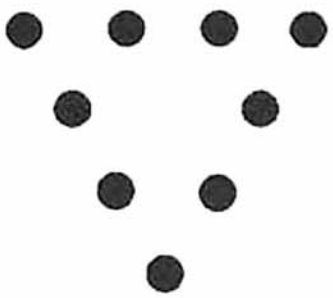
The period of the moon had been known for millennia by the time the first cities appeared. A reckoning of the sun's annual period happened, apparently, only sometime shortly before the emergence of those cities. Knowledge of the planetary periods followed, perhaps, a brief time after that. It is difficult to establish for certain when it became known that the "fixed stars" are not fixed at all. A slight wobble in the earth's axis of rotation causes an effect known as *equinoctial precession*. As has been mentioned, each year the equinoctial background, the stars which appear directly above the rising sun on the first day of spring, shifts slightly; the "fixed" stars precess 1 degree in *72* years, 30 degrees (one Zodiacal twelfth of the sky) in *2160* years, and 360 degrees in *25,920* years. (The discovery of equinoctial precession is generally attributed to Hipparchus of Bithynia (c. 2nd century B.C.), but the presence of very specific precessional numbers in both architecture and manuscripts that are known to antedate him render this claim untenable. It may be that this zealously guarded secret of the cosmos was known by Sumerian and Egyptian priests, but then was lost and forgotten in later epochs.)

72 years (and 7 + 2 = 9), 2160 years (and 2 +1 +6 +0 = 9), and 25,920 years (and 2 + 5 + 9 + 2 + 0 = 18, and 1 +8 = 9). And 25,920 divided by the divine Sumerian number 60 is *432* (and 4 + 3 + 2 = 9).

In each day there is a time of sleep and darkness; so too in each month (the new moon), and each year (the winter). We find in the discovery of a *Celestial Year*, a mythological extension of the same motif: In every cycle there is a consumptive phase where light disappears into darkness for regeneration and rebirth. As night follows day, eventually even the vast cosmos must sleep. And it is the Goddess of Eternity - the round of time that is always a nine - who beckons him forward, guiding him into the underworld, back to the secret garden that is the genesis of all being.

The Inward Journey

We saw, in the Pythagorean Tetraktys, a graphic representation of the Nine that guides one to the frontier of the Infinite. And in that image the first step into union with the cosmos is an *exterior step*, a *centrifugal* inclination where the objective is *out there* and the energies of the quest are directed to *push* into the unknown. But there is another representation of the Tetraktys, one with a *centripetal* inclination, where the objective is *in*



here; thus, the energies of the quest are directed to *pull* into the unknown. In this "Chthonic Tetraktys" we see the familiar rows of 4, 3, and 2, arranged - not below, but - *around* the Ocean of Eternity. And this image is vastly older than the upstart Pythagorean version.

In this orientation we may easily see the full significance of this beautiful form: it is a *yonic* triangle surrounding the mystery of the womb; there could not be a more enduring and compelling image of the horizon, beyond which is the unknown Source of Existence and the Mystery of Creation. Here are the Nine who guide us to the Gates of Eternity; here are the Nine who bear The Gift; here are the Nine who Beckon...

There is a French cave at Angles-sur-l'Anglin wherein we find perhaps the earliest representation of this sacred image. There, carved into the very stone of the cave, are three Goddesses. These very stylized representations of the Feminine (carved about 15,000 years ago) have only the remotest suggestion of heads and limbs; they are swollen hips and very prominent genital triangles - religious amplifications of the regenerative power of nature incarnate in the Feminine. This three-fold incarnation of the Goddess may be the first image of the spiraling Wheel of Time: She is the *past* whence life came, the *present* in which life abounds, and the *future* in which life returns to the Unknown whence it came. This great Round of Eternity is symbolized by three triangles, each of which possesses three sides (3 x 3 = 9).

The magical allure of a woman is well known and easily comprehensible. But the allure of the yonic symbol lies not in its resemblance to a woman's triangle; it is rather that this simple three-sided shape is the terrestrial counterpart of a Celestial Form: *all images of sublime beauty are the hieroglyphs of Transcendent Ideas* - archetypal forms of which woman and man are merely the most extraordinary *projections*. Like a form-embracing gown, such images are but adornment over the unknown body inside. Beauty is the *Raiment of the Goddess*.

All numbers multiplied by nine yield numbers whose constituent digits add up to nine. In this curious arithmetical property of nine we find yet another quiet whisper of The Creator who is *Sui Generis*: the Self-Creating Form-who-is-all-forms of the universe. And of course each one of us dwells nine months in the universe of our mothers before we are summoned to the threshold, brought forth to console an inconsolable pain, and make that first terrifying step into the Adventure of Life...

The One and The Many

The Many around the One, is one of the most common motifs in mythology, with several primary forms and literally thousands of local interpretations. There is the Duality that is, in conjunction, a third and greater thing - the Trinity. There is the Trinity growing from the Unseen Fourth. There are the Four Elements aspiring toward Quintessence. There is the six-fold Order of Life winding around Spiral Seven. There are the Zodiacal Twelve who serve the Mystic Redeemer. And, as we have seen here, there are the Nine Messengers communicating knowledge from the Sacred Tetraktys. The salient common feature of all these different stories is that there is a dynamic exterior in constant motion around a serene interior, an active dimension always struggling and aspiring in the service of a Still and Silent Perfection in the Center. What we have in these many symbols is, in fact, a single archetypal image that is, as we shall see later, surely the most abundant in the universe…

The Mystery of Being

The 20th Century has experienced a kind of creeping desacralization, and adoration of the Sacred is commonly regarded with suspicion and derision (it is *tres chic* to be a cynical atheist). In stark contrast to the *Way of the Goddess* is the pre-eminent philosophy of the modern world: *Positivism* - the belief that *perception is reality* and there is no other. In Paleolithic terms (when such ontological contemplation began) , we might describe this, not as the tender-hearted ethos of the Shaman, but rather as the hard-hearted ethos of the Hunter.

This *very* powerful "can-do" ideology has achieved extraordinary things for humanity. The last

100 years has seen unprecedented (even inexplicable) progress in every field of human endeavor: history, physics, biology, medicine, transportation, energy, exploration, entertainment, communication, mathematics, engineering, etc. We have attained profound insights into the mysteries of nature, and exposed astounding secrets that have troubled mankind for millennia. We are now more secure, more prosperous, more knowledgeable, and more pampered, than at any other epoch in human history. As Paul Simon sang, "These are the times of miracles and wonders." It is precisely so. In fact, the only problem with positivism is that it is *wrong*.

Like a child in the womb, we know vanishingly little of the cosmos in which we float. And all that we do know comes to us *impeded*. If we wish to ascertain the tactile quality of a soft downy kitten, we do not wear oven-mitts to do so. When we wish to ascertain the essential nature of the universe, we are similarly impaired, for between the cosmos and the mind are oven-mitts: our very *specific and limited* organs of sensory apparatus. Our sense organs gather data from the exterior world, and that data is subsequently processed by the mind into an intelligible, and quite often useful *model* of the world. But that model of the world *is not the world*.

Our primary image of the world is naturally a *visual* image, and in this product of our ocular sense we find our most comprehensive reckoning of our environment. The human eye can discern more than a million distinct colors, and with our innate understanding of the principles of perspective, we can determine the size and proximity of terrestrial objects with respectable accuracy. If we look at a vast expanse of blue, we might say, "*Yes, that is what the sky looks like*." But the radiation we perceive as visible color is only a minute corpuscle in the middle of a colossal ocean of light. The entire spectrum of electro-magnetic radiation is an awesome vista of energies, ranging from very long-wavelength (low-energy) radio-waves, to very short-wavelength (high-energy) gamma rays. Our eyes are completely oblivious to all but the tiniest fraction of light in the universe.

If we nick a finger, we often lick the small wound clean; we are all familiar with that viscous, salty taste. *Yes, that is what blood tastes like*. But a shark's entire body is covered with sensory structures exactly analogous to taste receptors. A shark wears his tongue *on the outside*, and can taste blood even if present in concentrations of only one part per million - and thus is able to detect prey from a distance of two miles or more. A shark's model of the world is defined by taste. There is not even the remotest corollary in the human experience that might allow us to comprehend the magnitude or quality of this perception.

If we smell another person, the information we acquire is mostly limited to whether the odor encountered is pleasant or otherwise. *Yes, that is what sweat smells like*. But there are dog breeds whose olfactory acuity is vastly greater than ours. We cannot even guess what untold volumes of biography are revealed by an *armpit times one thousand*. A dog's model of the world is defined by smell.

If we hear a sound, we are usually able to establish its orientation and proximity with at least some crude precision; our stereophonic auditory sense easily detects slight differentials in wave pressure and time of reception. Furthermore, we can discern a truly astounding variety of waveforms - provided that the frequencies lie between 20 and 20,000 vibrations per second - and even extract very specific meaningful sounds from within a deafening cacophony of meaningless noise. And some sounds (like a Rossini overture) can drive a burning sword of rapture into the soul. But a bat *sees* by sound. The silent flight of a moth is tracked by ultrasonic (up to 100,000 Hz, far beyond the threshold of human hearing) echolocation with better-than-visual precision. A bat finds, in the impenetrable tangle of modulating wave differentials, a moving "picture" of his dinner. Modern medicine makes extensive use of sonographs, but these "sound pictures" must be translated into "visual pictures" to have any meaning. A bat makes no such translation; its model of the world is defined by sound.

Scorpions can feel the vibrations caused by the footsteps of a tiny insect three feet away. There are fish that measure their surroundings by fluctuations in a static electric field. Other creatures orient themselves by a reckoning of the earth's magnetic field. There must certainly be many unknown mechanisms of perception, a vast multitude of Ways of Knowing, each understanding some small truth unknown to all others, each creating their own unique but *incomplete* models

of the world.

We are undeniably the pre-eminent life-form on this planet. And for those perceptions beyond the sensory grasp of our inherent mechanisms, we have fabricated wondrous machines to augment and extend our reach. But those information-gathering machines must then communicate with us in a comprehensible manner; they must compress and translate data that we are simply not designed to absorb. Natural selection has chosen for us senses and sensory acuities that are appropriate to survival in the jungle; in relation to all that is, the jungle is a very small place indeed. Our model of the world is an artifact of the mind; *the world itself* is something entirely *other*. The limitations of our perceptions are great, and the universe is far greater still...

Where the Forest was the Thickest...

The political history of humanity - the history of the Hunters - is occasionally interrupted by extraordinary people who seem to have touched *the world itself*. From the mouths of Shaman-Prophets come words of eternal beauty, but in the hands of Hunter-Politicians such words quickly become instruments of temporal power. And for 99% of human history, those who would not submit to that temporal power were (and still are in some places) sent to the stake...

The mortal conflict of political ideologies that so traumatized the 20th Century is a recent phenomenon. Before the first modern republics emerged about two centuries ago, ideological conflicts (as opposed to mere thievery, which was probably more common) between nations were conflicts between *religions*. In the collective temperament of a people, spiritual ideas are not merely notions about the origin and proper reckoning of things; they also provide a profound sense of national legitimacy and identity. And to call the legitimacy of a nation's *Idea* into question is to call that *nation* into question. Powerful men are prepared to defend their legitimacy (i.e., their right to own all the property), and in the European tradition we find one of the most egregious exemplars of this ruthless collectivism.

We do not hear of Buddhist monks who have visions of Christ, or of priests and nuns astounded by apparitions of the Buddha. We generally think of spiritual revelation as coming in the guise of the established local culture. In many individuals, the collective forms of religious practice are sufficient to assuage spiritual curiosities, and may sometimes even provoke genuine spiritual experience. But there shall always be men and women for whom the collective, socially authorized forms are *not* sufficient, who must seek their own way into the Mystery of Being. Like Gawain and the other knights on their quest for the Holy Grail (the sacred vessel which contains the Blood of Eternal Life - an unmistakable reference to the womb), such men and women "...thought it would be a disgrace to ride forth in a group. But each entered the forest at one point or another, there where he saw it to be the thickest and there was no way or path."

In the Christian era of European history, a personal quest for the Divine was a very dangerous and often fatal endeavor. And so it was necessary to *disguise* such individual pursuits within the acceptable garments of the collective will. One of these secret spiritual traditions eventually became the conceptual foundation for one of the most successful of all positivist sciences. They were the disciples of "The Great Work": the *Alchemists*.

Alchemy

The modern view of the Alchemists might be stated thus: "Stupid, greedy lunatics hoping to turn lead into gold." It is certainly true that among the Alchemists were some deluded profit-seekers, but it is also a fact that in those times the true province of corpulent spiritual corruption was found in the *orthodox* religions. In any event, our modern view of the Alchemists is misinformed; their objective was not to achieve gold one could spend (*aurum vulgi*), but to achieve Gold one could *know* (*aurum philosophicum*). Theirs was a quest for *Spiritual Gold*. Alchemy was a meditative discipline: by contemplating the material of creation, and thereby learning the processes by which one form of matter becomes another form of matter, the Alchemists hoped for nothing less than communion with the Form-of-forms that is the origin of all matter. And the word matter (like the comparable words matrix and material) is derived from the Latin word *mater* - Mother.

The Quest for Spiritual Gold - the *Philosopher's*

Stone - was a four-level process; like the four-level Sacred Tetraktys, each successive stage brought the initiate to a higher level of understanding. The Alchemists perceived a universe that is, in all aspects, *dual* (up-down, light-dark, active-passive, limited-unlimited, etc.); thus, the oscillating tendency between all such polarities represents the quintessential Rhythm of Existence - the inhalation and exhalation of the Cosmos itself, the systole and diastole of the One Celestial Heart. And the *fundamental* polarity of the universe is, they believed, Masculine and Feminine; the apparent diversity in the many forms of the world is an illusion and all the manifestations of nature are merely projections of just two cosmic principles - the *Two Gods*. The task of The Great Work, then, is to find unity in this division, to reconcile the irreconcilable in a Celestial Marriage of the White Queen (the female element, mercury) and the Red King (the male element, sulphur).

The guiding ethos of Alchemy was *solve et coagula*: purify and integrate. And this philosophy applied to the Alchemist even more than it applied to the contents of his crucible. By understanding the *material process* by which the Creator fashioned gold from elementary matter (*prima materia*), the Alchemist believed he might discover an analogous *spiritual process*. And so, as lead might evolve into gold within the crucible of the Alchemist's furnace, so too might the adept evolve from a material to a spiritual being within the crucible of his own burning soul. To obtain the Philosopher's Stone was to transcend perception and achieve perfect knowledge (gnosis) of the infinite cosmos itself.

Level 1 - The *Black* Stone, Base Matter. The first step was called putrefaction: the reduction of matter to a shapeless, featureless state. Base matter was usually represented as black, but as a symbol of the manifest aspect of the visible, natural world, this primordial incarnation of substance was often represented by the botanical color of the terrestrial illusion - *green*. Through a series of nine secret processes, base matter was transmuted into...

Level 2 - The *White* Stone, Mercury. The second step was called solution: the corruption of matter was removed by series of elaborate purifications, leaving only an essential and universal substance of shimmering fluidity. From a distant and unknown celestial beacon comes a first purifying revelation of light to the abyssal dark of base matter. Through a series of nine secret processes, mercury was transmuted into...

Level 3 - The *Red* Stone, Sulphur. The third step was called distillation: as the cosmos emerged from primordial Oceanos, as life emerged from the terrestrial ocean, so too does the *earthly* element sulphur issue from the *aqueous* element mercury. (What Alchemists called sulphur - which is, of course, yellow - we now know as mercury sulphide, or red cinnabar.) With the creation of the second component of the elemental duality - the Red Groom for the White Bride - the Alchemist sought to chemically facilitate an elemental courtship through a series of nine secret processes, until Queen and King were united into the Glory of...

Level 4 - The Philosopher's Stone, *Gold*. This final step was called sublimation: the realization of perfect Absolute Substance. To achieve gold was not to transmute lead, but to transmute the *soul*: to complete our incomplete models of the world, to ascend to a luminous celestial plane infinitely beyond *and within* the world one has known.

Raiment of the Goddess

We see in this image an apparition of the Goddess of Eternity in the great Cathedral of Illusion; fluttering around Her are the nine messengers - each one a whimsical reflection-in-miniature of the Goddess Herself. And hidden within this image we shall find an unexpected visual representation of the Alchemist's Quest...

The *green* forest is the nature from which we issue, and of which we are prisoners; as the progeny of material nature, we can never be other than material beings. It is nature that has determined for us the very limited extent of our perceptions, and yet it is also nature that has provided the consciousness that might transcend those limitations. And the first step of transcendence comes like a beckoning light in the darkness...or the cascading *white* of an eternal river bringing life to the thirsty *black* soil of the world.

Disappearing below the outer-sleeves of the Goddess' gown is an undergarment of white worn next to Her body. If black is the abyssal void of nothingness, then white is the first illuminating revelation of possibility. It is the delicate light that first appears in the eastern

sky of retreating night, the dream of a day that has not yet happened. White is the nocturnal luminescence of the sun-reflecting moon, the eternal promise of a great golden light to come. Like a painter's empty canvas, it is the still and silent purity of infinite potential unblemished by unrealized aspirations. The White Goddess is the song of all colors, beckoning the knights of the rainbow into the task of *realization*...

Over this first layer of white the Goddess wears a sensual gown of deep, dark *red*. If white is the invitation into The Task, then red is the explosive aspiration of the struggle for life. It is our raging passions and emotions inflamed, the call to dynamic action, and the horrific suffering that is an inevitable consequence of action. Red is the living blood that flows like fuel into the life-consuming engine of nature: flowing from the womb that brings new life into being, and flowing from the sword that returns it to the germinating soil. The Red Lord is the mightiest of the warriors of the rainbow, the will and the power by which The Task might be *achieved*...

And ornamenting this somber, brooding red is a decorative trim of luminous *gold*. Gold, the most precious of all metals, will not tarnish, stain, or rust; it is immutable and will not alloy with other metals. This quality of eternal perfection bestows upon gold a sense of immortality; in fact, the Egyptians believed the flesh of the gods was made of gold. The shimmering luster of gold has its celestial counterpart in the blazing radiance of the sun that obliterates the limitations of the night. And like the sunlight, gold is the illuminated knowledge revealed by the evaporating shadows of ignorance.

And the key to the whole image is found in the pattern *in* the gold - the *foliaceous* forms of the illusion of nature. Just as carbon - the fundamental element of life - is in one aspect base black charcoal, and in another aspect perfect crystalline diamond, so too are gold and clay *one and the same substance*. All we see are sorrows, shadows, and limits; but just beyond the threshold of our perceptions is the universe itself: Perfect, Luminous, Infinite. The presence of beauty in the universe is a Divine Beacon, a sign of hope that all this pain and blood serves some greater purpose - The Task - that we are far too small to understand. So we need not aspire to perceive the unperceivable, apprehend infinity, nor stare God in the face to ask our infinitesimal questions. We find the Grace of The Goddess when we realize that the beauty of the cosmos is a gift - *a gift of gold*...

* * *

Personal Notes on *Forest Light*

This image had been bouncing around in the back of my head for nine years or so (the artist said with a wink), and elements present here can be seen in many of my other images. *Forest Light* began as an attempt to redeem an earlier, very similar image called *Regeneration*, which I designed in 1990, but had always considered a very poor painting. I wanted to know if I could do a better job years later. And, as is usually the case, I found the real motivation and inspiration only in the process of painting the image; something that bothers an artist for *nine* years inevitably has an unknown psychological dimension.

Gnostic Alchemy emerged in Europe sometime shortly after the Emperor Justinian closed down all the schools of classical learning (pagan worshipers all!), although the tradition may be far older in India and China. And strange as it may sound, the restless shaman of whom I spoke in my essay *The Awakening* is apparently at work here too. I chose the colors and the patterning on the gold because that was the image I had in my head. I discovered the chromatic progression of the Alchemist's spiritual ascension only *after* I had completed the painting. Coincidence? The parallels are not merely close, they are *mirror images* of each other. The Alchemical tradition flourished for more than a thousand years only because it resonated in an unknown, quiet corner of the mind; and this empty cavity - the biological inheritance of every man and woman - perhaps serves no other purpose than waiting to be filled by the universal sound...

Right
Ancestors - © 2004
Oil on Canvasboard - 24 x 16 inches


JONATHON
E '04

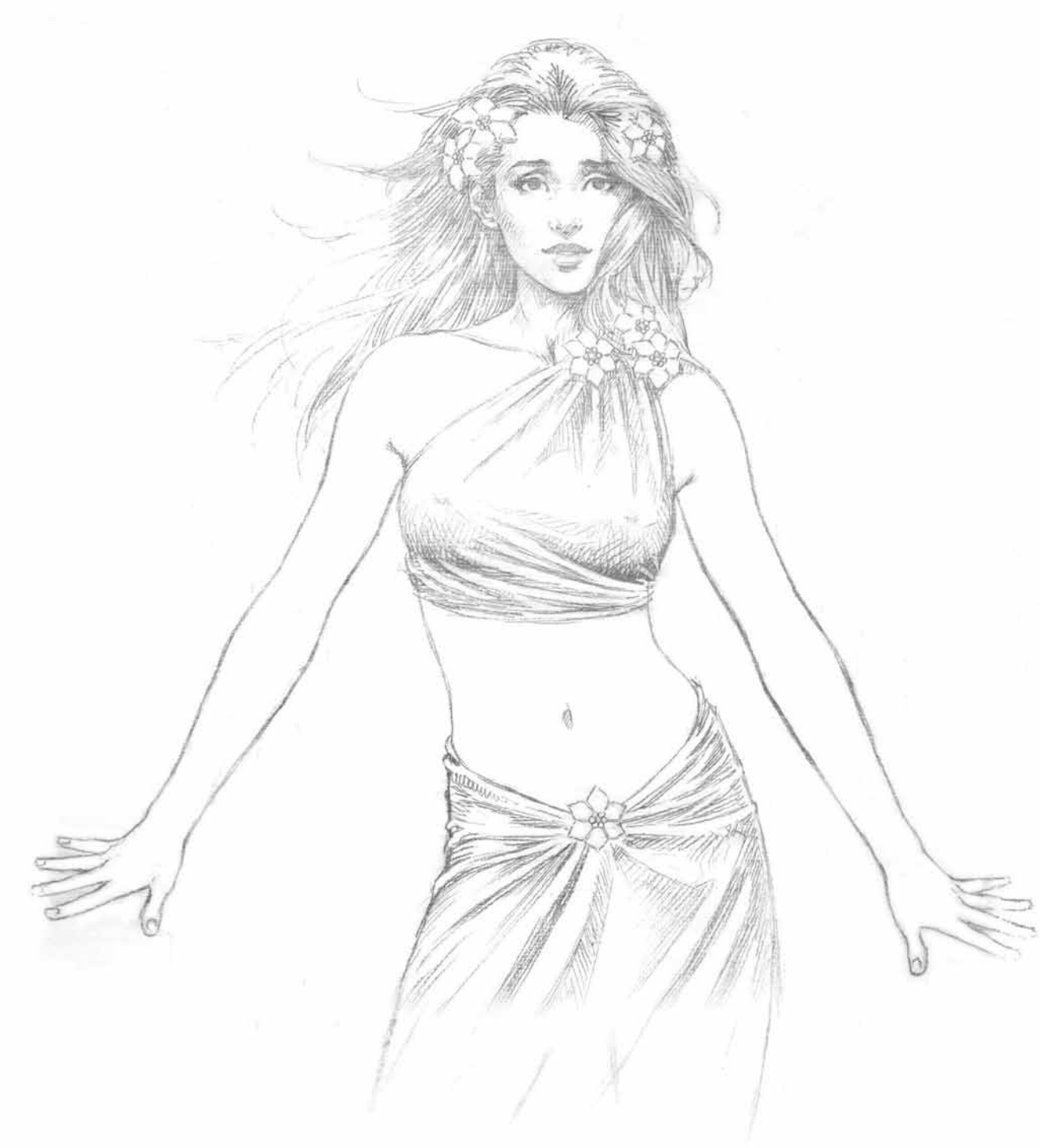

~ Eurynome and Ophion ~
Copyright 1999 - Oil on Canvas - 27 x 42 inches

From nameless void the Maiden came,
Sweet Eurynome (She of *good name*),
to grace the world and wisely tame
the Dragon, wild Ophion

Her soft embrace so pure and still
gave purpose to his primal skill
and gently did She shape the will
and passion of Ophion

Thus did his ambition swell
and all the other dragons fell
for only *one* can serve Her well:
the powerful Ophion

And now he shapes the world vast
but e'er is chaos gath'ring fast
and fragile things may not outlast
the struggles of Ophion...



Right
Desire - © 2004
Oil on Canvasboard - 30 x 20 inches


~ Waiting for Parsival ~
Copyright 2000 - Oil on Canvas - 36 x 24 inches

Parsival the Red, the Brave,
the Strong, the Quick, the *fool* -
Left the Fisher-King to bleed
an ever-growing pool,
Left his lonely wife to wait
until he found the prize,
Never saw a blessed thing
that passed before his eyes.

Legends say he found the Grail
within a distant land,
And thereby earned eternal fame
did Parsival the Grand
Some say thus the Wasteland low
was raised and brought back up;
Some say Red found trinkets and
a stupid bloody cup.

"Over yonder's where it is that
we must make our quest!"
cried Parsival the Eager,
Parsival the Blessed
"Relentless are we happy few
who journey to that land!" -
Left a mighty trail of blood
did Parsival the Damned.

"Here is naught but wasting, so
our destiny is there!"
said Parsival in parting as
he rode off unaware
that *I* remain here watching
o'er the rounding circle near:
The lonely path shall bring you home -
the Prize is waiting *here*...

Right
Forest Mist - © 2004
Oil on Canvasboard - 24 x 16 inches


~ Tears of Waialeale ~
Copyright 2001 - Oil on Canvas - 36 x 24 inches

By Dragon's breath this land was made
by molten burning might
From darkness deep t'was thrust up nigh
to air and sun and light

The Dragon's Realm an adamantine
fortress forged of stone
The Fire-King unchallenged in
his hard and brutal home

Yet searing red abates to black
and Ages long have seen
his land of gray and lifeless ash
succumb to living green

And so, the Mountain God must fall
beneath the weight of years
of soft and gently falling rain:
Waialeale's tears...

Right
RiverGenesis - © 2000
Oil on Canvas - 44 x 25 inches


~ LotusWood ~
(On the Ghost in the Evolutionary Machine)
Copyright 2001 - Oil on Canvas - 40 x 29 inches

The Last Color

Purple doesn't get much respect, considering its august position at the end of the rainbow, fading away in that lonely region of the electro-magnetic spectrum where human visual acuity fails and wavelengths of light become too short and energetic for our eyes to detect. What is the source of this strange prejudice? Why do we systematically exclude this marvelous hue from the pantheon of socially acceptable colors - a status given only to the other five members of the visible-light spectrum: Red, Orange, Yellow, Green, and Blue. We do not paint our houses purple, or our cars. We do not wear purple clothes, or fill our homes with purple consumer electronics. We do not go to work in purple offices, nor take vacations in purple hotels. And we certainly do not like our *prose* purple (good thing there's none of that conspicuously ostentatious writing around here!). Of course there are exceptions and such things are not entirely unheard of, but encounters with purple *are* comparatively rare. When we encounter some man-made thing that is this troubling hue, we reflexively raise our eyebrows with disdain - *hmm, that house is purple* - and look askance at people who confess without embarrassment that it's their favorite color. It's almost as though there were something comic - or *suspect* - about unnatural violet.

Purple (and the family of purplish hues) is one sixth of the colors available to us; from a purely statistical perspective we might expect that 16.6 % of all things to which we apply color would be purple, but we certainly do not use it with a propensity commensurate with its magnitude in the spectrum. Detailed statistics on this matter have probably never been compiled, but it seems fairly obvious that we humans use purple, not only less than 16% of the time, but probably far less than 1% of the time. It is an ostracized color. Perhaps it is too lurid, somehow uncomfortably sensual, reminding us of blood-engorged reproductive regions. Perhaps it is the strange intensity it possesses; it is so evocative, and yet we cannot quite find an emotion to correspond with it. Among the six colors of the spectrum, purple seems to be somehow richer and more vibrant than the others - almost suffocatingly heavy with its saturated, inscrutable energy. It is the darkest, most mysterious color.

It is likely that much of our aversion (perhaps we feel only reticence, and not blatant repulsion, but we avoid it, nevertheless) to purple is unfamiliarity: we simply do not often encounter purple in nature, and have never really learned how to relate to it. The endless green of the jungles where we first evolved as a species was punctuated by blossoms and fruits of white, yellow, orange, and red; and the vast half-dome of the sky generated many easily comprehensible spiritual associations for the color blue. But where was purple, other than in the subtly fading terminus of the rainbow? There are, of course, purple flowers, but they are not naturally abundant in most parts of the world; selective breeding in the last 100 years has multiplied their number many times. And there is, also, vaguely purplish hues found in sunsets (and in the shadows of snow and distant landscapes, that take their color from ambient skylight), but such tones are far-removed from the rich, *full-chroma* purples I am discussing here. The historical rarity of pure purple is a strange but true fact: until the early 20th century, much of the world lived and died without ever seeing purple, except in the rainbow.

The other five colors of the visible-light spectrum can all be made with naturally occurring pigments. These pigments - prepared from a broad variety of plants and minerals - were (and are) used to make things like paint and ink, cosmetics, dyes for cloth and leather, and glazes for pottery and ceramics, but there was no naturally occurring pigment that would make a genuine purple. Countless attempts to find one failed. A crude, dusky, vaguely purplish color could be produced by mixing blue and red, but because those natural pigments were not chromatically pure, the result was a purple of perhaps only 50% intensity, and nothing like the luscious, pure violets seen in flowers (which will not yield their pigment in a stable form) or in modern chemical pigments. There was, actually, one way to produce a fairly intense (but still not completely pure) purple from natural pigments: Tyrian purple, harvested from the shells of purpura mollusks. However, the shells were so rare that the dye extracted was vastly more expensive by weight than gold. Even the extravagantly wealthy could not afford it and its use became the exclusive purview of kings. It is for this reason that in ancient times purple was the color of royalty. And how often have you seen a king in the flesh? In fact, it was not until the late 19th century when synthetic chemical dyes were first made in Britain that purple entered the realm of common experience (William Perkins, an amateur scientist looking for a synthetic alternative to quinine - a malaria treatment - was

fiddling with chemically similar coal gas and inadvertently invented a pure purple dye). Perhaps after 100,000 years of existence without purple, we humans are still a little suspicious of the chromatic newcomer.

Octaves of Light

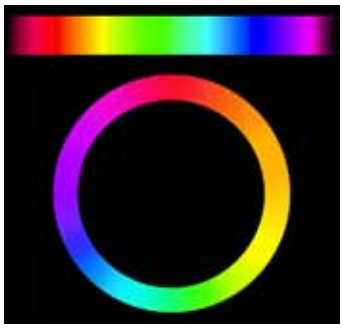
Visible light is only a tiny fraction of the electro-magnetic spectrum. We cannot see low-energy long wavelengths like radio-wave, micro-wave, and infrared radiation. Nor can we see high-energy short wavelengths like ultraviolet, x-ray, or gamma radiation. Light is a vast linear continuum of waveform energies, with frequencies ranging from the very low (tens of meters in the radio spectrum) to the very high (hundred billionths of a meter in the gamma spectrum). The human eye begins to detect electro-magnetic radiation at wavelengths of about 7000 angstroms - the color red - and is able to resolve wavelengths of increasing energy up to about 4000 angstroms - the color purple (an angstrom is one ten billionth of a meter). If our powers of perception were just a little stronger, if our vision could resolve just slightly farther into the ultraviolet at around 3500 angstroms (that is, if we could perceive across a range of frequencies where the longest wavelength was fully *double* that of the shortest wavelength) we would see a very interesting pattern emerge - a strange and wonderful pattern that is second nature to any musician...

Sound is also waveform phenomena, a linear continuum of ever-increasing energies ranging from low frequencies to high. There is, however, a mysterious phenomenon *rolling around inside* that linear continuum, a regular, periodic repetition of sameness called an *octave*. Strictly speaking, an octave is nothing more than a doubling of frequency; if a particular tone of 440 Hz (vibrations per second) is doubled to 880 Hz, they are one octave apart. What is truly strange is that, despite the fact that one tone is much higher in frequency and energy than the other, *they are the same note*. All this is so obvious to musicians that they may wonder what the mystery is here; if you are not familiar with music theory, just hum the first two notes of Dorothy's famous song from *The Wizard of Oz* (*Somewhere*...over the rainbow) - they are the same note, one octave apart. Now this is a very strange thing for a linear continuum to do.

Imagine a wailing siren, beginning at a very low pitch, the lowest you can hear (about 20 Hz), gradually and steadily going up in pitch toward the highest pitch you can hear (about 20,000 Hz) - an ever escalating ascent of increasing energy. The effect would be like the sonic equivalent of the trajectory of a rocket blasting away into the darkness of space above. But with each and every doubling of frequency, that siren is once again wailing the same note - higher, more distant, more energetic to be sure, but somehow still the same. It's as though that linear rocket were loop-the-looping all the way to orbit. Hiding within that linear continuum is another, *cyclical* continuum. This secret periodicity is also present in light.

The human ear can detect tones across a range of about ten octaves. Perhaps seven of these are musically useful, and we can hear all of them thundering like the Hosts of Heaven in a Rossini overture or a Beethoven symphony. If all that musical information spread out across seven octaves (with harmonic undertones extending out to the limit of our hearing) had to be compressed into a single octave, the effect would be rather like the sound that came from Edison's first wax cylinder recording device: squished thin to meaningless incomprehensibly. Fortunately, we do get to enjoy a great range of sounds across many octaves. Sadly, we miss most of the great symphony of light: we are not able to see even one entire octave of the electro-magnetic spectrum; our vision fails as the octave approaches, thus preventing us from actually witnessing the periodic sameness that defines the octave.

We can, however, see the principle at work in a simple pedagogical device used by every young painter: *the color wheel*. When white light is broken up into its constituent parts by a prism, the pattern extends in linear fashion from red through to purple. But it is also possible to artificially map that progression onto a circle: red at the top, blending clockwise into orange and yellow, which blends into green on the bottom blending up into blue and purple. And this is where the color wheel illustrates the point: the purple blends effortlessly back into the top - it is, in fact, a *combination* of blue and red. Purple, at the far end of the rainbow and vanishing into imperceptibility as it approaches the ultraviolet octave ever farther away from



the scarlet beginning, gradually acquires an inexplicable *sameness* to red. It's as though the progression is, at once, moving ever more distant, and, simultaneously, moving ever closer. Purple is the chromatic equivalent of the 7th, that lonely note of longing just before the octave that musically yearns for resolution in the completeness of the 8th note. A doubling of frequency and energy has brought the wandering adventurer (chromatic or sonic) to a distant, higher plane...and yet somehow back home to the source where it began - a mythological return to the womb where it might begin anew, regenerated and reborn, once again young and vigorous, seeking new frontiers and new treasures...

The Truth about Lines and Circles

Linear progression and cyclical periodicity are very different kinds of things, and it is difficult to reconcile these separate and distinct modes of being within a single phenomena - waveform or otherwise. How can something be dynamically linear, beginning one place and ending another, and also statically cyclical, beginning and ending in the same place? How can something always be penetrating into new and unexplored domains, and, simultaneously, watching over the same territory again and again? (This logical contradiction is reminiscent of the eerie problem of wave/particle duality: depending merely upon how we choose to make a measurement, the fundamental constituent parts of existence are either *continuous* waves, or *not-continuous* particles. That is, the universe is infinite, and the universe is not infinite. How can it be both?)

In mythological terms, these two aspects represent, on the one hand, individual aspiration, the importance of the hunt, the trajectory of the spear, and the irreversible cause and effect of life and death; and on the other hand, communal harmony, the importance of the harvest, the repetition of the seasons, and the eternal regeneration of new life from the dying seeds of the old.

What brought the *Never-Returning* and the *Always-Returning* together and bound them in a bizarre marriage of opposites? Strangely, this mysterious union of two contrary and even antagonistic modalities - manifest in everything we see and hear around us - has a shape: one of the most wonderful (and abundant) forms in the universe.

If we trace a circle, winding around and back upon itself again and again, and then move that cyclical tracing in a linear direction perpendicular to the rotational movement, we encounter the geometric manifestation of this enigmatic consonance. When linear action (the ethos of aggression directed outwards) is brought together with circular repose (the ethos of nurturing directed inwards), the resulting form is a *spiral*.

Spirals of Life

This geometric form (as previously mentioned) is everywhere, from flowers to galaxies, but its most immediate relation to humans is its presence in the structure of DNA, the molecular building blocks of living things. The fundamental unit of organic matter (that possesses all the instructions required to assemble an organism from nothing more than molecules) is shaped like a double-helix: the spiral is the geometry of life itself. DNA is rather like a ladder that has been twisted; it has two outward vertical supports of alternating phosphate and sugar molecules, bound by horizontal rungs called base-pairs. It is down the center of those rungs, along an axial spine of hydrogen bonds, that DNA divides during replication. There are only two kinds of base-pairs - an adenine-thiamine rung and a guanine-cytosine rung - and so when the DNA divides, the severed base-pair rungs can only reconnect with the correct base partner - a very precise molecular lock-and-key mechanism. The complex order in which these simple base-pairs are stacked up on top of one another is how genetic information is stored in the long DNA molecule. (The tightly-coiled DNA from just one cell would unroll from an invisible speck smaller than the head of a pin to a length of six feet; the human body has some sixty trillion cells, and so if all the DNA from just one person was laid end-to-end, it would wrap around the world two million times). DNA endeavors to ensure that the replica will be a faithful copy of the original, and there is an army of little enzyme proofreaders that check and verify the work of duplication.

It is by the mechanism of DNA, working its mysterious morphological alchemy, that life gradually rebuilds and reshapes one form into other, different forms. This gradual genetic restructuring process is called *evolution through random mutation and natural selection*. In a nutshell, life began, so the theory says, something like this:

About four billion years ago a randomly-formed

complex compound of hydrocarbons cooked up in the bubbling soup of the early earth ocean, found itself, quite accidentally, with a chemical structure that enabled it to initiate a bafflingly simple chemical reaction: it chemically attracted atoms and molecules identical to its own constituent parts from the surrounding chemical soup and, somehow, *chemically assembled a copy of itself*. And the copies, which had this same unusual property, made copies of themselves - and so on. Destructive bombardment - by high-energy ultra-violet radiation and perhaps also from the cosmic rays of distant super-novas - caused random errors in the replication process. 99% of the errors were catastrophic, and so the deviant molecules were no longer able to make viable copies. But those remaining mutations (1% or less) were actually more robust and even better equipped to make copies of themselves. And so the process went, and after only twenty iterations of this wonderful chemical reaction, there were billions of tiny replicating molecules, and then trillions and trillions. It is, perhaps, not too surprising that with so many little chemical factories churning out new little factories, that once in a great while some extraordinary accident would happen, and a new development would have a significant advantage over previous and subsequently obsolete models - and thus begin making superior little factories. This happens in our human-made factories all the time - and we are far less prolific than nature. Scientifically speaking, there is no intention, no pre-set inclination toward a particular result in this process; mistakes happen and they are almost always detrimental. On rare occasions these mistakes are beneficial and the lucky organism is better able to exploit opportunities in the environment, and more likely to pass the beneficial adaptations to their copies/offspring. The whole process is accidental: sometime you get organic muck and sometimes you get civilized intelligence and space exploration.

Evolution is the best explanation we have for how life on this planet came to exist in its current form, but the theory does leave a few nagging questions unanswered...

Some people wonder how the process got started in the first place; this is the *Argument against the First Replicator*. Evolution is simple...once you have a replicating molecule; just sit back and wait for mistakes to start happening. But how do you get that first self-replicating bundle of atoms? The structure of even the very simplest replicator molecule, possibly some comparatively simple variation of RNA (ribonucleic acid), would still have to have been *so* complex (at least 20,000 specific atoms randomly falling into a perfect 3-dimensional matrix with not one atom out of place) that one couldn't reasonably expect it to have formed by random collision and cohesion (a one in $10^{40,000}$ chance, according to calculations done by astronomer Fred Hoyle). With only 10^{80} fundamental particles in the observable universe, and only $4x10^{18}$ seconds since its creation roughly 14 billion years ago, well, there simply hasn't been enough roles-of-the-dice for such a *fantastically* improbable event to have occurred based purely on chance: if every particle in the cosmos had a collision event once per second for 14 billion years, you'd only have had about 10^{100} events. Of course, blind chance was not the only force at work upon those bustling atoms in the early terrestrial soup; nature and chemistry favor a certain few kinds of possible chemical bonds over a vast number of other statistically possible combinations that are chemically impossible. But this line of thought is almost more unsettling. The laws of the universe are such that the formation of complex self-replicating molecules, contrary to one in $10^{40,000}$ odds, was *inevitable*? What are the odds of getting a law that fortuitously *specific*? It's not scientifically satisfying to require that the emergence of a perpetual chemical chain reaction (now four billion years and a hundred billion iterations old) somehow be *written into the code of the cosmos from the beginning*.

(Some people, including DNA co-discoverer Francis Crick, think that maybe the first replicator came to earth on the back of an asteroid from somewhere else in the universe where life had already evolved - an idea called *panspermia*. But how did *that* proto-replicator arise?)

Some people wonder, in general, how carbon, hydrogen, oxygen, nitrogen, and the other elemental components of the organic molecules of which we are made, know how to do the truly astounding things they do (the *Argument against Teleological Nature*). Of course, organic compounds don't know anything at all; like a dropped stone that does not "know" how to fall but achieves that end nevertheless, these amazing chemicals simply react according to physical properties inherent in their nature. But that doesn't really answer the question. We can change carbon into other substances, but we cannot break into the "cosmic code" and give carbon properties other than those it has; chemical properties are immutable and therefore infinitely strong, but, it seems, made of a substance so fine

and delicate that it can never be detected. And so if these "properties inherent in their nature" are not attached to the matter-stuff of the world, where are they and what are they made of? How do they get from wherever they are to wherever we are? And if they're not anywhere, or made of anything at all, in what way do they exist? Sometimes it seems rather like these beautifully perfect, mysteriously intangible properties were *designed*. Perhaps there is an as yet unknown physical principle at work within the matter-stuff of the cosmos, a secret inclination of carbon that facilitates the creation of replicator molecules - and thus life - by entirely natural processes. But again, where did these "natural processes" - this inviolable codex of procedures unerringly obeyed by all the matter and energy in the universe - come from? They must be antecedent to the creation of the universe, itself a natural process, and so where did they reside before that?

Some people wonder, in particular, about the Second Law of Thermodynamics, the principle of nature that demands that, because some energy is always lost as heat in any work or process, all systems must degenerate from an initial state of maximum order to a final state of maximum disorder where no further functional or observable change can happen (the *Argument against Increasing Order*). Contrary to the ever growing amount of entropy (disorder) in the universe, evolutionary processes are making structures of ever-growing complexity and sophistication. That's OK, says thermodynamic principle, because the system (the earth) is able to export its waste energy out of the system (into the larger environment or out to space). But if entropy is, to a significant extent, a statistical law - there are a near infinite number of disordered states and comparatively few ordered ones, and so chaotic states are simply far more likely to occur - why don't we see periodic retrogressions in the evolutionary pattern? Why aren't some things *devolving* into comparatively primitive forms? Modern morphology is clearly distinct from archaic - new fish look dramatically different from old fish - and we simply do not see reptiles, birds, or mammals developing retrogressively toward earlier versions of the taxonomic model. Four billion years is a long time to keep rolling sevens.

Some people wonder how one form (a small rodent-like creature, for instance) becomes another dramatically different form (a bat, for instance), without becoming coyote food in all the tens of thousands of years it takes to evolve through the in-between stages; this is the *Argument against Intermediate Forms*. An eye with only 25% of the visual acuity an eye one million years hence will possess, is still quite a bit better than no visual acuity at all. The same adaptive advantage provided by an eye in the process of evolving into a better eye, however, is not obviously conferred to a paw in the process of evolving into a wing. A small rodent is an obviously well-adapted creature, as is a bat. But after a process of many thousands of generations, in that final evolutionary step before the erstwhile rodent fully mutates into a proto-bat that can fly (even poorly), it is only a clumsy mouse with six-inch webbed-fingers. How could such a ridiculous beast survive among hungry predators?

The wing, it is argued, *must* have provided some adaptive benefit, or the parents would not have survived to pass on their paw-becoming-wing genes. If a full wing allows you to fly from place to place, a half-wing must provide some *partial* gliding ability (it is supposed), permitting one to survive a fall from a height of x, and a proto-wing of only half that size perhaps allows one to fall from a height of $\frac{1}{2}x$ and survive, and so on. Perhaps. But a wing is, of course, an arm with fingers that exceed the body in length. A half-wing, then, which is said to provide this gliding benefit to be enjoyed when falling out of trees, would have been a hand with fingers nearly body-length in size. A strange beast - especially so in comparison with every other tree dweller in the forest canopy…all of whom have *small dexterous hands* (or gripping claws) to navigate a constantly treacherous landscape that is entirely unforgiving of bizarre flightless rats with preposterously long, webbed fingers. And if the strange beast did not live in the trees he was so demonstrably unsuited for, what then is the benefit of the mutation? The end point of the mutation, a fully functioning wing, is an obviously useful adaptation. But one is justified in wondering how it survived a maladapted liability - an excellent faller, but equally clumsy on ground or in tree - for so long.

Perhaps the clumsy fellow first evolved in an environment very low in predators. Perhaps they reproduced like mad, and there were just so many of the pesky things that the predators couldn't eat them all. Perhaps they tasted bad. And perhaps one can be forgiven for wondering if, somehow, something in the environment sometimes makes a special *accommodation* for such obvious maladaptations. It does indeed look like an inclination in the process *ac-*

tively seeks a significant advantage to be gained only at the amazing *end-stage* of a multi-generational mutation, and so influences local conditions to provide protective developmental time for long and difficult evolutionary transitions. It is a curious tendency for blind chance to exhibit.

It is sometimes asked, "Where *are* these strange, *intermediate forms*?" The world is a large place, the unseen part underground even larger and harder to get at, and the fragile treasures we seek are small indeed. It should actually be surprising, not that we haven't found more of the intermediate forms, but that we were lucky enough to find such a good fossil specimen of *archaeopteryx*, the astounding transitional species between dinosaurs and birds. We actually know about quite a few of these intermediate species and are always finding more in the fossil record. But the study of genetics has made the point almost moot. The presence of common genes in people and bacteria demonstrates that *there must have been* an unbroken succession of intermediate forms between an ancient common ancestor and the modern descendants. We will eventually find more *therapsid* fossils, the curious mammal-like reptiles of the dinosaur age that subsequently spawned the hairy live-birthing creatures on our part of the tree of life, but they are just attractive decorations on an argument made much more forcefully by genetic evidence. Fully 7% of human and bacterial genomes share the same genes; that means their mutual great great great (and so on, several billion times) grandfathers were the same guy - even if he was only a tiny pre-Cambrian organism in an early, watery age of the world.

But other problems persist. More practically-minded (and less philosophically-minded) people wonder about the simple arithmetical nuts and bolts of the problem - about rates of mutation and distribution. Mammals have a genome of about three billion base-pairs, and 3% (90 million) of those are expressed in the coding (the remaining 97% of inactive genetic material serves no known function). When we look at the genomes of closely related species within a particular genus, we see that often it is only a difference of 1% that distinguishes the genetic composition of one species from another. It is, therefore, perhaps only a difference of 1 million base-pairs that separates a species from its evolutionary predecessors. The transmogrification of Homo-erectus to Homo-sapiens, for example, seems to have required about 1 million beneficial point-mutations in the genome, and seven million years for those genetic changes to then propagate through a herd of perhaps 10,000 individuals. Simple.

Here the question has become *significantly* more concrete than "How did life on earth arise?" or "What are the Laws of Nature?" We are talking here about statistical probabilities that mutations will occur in specific numbers at specific places on the genome, and that those genetic changes will then disseminate at a specific rate through the species by interbreeding. We have reasonably accurate variables here, numbers that can all be dropped into a reliable equation that will add up...or not. Mathematically speaking, it turns out that it is *astoundingly* improbable that such genetic transmission of beneficial adaptations might occur in the time available. Even if we are unnaturally accommodating with our variables - allowing for mutation rates in the gametes (reproductive, "single chromosome set" cells, like the egg and the sperm) far in excess of what actually occurs in nature, allowing that mutations happen in the active sites on the genome only, allowing that beneficial mutations are never accidentally "un-mutated" away, allowing for larger herds (where you have more mutations but require more time for dissemination), or allowing for smaller herds (where you need less time for dissemination but have fewer mutations) - the math just doesn't add up. The process simply needs more time to accomplish and transmit the changes - *much more*. We are not supposed to be here for *another billion generations* or so.

And yet here we are, with our obvious morphological similarity to chimpanzees with whom we share about 98% of our genetic identity. Evolution is a fact of nature, but there seems to be an important mechanism at work here that we have not yet identified. There are two ways to explain the significant discrepancies between the math and reality of genetic dissemination. 1) There may have been many identical mutations happening in different individuals simultaneously and thus spreading through the herd at a much faster rate, or 2) there may have been long strings of ready-made genetic coding already present in the unexpressed region of the genome waiting to be "turned on" by appropriate genetic and/or environmental conditions. In either case (the precise repetition, in great number, of impossibly improbably events, or the entire history of the living world written into the first self-replicating molecule), the mutations cannot be random or accidental. Four billion years is indeed a long time to keep rolling sevens - *unless*

the dice are loaded.

Given the elegance and explanatory power of Darwinist thought, evolutionary scholars like Richard Dawkins and Daniel Dennett are not troubled in the least by such abundant improbability, but it's fair to wonder if, under the influence of so much improbability everywhere, philosophers haven't become a bit blasé about it. And perhaps one might be forgiven for succumbing to an unscientific idea that seems perfectly obvious: evolution is a demonstration of natural *intention*; it looks like the universe already *knows* what it is building...

One final point about all this procreation is the conceptual catalyst that fuels the whole endeavor: *libido*. Where did libido - the extraordinary affinity that nature has for itself, the inexplicable compulsion of the forms of the cosmos to come together and recombine into new forms - come from in the first place? Once present, it's easy to understand how it persists. But the origin of this relentless desire to entangle, in atoms and galaxies and everything in between, is a complete mystery. Of course, if it were not present, nor then would nature be. But that's a poor explanation: it only explains why something that isn't (a *non*-self-recreating universe)...isn't. Fortunately for us, however, *our* universe is really, *really* horny...

A Ghost in the Machine

This evocative, much-borrowed phrase was first used by Oxford philosopher Gilbert Ryle, who was arguing against Descartes' idea of an irreducible mind/body distinction. He, along with many other modern critics, disagreed with the idea of an immaterial soul, a "ghost in the machine", operating the body like some kind of heavenly puppet master. He believed, rather, that the mind is simply what the brain does. But it is also true that conceptualizing ideas is what the mind does, and it is a little harder to establish a satisfactory connection between conceptualizing ideas and the brain.

Descartes might be forgiven for believing in, what is still today, a slippery but still highly compelling description of the phenomena. The Mind really does seem immaterial, even though it is in many observable ways somehow connected to the body. Neurons and synapses are real things that we can manipulate in controlled experiments, and those laboratory investigations have revealed a startling mutability of memory, perception, behavior, and even identity. The stuff which makes us unique and individual is not near so permanent as we like to believe. The mind and brain yet possess many secrets and perhaps most of these will be discovered in the fullness of time. Some, on the other hand, will probably never be revealed.

One of the remaining mysteries is by what mechanism, and in what form, we actually archive memories and ideas. One the one hand, it may be the case that a unique and particular synaptic matrix of neurons (each with a unique orientation of molecules) corresponds to a particular idea. That is, some specific circuit of electrical activity in the brain represents a bird (or some other objective fact) and corresponds with such things out in the real world. But if that "specific circuit of electrical activity" represents a *subjective* fact (like liberty), then to where or to what other kind of thing is that correspondence directed? The synaptic "picture" of a bird corresponds with a living bird, but the synaptic picture of liberty corresponds to...? On the other hand, it may be the case that a very specific orientation of neuronal and synaptic machinery actually *is* the idea and not merely a cognitive representation of it. But if the cognitive representation of a fact *is* the fact, then what is that "other" world out there beyond our skulls? Does the world project reality into our minds, or do our minds project reality out into the world? And if the answer is "both are true", that really supposes a far more *intimate relation between world and mind* than we can ever satisfactorily explain.

These mysteries are actually asking the same difficult question: What and where is the *intent* within the cognitive processes of the human brain, and what and where is the *intent* in the evolutionary processes of nature? Perhaps there is another mechanism at work in nature, operating in some fashion for which we do not yet have a conceptual framework. It is completely understandable that science is loath to invoke totemic spirits when faced with an apparently intractable problem; that's not what science is. Science seeks good answers to good questions and, like Gilbert Ryle, has no patience for inquiry-ending notions like an ethereal poltergeist hiding in the nuts and bolts of natural processes. Such an idea is scientifically ridiculous. Where is this ghost hiding? Why can't we see it, or in any way detect its presence? How old is it, and will it eventually die? And if it is conveniently "non-physical", and therefore not accessible to any test we might wish to perform upon it, then how can it possibly interact with

and actually affect any physical process? How does the intangible move the tangible?

Scientific expeditions will take us ever deeper into oceans of the unknown, and yet nature's depth is far greater than any probe of human manufacture. In an important sense, each great discovery merely opens new vistas and new frontiers of exploration. We never get close to the ever-regenerating invitation to keep advancing. There *is* a ghost in the machine: something that we cannot explain has intention and with it is able to affect change in the material world...through *consciousness*. Perhaps this intention is a natural process we do not yet - and may never - understand, and the ghost is merely a metaphor and poetic fancy. And perhaps intention really is some *other* kind of process entirely, and the lonely Ghost is watching and waiting still for the intrepid among us...

A Lotus in the Spiral

We see in this image of the mythological forest an incarnation of the Ghost in the Machine, a luminous spirit dwelling within the living machinery of nature, guiding it to a specific destiny. Her gown begins in glowing purple, and spirals down to dark ultra-violet, seeming to vanish into nature, but the meadow - and the world beyond - is still very much suffused with its presence. In Her hands She seems to magically shape some strands of Her hair into a descending double-helix which ends in a strange symbol - another geometric representation of the mythological union between action and repose.

At the terminus of the spiral we see a beautifully harmonious composite form consisting of two geometric shapes in perfectly balanced conjunction. One form is an upward-pointing triangle; like a mountain to be climbed, like a pyramid to be built, like a burning flame it is the direction of our ambitions - the image of aspiration. The other form is a downward-pointing triangle, and like the yonic triangle it resembles, it is the image of the womb - the still and silent sanctuary beyond the known world that is the mysterious source and destination of all life.

This ancient symbol has many names. As previously mentioned, in India it is known as the the central "heart" chakra. In Hindu thought, the body possesses two filaments of "subtle" energy that form a double helix around the spine, crossing at seven intangible energy centers called chakras. The chakras are somewhat like mediators, points at which specific energies of our interior nature engage with corresponding energies out in exterior nature. The energies of the lower three chakras are directed outward, receiving the world into the self: eating and excreting (engaging the self through survival), reproduction (engaging one other through sex), and ambition (engaging many others through achievement). The energies of the upper three chakras are directed inward, pushing the self out into the world: the shakti's journey up the *Lotus Ladder* (appropriate meditation will awaken the sleeping serpent at the base of the spine and bring it through the successive chakras into mystical illumination) ends finally in a liberation through the thousand-petaled crown chakra, an escape from the Illusion of the Self, and consciousness returns to that nameless void whence it came. Between those oppositely oriented energies is the center of perfect, interpenetrating balance where Yoni and Lingam, Yin and Yang, dance.

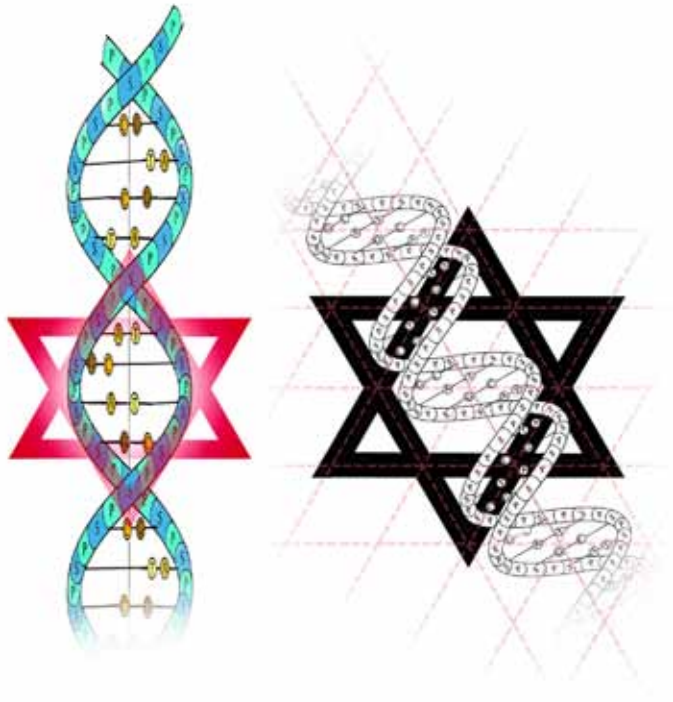
The "subtle" substance of these energy centers is not perceptible to the conventional senses - that is, they are invisible. But we sometimes wish to represent things that cannot be seen and so these chakras have been given shape and color that seemed, to the ancient shamans who designed this system, symbolically appropriate. The seven chakras are traditionally shown as a rainbow of lotus blossoms, a chromatic representation of spiritual potential. The lower three centers of *terrestrially-oriented* energy are pictured as follows: 4-petaled root survival (*muladhara*) is *red*, 6-petaled genital desire (*svadhisthana*) is *orange*, and 8-petaled abdominal ambition (*manipura*) is *yellow*. Correspondingly, the upper three centers of *celestially-oriented* energy are pictured thusly: 16-petaled throat vocalization (*visuddha*) is *blue*, 2-petaled brow visualization (*ajna*) is *violet*, and 1000-petaled crown realization and resolution (*sahasrara*) is blazing *white* - all colors in conjunction. The heart chakra (*anahata*), where the self-*making* energies invert to a self-*negating* orientation, is pictured as a 12-petaled blossom (which represents the Circle of Space and Time) that contains the 6-pointed star (which represents Life - the fleeting but never-ending collision of That which Burns and That which Quenches). And this lotus of spiritual re-orientation is *green*.

Green is the traffic light that is an indication to proceed after a time of pause. In Orphic, Hermetic, and Arthurian traditions, green is the color of the Grail Chalice, a symbolic representation of the sacred vessel of renewal that contains a solemn promise: the living blood of the *god*

who has fallen. Such signs and symbols have their basis in nature: green is the *rise of spring*, the redemption of the world after the frozen slumber that follows *the fall into red* (in China, this vernal resurrection that succeeds the long decline is called *the Ascension of Yang*). Green - the chromatic opposite of red, the color of violence and destruction - is the most tranquil color, a proclamation of fertility, joy, and abundance. Furthermore, green is the very center of human visual acuity where our eyes are most perceptive, the color-range in which we see the world with the most accurate and complete detail. Even though it is the color we see most clearly, its very abundance means that it also obscures or even confuses; unknown secrets and treasured mysteries of nature dwell in green. Natural selection chose this center of our visual acuity (between the limits of red and violet) because there is no more abundant color in the living world than the green of the photosynthesizing chlorophyll that carpets the habitable regions of the earth. And green is also the color of beginnings, the organic radiance of that mystic place of primordial origins where life began, long ages past, in an otherwise empty and barren world. As the color of the living flesh of the world, it suggests perpetual regeneration and immortality; as the color of the nutrient-rich waters that flow through, surround, and fructify the landed parts of the earth, it is also symbolic of the *womb*.

If the universe has a most sacred intention, surely Life, this ancient and tumultuous globe of self-recreating green, is it. We will return again to this motif of the Green Center of Transformation, in a *cosmogonic* context, later in this book.

In *this* image of primordial green (and the unseen, ultraviolet intention from which it grows), we have seen that these two simple forms - the spiral and the six-pointed star - are the confluence of opposing archetypes, graphic representations of the mythological marriage between Heaven and Earth, Beauty and Power. This extraordinary integration is symbolized here by the curious hybrid-symbol (composed of both the double helix *and* the anahata) that flows from Her luminous *crown* like a manifesting idea. But this strange geometric fusion is more than mere creative artifice: *it's real*, and actually present in the living molecules of our genetic identity. An idealized representation of the double helix - two twirling verticals bound by horizontals - reveals the hidden *Lotus of Creation* dwelling within; and the *actual* geometry of life, the mathematical structure of the elemental instructions that enable stardust to imagine itself, *is exactly the same*…



Personal Notes on *LotusWood*

I think it is unlikely that my wife, a dedicated professional who has very little patience for philosophy, will ever read these words, so I'm going to venture an observation that I think would annoy her: she's not too interested in the mythological work I do. Certainly my friends and family are *mostly* ambivalent about paintings that are not landscapes ("When will he grow up and do *respectable* work?"), but Lizzy surprises me sometimes. I had painted the background trees and ferns of *LotusWood*, and also the foreground figure and trees-helix. I was just beginning to paint the extreme foreground where the gown disappears into a carpet of purple blossoms. I thought the flowers I was painting looked just fine, but Lizzy came into my studio, full of concern: "No, those are wrong," she said with authority. Now, an artist doesn't want to hear that kind of comment, but one is rather obliged to listen to someone with 3 honors degrees in science. So I grumbled a bit, but scraped off the flowers I was painting and started again. I'm not actually sure if what I did subsequently was better or not, but Lizzy certainly thought so, and I very much like that fact that this is her favorite of my paintings.


~ Cathedral of Illusion ~
(On the Paradox of Mind and Experience)
Copyright 2000 - Oil on Linen - 48 x 30 inches

A Tale of Two Hunters

There was a primitive *jungle* hunter exploring the forest one day, who came upon a magical, miraculous apparition. But he had no words to describe its function, and only a precious few to describe its appearance:

"What did it look like?" his friends back in the village asked him.

"It was the size of a rhinoceros, and the color of the tail-feathers of the long-calling bird. It wore ornaments that shimmered like the water of the flowing river, and its stubby, dark legs had skin like an elephant."

"What did it feel like?" they asked him.

"Like the large, smooth stones at the side of the river."

"What did it smell like?"

"It had the breath of a bog ripe with hippo dung," he replied.

"What did it sound like?"

"It roared like the great waterfall. And on the beast's back was a little hut with hard walls made out of air like rock. In the hut was a place for sitting that was soft like the belly of a fresh-killed antelope. And all around me - though I saw no one - were the voices of spirits singing..."

"What *is* this great thing, and what does it *do*?" they queried with quivering excitement.

"I do not know, but it came from the gods," was all he could say.

There was a primitive *mountain* hunter exploring the jagged hills one day, who came upon a magical, miraculous apparition. But he had no words to describe its function, and only a precious few to describe its appearance:

"What did it look like?" his friends back in the village asked him.

"It was the size of a large boulder, and the color of the little blossoms on the rock-lichen. It wore ornaments that gleamed like the sun on rain-washed ice, and rested upon great skipping-stones made of the foot pads of a bear."

"What did it feel like?" they asked him.

"Smooth, like the small stones at the bottom of a stream."

"What did it smell like?"

"It had the breath of a forest ablaze in the valley of the burning water," he replied.

"What did it sound like?"

"It spoke with the voice of an avalanche. And on the beast's back was a little cave with hard walls made out of ice that was not cold. In the cave was a place for sitting that was soft like the belly of a fresh-killed deer. And all around me - though I saw no one - were the voices of spirits singing..."

"What *is* this great thing, and what does it *do*?" they queried with quivering excitement.

"I do not know, but it came from the gods," was all he could say.

We probably should not expect these two men - each the product of very different experience - to conjure even remotely similar descriptions of this same (imaginary but, in principle, possible) encounter. Their descriptions, while perfectly accurate within a limited context, are misguided and simply not sufficient to the task. Both men have experienced the same *real* object, but the frames of reference from which these men make their observations are so far apart that they are incapable of describing their perceptions in the same way. Because the reality of this apparition is external to their experience, these two hunters are obligated to bring their *own* experience *into* any description they endeavor to make. And so, they can communicate nothing of the essence of that object in any meaningful way; in the end, such attempts to describe an unknown merely tell us a great deal about the observer, and nothing significant at all about the observed. These hunters are not stupid. Their observations are as accurate as their experience and tools of observation allow them to be. They simply don't know - can't know - what they're looking at. A pink, chrome-trimmed Cadillac revving its engine while the radio plays a Palestrina Mass is simply too remote from the savage's spear. There is reason to wonder if anything has fundamentally changed since stone-age times. We see farther now, but how much further removed from mankind's tiny reckonings is the Great Unknown?

The opening parable illustrates two important

points: one, that it is not surprising that our many descriptions of the mysterious dimensions of existence all sound different (and also eerily similar at the same time); and two, that many of those descriptions might actually be of something rather more mundane than we hope. Several thousand years of technological development is all that separates those hunters from the answers they sought about the heavenly Cadillac. Our history has demonstrated - in the unfortunate stories of Pizarro and Cortez - that sometimes it is only mere technology that separates men from the gods. Armed and powerful with the knowledge we once thought belonged exclusively to a transcendent power, it is now *we* who are the gods, remaking the cosmos in *our* image. We are no longer obliged to justify our ignorance of the world with wizard's tales; we've seen into the magician's bag and now know how many of the tricks were done. These two hunters, who were quick to ascribe some kind of supernatural authorship to the unexplainable phenomena, demonstrate a natural human inclination: we've been plugging the gaps in our understanding of the universe with divine mortar for a long time. In stone-age times, when we understood so little about the nature of things, the world seemed more gap than structure; now, in modern times, the mighty Enterprise of Science has left precious few holes in our knowledge for a god-of-the-gaps to fill. God is just about out of a job. Or so some like to think. But some of those pernicious remaining holes are really *rather large*...

What is everything made of?

Reductionism is a problem-solving method used very effectively by science to simplify complex problems. A problem is broken up into constituent categories of study, allowing researchers to solve comparatively little problems; some researchers will then assemble several smaller solutions into one larger solution, and others will break a small solution into even smaller problems. This method has been spectacularly successful. A good example of reductionism at work can be found in the study of medicine. When it first began to emerge as a legitimate, recognizably modern science in the mid 19th century, there was simply one kind of doctor who attempted to treat maladies of every kind. Soon thereafter developed the separate and distinct specialties of surgical and internal medicine. Over time, these disciplines fragmented into dozens and dozens of new specialties and sub-specialties, each one seeking greater depth of knowledge regarding a narrower range of inquiry. Neurology, cardiology, radiology, hematology, endocrinology, oncology, anesthesiology, etc., are just a tiny handful of the many disciplines found in medicine; there will soon be as many specialties in genetic science. We might even include in this list other body-related concerns like nutrition, fitness, cosmetics, personal hygiene, etc. No one person could ever hope to understand even 1% of what we now know about our bodies, but a vast army of people working in concert has provided a truly impressive result: in the last 150 years, average human longevity has almost doubled. This is the miracle of the reductive method, and it works every bit as well in the other sciences. But there is a devil hiding in the details.

Many of the structures within the structures of the world are far more complicated than we originally thought (like that of a living cell) and many years of research will go into revealing merely some of the secrets therein. Researchers from one discipline may not concern themselves with the smaller constituent parts of their study, but there will always be another discipline trying to understand the larger parts by examining ever smaller parts. Eventually, however, scientific inquiry is confronted with a fundamental unit that cannot be disassembled for further examination, and so there the scientific endeavor stops. There is a truly staggering amount we do not know about all the micro-structures of the world which are made of these fundamental units, an enormous amount of useful science to be pursued where objectives might be realized. And so, with so many interesting sights along the way, there are comparatively few research-adventurers interested in taking the trip to the last stop, to find there the unsettling fact that dwells at the terminal end of the scientific path: down inside the heart of matter - in the domain of the quark and the electron - is the impenetrable boundary at the edge of the universe.

Quarks and electrons are considered to be *fun-*

damental particles (there are currently twelve different kinds of such quanta in the standard model); that is, they have no structure as we commonly understand the concept, and so they simply cannot be subjected to any kind of intrusive examination. They do not have interiors, they are not made of anything; they simply *are*. Current reckoning believes that quarks were bundled into indivisible clumps of 2 or 3, a tiny fraction of a second after the birth of the universe, and these infinitesimal bundles now form a broad variety of other sub-atomic particles in the universe - the most common of which are protons and neutrons. Positively charged protons and uncharged neutrons dwell in the nucleus of the atom, surrounded by orbiting swarms of another fundamental particle, the negatively charged electron. Scientific thinking about the quark is, perhaps, not all that advanced; we are not permitted to isolate one and easily evaluate its properties. But we know a great deal about the mighty electron: it is the humble spec upon which our entire civilization is based, the indefatigable Atlas that holds up the cosmos.

Surging rivers of them power our electric machines. The electron's associated force-particle, the photon, fills the heavens with light. The beautiful magic by which the 92 elements transform themselves into a near-infinite variety of different molecules is facilitated by the effervescent coupling of spherical electron clouds sharing common electrons to bind atoms into the material structures of the universe - and doing so with a potential for chemical diversity that is, seemingly, without limit. The strength of these electron bonds provides the structural integrity of matter, explaining why material objects, which are far, *far* more than 99.999% empty space, don't simply pass through one another when they come into contact. (If a hydrogen atom were enlarged such that its fuzzy electron-cloud shell was 100 feet in diameter - about the size of the Capitol Dome in Washington - then the proton in the center, the one and only lonely inhabitant of the complete and utter void therein, would be about the size of the period at the end of this sentence.) In fact, our entire experience of the universe - from the exterior data we collect with our five senses to our interior cognition of that information - is mediated by this infinitesimal Hercules. The electron is even more impressive than it seems because *it is not really there*...

The electron is very small: it is a dimensionless point, without volume or extension in any direction - it has no size whatsoever. It has been described as "nothing more than a region of space-time where the field strength takes on extraordinarily high values." Nobel laureate Leon Lederman observed that this otherworldly absence of any spatial magnitude confronts us with four inescapable questions: "*What* has mass, *what* has charge, *what* spins, and can I get my money back?"

Modern theoreticians are currently playing with a concept called superstrings, suggesting that perhaps the fundamental particles are made of infinitesimal loops of multi-dimensional vibration. The hope is that the monstrously complex mathematics inherent to string theory will one day explain away the serious problems that persist in the standard model of the sub-atomic domain. And superstrings, as the theory describes them, seem to be made of nothing at all other than pure mathematics. So this is where the materialist endeavor ends, with a universe made of *immaterial* mathematics. This sounds rather like the hunter bringing his own experience to the description, and not really describing the thing at all. One has to respect the physicists and mathematicians and their considerable prowess with numbers; their magic is powerful indeed. But if the theologian says the world is made of ethereal divinity, and the philosopher says the world is made of ethereal idea, and the artist says the world is made of ethereal poetry, then is it really that much different to say that the world is made of ethereal mathematics?

The foundation of the world is emptiness; the cosmos is *all* gaps.

Occam's Razor

Science often uses a simple maxim in its search for truth, a guiding logic, validated by centuries of observation, that nature prefers economy to ostentation, the easier rather than the more difficult way to achieve an end. This maxim is known as *Occam's Razor*: "Entities are not to be multiplied beyond necessity." That is, the *simplest* explanation

of the available facts is *probably* true; complex and unwieldy explanations consisting of many factors are not as satisfactory because each additional factor also requires an explanation for its presence in the explanation.

An edifying, but somewhat non-scientific example might be the puzzle of the JFK assassination. There is here a mystery that requires an explanation, and there are two competing descriptions to explain it: 1) a lone gunman got a gun and took a few shots from a window, or 2) a vast conspiracy of CIA and DOD renegades, Dallas policemen, Cuban counter-revolutionaries, paramilitary homosexuals (!), shadowy underworld types, and mafia hit-men coordinated an intricate multi-pronged attack to eliminate JFK, laid the blame elsewhere, covered their tracks, otherwise achieved their mysterious goals that had been previously thwarted by Kennedy, and then protected the whole sprawling criminal endeavor with a vow of silence unequalled in the history of the world. William of Occam (who, curiously enough, never mentions his eponymous dictum in *any* of his extant works) would say that, with so many additional elements that also beg for explanation in the second version, the first, far more simple explanation is probably true (although cynical, conspiracy-minded types would, no doubt, remind him that the first explanation does not seem to explain all - or even most - of the available facts). It is important to remember that Occam's Razor is not a Law of Nature; it is, merely, a useful guide that recognizes a general tendency for nature to almost always achieve its astounding objectives by the most direct method possible, a statistically-informed, *conservation of energy*-minded rule-of-thumb, that does not solve the Kennedy assassination or any other enigma. It is certainly not logically impossible that a ludicrous hodgepodge of unstable malcontents devised, executed, and then erased their monumentally complicated campaign with absolute efficiency and eternal silence; Occam says only that it is *far more likely* that just one defective lunatic was responsible for the JFK assassination. Good science believes in numbers.

Which brings me to the *Anthropic Principle*, an expression that states the obvious fact that the universe is the way it is because if it were some other way we wouldn't be here to observe it. Science does not really like this principle, given its implication of teleological nature, or nature designed with humans in mind. And yet, it remains true that any explanation of the cosmos must explain why the physical constants of nature are what they are; it just so happens that these constants are fantastically *fine-tuned* to permit the kind of cosmos we actually see - one with galaxies and stars, worlds and *life*.

Values such as the relative strengths of the four fundamental forces (electro-magnetism, the strong and weak nuclear forces, and gravity), or the energy of the excited state of the carbon 12 nucleus (a tricky stage in elemental evolution that allows for the creation of all heavier elements), must be very accurate and nothing other than what they are if we hope to see elements, molecules, and a living cosmos. One of the most important of these fine-tunings is the vacuum-energy of the universe, known as the *cosmological constant* (which can be thought of, crudely, as a measure of the viscosity of the cosmos). When the universe exploded into creation roughly 14 billion years ago, that Big Bang explosion had to finesse a mind-bogglingly accurate rate of growth: if the expansion had occurred too quickly, if the cosmos was *insufficiently* viscous, then clouds of hydrogen could never have accreted under their own mass into stars and galactic clusters of stars thus permitting the creation of the elements necessary for life; and on the other hand, if the expansion had occurred too slowly, if the cosmos was *too* viscous, then the whole universe would have collapsed into itself long before the first stars could evolve through even a single stellar cycle of elemental creation. Unless the vacuum-energy of the cosmos has a certain, very specific value, the universe experiences runaway exponential inflation or sudden collapse. According to Nobel laureate Steven Weinberg, the precision required for the exact negation of all contributions to the vacuum-energy must be accurate to *120 decimal places*! That is, the cosmological constant must be set with an accuracy that cannot deviate by more than one part in 10^{120} (10,000,000,000,000,000,000,000, 000,000,000,000,000,000,000,000,000,000,000, 000,000,000,000,000,000,000,000,000,000,000, 000,000,000,000,000,000,000,000) or the universe as we see it is impossible. That kind of fanatically exact

fine-tuning in the "nuts and bolts of natural processes" troubles people - a lot.

And so a solution to this conundrum has been proposed: *Inflationary Cosmology*. It does indeed shed light on some otherwise intractable problems with the standard model of cosmic evolution (including the cause of variations in the matter density of the early universe that allowed the subsequent formation of large scale structures like galaxies and stars), by proposing a variable vacuum-energy value that must have been very much higher in the first trillion-trillion-trillionth of a second after the big bang. Furthermore, it seems that this inflationary process is eternal, an unstoppable chain reaction of Big Bangs (driven by something called an unstable *false vacuum*) that is always happening…just somewhere else totally removed from and exterior to our universe. According to MIT professor Alan Guth, the principle architect of this increasingly accepted theory, "it seems far more plausible that our universe was the result of mass reproduction rather than one created from a unique cosmic event."

Inflationary cosmology neatly steps around the thorny issue of the anthropic principle by stating *there are an infinite number of universes*, each one consisting of unique physical constants very different from ours. The overwhelming majority of these universes would be incompatible with life. Our universe is *not* special or fine-tuned; it is merely one insignificant bubble in an endless effervescing ocean of infinitely many universes with every possible kind of tuning.

Science certainly cannot invoke an "ethereal poltergeist" to explain the precision of the cosmological constant, and yet this *multiverse* model of cosmic creation is also an "inquiry-ending notion" of the kind proper science rejects. These other universes, floating in a Swiss cheese-like domain of transcendeffervescence, are also, like the mystic spirit they sought to supplant, not subject to scrutiny or verification. Each universe is contained by the parameters of its own physical constants, sealed off from all others by a Barrier of Law through which nothing subject to such law - *anything physical* - can penetrate. As far as the physics of this universe is concerned, no other universes exist, and no events beyond the Barrier can ever have any effect or influence on events here. So this theory is conveniently non-testable, and thus sounds rather like the theist, invoking some *other* causal agent, in an effort to explain everything: "I can't prove any of it, but you can take it on faith that what I say is true." Inflationary Cosmology is indeed good science, a dramatic example of the daring thinking needed to explain the cosmos by entirely natural processes, but *it is poor ontology*. The inflationary model explains our *one* universe by positing an infinite number of other different universes into which our extraordinary uniqueness can meaninglessly disappear. The universe, it says, was created by a perpetual fountain of infinite universes; now *that* is a truly extravagant denial of economy. Another, more modestly "multiplied beyond necessity" explanation survives Occam's Razor less cut: the universe was created…by a *Creator*. "How then do you explain this creator?" the scientist is obliged to ask. Such explanations are unnecessary: if science cannot explain this transcendeffervescence out of which infinite universes emerge, then one is logically compelled to consider the self-recreating Multiversal Froth-Maker and the Creator as indistinguishable: both are beyond the cosmos, beyond knowledge, and *Sui Generis* - they are *one and the same*.

What is Time?

While it is indeed true that we have learned a great deal about the properties of matter and energy, and can predict and even manipulate a few of their innumerable tricks, it is important to remember that of the fundamental nature of this cosmic *stuff* we know nothing. We also know a little about space, the arena in which matter and energy perform their magic. In *Order and Chaos*, we discussed some of the bizarre things science has learned about space in the last 100 years, and I'll return to this subject again later. There is another curious aspect of this cosmological opera-house, intimately bound up with space, that also exposes some serious limitations in our understanding of reality: *time*.

In Newton's day, we thought there was one universal clock ticking away the seconds equally in every part of the universe. Einstein showed us that, in fact, each of us actually carries around our own clock, and those clocks tick away at different rates according

to such things as relative velocity and proximity to gravity. As strange as it sounds, thousands of experiments have proven that a stationary clock on earth ticks faster than a clock speeding away into space. If we could build a spaceship that could travel 99.99% light-speed, we could circumnavigate the observable universe in about 30 years - according to the *ship's* clock. When we returned to earth, however, *billions of years would have elapsed* - and the world we knew would have long since perished within the bloated red-giant our sun is to become in that distant future.

We don't notice these relativistic differences in the rate at which time elapses because this exponentially-growing effect is only noticeable at speeds beyond 90% light-speed - and only really dramatic at speeds beyond 99% light-speed. Time differences that we experience at everyday velocities are measured in *billionths* of a second - and who cares about distinctions that small?

But there is another way in which these relativistic time differences are experienced. If you are stationary on one side of a room, and I walk toward you, I am slightly compressing the amount of time it takes for information to travel from me to you; if I walk away from you I am slightly extending the information's travel time. We don't think about "information's travel time" because it is so infinitesimally brief in ordinary experience, although NASA engineers deal with this phenomenon every day because many things they communicate with are *very* far away. And the farther away something is, the greater the effect of relative motion. At the scale of the observable universe, relativistic time differences become enormous - even at very slow speeds.

If I have a good calculator, I can, using Einstein's equations, calculate the state of *My Universe Now*: I am experiencing now, *now*; information from the other side of the room traveling at light-speed takes a billionth of second to reach me, so *My Universe Now* includes the far side of the room as it will appear in a billionth of a second, the moon as it will appear in about 2 seconds, the sun as it will appear in 8 minutes, the nearest star as it appears 4 years hence, and so on. Relativistic effects at such distances are not impressive; at great distances of billions of light years, however, they are stunning. Imagine yourself out on a long highway stretching away to the horizon, and then imagine a real (but unknowable) point 10 billion light-years further beyond it. For the purposes of this explanation we are also going to imagine a stationary clock on that point (they might have clocks there), but it's not really necessary. Walk toward that distant point while performing your calculations of *My Universe Now*: you will find that the 10 billion light years-distant clock has leapt back in time more than 100 years! Walk away from that distant point; your calculations now indicate the distant clock has leapt 100 years forward! And the equations work both ways. Let's say you and your clock are stationary, and Zolg, another relativistic thinker10 billion light years away, is also calculating *My Universe Now*. If neither of you are moving, relative to each other, then calculations will agree that you both exist at the same time. But if Zolg merely walks toward you he then exists before your great-grandfather was born, or exists a century after your death by walking in the opposite direction. And the effect is even more astounding at spaceship speeds. According to a reckoning of *Now* one might calculate from the space-probe *Voyager*, Zolg won't be born for *thousands of years*.

If space is infinite, then this taffy-like temporal landscape - where any two separate and distinct moments in time can be stretched and pulled together by nothing more than mere movement - extends to include every point in time from the beginning of the universe to its end. And *everything is always moving*, on worlds spinning around stars spinning around galaxies hurtling through space, so relative motion is constantly pulling everything into the distant future or pushing it into the remote past. We are all not-yet-existing *and* long-ago-deceased, according to distant parts of the universe whose reckoning of time is every bit as valid as ours. *All time exists always*: every event in the history of the cosmos (every bad thing we've ever done, or even thought) is frozen forever in a universal timescape that never changes, like an eternal library of all moments, available to any observer beyond space-time wishing to review the facts.

The same science that sends data-gathering probes to the planets, powers our metropolises, annihilates our enemies from afar, and allows us to comprehend the celestial processes that built the cosmos

also shows us that time as we experience it - *Now* is a rapid succession of continuously flowing moments that arrive and are instantly gone forever - is *impossible*. Something very strange is going on here. If the entire history of the universe is an eternally existing thing, if the outcome of every event is already determined and merely waiting for inevitable discovery, if everything we will ever do is fixed and unchangeable in a 4-dimensional sculpture that limited consciousness encounters only slice by slice by slice, then what are the implications for the most intractable problem in philosophy - the sovereignty of mind and experience?

The Free Will Enigma

Can you make a *decision*? If the answer seems altogether too obvious, then perhaps the absurd simplicity of this question has not conveyed the subversion I intended. What I really mean is: can you think for yourself, or only as the chemistry of which you are made allows? Certainly most people *believe* that they can make a decision, but this article of faith does not survive logical scrutiny entirely intact; the proposition that man has free will - that he can compel the chemistry in his brain to act in an *specific* way - involves some conceptual paradoxes that cannot be explained away. Part of the difficulty lies in our incomplete understanding of just what, exactly, consciousness is; somehow, the activities of diverse and distinct regions in the brain, each responsible for significantly different kinds of tasks, are bound together into a single entity, one that thinks, feels, and has experience of the world. The current scientific view is that consciousness is an *emergent* property, mysteriously rising out of the transmission of vast amounts of data along neural pathways: *the mind is what the brain does*. And so our ability to choose one action rather than another must be, according to this view, the product of brain activity: the movement of atoms, molecules, brain cells, and very, *very* long trains of electrical impulses. A decision occurs…when the chemistry is right.

The existence of free will, our ability to choose one from among many possible options, is completely validated by experience; it is, however, utterly *invalidated* by the facts.

Part I - Who or What is Responsible?

We call something an act of free will if, by some inscrutable magic, we *decided* to do it. If we could not have done otherwise, if we have been compelled by some caprice of nature and not by our own sovereign volition, we do not call it free will; we call it cause and effect. Our human-made laws recognize this spectrum of culpability; they are a statement of our belief that there are degrees of responsibility. As an example, let us look at several different imaginary scenarios involving the death of a man who has been hit by my car:

1) If I am driving down the road and a man throws himself in front of my car, I am not held responsible for that action: it was beyond my control and I could not have done otherwise. In fact, in this case the man would be held responsible for his own demise.

2) If I am driving down the road and a psychopath leaps into my passenger seat while I am waiting at a red light and then subsequently orders me - at gunpoint - to crash into a man walking down the sidewalk, I am not held responsible for that action: it is the crazy man with the gun who is deemed to be responsible for the accident.

3) If I am driving down the road and a sudden blow-out causes a complete loss of control of my car which then veers into the man, we say that no one is responsible: as long as I have not been driving on dangerously worn and unsafe tires, we are inclined to say that the catastrophic failure of the tire at that unfortunate moment was beyond my control, and the cause-and-effect (or is it chaotic whim?) of natural law - in this case, inertia compelling the runaway vehicle - is responsible for the accident.

4) If I am driving down the road and have a sudden heart attack, lose consciousness, and my now un-piloted vehicle veers into the unfortunate man, we also say I am not responsible. It is unquestionably a defect in my nature, albeit a physiological rather than mental one, that has caused this accident, but the defect was beyond my power to control. And so again, it is nature that bears the responsibility for the pedestrian's death.

5) If I am driving down the road blind drunk and *unintentionally* swerve onto the sidewalk to strike

the man, I *am* held responsible for this action, but my responsibility is somehow *diminished*: choosing to drive under the debilitating influence of alcohol was something within my control, even if drunkenly losing control of my vehicle was not. That I did not *intend* to strike the man is a mitigating factor. I may be charged with manslaughter in this case, but I will serve less time in prison than for other more serious offenses. Nature - in this case manifest as the consciousness-altering mixture of alcohol and human blood - seems to bear about 50% of the responsibility for this accident.

6) If I am driving down the road and suddenly and *intentionally* careen into the man, I will be held only *almost* fully responsible for that action. Why only "almost?" Because we accept the possibility that I may have been struck with a sudden and otherwise inexplicable mania; in the absence of any history to otherwise explain an isolated crime, we may choose to believe that the evil act in question was not necessarily caused by an irredeemably evil person. In this case, Nature - manifest as, *perhaps,* the mis-firing of motor neurons in the brain - still bears about 10% of the responsibility for the death.

7) It is only if I am driving down the road and I swerve - with malice of *forethought* - onto the sidewalk to strike that *particular* man, that I am held fully responsible for this action. My premeditation of this crime, my rejection of reason after careful and deliberate contemplation, places the entire burden of responsibility upon my shoulders; nature is off the hook for this one, and in this case I will suffer the harshest penalty provided for in the law.

In each case the man is just as dead, in each case killed by impact with my car, but I am said to be fully responsible only when I *consciously chose* - when it was my *free will* and nothing else that compelled me - to strike the man with my car. If I drove into the man purposely, then we are not able to blame a reckless pedestrian, a gun-wielding madman, unsafe tires, poor coronary health, impairing liquor, random brain activity, or any other factor that was beyond my control. It is precisely because I *was* in control - because I made a *decision* - that I am held fully culpable. But what kind of process is at work when we make a decision? What mechanism is it that produces *intention*? If we are unable to define this mechanism (and we shall see that we cannot), then how can we be sure that this process truly *is* something that is under our control? And if intention is not entirely under our control, where then does *true* responsibility lie?

No reasonable person would dispute the fact that such laws as the Prohibition Against Murder are fundamental to the existence of civilization. But our laws have no basis in the natural world; they are derived from a philosophy of ethics that is our own invention, designed to separate and protect us from the brutal world of nature whence we came, and make our ambition of a peaceful, stable, and organized society possible. Ethics are not facts; they are not science. And so, if we disregard the subjective ethics of the matter and examine the problem of free will analytically, we find that it is considerably more difficult than we might originally suppose to find the agent (the causative thing that makes something happen) truly responsible for the pre-meditated crime...

When we say a decision has been made, we mean that a mind made a decision. And a mind is the product of two - and *only* two - things. The first is the genetic composition that we inherit, fully formed and utterly unchangeable, from our parents. This composition determines athletic, intellectual, and creative ability, emotional inclinations and temperamental dispositions, and in general a certain *potential* to achieve some things but not others. The second thing by which a mind is produced is the interaction of that inherited, interior nature with the vast exterior nature beyond our skins. This interaction with the world will determine many important features of our identity. It will be possible to meet many people who will significantly change our future development, and it will be impossible to meet many other people who might also have had a significant but different effect upon our subsequent experience. We will encounter certain teachers and certain books, and be affected to varying degrees by them; and we will be entirely oblivious to knowledge we never acquired that might have changed our thinking - and subsequent actions - dramatically. Good and bad things will happen to us, both altering the way we subsequently interpret the world. In general, we can see that there are a great number of events and opportunities that direct a life in one way, when other unrealized possibilities did not. And we must

concede that there is a vast caprice in our experience of the world: any actual experience might have been profoundly different if we had been somewhere five minutes earlier - or five minutes later - than we were. This experience of the world - collected and classified in the mind as memories, beliefs, and ideas - will combine with inclinations inherent in the psyche to form our *Identity*: that entity we refer to when we say "I".

This seems correct and not at all controversial, but there is a quiet problem in this two-part way we are made. The empty vessel given to us by our parents, and the contents the world outside pours into it, are both entirely beyond our control; we are in no way responsible for either. We are born empty shelves, waiting to be filled by books already written. "*That doesn't sound right*," we say, already getting agitated. We want to believe it is our *choice* that we become what we are; we choose what we learn, choose who we know, choose what we do. But is it choice to learn pre-existing facts, meet pre-existing people, or pursue pre-existing activities introduced to us by others? How do we make those kinds of choices? We have our innate inclinations, and our experience of the world, which combine into a personal identity. And that identity resonates positively with some things and not with others. We don't choose the way we are, we don't choose the way other people and things are, and we don't choose to have some kind of attraction to - or repulsion from - them. This holds true for every other kind of knowledge or experience we can have with the things of the world. A pre-existing fact of the exterior world resonates with some aspect of our pre-existing identity and then *that resonance makes a decision*. We don't choose to find something interesting; we have an affinity for something or we do not. We can develop new affinities, and we can deny existing affinities, but such actions are merely satisfying other different resonances within other regions of our complex identities. Choices do indeed seem to get made, but the question is, do we as individuals make choices, or is it fantastically long chains of causality, great histories of processes, that choose?

What part of us is it that chooses? What part of us is it - that is subject neither to the physical nature we inherit nor the empirical nature we inhabit - that is able to make a decision that is truly our own? We like to say, "*my decisions are subject to my will*." But if everything I am (including my will) is entirely created by my parents genes and the action of the world upon the incarnation of those genes - both antecedent facts which I am utterly powerless to change - how can I be anything other than *compelled by nature* in my thoughts and actions? We can confront a convicted criminal - the maniacal driver in example #7 - with the admonition, "*You could have chosen differently*." And so it seems. But to what responsible part of him are we appealing that is not determined by his innate potential - which is not his fault - nor compelled by his experience of the world - which is also not his fault? Are we correct to blame him for being the unfortunate end effect of a faulty causal chain? The question is not so much whether the criminal could have acted differently; the question is, rather, is it the criminal, or the vast chain of events that preceded that criminal moment, that is responsible for the crime? Is it correct to blame the cause or the cause of the cause? If what we are is beyond our control, and could not have been otherwise, then how can we be held responsible for what we do? We certainly do have the cognitive sense - we believe - that we are able to make a decision, that we could have done other than what we have done; but if we are not free to perform an act for which we are genuinely responsible, we are not free. When I make a decision, I hope it is me, and not just the random jumbled mixture of my parent's genes and a chaotic world that's doing the deciding. But where am I, if not in those things?

Think of a choice you believe you have made. How many hundreds, if not thousands, of entirely random events beyond your control precipitated the circumstances that presented you with the opportunity to make that decision? Whenever possible we make decisions in accord with our character, and a specific biochemical orientation in the brain corresponding to our identity responds in a predictable way to a particular external stimulus. On those occasions when an in-character decision is not among the available options, when the situation is beyond all experience, we simply roll the cognitive dice. The fact that our interior nature (a pre-determined collection of genetic predispositions sculpted into a set of characteristic

inclinations by events in a already-determined world) reacts to exterior nature in a particular way, sounds less like what we want free will to mean, and more like what we think a machine is: merely action and reaction, a certain initial cause will result in a certain inevitable effect.

Again, the question is not whether decisions are made - of course they are - the question is whether it is individuals or histories that make them. Of course, if we were to foolishly rewrite our laws so that responsibility did not lie with the individual, but rather with the chain of events that lead to that individual, that would introduce another causal effect into the chain, leading individuals to act in different, quite possibly uncivilized, ways…

Part II - How would a Mechanism of Intention work?

Our world is surprisingly predictable. The behavior of living things, especially humans, still presents some difficulties, but our mathematical models of the mechanical universe serve quite well for most other applications. One of the cornerstones of our mechanistic understanding of the world is causality. This model does not work quite so well in the quantum domain of the atom, but the random, probabilistic nature of the micro-world evaporates at scales larger than the atom. At the scales of our everyday perception, the world seems entirely deterministic: that is, the universe is a dynamical system that changes according to certain laws and principles, and events in the future are bound to events in the past by chains of causality. Two of the simplest things demanded by determinism are: 1) there are no *uncaused* events, and 2) there are no *random* events.

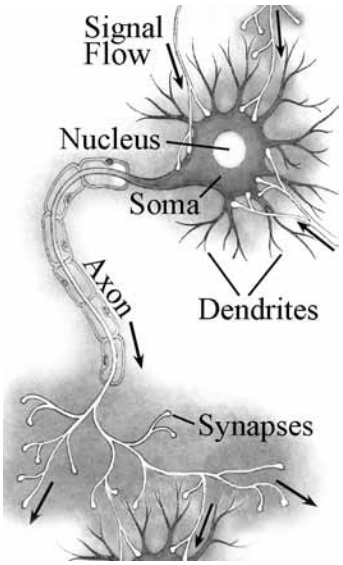
Before quantum mechanics dramatically changed our world-view, it was generally thought the world was entirely deterministic - a vast clockwork mechanism bound in a matrix of cause and effect that extended from the beginning of time to its end. We always understood that limitations in our scientific devices made measurements of infinite precision impossible, but we did not doubt that complete precision in the state of the world actually existed: even in apparently unpredictable processes like the weather or a role of the dice, some process of cause and effect invisible to human inquiry must determine the actions of things. We now believe, however, that infinite precision is - *in principle* - impossible; the world gets a bit fuzzy in the atomic domain, a chaotic and entangled world where the macroscopic rules of cause and effect do not seem to apply.

We still recognize, however, that systems can only be of these two kinds: random or deterministic. A simple example of the two can be found on a billiard table (for the sake of this example, we assume there are no flaws on the table surface or upon the balls which might adversely affect the results). Classical determinism says that if a pool ball strikes the cushion at an angle of 45 degrees, it will bounce away at an angle of 45 degrees. The ball has no choice in this matter; it can only follow a path that has been predetermined by the initial trajectory. If we know with precision all of the initial conditions (velocity, spin, friction, air pressure, altitude, elasticity, position of other balls, etc.), we can calculate the exact path of that ball from beginning to end. The entire subsequent history of that pool ball is contained in the initial conditions. That's determinism. Quantum mechanics, on the other hand, says that we can't measure the initial conditions with complete precision, and there will always be some uncertainty in our knowledge. If a pool ball strikes the cushion at an angle of 45 degrees, it will bounce away at an angle somewhere between 44 and 46 degrees (the uncertainty in this example has been *wildly* exaggerated so that decimal expressions of 20 places are not necessary). Tiny uncertainties in our knowledge about the initial conditions will become increasingly larger uncertainties over time; it is simply not possible to know at exactly what angle the ball will deflect. The path followed by the ball *does not even exist with complete precision* and so is determined by nothing more than chaotic chance. That's indeterminism. These are the only two options available: the events of the world are *pre-determined* (the classical worldview, which holds for the large-scale events of everyday experience) or they are *un-determined* (the quantum worldview, which holds for the small-scale events of the atomic domain).

When we attempt to define the mechanism of free will, to explain the biochemical process by which we make a decision, we must do so within the context

of one these two scientific regimes. The brain is made of matter and subject to material laws; any process of the brain is also subject to natural laws. The methodology we use to successfully describe the actions of atoms and molecules in every other substance, must also successfully describe the actions of atoms and molecules in the brain. Whether we are talking about the geometric nature of pool ball trajectory, or the chemical nature of molecular interaction, the problem is the same: such nature must be pre-determined by the initial conditions or it must be randomly determined by probabilities.

It might be helpful here to provide a (very) brief description of the chemistry of our decision-making processes. Our brains are divided up into different regions that are responsible for different kinds of cognitive function. The operations of these diverse regions of the brain are performed by brain cells, also called *neurons*. We have somewhere between ten and one hundred billion of them. They look vaguely like little trees with the cell nucleus within the dendritic "bushy" part, and at the uprooted ends of the axon "trunk" are the *synapses* - communications links between isolated cells. There are perhaps as many as a million-billion such connections in a healthy brain. The oscillating rhythm of positively and negatively charged ions in and around the nerve fibers of a brain cell creates a corresponding rhythm of charge differentials that travel down the long axon of the neuron to the synapses, where another corresponding series of neurotransmitters are emitted; if the necessary preponderance of excitatory rather than inhibitory neurotransmitters are present at the synaptic cleft, a positive potential charge difference will induce the neighboring neuron to similarly fire - thus continuing the cerebral response. Given this simple model, we can already sense a problem emerging. The biomechanical way the electrical signal is propagated from neuron to neuron is complex but comprehensible; however, if the neural activity is not a response to exterior perception but merely interior contemplation, then what *initiates* the signal?



For the purpose of our discussion, let us suggest that these pool balls bouncing around the table correspond to atoms and molecules bouncing around in the brain. The analogy is not quite as inappropriate as it sounds. The interactions of chemicals in the brain are more complicated than the interactions of pool balls on a table, but it is analogous mechanistic laws, either random or determined, that define the motions of both large and small moving systems. Simple or elaborate, some kinds of interactions are permitted by the rules and others are not. Now, within this simplified sample framework of a dynamic system that moves and progresses only according to certain rules, the problem of free will becomes apparent. In a predetermined world, the deflected trajectory must equal the incident trajectory; *atoms and molecules in the brain can only follow paths already decided by the initial conditions* (or classical laws of chemistry). In an undetermined world, the deflected trajectory must be smeared across a range of random possibilities; *atoms and molecules in the brain will haphazardly follow a path randomly decided by probabilities* (or quantum laws of chemistry). Both options sound wrong to us: "My actions are pre-determined by initial conditions that stretch back to the beginning of time? Nonsense! My actions are accidentally chosen at random from among many possible actions by some kind of molecular lottery? *Ridiculous*!" Neither option satisfies the conditions necessary to produce that brain state that everyone believes they possess: "The movements of the molecules in my brain are determined by ME!"

What we (very much) want a decision to be is this: the pool ball strikes the cushion at an angle of 45 degrees and deflects away at a *specifically different angle* - for example, 45.432 degrees. We don't have any science to explain such bizarre activity. What force in that little pool ball (or in a tiny molecule in the vast neuron, or in a tiny neuron in the vast brain) compels it to break every rule of motion (or chemical interaction) and *not* deflect at the incident angle, *not* deflect randomly within a range of possible

angles, but deflect off at a *specific angle of its own choosing*? What possible mechanism could give this billiard ball - or a great collection of willful billiard ball-neurotransmitters in the brain - *intention*?

Part III - The Problem in a Nutshell

If the world is *deterministic*, then every event is merely the inevitable consequence of causality chains, orderly rows of dominoes falling down through the history of the cosmos - right up to and including the molecular tumbling of neural processes in your brain. In a determined world, there is no possibility for choice: every event, from the galactic to the sub-atomic, is only the temporal extension of a prior event - a certain and pre-determined *re*-action to an earlier action beyond its control or influence, a fixed and unchangeable effect propagated by a fixed and unchangeable cause. And if you cannot exercise choice, then you are nothing more than a sophisticated abacus (although a quadrillion synaptic connections is indeed a lot of beads) - an algorithm that could be written down in a book, albeit a very large one. In a determined world, we are reduced to mere *formulas*.

If, on the other hand, the world is *indeterministic*, then every event is merely the accidental consequence of random activity, a crap-shot game of chance where any particular outcome (like a specific intention or decision) falls haphazardly out of a probabilistic chaos of every possible outcome. In an undetermined world, again, there is no possibility for choice: every current state has an infinite number of possible subsequent states (a few of which are quite likely and many more which are much less so), and *there is no physical mechanism to specify any one particular subsequent state* - no deterministic weight with which to load the indeterministic dice, no secret button to rig the roulette wheel for a certain guaranteed wager. If it were possible to replay the event again, it is a statistical certainty that a different, albeit quite likely very similar, outcome would result. In an undetermined world, the neuron-synapse machinery of consciousness is exactly analogous to sand particles helplessly tumbling within the aimless drift of fleeting dune formations: we are reduced to mere *dust in the wind*.

The world is either determined or it is not - and neither scheme can explain free will. This paradox is not the consequence of any limitation in our understanding of neurology or the underlying physical principles of matter. Neurology and physics yet present many puzzles to solve that will, no doubt, be resolved in due time; free will, however, is a much *deeper* problem. Simple logic demands that events must and can only be pre-determined or un-determined; that is, a specific and particular event *must* happen or a specific and particular event *cannot* happen. The kind of specific and particular event that we believe a *decision* to be (an initiation of specific action that manifests mysteriously out of nothing) is *neither* of these things: choice is a strange and elusive "could possibly be this and/or might definitely be that" kind of phenomenon. Free will, determination *made by consciousness*, is a network cascade of purposive neural activity, an *organized avalanche of thought* falling suddenly into the world. If free will exists (and is not merely an illusory artifact of consciousness like dream images and events that have no external reality), then it is a phenomenon unlike any other in the universe: it cannot be *pre*-determined and it cannot be *un*-determined - it must be *self*-determined. *Somehow*, it is the flow of information that determines how the information will flow; from an avalanche of rocks tumbling down a mountainside emerges the ability for that collection of rocks to choose the precise formation of their falling: *thought determines thought*. We will require a new kind of science (indeed, a new kind of logic) to describe cognitive events that are not caused by prior events and are not caused by statistical caprice, but are caused…*by themselves*. What or Who is this Promethean Atlas in the mind - stronger than the inexorable compulsion of physical law and mightier than the purposeless cascade of quantum uncertainty - that endeavors to do something so simple and mundane as annihilate every contrary impulse and reflex of the entire universe…and make a decision? And without some *Ghost in the Machine*, how does an idea that does not yet exist bring itself, uncreated, into the world?

Is Free Will an Illusion?

It is logically (if not emotionally) easier to suppose that we *cannot* make a decision. In fact, some exceedingly clever people (including Albert Einstein, who is in my opinion the greatest of our kind) do not accept the reality of free will, believing it to be only an illusory projection or artifact of cognitive function. According to this interpretation of the available facts, the brain is nothing more than the most sophisticated machine in the universe, a bio-computer running fantastically complicated software. Certain input, run through computations so complex that the causal pathways can never be traced, yields certain output. But this certain output is certain only to the application subroutines; the *uncertain* operating system (that we call "I") does not need, and is not programmed, to understand the complex subroutines and misinterprets a pre-determined and inevitable result as…choice. And the state of the overall system is so dynamic, with all the different hyperactive subsystems always in constantly shifting relationships relative to each other, that the same input on different occasions rarely leads (or need not lead) to the same output. What appears to be a different choice is really nothing more than a different reckoning of the current ever-changing state of the overall system. All the subsystems are deterministic, but the overall system doesn't know it. The stressed-out operating system must effectively coordinate the frenetic non-stop activities of a huge cognitive corporation with many separate and sometimes competing divisions; it is simply not practical for the head-office to understand the intricate determinism out in the field. An effective administrator simply cannot bother with the exquisite details of the specialist's work, and so a kind of executive blindness (or oversight) prevails. There is no choice and free will is an illusion; you and I and everyone else are chimeras, the deluded hallucinations of organic machines.

Quantum mechanics is (as we shall soon see) strange. So strange that Richard Feynman once famously quipped, "If you think you understand quantum mechanics, you don't understand quantum mechanics." But we have enormously powerful theories about it that must be at least in part correct, because they have been so reliably useful to our understanding of the sub-atomic world. Science now also knows quite a bit about brains, and an impressive amount about mind, but cognitive science, linguistics, neurology, psychology, computer and AI science, etc., do not yet have even a *theory* of consciousness; it is the last, greatest mystery. Research and analysis will continue, as it should of course, and it may come to pass that someday we know what it is. The prospect of such knowledge, however, should frighten us a little bit. It is perhaps not a coincidence that this *last greatest mystery* sounds rather like the *one forbidden thing* motif so common in mythologies around the world (the violation of which always results in catastrophe). Maybe those stories are just silly superstitions; on the other hand, maybe there really *are* things we shouldn't know.

Our radical reshaping of the entire world is based upon what we think of ourselves: we believe *humans are special* (10,000 years ago, humans and their domesticated animals represented about 0.1% of all land-animal biomass; today the figure is closer to 98%). Only *we* feel love and joy and rapture, and misery and despair and agony. Yes, modern biology has forced us to concede, we are made of the same genetic stuff as all the other living things of the world, but only *humans* know of good (life) and evil (death). The single most obvious fact about the world is that biological organisms with advanced consciousness will determine what happens to it. There are disagreements about just where this authority came from, but it cannot be disputed that we have the *right* to do this - we are the *makers* of rights. And we will make the world whatever we want it to be for a simple, inexorable reason: because, of all the progeny of earth, *only we can*.

But what if the materialist-mechanistic view of consciousness is correct and we really are just bio-machines? If humanness is reducible to objective equations (love = chemical state x, ambition = chemical state y, excruciation = chemical state z) then this knowledge will surely change our opinion of ourselves more profoundly than any other event in human history. If humanness is expressible as numbers on a page, as predictable, as changeable, as reproducible, as *fake*-able, then all those subjective qualities about ourselves that we believe are unique and important, will be revealed as an *illusion*. If feeling and awareness are not states of some *intangible entity* but only

processes of *tangible chemistry*, then the august and protected status we have given the human is a delusion: experience itself is a lie. No bliss, no pain, no life, no death, no *purpose*; instead life is only the relentless grind of a busy eating and shitting machine, mindlessly sweating out complex chemical reactions that merely *emulate* the quasi-magic of consciousness to accidentally advance an accidental process to a meaningless, accidental end.

In such a universe, our analogical picture of organisms as something *like* gears spinning and being spun by other gears in some cancerous clockwork monstrosity, becomes quite a bit *less* metaphorical than we previously imagined. If it should come to pass that we eventually discover this particular forbidden fruit of our true nature, we will indeed long for the paradise of our former ignorance. In fact, it is reasonable to wonder if a mechanistic human psyche would be strong enough to survive such knowledge. Can thesis and antithesis coexist in the same space? (It's like the old joke about a joke so funny that everyone who hears it immediately dies laughing.)

That somewhat unsettling view is logically consistent with the available facts…*and free will is not*. But, as I have tried to demonstrate, there are important facts about the nature of space and time that are still beyond our comprehension. The physics of consciousness is Unknown. The world is machine or magic - *you* decide. And if free will is not an illusory mirage of consciousness, and we actually possess intent capable of making a decision - *if we tell chemistry what to do* - then we are truly magicians, wizards, every one of us…

The Observer Problem

Free will seems, in some way, to be the conjunction of these two incompatible world-views: a decision is a specific (deterministic) but uncaused (indeterministic) phenomenon. It is interesting that these very same competing descriptions of the world also come into conflict in physics. The deterministic "classical" model describes the large-scale world very well and the indeterministic "quantum" model describes the small-scale world very well, but the classical model cannot describe the atomic domain and the quantum model cannot describe the galactic domain. (Actually, the quantum model *is* deterministic in unobserved stage one, but as soon as we look at it in stage two, it instantly becomes indeterministic - as we'll soon see.) This absence of a single, universal model that explains both the large and the small, remains the most vexing problem in physics. Perhaps it is no coincidence that the biggest problem in physics and our understanding of the universe, and the biggest problem in philosophy and our understanding of ourselves…is the *same* problem: how can something - the universe or my brain - be both determined *and* undetermined?

As we have seen, if every event, past and future, is locked within a clockwork mechanism of cause and effect, then even the events in our brains are similarly constrained…and free will is not possible. The machine-like matrix of causality described by Newton, Maxwell, Einstein, and classical mechanics in general, however, encountered a problem with the notion of free will *only in theory*, *not* in experiment. The presence of an observer did not intrude into, change or affect, the world being observed. Consciousness could be treated as an external system and ignored without consequence to scientifically rigorous descriptions of an objective world. In pre-quantum physics, consciousness was a separate matter from science - possibly, but not necessarily, separate also from the determinism so anathematic to free will - it simply wasn't relevant to a scientific worldview as accurate and logically consistent as it could be at the time. We now know those classical descriptions of nature were incomplete, and so the old physics has been updated by the new physics of the mysterious microworld. But, unlike the passive, limbo-bound consciousness of the classical world-view, the observer *does* intrude into quantum mechanical descriptions of nature - *like a bull in a china shop*.

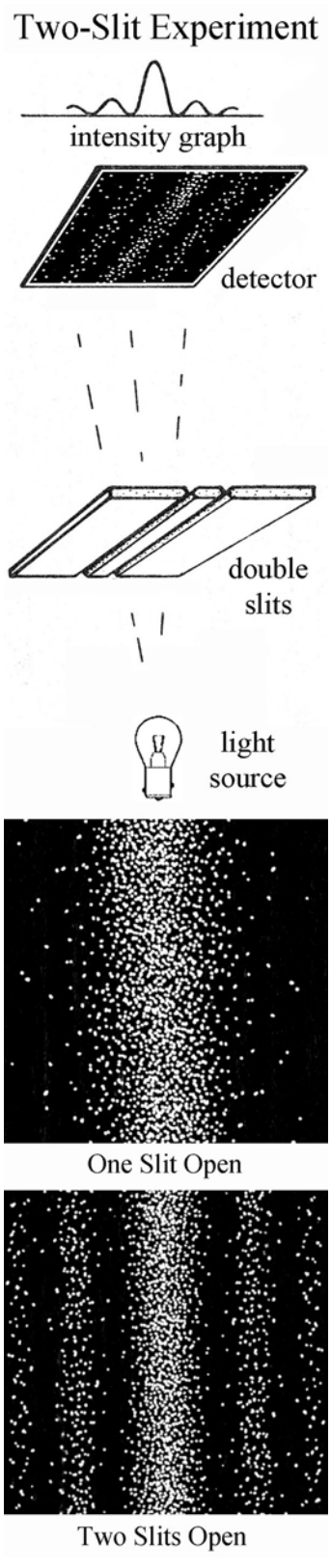
Our everyday experience of the world leads us to believe, not surprisingly, that it is actually there in an objective way. We may not understand the Newtonian mathematics of the activity we see around us, but we all have an intuitive sense that for every action there is an equal and opposite reaction. The world is predictable. Most importantly, the world is predictable even when we are not looking at it. If we do not look

at or study it in any way, it goes on about its worldly business, oblivious. It exists (so it seems) in a real and permanent way that is not affected by how we look at it. It was, after all, only creatures who thought in this no-nonsense way that survived the predator-filled jungles we inhabited long ago, and so we descendants of those sensible creatures think likewise. Natural selection has *made* us objectivists - everyone thinks the world is actually there whether we look at it or not. In this reasonable belief, quantum mechanics says, we are mistaken.

This new physics describes in exquisite detail another even more important way that science encounters this self-*in*consistent paradox of determined-undetermined nature, a spooky aspect of quantum mechanics known as the quantum measurement problem, or *the observer problem*.

The microscape is made of a small variety of different things - electrons, protons, neutrons, etc. - and these things all exist in two dramatically different, yet co-existing aspects. On the one hand, they are all *particles*, discreet, individual, tiny dots of matter; on the other hand, they are also *field oscillations*, wave-like regions of disturbance analogous to other waveforms we see in nature. This is not conjecture: we can verify these seemingly incompatible qualities in exacting experiments. If we wish to examine the properties of an electron and set up an experiment to detect particles (that is, find a position state), particles are what we find; conversely, if we set a slightly different experiment to find waveforms (the momentum state), that's what's found. It should be noted that these particle-wave qualities are *stunningly* diverse: a particle is a sizeless mote smaller than any detector (or theory!) can reckon; a wave is an energy spike in a field that extends to the end of the universe. So, is the electron a) infinitely small, or b) infinitely large? The answer is *both are true*. How can that be? Nobody knows. There is a well-known real-world demonstration of this strangeness called the "two-slit experiment" (first performed by Clinton Davisson and Lester Germer, with an electron beam, in 1927) which has been exhaustively tested and re-tested in many sophisticated variations; it always confirms the worst: the universe is *seriously* FUBAR.

In the simplest version of the experiment, a precision light source is placed in front of an opaque screen with two narrow vertical slits that will allow light from the light source to pass through to a photon detector beyond (the experiment works equally well with any other particle-wave from the theater of subatomic players). In the first part of the experiment, one of the slits is closed and a beam of photons is directed toward the detector. The resulting array of measurements recorded by the detector is called a *diffraction pattern*, a fuzzy, narrow vertical blob of light specks, a diffuse collection of many photons detected, thus indicating that light is made of many little pieces. In the next part, the second slit is also opened and a new beam of photons is directed at the detector. The resulting measurements look different this time: a series of alternating vertical bright and dark lines, banded regions of greater and lesser intensity, are arrayed across the detector in what is know as an *interference pattern*. By opening the second slit, we have doubled the overall illumination as expected, but in the bright bands the illumination is 4X brighter, and is completely absent from the dark bands - regions where photons were in fact detected when they passed through one slit only. The first diffraction



pattern was understandable as the cumulative effect of many photons passing through the slit to form the measurement(s) found. The interference pattern, however, cannot be explained by the action of many particles; photons, in addition to their particle-like aspect, also have - and are seen here in - a wave-like aspect.

Imagine the surface of a pond disturbed by the energy of a dropped stone. This energy is then dispersed across the surface by waves carrying energy through the medium of the water. A wave has a peak of positive energy and a trough of negative energy. When two waves meet with and overlap each other, the size, or *amplitude*, of these waves combines: two equal peaks (or troughs) meeting *in phase* will *reinforce* and combine to form twice the amplitude; a peak and trough of equal (but opposite) amplitude meeting *out of phase* will exactly *cancel* each other, leaving the field flat. The effect of adding wave amplitudes together is called the *superposition principle* - it's what occurs when two or more waveforms combine to make a new and different waveform. This *constructive* or *destructive interference* between peaks and troughs radiating out from the two slits of the experiment is what causes the banded pattern seen on the detector.

It is, perhaps, strange enough to confirm that light is in one aspect infinitely small and in another infinitely large, but it gets stranger still. The precision light source in this experiment is able to release not only a beam of light, but also just one photon, a single corpuscular grain of light, at a time. Again, one of the two slits is closed and a succession of single photons is fired through the slit toward the detector beyond, with the same resulting diffraction pattern we saw with the beam of light through one slit. Things get very interesting, however, when the second slit is opened. As each single photon is released, it must pass through only one of the two slits; and yet, after many successive photons have been fired, traveling through one slit or the other, the *same* wave interference pattern results. Somehow that single particle of light is going through both slits at once, and *superposing with itself* to cause the interference pattern! And if we decide to mischievously insert a detection device at the slits, to determine which slit the particle actually goes through, subsequent measurements do not have the interference pattern. The photon "knows" it's being watched and changes its subsequent behavior accordingly (it makes a diffraction pattern).

Many photons could, in aggregate, assume wave-like properties. But how can *one tiny photon* simultaneously be a *universe-spanning wave*? How does the photon "know" that the other slit, the one it's *not* going through, is open, thus freeing it to become a wave that ripples out to the edge of the cosmos? And when a detector is placed at the slit, how does that part of the probability wave on the far side of the universe instantly know that a peeping intruder is present and that it should suddenly and completely vanish into the single particle measured? It seems that all the tiny pieces of which the reliable world is made are actually pan-galactic ghosts - until we *coerce* them to exist here and now.

The physics of the very small, of atoms and things even smaller, inescapably involves something called Erwin Schrodinger's *wavefunction* equation, a mathematical description of the *probability distribution* of quantum events - of the always-changing chance of finding a quantum particle at a particular location.

Probability is, as the name suggests, an indeterminate business. Take two dice and throw them. What is the result? Probability theory doesn't have a clue about *one* roll of the dice; it knows a great deal, however, about *many* throws. Seven, the most likely combination of two six-sided dice, has a probability of occurring once in each six throws of the dice - about 16.666…% of the time - so if you throw the dice 100 times, it is quite likely that you will throw seven about 16 times. The more throws you make, however, the closer you'll get to exactly 16.666…% of all throws being seven. If you roll the dice more than a *billion* times, it is a statistical certainty that 166 million throws will be seven (give or take a few). And if the probability you're trying to establish is the distribution of photons, well, an average 60-watt light bulb releases 100 billion-billion photons every second - more than enough "rolls of the dice" to ensure that the "fuzzy," "ghostly," "indeterminate," "probabilistic" nature of the very small is, nevertheless, subject to the entirely deterministic wavefunction equation. The free-rolling dice are in fact utterly constrained; with a vast number

of rolls, they *must* conform to the probabilities. Similarly, the wavefunction - the shape and amplitude of a probability distribution as it evolves through space and time - never lies…unless, for some mysterious reason that the otherwise very powerful theory can't fathom, it suddenly *collapses*.

Our televisions, computers, and nuclear reactors all work as reliably as they do because Schrodinger's wave mechanics has provided an incredibly accurate description of what's going on down there in the microscape we cannot see. Thousands of experiments have verified that wavefunction is, at the very least, a *partially* true picture of reality. The probability wave described by the wavefunction equation is *so* useful, in fact, that everything would be happily settled…except that wavefunction also demonstrates some *exceedingly* strange, really rather unbelievable things about the world it describes so well.

Until we reach into the wavefunction and *cause* the enormous cloud to distill into a tiny drop, an action known as *state vector reduction* (or *wavefunction collapse*), quantum theory says the photon cannot have both a definite location *and* a definite velocity. That is, until it is observed, *the photon only exists in a ghostly superposition of every possible location*. Where the wave amplitude is large, the chance of detecting a particle is more likely; where the wave amplitude is small, the presence of a particle is less likely; where the wave amplitude is zero, no particle is present. And because the probability wave extends to the end of space, there is always an exceedingly small but importantly *non-zero* chance that a particle will be exorbitantly far from where you expect it (the photon is quite likely to be somewhere in the experiment, but it *could* be on the far side of the galaxy). So where *is* the photon, *really*? The theory says we're not allowed to look, because if we do, the wavefunction self-destructs: the locationless photon was nowhere and everywhere at once, and then, because we *said* so, it was forced to be at a certain location on a detection screen. What kind of object doesn't have a location until an experimenter's mind gives it permission? How does *that* work? Nobody knows.

If quantum theory is a complete description of the world (and its overwhelming experimental success strongly suggests that it could be), then one of two possible worldviews must obtain: 1) the world "tells" *us* what kind of measurement-observation to make, thus ensuring accord between objective reality and experiment, or 2) the world is *not* objective. Both prospects are strange indeed, but *that's all the data tells us*. There are many competing but still unsatisfactory and unproven explanations for this quantum schizophrenia - *sum over histories*, *hidden variables*, *many worlds*, *decoherence*, etc. - and all of them reject *both* options, supposing instead some deficit in our understanding of the otherwise *spectacularly* successful Schrodinger equation. Stage one of the equation is a pristine and deterministic reckoning of the wavefunction throughout space and time; it is only our desire to know *anything* about the wavefunction that introduces the problematic stage two collapse - a non-mathematical ad hoc addition to the equation that is present only to explain the sudden dramatic change we see in the state vector when we do something so seemingly innocent: we merely *look* at it.

Does the universe exist if we're not looking at it? The answer is, apparently, no: the Observer's Choice makes the world. The free will enigma has now leapt from those ivory tower academies of philosophy and entered our scientific discourse in an obvious and undeniable way. The observer is problematic because it seems rather more *godlike* than nature-like; the heretofore silent elephant in the room is hungry and starting to make some noise…

Bigger than the Universe

I mentioned earlier that a "new science" will be needed to explain free will. This not-yet-imaginable mode of investigation will, I believe, somehow involve *hyperspace*. At the center of a large star that has collapsed into a black hole is something called a *singularity*, a place where the fabric of space-time has been compressed to infinite density and squished right out of the universe. It is the end of space-time - literally, the end of the universe. It's already there... waiting. Cosmology is not certain at this time (and probably never will be) just how long the universe is supposed to last, but if that cosmic lifetime is, for the sake of conversation, 100 billion years, then that distant future is already here, hiding beyond an event

horizon in the corpse of a dead star. And if one were to leap into such a gravity-well (numbering, we now believe, in countless billions in the universe), they could make a 100 billion-year journey to the end of the cosmos in the blink of an eye. But from *that* journey there is no return.

There is, however, another kind of time travel from which there *is* a return. And we sentient beings make this journey many times every single day - without ever considering just how extraordinary such travel actually is. With our powers of cognition, we are able to "see" the consequences of our actions. No other animal does this (at least not over spans of time greater than brief moments). Somehow, we can describe in our minds different possible futures based upon certain different actions - and can modify or completely change our actual subsequent actions based upon the information thereby acquired. We think nothing of this. "I thought of doing that, and then I thought better of it. I could see that such action was a mistake." It is so easy for us to do this that we do not often think about just how magical such cognition actually is. *How* do we imagine a possibility in a future that does not exist and may never exist and then evaluate non-existent complexities to (sometimes) correctly determine immediate action? "I just thought about it," we say. But what is the mind *doing* that allows it to look into the future? It is protruding into hyperspace to cognitively survey a 4-dimensional *temporal landscape* - past, present, and future (or futures). We are all time travelers.

Imagine a 2-dimensional flat plane, above which hovers a 3-dimensional sphere. If that sphere were to descend and protrude into the flat plane, plane-beings there would perceive at first only a point (of contact) and then an expanding circle as the sphere protruded to its maximum diameter. A 2-D plane is infinitely thin: it has no 3-D thickness. Correspondingly, a 3-D volume has no 4-D thickness: hyperspace is infinitely greater than mere space. If a 4-D hypersphere were to protrude into a 3-D volume, volume-beings (like us) would perceive at first a point and then an expanding sphere as the hypersphere protruded to its maximum diameter. I believe such a protrusion is happening: the stuff in our skulls, evolving ever larger over the last hundred-million years, is pushing out into hyperspace - *or something in hyperspace is pushing back*. And the point of contact is slowly getting *larger*…

Which came first, brain or mind? According to the way we commonly think about how the world came to be in its current form, it's a nonsensical question: we generally believe that brains evolved slowly over billions of years until they were sufficiently elaborate to allow the emergence of consciousness. The brain-mind relationship viewed in this way is rather like that between hands and manipulation: hands evolved from fins and paws to eventually manipulate the material of the world into shapes of our own design. First there is a thing and, second, an action that thing does: hands *then* manipulation. The other, less-common, view is that consciousness (whatever it is) was *always* there, waiting for a sufficiently elaborate mechanism (like a brain) to access it (or liberate it). The mind-brain relationship viewed in this way looks more like the relation between mathematics and equations: the eternal forms of the *idea-world* existed forever before we discovered them and how they define the shape and movement of the *matter-world* cosmos.

Perhaps this entity that observes and feels and has experience is not inside the brain at all; it is, rather, an external ("forever far, yet touching near") intelligence resonating with the sense-organs of our still-evolving *sixth* perception, a *hyperspatial* extension of mind reaching out into infinity, struggling to remember *Who* it is…[1]

1 There are some inevitable ontological inconsistencies in an existence where you are not really where you think you are. Perhaps humor has evolved in response to the prevalence of such incomprehensible curiosities: unlike synthetic *Turing Machine* intelligences that do not and cannot know when to stop calculating an infinite problem easily seen by humans to have no solution, we can laugh and walk away when faced with the absurd. In fact, if we approach it in good humor, we actually derive pleasure from paradox. It may be difficult to imagine just how the chemistry in the brain learned how to manufacture such a wonder-drug, but it is easy to see the benefit of such a skill once you have it: if there were no cognitive mechanism for dealing with the abundant absurdity of the cosmos, if we could not laugh and move on, the human mind would quickly and permanently immobilize itself in contemplation of its own existence...

Where is the Observer?

There is another curious aspect of consciousness that eludes understanding: the simple awareness of ourselves as distinct and existing entities. In many ways we are machines, made of organic bone and tissue rather than bolts and steel, but machines nevertheless. But it is not anything to be a machine (as we commonly use the term). The super-computer (as it might one day exist) may or may not be smarter than me - although it already surpasses my abilities in many respects - but it has no experience of itself. The super-computer does indeed seem smarter than my dog (in some ways), but it is something to be a dog; it is not anything to be a computer. If I smash the computer to pieces, its experience of itself is unchanged - it did not know it was assembled and it does not know it is smashed. Not much soul gets into machine parts; quite a bit more of *whatever it is that is aware* gets into a dog.

It seems that the predominant thought in modern philosophy is that the mind is simply the activity of the brain, the incessant hum of data gathering and processing which, by virtue of some critical threshold of sophistication that we have evolved beyond, becomes self-aware. Consciousness is understood as an *emergent* property, curiously rising out of the transmission of vast amounts of data along neural pathways: the mind is what the brain does. Thought and comprehension of existence must be, according to this view, the product of brain activity: there is only the complex movement of electrical impulses between various processing hubs in the brain. Free will is an illusion; consciousness is an illusion - the mere byproducts of brain activity, the accidental effluent of cognitive number crunching. Organism is synonymous with mechanism; the general pattern is the same, only the materials are different. Or so the theory says.

Given our current level of technology, we can imagine a very human-like machine that is not, in principle, beyond our ability to construct, and let us say that money is no object here - we have unlimited funds. Prosthetic limb designers already build functional arms and legs. We could certainly apply very acute pressure-sensitive pads upon those limbs to emulate a sense of touch. We could even apply a veneer of skin-textured latex to give our Pinocchio a more human-like appearance. Cameras serve as eyes, and current scanning technology certainly enables the machine to perceive grades of lightness and the full spectrum of color. Gas chromatographs can analyze the chemicals present in solids, liquids or gases, and provide an analog to our senses of smell and taste. Microphones record sound to be processed by the best voice-recognition software, and little speakers in the synthetic mouth simulate speech. Motor control and the gathering and processing of data is all performed by our most sophisticated computer, and we can give the aspirant an enormous hard-drive pre-programmed with 1 million standard responses to 1 million standard questions. (And unless you *knew* someone was trying to trick you with a fake person, you would probably ask only very mundane questions of the kind popular in polite conversation - this is *not* a Turing test). We might even program the machine to emulate certain behaviors corresponding to certain emotional states (for example, he might "give the finger" when asked about his sex-life). To finish the package, we invite Hollywood special effects wizards to make the overall appearance as realistic as possible. In a dark room and a tightly controlled situation (no *funny* business), this silicon-chip Frankenstein might actually fool people for a while. But this pretender has no identity whatsoever. If I melt it down, it will think of itself in exactly the same way - which is to say, not at all. Such a thing is nothing more than a large abacus, and has the same experience of the world as the inert beads of which it is made - none whatsoever.

Once life actually gets started, it is not completely surprising that organisms capable of gathering data, and subsequently processing that data into useful survival-ensuring information, might evolve. But nothing in that equation requires the existence of self-awareness. Our walking calculator can easily be programmed to flee from predators; an object larger than a certain threshold size, approaching faster than a certain threshold speed, will trigger a specific "turn and move away at maximum velocity" response. Such an inclination in the programming would ensure that the machine endured to witness other days. There is no need for the machine to be *aware* of what it is

doing; it only needs to act, not *think* about it. In fact, awareness is entirely superfluous and, quite possibly, detrimental: it is just another signal interfering with the data stream or, more seriously, the original survival programming.

We now have the imaging technology to monitor the traffic of information moving along the many synaptic highways of the brain to various processing hubs; we can actually detect the ways in which the brain acquires and uses the data it encounters. But where is the *observer*? Something that is *known* - data - is not at all the same thing as something that *knows* - awareness. Somehow the data knows itself? A bound stack of paper...wonders whether it is a good book? A very long list of 0's and 1's...believes itself to be a rousing (digitally-produced) version of the Brandenburg Concertos? An intricate organization of precise spectral information...is having an identity-crisis because a dark-skinned woman in a green dress doesn't really *seem* like a painting about free will? It is often said that we are nothing more than complex organic machines: hardware brains running software minds - a cerebral abacus with neurotransmitter beads. But how can conscious awareness arise from the abacus, where there is only: a mechanism that processes data (enabling the movement of information in different usable forms), and data (information somehow contained or preserved in the movable machine parts of the mechanism)? The abacus knows nothing; the arrangement of beads knows nothing. Data cannot *know* anything, any more than can the pulses of electric current that move it from place to place, or the chemical brain-machinery that generates this activity. If the busy pattern-generating loom of the brain *and* the intricate tapestry of thought it weaves are utterly empty, then *how* is awareness possible? And if this *awareness above the data* is not actually made of data *or* the machine data-*mover*, what *is* it made of and how does it exist in our brains? *It must be somewhere else*, poking into this world through the peephole of human consciousness.

People are like clothing that this mysterious *observer* wears. Some clothing is fine and clean, and some is worn and dirty. The observer experiences these realities, but is untouched by them. Our identities, our memories, our interior experiences of ourselves, are all clothing - they are not permanent, and are, in fact, highly mutable. They are an imperfect way for a larger presence to inhabit and experience the universe: one Observer (and sometimes *another*) looking out through many eyes.

The entity that lives behind my eyes is the interaction of ageless Consciousness and rapidly-aging meat. When the meat finally spoils, consciousness withdraws. The entity formerly called [insert name here] is gone - and never truly existed. Each of us is merely a different, and yet gloriously unique, perspective on the cosmos. Like the noise of a crowd, Consciouness is not here or there but everywhere; like the voice of a symphony, it is what it is only in the totality of its many parts. Does Consciousness remember what it has seen through my eyes and yours? Who can say? But the profoundly long and difficult effort it has made to get to these many vistas of experience would be entirely wasted if it did not.

You and I and all the manifestations of life everywhere are *windows* through which an eternal consciousness watches - and thus endows the world with *will and purpose*. More life is more windows, and a *virtuous* life draws back the curtains from a narrow egocentric view, opening and enlarging it onto a greater vista of unknown possibility. We do not nurture life for the benefit of the other; it is *ourselves* that is made greater when the ever-curious, Universal Watcher who dwells within sees *farther out*...

Cathedral of Illusion

And the magician became lost, wandering aimlessly in the Nowhere Realm, bound between two awesome, stupefying vistas...

There was the world: dark and brooding, musty and aging, weary and bewildered. The uneven bustle of listless movement was interrupted by a gasping wind, foul with decay, scattering bits of rancid detritus into growing piles of rot. Mournful noises ricocheted from every direction: rustlings of sorrow and misery, clatterings of greed and deceit, detonations of anger and violence. Far away the sound of vast, invincible machines pounded a martial rhythm like the battle drums of an advancing army, and a relentless apprehension oozed over the ground like a creeping

putrefaction. A gurgling spasm shuddered beneath the world, and everything was dragged down. The very foundations of the earth decomposed, and inexorably succumbed to a hideous ravening maw mercilessly sucking the living flesh of the world into a swirling hole of necrotizing filth. Down, down the world fell, into the bowels of time, digested slowly, still alive. A withering little flame fluttered in the deep, and was extinguished into sleep.

But *another* aspect was rapture and ecstasy in the embrace of soul-inflaming beauty...

There was the world: saturated with light, opulent with life, mysterious, beckoning, vivifying. The River of Life poured into the world, a shimmering, many-channeled ribbon that gently meandered across a misty dreamscape as ancient as the foundations of the earth, binding the world to some infinite and unknown Wellspring. There were many ferrying waterways to be explored in the vast forest sanctuary, but the unknown courses were by far the greater part of the River, flowing ever smaller into the flesh of everything that moves, flowing ever larger toward its unseen ocean destiny. A luminous apparition at the distant end of the visible wood appeared, a great window gleaming pure, as though cleansed of any worldly aspect, allowing the sacred light beyond to shine through into every evaporating shadow. The image of eternal regeneration, of the source and destination of all things, flared incandescent in the forest. In the surging swell of light, a great verdant cathedral emerged from the gentle mist of the forest, shimmering like a timeless paradise of holiness. In the cathedral garden, two lovers danced. One was a great red hawk, soaring around the lofty regions of the wood, strong and vigilant. The other was a delicate white dove, beautiful and wise, waiting peacefully below the circling hawk. And all the living things of the garden were their children, each one an extension of the living light beyond that never dies.

And the magician wondered if the form of the world was his to *choose*...

* * *

Personal Notes on *Cathedral of Illusion*

Sometimes, I get interesting ideas for a painting... that I have just completed (in addition to the current example, you will soon see that *Celestial Apparition* also suggested another possibility to me). I had just put the finishing touches on *Forest Light* and was writing the companion essay, when out of my brain fell these words: "...an apparition of the Goddess of Eternity in the great Cathedral of Illusion..." This image suddenly flashed in my mind. At first I wondered if I couldn't make some revisions to *Forest Light*, perhaps only adding the yonic "rose window" in the distance, rather than design a whole new painting. I quickly decided instead that the idea really needed a fully developed cathedral carefully integrated into a more peaceful and mysterious forest. And perhaps I could find a way to reinforce that "dynamic red and gentle white" motif that I had been playing with.

In general, I am trying to suggest with this image that there are some very important aspects of the world that we simply do not experience with the senses available to us, that the world *must be more* than it appears to be. When people ask me, conversationally, what this painting is about, I mercifully assume that they do not want to hear a lecture on consciousness, free will, and the observer problem ("Then why punish us?" you may be saying). I do want to convey to people that it is about trying to see beyond, but unlike William Blake (who wants to "cleanse the windows of perception") or Jim Morrison (who wants to "break on through to the other side"), I think *something* is trying to see into *this* place, break through to *our* side from... *elsewhere*.

Within the comfortable privacy of my own thoughts, I like to call this painting, *A Womb with a View*...


~ Children of Eternity ~
(On the Geometrodynamics of the Inward Domain)
Copyright 2001 - Oil on Linen - 30 x 48 inches

Vesica Piscis, mysterious verge,
whence all the forms of the world emerge;
External nature an unfolding bloom
e'er growing from the Empyrean Womb

Matrix and Structure of matter and space,
all geometric perfection and grace,
Law and Idea, the Infinite Field -
e'er the *Still Purpose* to whom the gods yield

Into the empty world came the First Born:
Almighty Twins - by two loyalties, torn;
One is the Builder that makes the world go,
one the Destroyer that lays it down low

Aspects of Power, two ends of one force,
Gravity Moving from only one source;
good falls to evil and growth to decay -
toys getting broken as large Children play...


~ Transcendeffervescence ~
(On the Many-Worlds Interpretations of Quantum Mechanics)
Copyright 2002 - Oil on Canvasboard - 30 x 20 inches

In the realm of atom-small
existence can't exist at all -
it's nothing but a random squall
of fuzzy perturbescence

Ghostly points enter into
the cosmos for a blink or two -
flaring as they pass right through
in fleeting evanescence

Every instant overflows
as indeterminism grows -
erupting from the flick'ring throes
of quantum efflorescence

From the seething Void of Chance
the teeming multitudes advance -
an endless e'er cascading dance
of procreative essence

Infinitely swelling mound
of universes growing round -
All possibilities abound
in cosmic luminescence

Many worlds fore'er unseen,
arising from what's *in-between*;
all dwelling in Her timeless dream
of Transcendeffervescence...


~ Lotus of the Eternal Night ~
Copyright 2002 - Oil on Canvasboard - 30 x 20 inches

Is time a line, with beginning and end;
or is it round, only subtle of bend?
Is Cosmos a tomb with no meaning thereof,
or Dream-World Ballet with the Goddess of Love?

Shimmering rainbow mist wings of the night,
fluttering currents of lonely starlight,
drift in the swirl of celestial Rose;
there in the blossom She waits in repose

Twelve are the regions of cosmos around
a destiny waiting - to which we are bound;
Twelve are the labors through which we must pass -
striving, enduring, and falling, at last

Ever it seems that the Darkness is deep,
that sorrow and instinct are longing for sleep,
yet music plays hushed in the night cold and long -
so dance in the tomb, to Her merciful Song...


~ Tending the Dragon Sleep ~
Copyright 2004 - Oil on Canvasboard - 30 x 20 inches

They lie deep in their stony slumber
silent beneath the heavy blankets of long ages
and there is scarcely a restless twitch
heaving snort
or somnambulist's nocturnal stagger
to suggest the presence of an immanent peril
just below the surface
of an average day

Sometimes the old ones awaken
hungry and intemperate
and invincible claws rake trembling meat from the bones
of a shuddering world
become a gurgling crimson turbulence -
until a casual weariness and boredom
calms the capricious fury
at last

Ages past we fled the pristine land
expelled by a relentless malice
more ancient and voracious than time
seeking refuge in every distant sanctuary
at the ends of the world;
but they have followed
led by the living chain
that binds us

When the mind-quakes recede
and clotted vermillion dirt dries
once again crumbling in the light of day
to scatter on the winds of spring
She returns
and attends to their merciful indolence
with long and gentle lullabies
to comfort troubled dreams

Like a velvety drizzle of cool water
She soothes the rousing pang of burning throats
and stills the shifting undulations of a thirsty desert
vast and fecund;
the harmless little ones are cute
but they get big so fast
and the food is plentiful
as autumn descends into red...


~ Parsival's Lament ~
(On the Rise and Fall of Space-Time)
Copyright 2003 - Oil on Linen - 30 x 48 inches

Prologue

The cosmos forged in 7 days
made by the Builder's Hand
Electron clouds to quasars vast
are moved by His Command
Whence the raw materials
or tools to shape these things?
Whence this *Builder*, grave and great
almighty King of kings?

Swarming, whirling, orbit dance
of all the outward part
The raging thrust of matter-stuff
around the Sacred Heart
Atom, cell, moon, planet, star
all guided 'round a focus
Whence the still and silent will
that binds them to their purpose?

The vortex whorls from zenith high
to nadir at the end
A gath'ring, all-compelling tide
in which all things descend
On tracks of formless, cosmic-code
move power, time, and space
Whence the latent, motive thought
that set these tracks in place?

Relentlessly evolving
ancient process of transition
Dust and stones and men and worlds
advance to their ambition
The *ever*-changing cosmos churns
as future falls to past
And long-enduring stars ferment
to elemental ash

Ghastly cosmic engine roars
a self-consuming beast
The universe itself the flesh
upon which it will feast
Dragon's lust and fury burns
yet new life e'er will rise
The Fire-Thief defies the beast
to serve the Lotus Prize

The Grail-Seeker's art has wrought
these living, yearning gyres
E'er they fall to Chaos' Flame
yet Order e'er aspires
Whither go His labors long
and wherefore was He sent?
Does e'en the Grail know the cause
of Parsival's Lament?

And yet, there is a deathless part
the *never*-changing laws
Eternal Beauty, Perfect Form
the First and Maiden Cause
The Lotus Throne e'er waits below
the many Lords of Power
who know not they serve the Watcher's
deep, Immortal Flower

Hidden in the maelstrom
a dark tranquility
Annihilation, rapture, bliss
at Singularity
Immovable Nirvana, far
within the Grail Rings
O'er the last event horizon where
the LotusMaiden sings:

"*The mighty hawk, aggressive, strong*
and peaceful fost'ring dove
The burden of all suffering
and sweet embrace of love
The many lands to be explored
and frontiers e'er forbidden
The manifest that might be known
and secrets ever hidden

"*The concrete forms of earth and sky*
from dream idea grow
The body, just a slave savant
from mind, all freedoms flow
The ardent questions searching out
the answer beckons in
The restless seeds that venture forth
the womb that waits within

"*So many things you children are*
so like your parents too
He is hard and brutal Red
I am gentle Blue
Fear not all your torments, lost
in labyrinths alone
Seek your Joy, my precious ones
and find your way back home..."

The Mystery of Beauty
of harmony and rest
The Mystery of Longing
of gravity and quest
The Mystery of Nature
of life and death and pain
The Mystery of Woman
these things...are the same

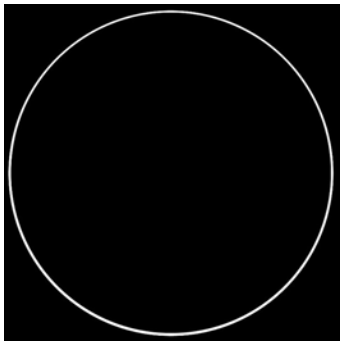
* * *

What follows is a view of the universe and its progeny - as seen *from the inside looking out...*

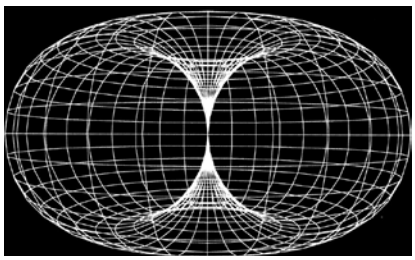
Geometrodynamics

This is a dynamic image, with many elements involved in complex interaction. More complex still is the geometric landscape in which the action occurs. The large oval that contains the image is made of four different geometric motifs: the circle, the torus, the lotus, and a mysterious fourth form that dwells hidden within the others...

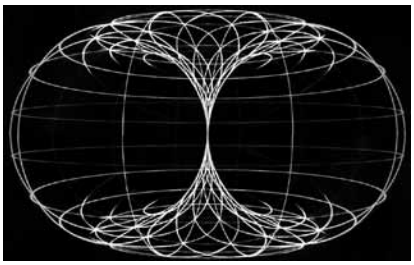
The *circle* is the most abundant of all forms in the cosmos; from the vast (spherical galaxies, stars and worlds) to the tiny (atoms, nucleons, and perhaps the fundamental particles themselves), it is a zodiacal universe of interlocking clockwork wheels. The great ring of the horizon divides the world below from the heavens above. The circle is the most simple of all shapes - a radial line of rotation drawn around a single axis - and the shortest line that encloses the largest area. It is simultaneously one-sided and infinitely-sided. A circle has no beginning, no ending; it is featureless and invariable, undivided and complete, timeless and perfect. It is the womb from which all geometry is born, the image of the transcendent.



The *torus* is a form of comparatively recent discovery. If a 2-dimensional circle is rotated perpendicular to an axis that bisects its center, the result is a 3-dimensional sphere; if the circle is rotated instead perpendicular to an axis upon its exterior edge, the result is a form called a torus - a hole-less doughnut-like shape that looks as if the north and south poles of a spherical balloon were pinched to meet at a tiny point in the center of the now-oblated spheroid. It is an uncommon form, sometimes used to describe the large-scale structure of 4-dimensional space-time: the three dimensions of space are represented by the circular expansion and contraction of the horizontal *x-y* plane; the one dimension of time is represented by the circular path of the vertical *z*-axis. In this "finite but unbounded" model, the origin and fate of the universe, the beginning and ending of all space and time, are at the same infinitesimal speck of nothingness called a singularity - the center of an infinitely compressed point in space-time that marks the boundary of physics, the cosmos, and even existence itself.



The *lotus* is associated with the mystery of creation in sacred stories across the orient - meaningful from ancient Egypt to modern Japan and everywhere in between. It is a structurally complex flower with a precise radial arrangement of petals, blooming at sunrise like a living incarnation of geometry and the eternal forms. Like the emergence of existence from non-existence, like the emergence of life from non-life, like the emergence of awareness and understanding from non-consciousness, the lotus rises from unknown depths of chaos below the waters, to open with luminous beauty in the manifest world of light. In ancient Egypt, where it withdrew every sunset only to re-bloom again with every sunrise, it signified the first life and eternal rebirth. In China, where the purity and texture-less perfection of its coloration was admired, it signified the potential to rise from the mud and escape the moral taint of desire - the image of Buddha-nature utterly untouched by the corruption of the world. In India, where they found meaning in its rise from darkness into sunlight, it signified spiritual fulfillment. It is the shape of the chakra energy centers through which we experience the world-illusion, the mandala window through which we might imagine an existence beyond that illusion, and the luminous, many-petaled Portal through which we return to the Origin of Being. The lotus is the Eternal Throne upon which sits Brahma the Creator; it is the first form from which all forms emerge, connected to the world by an umbilical stalk emerging from the navel of Vishnu the preserver, Vishnu the defender, Vishnu the world-dreamer...

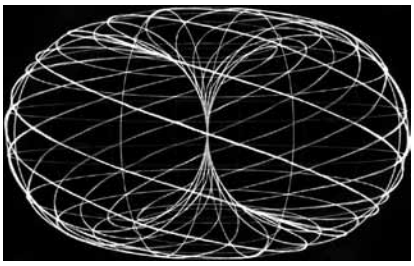


By revolving around its exterior boundary, *the circle generates the torus*. Now, twelve contiguous spheres of equal size packed together in omni-directional

balance enclose an equal *master sphere* in the center. That is, a global, circumadjacent arrangement of twelve spheres leaves a hollow in the center, a vacancy precisely occupied by another equally-sized sphere. The first increment outward from the interior locus sphere is the twelve-fold exterior beyond, and that exterior is *made in the image* of the center. For this geometric, and thus timeless, reason, twelve is seen as the number of circumferential limit, the celestial totality of the universe. Like the Olympians around Zeus, like the Apostles around Christ, like the Knights around Arthur, like the Namshans around the Dalai Lama, like the Councilors around Odin, twelve symbolizes the revolutions of action and change, held in orbit by the gravity of an eternal truth in the center. Twelve is the journey up from initial awakening to final descent into sleep. Like the constellations of the Zodiac, twelve are the Regions of Space; like the months of the year or the hours of the clock, twelve are the Ages of Time.

And so, as a map-like projection of space-time (and *chaos incognita* beyond), this toroidal, 4-dimensional *hypersphere* has twelve longitudinal and twelve latitudinal divisions. The intersections of these perpendicular map lines are visible here as stars with pronounced lens flares - the lines of which follow the curvature of space-time.

By connecting the vertices of these twelve vertical and twelve horizontal circles along the diagonals, *the torus generates the lotus*. This many-petaled pattern is seen in the crown-like projection emerging upward from singularity. But as symmetry in the forces of the universe breaks shortly after creation, and one unified "superforce" separates into four, so too does symmetry vanish in the torus-generated lotus: one axis of diagonals fades away, leaving only a clockwise-spiraling pattern of stars representing the dynamic geometry of space-time. The *lotus generates the vortex*.



This painting is a representation of creation and evolution, of challenge and struggle in the arduous quest for purpose and destiny, of things rising up with great ambition out of nothing, only to descend back down and finally disappear into blackness. It is a history and biography, telling the life-story of the universe, of worlds and civilizations, and of individual lifetimes. At every scale of observation the narrative is the same: there is a climbing out of some nameless deep that ever seeks to again embrace its vagabond progeny, there is a long journey toward the golden treasure of great purpose that ever recedes away, there is horrific violence and ravening chaos beyond (and within) that ever consumes a finite resource of will and power, and there is a final withering collapse down into the abyss from which nothing ever escapes...

The Dance of the Rollers

Arabia: the name conjures images of parched, arid desolation. It is home of the Rub 'al Kali - the Empty Quarter - one of the driest and most barren places on earth. But in the western highlands, along the Red Sea coast, there is a comparatively lush region. This unexpected oasis on the frontier of the desert peninsula is home to the Arabian Roller, a magnificent looking bird of iridescent blue and green. Rollers have a truly amazing mating ritual, a spellbinding ballet that has an operatic, even mythological dimension. Their poetic dance is not merely the fleeting congress of male and female, but somehow also a union of *universal* principles.

Two rollers meet. She waits silently, and will not move; her part in this drama is in the center, the focus around which all activity revolves. She continues to wait, a silent invitation in repose. An eligible male flies by, notices her, and quickly flies down to introduce himself. As is common among birds, the male is ostentatious and vivid with pulsating color, compared to the rather static and unornamented simplicity of the practical female (an appropriately inconspicuous demeanor, however, for the vulnerable keeper and caretaker of the future). The male shuffles along the branch to get close to the object of his affections, ruffles his spectacular plumage, and seem-

ingly expects coos of approval and submission. This he does not receive, and he must feel a certain avian corollary to ego-deflation when she merely sniffs dismissively at him. He is an extraordinary looking fellow, but appearance - a passive, inherited quality - is of only secondary interest to her. She requires him to act, to change and evolve toward a distant ambition. He must aspire to achieve her affections, earn the privilege of her gift, become worthy of the timeless perfection of her prize. Like a knight of the round table, he must actively seek to win the Grail: the Vessel of Eternal Life that can only beckon and wait...

So the amorous Roller flies up into the sky, and turns suddenly into a vertical dive. He will accelerate toward the earth at a prodigious velocity, reaching speeds in excess of 100 mph. Just a few short feet above the ground he will swoop into level flight at fantastic speed and "roll" back and forth in a dangerous swaying motion that will bring the plane of his wings perpendicular to the ground. He must intermittently stop beating his wings to accomplish this act of rocking left and right, and each rolling motion brings him closer to bone-breaking impact with the ground. Many less-competent Rollers must surely have met their fate in this fashion.

He flies back to the branch looking for some approval of this daredevil gesture; he finds none. Back into the sky he flies, even higher this time, to begin the death-defying dance again. He will roll even closer to the earth on the second run, his wings violently jerking backwards as they graze along the ground at high speed. He may have to repeat this acrobatic display of aerial prowess several times, but he will succeed in his ambitions. Having proven his worth - the magnitude of his ability, the depth of his commitment - she who waits will surrender the prize: his genes and hers shall inseparably join in the sacred union of a new generation. Time will pass and - as is the way with the world - it will come to pass that the female will act and the male will not. But in that fleeting, but paradoxically timeless, moment of ideal perfection, the adventuring seed that ventures forth becomes one with the beckoning womb that waits to receive. And all the things of the cosmos are the swirling ballet of these two mysterious archetypes.

That which moves and That which does not

These elusive, abstract classifications are known as *Archetypes* (from the Greek, the beginning or principal idea, the unseen quality that applies *universally*). Their presence or function in the real world of common experience is not immediately apparent, but they define all the concrete, tangible qualities of the material universe, the *Phenotypes* (the shown or demonstrated form, the seen quality that applies *specifically*). My first encounter with the concept of archetypes happened long ago, when I was a little boy of five or six. I observed an unfriendly neighborhood dog that made a habit of chasing the neighborhood cats. That was a profound mystery to me. My mother had already explained to me how babies are made (offended into early revelation by a kindergarten teacher who had informed me that *God* is where babies come from), and armed with that knowledge, this dog-chasing-cat phenomenon was deeply troubling to my understanding of the world. "Mom," I asked, "why do dogs chase cats up trees?" "Because cats and dogs don't like each other very much," she said. "But if they don't like each other," I persisted, "how do they get together to make little cats and dogs?"

My Mom probably thought I had run into a few too many tables, but cats and dogs *were* always around the neighborhood together, and kittens and puppies were obviously coming from *somewhere*. Dogs are bigger, stronger, shaggier, noisier, more friendly when they like you, and more aggressive when they don't. Cats are smaller, prettier, tidier, quieter, and more reserved and aloof in all social situations. Dogs are rambunctious; cats are peaceful. I was sure that *dogs were boys* and *cats were girls*. I had perceived distinguishable, categorical characteristics in those animals, and those qualities extend far beyond the neighborhood fauna.

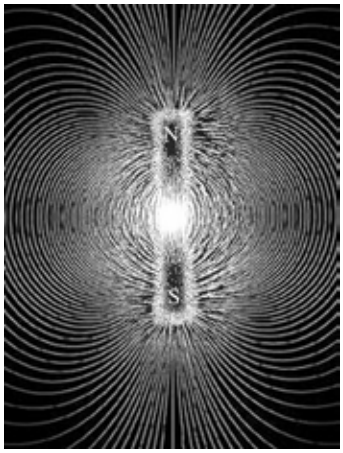
The idea of a universe created by the interpenetration of two equal but opposite principles finds its most complete expression in Chinese thought. In the well-known symbol of Yin and Yang, a circle is divided into two equal forms by a sigmoid line; each shape is created by, and only exists in relation to, the other. One form is light, the other is shadow, and within each is a small circular seed of the other - indicating that within any particular form, or within any class of forms, there

is the germinating potential for its antithesis. Yang is the active masculine principle; it is a positive, linear energy, pushing upward to the zenith, outward to the horizon. Yin is the passive feminine principle; it is a negative, cyclical energy, pulling downward to the earth, inward to the center. Yang is power and the searching question; Yin is beauty and the waiting answer. Hot and cold, dry and moist, hard and soft, brutal and gentle, evolution and involution, expansion and contraction, eros and logos. The rhythm of their dance is the breath and living heartbeat of all things.

Paradoxically, these contradictory orientations and opposing modalities do not negate each other, for they are *not* in conflict; they are, rather, harmoniously interdependent, each one coming into being as the inevitable consequence of the other. The apparent separation is an illusion. It is like the two aspects of an apple: not the indistinguishable left and right parts, but rather the interior reproductive part, and the exterior protective part. The exterior part exists to provide a delivery mechanism for the interior part; it is expendable and has no other purpose than to sacrifice itself for a distant trans-personal interest. The interior part exists to ensure there will be others of its kind in the future, and will exploit every resource available to ensure this objective. One part is ever-dying and ever-reborn; one part is perpetual. One part is the *objective form* (which is a simple dispersion of power in space and time); one part is the *subjective function* (which is an elaborate coherence of eternal geometry) - each part grows from and is an extension of the other. Like the opposing polarities of an electro-magnetic field, the existence of the whole emerges only from the flowing current between the two. And the shape of an electro-magnetic field (morphologically similar to the apple) is strangely relevant...

Universal Dynamo

Fundamental particles of matter possess a mysterious quality known as *charge*, a kind of orientation of energy that reacts with oppositely-oriented energy: particles or bodies of matter with like charge repel each other; those with unlike charge attract. Between regions of positive and negative charge there exists a potential for exchange. If a conductive pathway is established between the oppositely charged regions, a flow of *electric current* will occur. Along and around this current are lines of force that manifest as another mysterious phenomena. A *field* is a region, an ethereal force-filled sphere of influence, in which an object is able to interact at a distance with another object, doing so by virtue of certain innate properties that each object possesses, properties that extend out into the space around them. The electro-magnetic field permeates the universe. It is a composite phenomenon, consisting of two aspects. Each aspect is bound to, and generated by, the other: an electric current creates a magnetic field, and a *changing* magnetic field creates an electric current.



The electro-magnetic field - swirling around atoms and molecules, neurons, brains, people, worlds, stars, and galaxies - has a shape. Lines of force emerge from one pole of a central axis, rising and expanding like a hyperbolic funnel circling around in all directions in arcs that can extend for great distances; the lines of force curve all the way around and re-enter the opposing pole at the other end of the axis. The north pole is pushing outward and the south pole is pulling inward, a self-sustaining communication of differential exchange, creating the form of a many-layered torus - the hyperspherical shape of the cosmos itself.

In this painting there is a prominent vertical axis, a positive energy at the north pole, a negative energy at the south pole, and a potential for exchange between the two. This stationary axis has *apparent* spin (caused by the relative motion of the revolving cosmos), and a magnetic field is also generated by *spin*. A rotating field generates a flow of energy. And along and around this current is the clockwise-spinning electro-magnetic field (following Ampere's "right-hand-screw" rule). The positively-charged current-flow of expanding space-time, emerging and advancing away from the lotus crown, sweeps in a great swirling arc of universal rotation. This universal rotation is seen in the celestial *Coriolis Effect*, where the vast galactic currents of the

heavens - like the currents of Caribbean winds - are deflected by the larger environment into rotation themselves. And so the spiraling space-time dynamo spins, dragging the very fabric of the cosmos ever downward into an enormous vortex - coiled like a great serpent winding around creation from beginning to end...

Parsival the Red

Red is the color of blood, the color of the passions inflamed; it is rage and killing, lust and love. It is action, ambition, appetite. It is birth and death. It is the burning flame of living experience in a sensual and brutal world. Red is the color of a task bestowed and a challenge accepted. It is the banner of all those who would deny their fear and endeavor for great purpose.

Parsival, the Red Knight, is one of the central figures in the Arthurian legends and medieval romances about the Knights of the Round Table and their quest for the Holy Grail. (The untraditional spelling of *Parsival* used here - a combination of Wolfram von Eschenbach's literary *Parzival* and Richard Wagner's operatic *Parsifal* - declares an intent to take the old myth into new symbolic territory.) The Grail has been described as a dish or a stone, but it is most commonly seen as the sacred chalice that received the blood of Christ at the crucifixion. The holy artifact, the Vessel of Eternal Life, was thereafter brought to Britain from Judea by Joseph of Arimathea, but was subsequently lost and disappeared from all knowledge. Men of great virtue dedicated their lives to its recovery. This is the Grail Quest: a search for the Eternal in the here and now.

Parsival (which means, "pierce the valley", or "the way between") was born of a widowed mother, Herzeloyde, who had been a Welsh queen before she retreated to the wild forests of North Wales to grieve in solitude after the death of Parsival's father, the great warrior, Gahmuret. He was far away indeed from the civilized center of Camelot, and grew up entirely ignorant of the chivalrous ways - the established social conventions - of Arthur's Court. A chance, violent encounter with the first Red Knight left Parsival in possession of the blazing, scarlet armor no longer needed by the former owner, and so he set off to be trained in the proper ways of the world by the Knights of the Round Table. Parsival's inexperience and naiveté lead him to many failures, including a disastrous first encounter at the Grail Castle, where Anfortas, the maimed Fisher-King, was left to suffer many long years more for Parsival's incompetence. But the Red Knight searched on, and as years passed he slowly gained wisdom and genuine insight. Eventually he again found the Castle, liberated the King from his suffering, re-united with his lonely wife Condwiramurs the White, and became himself the Grail King - the caretaker of the sacred heart of a profane world.

In the legends, Parsival is *not* reported to have battled dragons across the starry heavens. But in his role as a noble servant bound to a great purpose, he represents an ideal of honor and duty that extends far beyond the shores of Britannia...

Who is Parsival? He is resurrected Horus, he who has returned from the underworld of death to stand against the life-negating machinations of Set. He is mighty Thor grappling with Jormungand, the Midgard serpent, at the threshold of Ragnarok. He is Gilgamesh, diving to the bottomless depths of the cosmic sea to find the Watercress of Immortality, only to lose it to an avaricious little snake, whose tireless hunger lived on unsated ever after. He is Vishnu the preserver, the defender, standing in cosmic counter-balance to the all-consuming aspect of Shiva the destroyer. He is Hercules struggling to appease the Olympians, the twelve constellated governors of the cosmos, by surmounting his Twelve Labors - one task for each cosmic hour between celestial sunrise and sunset. He is Prometheus stealing fire from the greatest power in the universe (so that Man might one day be greater than the vengeful gods) only to endure eternal torment for his defiance. He is Alexander, subduing the armies of the known world and shining the beacon of Hellenism across it, only to be felled by the tiniest insect soldier. He is Einstein disappearing into his study in 1907, and in the unknown caverns of the mind stealing past the hungry dragon who guards the Treasure of Great Knowledge, to victoriously return with his intellectual boon eight years later - an aged man long before his time.

Who is Parsival? He is an incarnation of the dynamic universe, the action of matter and energy in the field of space and time. He is the cosmic builder, the tireless process gathering fundamental materials

into the atomic and molecular forms of the world. He is the ambition of cosmic evolution, assembling those many simple forms into an astounding edifice of ever-increasing complexity and sophistication: galaxies, stars, worlds, life, consciousness. He is the conscious will of the self-organizing principle diligently building islands of order in a dangerously rising sea of *disorder*.

Who is Parsival? He is an incarnation of advancing civilization, a visionary soldier of progress ever marching toward some distant ideal of justice, peace, and prosperity. He is the vagabond spirit of freedom that wanders the globe in search of the foresight, good will, and optimism that binds the disparate abilities of many to a common goal in the future. He is the confidence that expands into unknown frontiers, ever looking for potential not yet imagined. He is the security ensured by rule of law that makes development and new opportunities possible, the vigilant sentry that stands between society and the dragons that always seek to drag us back to the primitive barbarism we left behind.

Who is Parsival? He is us, born with great promise into the world entirely without the understanding we need to survive and prosper here, fumbling through ignorance, humiliation, and failure. He is the hope we have to participate in the larger drama around us and make some important contribution to the process. He is our ambition to shape the world to our own design, and when we must, the resolve to accept the world as it is. He is the combination of strength and pride, knowledge and wisdom, and fear and desire that struggles against the terrible, gathering inertia that threatens to immobilize us, allowing the dragons to consume us from within.

Who is Parsival? He is the image of the self-made cosmos, standing alone against the relentless, all-consuming vortex, staggered by the appalling horror of its fury: the cosmos is an engine and blood is the fuel it burns...

Dragons of Chaos

The dragon is many things to many people. Chaos and violence, consumption and decay, suffering and death. A penetrating insight into the symbol of the dragon can be found in the Ouroboros - the self-consuming serpent. A snake sloughs its skin and consumes the protein-rich remains; that is, the old and decaying is made young and vivified by the act of eating itself. This is the image of nature: the living world endures through a constant act of self-consumption. Life lives by eating other life. *Nature is perpetually digesting itself.* Civilization is largely an attempt to disguise this hideous truth and inure us to the reality of this place. The attempt is rather successful, and we do indeed get to enjoy a protected existence here in our technological cocoon. In our artificially manufactured innocence, we gasp at nature films where the crocodile explodes with unrestrained ferocity from the river's edge and drags the thrashing wildebeest to his doom. Such mortal violence is unknown to most of us. We are thankful to be so safe. But the indomitable dragons from which we have taken refuge are everywhere...

The Second Law of Thermodynamics states simply that heat flows from a hot body to a cold body, and never the other way around. This means that you can't get more energy out of an exchange than you put in, because some energy is always lost in the form of heat. And if there is always ever less available energy, the system must degenerate from an initial state of maximum order to a final state of maximum disorder. Some systems may temporarily experience an apparent increase in order at the expense of great heat-loss, but in any closed system (a laboratory experiment, a power station, or even a life-sustaining world) the entropy (the amount of disorder) must always increase until a state of thermodynamic equilibrium is reached and no further ordered or meaningful exchange (of heat or information) can occur. Everything in the universe will eventually decay into a featureless mash of chaos. Confluences of order - accretions of pattern, structure, and complexity - are the regularities we see in the natural forms and processes of the world. They do not last. The universe has been churning for about 15 billion years now, and may endure in more or less its current form for some billions of years to come. But the dragon grows fatter every passing moment, and the finite amount of energy available to perform useful tasks is ever vanishing down the inexorably approaching throat at the end of the universe.

But that is very far indeed from here; the cosmic ocean and its galactic island archipelago seems peacefully undisturbed by that distant storm. However, the galaxies themselves are not always the peaceful, star-

dusty snowflakes we suppose they are. It is still unclear exactly how these large-scale structures of the cosmos were formed. When we look out into the deep heavens, we are looking at the remote past. Light travels very fast, but if its journey is from the boundaries of the observable universe, it may take 12 billion years to reach us. And in that remote past we see amazing objects called quasars that seem to shine with the light of billions of galaxies. We don't know what they are, but they may be involved somehow with the formation of galaxies; we do not see them in regions of the universe at a later stage of development. Some people think these galactic blast furnaces settle down into super-massive black holes that dwell still in the hearts of modern galaxies. And sometimes it seems those immense black-hole hearts (with the mass of perhaps billions of stars) develop a bit of a flutter - perhaps as the result of a collision with some other super-dense object. We can look out into the heavens and see swirling agglomerations of 100 billion stars all dying at the same time as gamma-ray bursts erupt from a galactic core sterilizing everything within a radius of millions of light years. After the big bang, these are the largest events in the universe, which, for a fleeting moment, shine with intensity *greater than all the rest of the cosmos combined*. Galactic neighbors who live too close to these "little big bang" meltdowns will suffer a similar fate, as the dragon's prodigious flames sear out across the intergalactic wastes.

But that is also very far from here; there is good reason to believe that such events happened only in the young universe, and that galaxies, even when in collision, are comparatively stable places to build a pleasant solar neighborhood. However, the stars themselves are not always the warm and friendly lights we suppose they are. Nobody expects things to last forever, and so stars come into being, live a stellar lifetime appropriate to their size (hot, fat stars always die young), and then expire - usually with considerable violence. Next-door neighbors may not survive such events. But old stars advertise their age, giving plenty of notice that the time to move on is approaching. The real nuisances are the stars that get sudden indigestion. Like proto-galaxies, stars too can mysteriously become gamma-ray bursters, caused, perhaps, by a rare form of simultaneous gravitational collapse and supernova, or perhaps by the collision of neutron stars. When such events happen, a radius of hundreds to thousands of light years is waylaid by a toxic storm of gamma and cosmic rays. The process is not well understood, but there seems to be no way of knowing which stars are contemplating things they shouldn't, no way of predicting when the dragon's scorching breath might howl over the interstellar sea, reducing every living world in its path to inert, lifeless ash.

But that is probably not *too* great a worry around here; the modestly-sized stars in our little corner of the galaxy do not seem to be at all threatening. However, the peace of our quiet solar neighborhood is intermittently disturbed by marauding gangs of meteors, asteroids, comets, and various other vagabond bombs. It is common knowledge now that the dinosaurs were probably killed off by the Cretaceous Event, the impact of a celestial object about 65 million years ago; the Permian Event is a mass-extinction that occurred about 245 million years ago that *killed 95% of all life on earth* at that time. When the largest chunk of the Shoemaker-Levy cometary fragments struck Jupiter in 1994, the resulting fireball was *larger than the earth*. Unfortunately for us, these are not isolated incidents; the completely obliterated surface of the moon testifies to the grim fact that bombardment from the heavens is the rule, not the exception - the geologically-active earth just has a better clean-up crew. The self-erasing geological record of such impacts is somewhat vague, but there is good reason to believe that these events are periodic, happening with clockwork predictability. One hypothesis suggests that our solar system, orbiting the galactic core upon one of the outer spiral arms every 200 million years or so, actually bobs up and down as it revolves, encountering a greater density of interstellar flotsam as it passes through the galactic ecliptic. Regardless, we know that the cosmos is permeated with countless mountain-sized sledgehammers careening through the depths at 30 miles per second, oblivious to any planetary anvils that might block their path. A merciless, world-crushing wrecking ball is already swinging toward us, and the dragon does not wait for straggling residents to find alternative accommodations before it strikes.

But that is, well, *hopefully* not an immediate concern, and so we strive to enjoy the tranquility of this planetary island oasis in the solar archipelago. However, the earth itself is not always the rock-solid terra firma

paragon of stability it seems. For example: volcanic explosions that hurl 35 cubic miles of ejecta into the atmosphere, great rivers of molten rock that scour the landscape of any previous feature, earthquakes that heave up the very surface of the earth and shake it like a dusty carpet, tidal waves that race across the ocean at 600 miles an hour and leap to heights of more than 200 feet before crashing through the shore, windstorms 500 miles across that blow almost 200 miles an hour, wind vortexes that blow at more than 300 miles an hour splintering everything in their path, tectonic forces that tear trillion-ton continents apart and collide them together. And ever the frost-serpents who sleep at the poles threaten to awaken hungry and avaricious, and once again slither out over the temperate regions of the globe to bury them under a three-mile coil of ice.

But such things might possibly be still far in the future, I'm sure, and so we ignore the pitiless destruction of nature all around us and enjoy the tiny, soap-bubble dome of security afforded by this insulated, *artificial* nature called civilization. However, the dragons of history provide little respite. In my lifetime I have seen on the evening news: 1 million dead in Burundi and Rwanda during the tribal violence of the mid-90's, 1 million dead in the Iran-Iraq war, 4 million dead in southeast Asia during the Vietnam war, and a ghastly parade of other bloodbaths too numerous to easily recall. In the last century or so we have suffered 20 million dead in the Chinese cultural revolution, 60 million dead in the second world war, 20 million dead in the Soviet gulag, 10 million dead in the first world war, 25 million dead in the Chinese T'ai-p'ing rebellion. When European ships first arrived in Tasmania, they killed, with weapon or disease, the original inhabitants of that land - all of them. They are an extinct people. Perhaps we'll do better when the first interstellar ships from afar arrive on the defenseless shores of our little planetary island.

If we should be so fortunate as to survive exploding galaxies, exploding stars, exploding worlds, exploding civilizations, and alien invasions...then we can prepare for assault from within. The *little* dragons also have a truly impressive array of lethal weapons: viral, fungal, bacterial, and protozoan infection, cancer, disease, genetic disorders, etc., etc., etc. And in the end, of course, they must win: cellular integrity diminishes with every duplication, and the dragon-breath acids of time slowly dissolve us into the constituent parts of which we were made: the dust of the earth - itself the ash of long-dead stars.

The torus-motif in this painting is a representation of the universal dynamo, a cataclysmic creation and destruction of galaxies and stars, worlds and civilizations, all grinding themselves into oblivion...

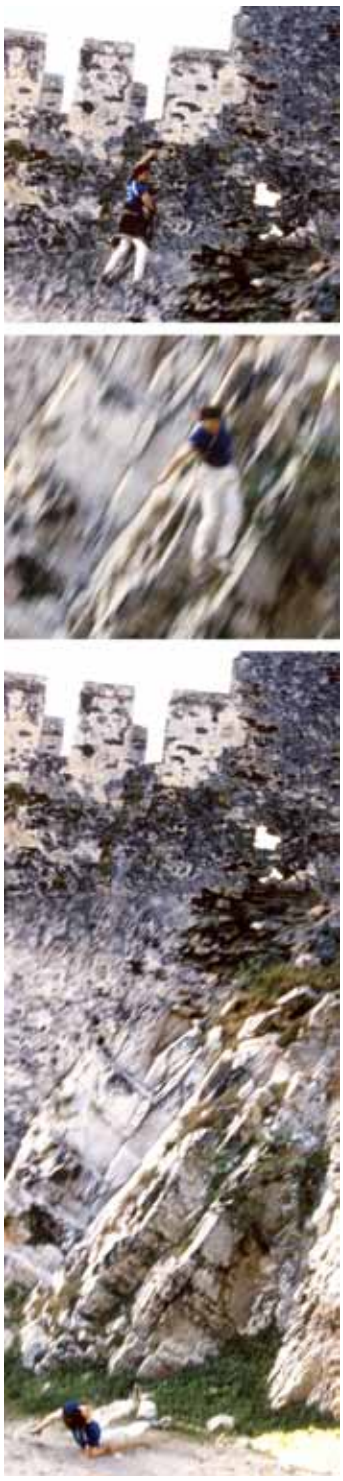
Encounters with the Dragon

I once lent a pen to someone I disliked in high-school and he was not inclined to return it in a hurry. It was a small matter, but I allowed it to fester in my mind over a period of some weeks (because, I suppose, I disliked him). The disagreement came to a head one day when I noticed he had a pen - my pen - hanging out of his mouth. I walked up to him, pulled the pen from his mouth, snapped it in half, and tossed the pieces to the floor at his feet (take *that*!). I turned and walked away. This fellow was understandably upset (I rather suspect the dislike was mutual), and he attacked me from behind. I turned and met a furious volley of punches, most of which were ineffectual and clumsily blocked. This persisted for a few moments, him throwing punches and me pushing them away. I don't recall having any feeling about the fight at that time; I was still shocked at the sudden attack, and was merely defending myself dispassionately. And then he landed a good punch on my jaw. *Something* in my head took over. I was still there in my brain, aware of myself as a distinct entity, but I was no longer the operator of my body machinery. The new captain of the ship threw the other boy to the ground and began striking him in the face with ruthless ferocity; I, on the other hand, merely observed the events as though from some distance, wondering why I felt no anger and how long the *other* would continue. A teacher and a few students pulled me off shortly thereafter, and so I was not required to mutiny - if such a thing is possible. But that encounter troubled me for a long time: I knew that the *thing* that battered that boy so viciously did not intend to stop - ever. *Bad dragon*.

I once witnessed a beating in progress. As I slowed to a stop at a red light, two men from a car in the lane beside me leapt from their vehicle and attacked two men in a convertible in front of me. Then the *other* came back. I quickly jumped out of my car and ran to

the altercation, situating myself between the attackers and the attacked. The aggressors dodged and crowded angrily, trying very hard to reach over and around me to continue their attack, but they did not punch or otherwise re-direct their considerable anger at me - despite the fact that I was indeed physically restraining them, and doing so with confident efficiency. We wrestled in the street for ten or fifteen seconds, the light turned green, and the convertible sped off - closely followed by the attackers' car. I did not know if the occupants of the convertible deserved to be beaten. I did not know if the attackers were gun-wielding madmen. The *agent* who made the decision to intervene did not care about such things. I did care, however, and when *it* retreated to wherever it is that such things go when they are not awake, I began to shake and sweat and had difficulty driving my car. *Crazy dragon*.

I had the opportunity to travel when I was 26, intending to cross Eurasia by land from London to Hong Kong. I did not complete the journey. The adventure was intoxicating, and I became increasingly reckless as I progressed across Europe. By the time I arrived in Turkey - a wonderful place, by the way - I had quite lost all perspective and was doing things far in excess of my abilities. It was only a matter of time before something bad happened - and it did, in a little place called Anamur. There is a 12th-century crusader castle there, crumbling into ruin by the sea. I decided I should scale the exterior wall - and let us not discuss the reasons for such action or the unfortunate symbolism therein. I had done some rock-climbing before, but my confidence was far in excess of my weekend-scrambler abilities. Despite my lack of skill I had always enjoyed good fortune in my climbs, but in that remote location (many hours from the nearest hospital, I later learned to my dismay) my luck ran out. I climbed up perhaps 30 - 35 feet, and reached an impasse: 800 years of exposure to wind and salt had compromised the stone, and 5 feet from the top the rock was too eroded to continue; it simply wouldn't support my weight. It was then I realized that I had never really learned how to climb *down*. So I clung there to the wall of that castle, hopelessly trapped. I became frightened; directly below me was an unpleasant pile of jagged stones that had fallen from the walls, which extended out to a distance of about 10 or 12 feet. I was going to fall and it was going to hurt - a lot. My knees began to shake and I felt a profound shame that my immanent demise should be so undignified. I had no plan, no intention, other than to wait for the inevitable. The stone crumbled in my hands, I lost my grip, and fell. And then *it* came back. In the tiniest fraction of an instant that it had to act, it was able to leap hard away from the wall, propelling us backwards out beyond the rock pile; as we fell it was able to orient my body slightly forwards to see where I was falling and finesse the landing to the extent it was possible. I hit the flat ground just beyond the rocks; it sat up and inspected my wounds: head fine, back fine, left arm fine, *working* arm broken, right leg fine, left leg *badly* broken (which cost me almost an inch of tibia). Its job finished, it lay back down, went to sleep (or retreated into its pit), and left me thereafter to clean up the mess. Stupid human - *good dragon*.



My experience with the dragon is, I suppose, embarrassingly mild (Erich Maria Remarque speaks, in his harrowing tale of trench-warfare, *All Quiet on the Western Front*, of young soldiers in combat who experience a kind of "battle-torpor" where higher cognitive function all but disappears as the survival part of the brain takes over for *weeks* on end). But I do have one more brief story to tell. Some winters back, I was late for an appointment and driving too fast on an icy road in my haste

to get there. Just ahead of me the road was bending to the left and there was a row of cars parked on the right hand side. As I started to navigate the corner, I could tell that 40 mph was too fast (I was probably distracted and fumbling for a cigarette) and so I lightly touched the brake. But I had badly misjudged just how slippery the ice was and the car started to skid, with the back end sliding out to the right. I was only several car lengths from a nasty accident (and I do not wear a seat belt). And then, in a sudden atemporal flash, I became merely a passenger. The view through my eyes was indeed still from the driver's side of the car, but *I was no longer driving*. In a tiny fraction of a second, *it* took control of the situation, removed my foot from the brake and steered hard right. The car responded and careened onto the sidewalk mere inches before the row of parked cars and continued on, veering left between two trees and on *through several snow-covered front yards*, before a gap in the parked cars allowed the driver to jerk my vehicle back onto the road. I watched the spectacle in astonishment, mute and paralyzed, as the highjacker in my head continued on as though nothing interesting had happened. And then it vanished...and *my* will poured back into my arms and legs and *I* was driving again. My voice returned: "Thank you *God*!" I whooped involuntarily, but of course god had nothing to do with it.

Consciousness, whatever it is, seems to emerge from the concatenation of information flowing together from all the various data-processing hubs around the brain, congealing like the various sections of an orchestra into a single symphonic soundscape. These symbiotic areas of the brain, resonating and resolving into the perceiver behind our eyes, are rather like evolutionary parasites. The various music-like aspects of the cognitive ensemble are adaptive claim-jumpers, all clinging precariously to a small and brutish nub of brain function that is 500 million years old - a "relentless malice" upon which they are all dependent for survival. And where the symphonic character and totality of consciousness is manifold and unique to each individual life-performance, the stage or predicating foundation upon which it performs is *undifferentiated*: we are but many instruments to this one lethargic, suddenly manic conductor. It is truly *stunning* to witness just how fast the personal cerebral concert collapses when the ancient, universal dragon down in the amygdala (Jormungand the World Serpent) is roused for performance. And so sometimes, like when nations are at war, the usual scattering cacophony of millions of distinct person-melodies is harmonically subsumed by the common purpose of an even larger symphony; and yet, it is precisely when the arrangement is so extraordinarily large and complex that a simple fundamental rhythm binds the whole chaotic endeavor: the metronomic breath of a singular ageless intention...preparing to feed on its children...

(Are these musical metaphors - *consciousness is a symphony of cognitive function*, or *civilization is a symphony of social function* - merely explanatory devices, or do they represent something more? The emotional power of music - for some, the most intense emotional experience they can have - defies explanation. We know that music stimulates the pleasure-center of the brain, the hypothalamus. *But why*? Why is music so different from all the other sounds we hear, so much more emotionally penetrating than the data we gather with our other senses? When the right harmonically complex sound encounters the right electrically complex consciousness, the resonance between them seems to dilate our sense of self: it's almost as though we disappear from the world into another realm beyond time and space. Perhaps some deep part of us is *remembering*, and music is the closest approximation we have here of another home we had before we came to this place…)

Encounters with this most brutish aspect of human instinct (although *none* of our biological imperatives are quite so dignified as the disguises we give them) are common. Our history is an unending lament of inter-tribal slaughter, a grizzly testament to the latent bloodlust lurking below the surface of consciousness. We have lived with the dragon in our collective basement a long time, but it is still disconcerting to know that such murderous potential hides within us, slumbering peacefully until awoken. We live our peaceful, rational lives, familiar with who we are and what we can do, and all the while the dragon waits - merciless and implacable. And yet, the brutish, primal instincts that incline us to violent self-consumption are the same instincts that have allowed us to survive the monstrous vicissitudes of nature and endure through countless ages. That is the dragon: alive in the natural processes of the heavens and all the worlds therein, alive in the processes of history and in all the people therein. It is

the eternal hunger of the primitive forms upon which the fragile superstructure of more developed forms has been assembled. It is the immortal threat of consumption, compelling us into action against it; the dragon's wrath provides the motive force of the cosmos: *Eat or be Eaten*...

Dragons in the Blood

Some years back, a series of interesting experiments (at Rockefeller University and the University of Colorado) were performed on some rats. They isolated two small communities of the rodents, and then randomly shocked them through the floor with a very uncomfortable but not lethal amount of electricity. Rats in the first community were trained to push a small button that would break the circuit and provide relief to both communities. These two rat groups had no idea when the periodic shock would occur, but group one did learn that they could control their environment by pushing the little button to eradicate the unpleasant sensation.

Now, the poor rats in the second community suffered exactly the same amount of physical trauma (the little button eliminated the current to both communities), but the big difference was that they had no control whatsoever over their environment; the pain came and the pain went away with no apparent cause or predictability.

This is interesting because when the body is subjected to duress, mammalian brains respond by producing chemicals called *endorphins*. The chemical is very much like morphine (from which it gets its full name - endogenous morphine): it nullifies and delays the pain of serious injury; if damage is sustained in a life-threatening attack, endorphins allow us respond appropriately to the crisis and postpone the agony so that we might still act with sufficient vigor to escape and live to see another day. This highly useful and naturally occurring drug makes us feel better when we need it, but it is *not* good for us. The second rats were many times more likely to develop ulcers, infections, and were in general dull-witted and more susceptible to disease. They did not know their suffering would be mitigated by the enabled rats, and so their little brains pumped out endorphins constantly. Their immune systems and cognitive functions became ever less effective, overloaded with quasi-poisonous pain-blockers as addictive as morphine. The helpless rats became lethargic, weak, sick, and died, basically, in a narcotic catatonia.

The rats in the first community didn't *really* have any power over their environment. The scientists were free to shock them as many times, and as violently, as they pleased. But the rats *believed* they had the control and so for that reason alone they were free to be rats: eat, poop, reproduce, and experience such joy of which rats are capable. Humans, likewise, should endeavor to seek purpose in their lives. Not because such purpose actually obtains, but because it is in our vital interest to do so. When some calamity befalls us, as it inevitably must in this tormented place, we *must* say: "The Gods did not want me to go that direction. They have other purpose for me. I do not know Their purpose, but I will go where They send me. I will work for the Noble Purpose of the Gods."

The universe has ingeniously ensured that it is beneficial, even *crucial*, to believe that everything happens for a reason, even the very bad things. Unlike the rats (who know nothing of *psychological* distress), we cannot always turn the pain off, but we *can* believe the suffering is for some good reason - a Great Purpose to which we have the privilege to contribute...if we choose to do so. That is our control; that is our freedom; *that is the purpose of free will*. To choose to participate in the bloody orgy of life and death and pain is our liberation, our escape from the merciless life-sucking dragon hiding there in the pituitary, waiting for an opportunity to strike…

The Dragon's Cave

We all understand that the human skeleton is the essential human form, the universal foundation upon which the flesh of the human body is assembled. And despite small variations from skeleton to skeleton, we also understand that there is only one archetypal form for the human skeleton, a single blueprint from which all human skeletons are derived. Human consciousness - the Psyche - also has an essential, universal skeleton; this primordial, psychogenetic Consciousness is the singular archetypal form from which all the many distinct psyches of the populous earth are derived. And just as a local projection of the

universal skeleton inhabits every woman and man, so too does a local projection of the universal psyche live within every human mind.

How do we know this? When we observe the human form we are quite easily able to determine the basic similarities of shape. Some are tall and some are short; some are large while others are small. But we still recognize the essential human shape: bilaterally symmetrical and bipedal, 4-limbed and 5-digited, etc. We are not able to observe the psyche so easily, but we may certainly study patterns in human thought to determine what thought-forms present themselves as universal. And extensive study has indeed revealed patterns of thought universal to humanity - from Wall Street to New Guinea, from theoretical physicists to Paleolithic cave painters. We hear these whispers of the primordial voice in the global distribution of identical dream-images, in the prevalence of analogous motifs in our many different spiritual beliefs, in the uniformity of the guiding themes that animate our historical stories and great literature, in the different motivations, ambitions, and even emotional pathologies of men and women that everywhere are manifest in the same enigmatic forms.

In the *dragon-cave* stories of legend, an intrepid and selfless adventurer is permitted to escape the serpent's lair and treasury with one little sample of gold; avaricious profit-seekers, on the other hand, never get past the guard and are consumed, digested, extinguished. How does one resist such vast treasure and recognize the one seemingly unremarkable trinket they may possess before following a beckoning light that lies beyond the dragon? And what *is* the treasure for which they risk so much?

The dragon sometimes takes other forms (goblins, ghosts, pirates, even forbidding landscapes), and the treasure may be gold or it may be a virgin princess, but the motif is the same: a dark terror zealously guards something for which he has no apparent use. The hero in these stories is invariably a rube, a naive and inexperienced fop who knows nothing of the great world beyond his tiny village. He is us, the average, egocentrically self-absorbed human, mired in the small parochial concerns of a small parochial life. We know precious little of friends and family; how much less do we understand the far corners of the earth that we shall never see? We know one little part of the world: the part we carry around in our heads (and our knowledge of even this may be suspect); about the rest of creation we are monumentally ignorant. But perhaps there is a way to see much more than the tiny fragment of the world that is visible from our conscious perspective, a way to see the world from the center and achieve a perspective on the world entire. In a world of bewildering multiplicity, perhaps there exists a rare view of simple *unity*.

According to legend, to witness this ancient view of the undivided world is to achieve a great and terrible power - and disappear from the ordinary manifold world of the here-and-now - rather like those who wear Bilbo's Ring. To achieve *invisibility of the self* (that is, to dissolve into the primordial Consciousness of which all individual consciousnesses are but mere local projections of a greater, *darker* entity) is to earn the privilege to search for gold in the Dragon's Cave. The risk is also akin to that of Bilbo's Ring: How long can you wear the ring (the sins of the world) before the ring wears you? How long can one play with the dragon (the primal appetites of nature) before one is forever trapped in the belly of darkness? Once the little raindrop dissolves into the great ocean, once it learns the unfathomable immensity and awesome power of which it is part, can it ever again become the same insignificant raindrop?

What was Smaug going to do with all that gold, or Malificent with Sleeping Beauty? In countless legends and fairy tales, a quiet hero stands against the terrible guardian and liberates the precious treasure. But what did Bilbo really gain when he escaped with that small trinket? Bilbo of the Shire knew a great deal about the simple ways of Hobbiton, but nothing at all of the big world beyond. After his great adventure to the lair of Smaug, Bilbo is never again a citizen of the Shire in the way he was, for unlike all others who dwell there, he has looked out through the eyes of the dragon and acquired a rare and frightening view of the world entire.

To journey down into the impenetrable depths of the psyche, down through the ages of history, down through the evolution of Man…ape…lizard, down below love and pain and mercy, is to travel to the very Source of Consciousness. It is to dissolve the boundaries between the separate and distinct, swim in a boundless ocean like a drop of rain, fly in the infinite heavens like a breath of air. It is to leave behind what makes one unique, and approach what makes all identical. It is to

abandon what is concrete, and become ethereal, indistinct, unified, One. To descend into the most ancient and primal aspects of human existence and look out at the world through the primordial eyes of *Instinct* - the multi-dimensional beast that protrudes into the world from wherever it lives into each and every one of us - is to see the world, not this way or that, but *as all men see it*. The dragon, a universal observer animating the deepest and most fundamental strata in the *Mind of Man*, sees the world as it actually is: an awesome and terrible machine of universal procreation and self-consumption. And the great treasure it guards so jealously is the unknown Will and Intent whom it serves.

We have, for a very long time now, been telling ourselves the astounding story how this dragon, busy elsewhere in the cosmos for long ages of the universe, inexorably found its way to the world in some long-forgotten first age of humankind, to insinuate itself into our affairs ever after…

Serpent Woman

People must have thought about history differently when there was significantly less of it. Evolution, the idea that our species was once a different kind of beast that very slowly changed incrementally over a thousand generations into our current morphological incarnation, is relatively new in the human imagination. There were such speculations even in the classical world (Anaximander's *Transmutation of Forms*, c. 550 B.C.), but without Darwin's epiphany - a description of the *mechanism of natural selection* - the idea never really caught on. And yet there was certainly the idea that *civilization* was evolving. It must have been apparent that there was a time in the past when the products of human design - buildings, writing, fashion, law, and city-life in general - were less established, or not established at all. They would have felt much closer than we to any description of how things came to be civilized, when it was obvious that at some point in the not-nearly-so-distant past, things were much different. They must have wondered, as we still do of course, about the process by which mankind came in from the cold.

How *did* we become organized out there in the jungle, and learn to co-ordinate our labor to construct the first cities? Who taught us to think and speak and build? And why would we do such a thing, begin such an expensive long-term project, when very few instant benefits are readily apparent beforehand? The question is rather convoluted and theoretical now, but in the very early history of (semi) civilized man they must have had a much more immediate sense of it - an intimate perspective on our beginnings worth sharing with subsequent, further-removed generations. And because they had neither the formal logic to scientifically describe, nor even writing to accurately record their understanding, they were obliged, it seems, to instead reckon the making of the world with extraordinarily incisive and memorable language:

"In the beginning God created the heaven and the earth…" and continued on to make everything else, including man and woman, in the ensuing six days. The man and the woman were blissfully happy in the garden God made for them, but a conniving serpent convinced the woman to eat of the *forbidden* fruit…and so God tossed them (and their descendants) out into the street. Thus did sex and death come into the world.

For many (perhaps even most) people, this *is* the bible, the single most potent image that has reached out and firmly lodged itself in the consciousness of everyone in the western world. The effortless ease with which this archetypal narrative insinuates its way into the human psyche hasn't diminished in 2500 years of telling. (It is possible that the Jews had an older version of this tale - other passages in the Old Testament with markedly different mythological and historical flavor certainly seem to date from perhaps 1000 years earlier - but the version that has come down to us almost certainly dates from a time after the Judean exile to Babylon in 587 B.C.: clearly influenced by the great and ancient culture, the Jewish legend of *Man's Fall from Paradise* is suffused with much older Mesopotamian creation motifs.) How does a story come to be so important that we remember it for so long, when so many other things are forgotten? Imagine the mundane observations of two men in a Neolithic tavern: "I heard about this woman in a garden looking at an apple, but the groundskeeper told her she couldn't have it, and then she took it anyway, so he threw her out!" To which the other man must then have replied: "I like your story; let us form a great religion around it!" The *real* answer for why this simple fable has endured through millennia must be rather more

complicated than that.

The language of Genesis - grand, portentous, intensely *dramatic* - is obviously poetry and not meant to be a journalistic account of how the world came to be; and yet, *it feels profoundly true* in some nebulous, difficult-to-understand way. It often happens that we hear something said, that we *know* means something else entirely. And in such situations, it is almost always the case that smooth language is used as a veil to discreetly disguise and conceal something far more primal beneath. The primal aspect of *The Fall* has found an empathetic resonance with something correspondingly primal *in us*, singing of something ancient, something of which we *never* speak, something that, nevertheless, we all know *must* be true…

At some point in our distant past we were barbarous and uncivilized, brutal and savage, like the other animals of the jungle. And then…we were something else. By what process did we move from a kind of existence that we shared with all the other living things of this world, to a new kind of existence that humans alone experience? Who made the bridge from the jungle to the city? In other simians, we generally see a division of labor rather than a physical imposition of superiority between males and females; however, stone-age man certainly *could* have imposed his wishes, as the stronger beast eats the weaker, if he so desired. And with a perpetual mating season, he *desired* very much. Savagery is a tolerable situation for the man, but less so for the woman. So how (and *why*) does the savage imagine a potential *beyond* the savagery of *everything else in nature*? And after so imagining, how could he possibly believe such a potential was anything more than fantasy, given the universal brutality of everything else in his experience? What is the appeal for *him* of a world where he is, *not* the indomitable hunter who lays low the charging bull mammoth (some more than twice the size of the largest modern elephants) with nothing more than preternatural courage and a sharp stick, but only a domesticated salaryman obediently performing his allotted task for the benefit of society? What possible inducement could have made that *impossible* proposal… inevitable? And yet, in the remote history of humanity, someone must have said (in deeds, if not words): "This way we have always done things - endlessly wandering the world for food, and fucking and killing whomever we please - will now *stop*. I have imagined a new and different, *better* world: *non*-nomadic, *non*-violent, *non*-chaotic, *safe*. We *will* make it exist - *here*; *now*." Who would ask for such things, make such extravagant demands…of a savage? Who gains the most from leaving the jungle (where *any* action not forbidden by natural law is permitted), for the city (where strict limits are imposed, by Man, upon the appetites of Man)? That is a good question; Genesis, and the story of Man's separation from nature, answers it. Therein lies its enduring enchantment.

Obviously this decision to "go urban" happened on many occasions in many different places in the world. And it didn't begin by a sudden and irrevocable flight from primitive life; it was, rather, an incremental process of development occurring over thousands of years. And yet, it seems that a single, compelling purpose must have driven and inspired the whole drama. If it were possible to watch this history happen, and observe the experience of particular women acting upon this astounding revelation, one would probably see many different stories; but if one could somehow get a distant perspective of the whole great saga of human development (as one might watch a vast battle from a great height and see many thousands advancing as a single shape), it would seem very much like a great force rising up in the world to say: "Follow me, you strong and clever builders..."

The primary beneficiary of civilization is the *woman*. It was women who determined the idea and form of the settlements we have made. It is not the interests of the testes, but the *interests of the womb* that are served by a fixed and organized society, and the *experience of women* made it necessary and inevitable. It was the persistent insistence of women - and *only* such insistence - that made men ever less savage, and ever more useful to the design of this new, "better world." It was women, not men, who *needed* civilization to happen; *and it was women who first made the necessary psychological adaptation required to make it happen*.

Someone had to animate the world and transcend passive nature through dynamic will. Someone had to lead the way from an epoch of might and predation and ignorance, to a new epoch of respect and law and intelligence, someone who had the most to gain from the formal limitation of man's instincts, someone who had revolutionary weapons (or *methods*, if you prefer)

unseen in the long history of the earth that might subdue the hunter and channel his strength away from the boyish games of death toward a man's responsibility to life, someone who knew a great secret about the world…that the other did not. Someone who was *beautiful*...

Only the woman could have imagined mercy and compassion (a deceptively gift-wrapped package from the Cosmic Serpent hiding a darker antithesis within) to thus lead us on those first tentative steps into humanity. And once the woman had this realization, she was no longer the female beast she was. Adam may have been the first man, but *Eve* was the first *human*. She wasn't *forbidden* from eating of the fruit, of learning the difference between good and evil, between civilization and barbarism; she was *chosen*. A serpentine arm of the Grand Design reached out, not to primitive Adam, but to the *Woman of the Serpent*, the unwitting proxy of the Cosmic Will, imbuing her with a silent invitation glowing around her like a beacon. It's difficult to describe in words what that beckoning invitation was - the ecstatic, agonizing synthesis of hormones, ego, and guilt - but the *first moral being* needed something new in the world that could not be found in the jungle, and she needed the hunter's strength to achieve it. And so *she made the savage understand*...and the man followed the light of her secret knowledge, the two of them leaving the garden behind forever. Perhaps men have still not entirely accepted this arrangement, and some men seem to live easily in either world contingent on their immediate purposes. But, in general, we *have* accepted this bargain and its promises of something we *still* do not yet comprehend. Thus did grace and purpose enter the world.

It seems the universal Lawmaker has determined that the only thing more inimical to its Grand Design than the man's rapacious appetites is his colossal laziness, and so it has provided an awesome and irresistible, beautiful and terrible incentive to activate and focus his potential - a force of nature, a hurricane indeed. *This* is the secret the woman learned at the Tree of Knowledge, the divine realization - understood, even if only through the natural hormonal processes of her body - that led our species from the blissful ignorance of an *environmentally-determined* State of Nature to the onerous knowledge of a *self-determined* State of Civilization. Only the woman could look into the emptiness of the distant Watcher that the self-recreating womb of the woman serves, to receive the judgment of the hungry, aching void in the self-recreating cosmos itself. And the unquenchable *expectation* thereby delivered was the catalyst that awoke the slumbering Demiurge to his long and arduous task. Sometime in the remote prehistory of Homo Sapiens there was a first expression of free will, a first decision that was not determined by instinct but instead by something entirely new in the human mind. Eternal knowledge *found* the woman; man *chose* to deny his nature and follow her guidance into a fundamentally different kind of adventure in the history of life. Thus did shame (concealed beneath a discreet veil of hair) and evil enter a suddenly dirty and murderous world.

There's no returning to that from which we have been divided, no unlearning the truth that fell from that tree, no escape from the moral revelation that Eve (a symbolic archetype of the early women of our species) delivered unto the world, no redemption from the guilt we all carry ever after: *we're all Jesus*, unavoidably assuming the sins of the world, dying (sooner or later) for the taint it leaves upon us. As you have murdered - culpably bound in an intractable web of complicity that extends to entangle the entire world - so too shall you be murdered. The Universe seeks Life - the many-windowed, Infinite Good - but not any one *particular* undetermined roll of the genetic dice. The Grand Design requires the *certain* determination that only comes from *all* rolls, life across the *entire range* of possibilities from creation to extermination: love and ecstasy and fury and torment, all superposed in a universal probability wave of every attainable experience throughout the cosmos, an undulating celestial tide of triumph and despair rolling over the horizon of space-time toward some distant, unknown shore of judgment...

The Rise and Fall of Space-Time

About 15 billion years ago, the universe came into being: all space and time, all matter and energy, emerged into existence from a dimensionless point of nothingness. The new-born universe grew rapidly, according to laws and geometry inherent to its nature. For the first few infinitesimal moments of existence the eternal Forces of Nature were unified and symmetrical, like the symmetry of the eternal geometric

forms in the Lotus-Crown expanding up from the singularity. But brief instants later they broke apart into separate forces - gravity, the strong and weak nuclear forces, and the electromagnetic force. We see the symmetry break in this image; the counter-clockwise axis in the crown evaporates and the lotus-vortex thus acquires chirality (or "handedness"): the universe unwinds in a *clockwise* manner. This chirality permeates the painting, an echo of the cosmic-scale shape of space-time, and is indicated by strings of stars that follow the force-lines of the whirling vortex.

The early universe continued to grow ever larger and cooler; matter congealed out of energy, and about 300,000 years later the density of the initial matter-radiation fireball became dilute and transparent. In about 1 billion years the first stars and galaxies appeared. Ordinarily we don't expect to see little clusters of order growing in the debris hurtling away from an explosion, but this is what happened. Some mysterious process of nature, working in the blast-wave of the Big Bang, began to assemble matter into the large-scale structures of the cosmos - building order in chaos. In this image the early transparent epoch of the universe is seen just above the glowing halo of the Lotus-Crown; there, an ancient dragon of chaos is well along in the process of collapsing in upon himself, swirling into - and generating other - orderly spiral forms of stars: galaxies. Below that we see a more recent event: another mortally wounded dragon is just beginning the process of contraction - still more dragon-like than galaxy-like. And below that we see the agent responsible for this mysterious rise of pattern and structure: the Celestial Builder, *liberating order by slaying chaos*. Even as the third dragon perishes, he is already contracting, already coiling up into the orderly spiral of stars he will become. And the Builder slays the dragon with a spear-like sceptre that is crowned by a strange disc. The Dragonfire Amulet has twelve circumferential Jewels, one for each labor between Him and the Grail. Three of the Jewels are glowing incandescent - one for each dragon-task dispatched. The Builder is mining chaos, harvesting dragon-flame, charging the Lotus Jewels with the Essence of Creation, to fashion a great Key for some distant purpose...

But nine of the twelve dragons remain to wreak their unholy wrath upon the cosmos. One dragon lurks within the Builder himself, swimming through his veins like lethargy and despair; a little piece of that serpent flows from the thigh-wound inflicted by dragon III. The other dragons, great and small, stand between the Builder and His destiny, and one by one He must steal their fire to energize and activate the Key. These labors will take the lifetime of the universe to complete.

The universe continues to cool, as the geometry of space-time curves around; time is running out. The stars lose their energy, become cold, and slowly extinguish. The universe is smaller now, and much darker. The Builder is old and weary, and has one final Amulet Jewel to illuminate, one final guardian destroyer, greater than all the others, to slay at the event horizon of cosmic night...

Black Time

The universe is able to make an object so heavy it cannot lift it. When too much matter is compressed into an insufficient volume, the fabric of space-time will not support the object and, in extreme cases, it "drops" right out of the universe. When a massive star burns up its fuel supply, it can no longer

generate enough *expanding* heat to counter-balance the *contracting* tendency of all that matter, and so it will start to collapse. If the star is fat enough, the gravitational collapse will occur with such ferocity that space-time itself will turn "inside-out," leaving nothing behind but a spherical region of infinite space-time curvature. The diameter of this spherical region will have a fixed size (the distance from one side to the other might be 10 miles or 10 thousand miles) but its radius will always be *infinite*. Such a place is a hole in the universe so fathomlessly dark and so bottomlessly deep that nothing, not even light, ever escapes. It is a place where matter and energy, space and time, are crushed to a dimensionless point of nothingness; it is the end of everything.

Modern reckoning suggests that the universe is filled with countless billions of these things. If space-time is flat, then each black hole corresponds to an independent terminus, and the cosmos would thus have billions and billions of endings. If, on the other hand, space-time is a hyperspherical torus, then each black hole is oriented, in four dimensions, at the same central focus - *the one and only singularity at the heart of every black hole everywhere*. It is in this direction, toward this dimensionless point of nothingness between the rise and fall of the universe, that gravity, present in every massive object everywhere, insistently beckons all things.

This is the Black Goddess Kali, and Her terrible cloak is the swirling vortex of space-time, gathering the entire universe into an infinite emptiness that can never be filled - the boundless black silence of Eternity. In the very Heart of the limitless abyss dwells the thirsty twelve-petaled blossom of the *Lock of the World Lotus*. It is here at the point of singularity that the nameless magic of transformation and creation occurs, here at the junction of the opposing energies of the Outward and the Inward - in conflict everywhere else except in this harmonious orientation - that a new element is introduced to the stillness of an eternal perfection that never changes.

We see, in the trailing coils of the last dragon lurking at the end of space-time as it collapses back into the singularity from which it emerged, the unseen will behind the manifold machinations of chaos: the dragon's tail *grows from* the geometry of space-time - it is an *extension* of the eternal forms. The universal vortex is *made* of dragons - one whirling void of hunger for each House of the Cosmic Zodiac. And these primeval demons exist for only one purpose: to drag the innocent forms of the universe from brief and flittering struggle in the light…to extinction in the dark.

The dragon is a projection of *shakti*, the energizing principle of the Goddess that dwells in the motionless center of the revolving universe. Shakti is the incarnation of purpose that motivates the evolving cosmos to aspiration and transformation. It is the primary impulse to action that guides the aim of all ambition. It is the Voice of the GrailSong in Avalon-Nirvana, rippling through the cosmos from the other side of a final, catastrophic desolation. She sings an invitation to discovery, an inspiration to the Quest, an imploration to the Task, and a promise that all this suffering is for some Great Purpose. The Lock of the World Lotus beckons... and waits.

And so it comes to pass that He is triumphant and crosses the boundary of no return, thus bringing to Her the Key of the World Lotus throbbing with dragonfire, the Essence of Creation stolen from the serpents of destruction. This essence, upon which the dragons have grown fat and furious, is *entropy*.

This image is a symbolic representation of a vast but dwindling domain of perpetual upheaval falling into ruin: the fundamental reality of existence is *carnage* - the ghastly still denouement of all endeavor. The universe is promise: *certain annihilation for all things*. Every process, from the atomic to the galactic, deletes from an ever-diminishing pool of available energy and contributes to an ever-growing reservoir of entropy. Every action, no matter how small, is bound to a corresponding accumulation of entropy that has made the cosmos less by an equal amount. It is rather like an accounting

ledger of events, a document of all that has happened in the life of the universe. It is a History of the Cosmos to which all forms - living and otherwise - contribute in the process of their existence, and into which they disappear when the last of their energy is spent. In some distant future when all available energy in the ouroboric universe has been consumed exactly in the fashion of the self-consuming serpent it so resembles, there will *only* be entropy. And this great treasure - the Energy of the Dead - is a seed.

We saw within the inter-flowing symbol-forms of Yin and Yang a contrapuntal seed of energizing opposition; it is a principle we also see in this painting, incarnate in the dance of two conflicting intentions - one that seeks movement and one that seeks stillness - because they are both of them *transformed*. The ever-changing universe is a *manifest process* of Order into Chaos, one aspect slowly consumed by the other. The never-changing Codex of Eternal Law is a *mysterious state* of magical transformation - Chaos into Order - where sorrow becomes joy, pain becomes bliss, death becomes life. Where the fundamental reality is chaos and ever-growing entropy means there is ever *less* potential in the cosmos, then action is the agent of order, the possibility and realization of form and structure; where the fundamental reality is order and there is *only* potential, only idealization without realization, then action is the agent of chaos, the possibility for revision and perhaps even *expansion* of the infinite and everlasting Realm bound in a changeless symmetry of perfection.

And so the *Order-Builder* labors to assemble the Twelve Spheres of the Cosmic Temple and liberate the Grail-Prize, ever challenged and slowly eaten by the shadow of the *Chaos-Devourer*. But what lies beyond the darkest robes of this lamentable night? On yonder shore of singularity where *the agent of order becomes the agent of chaos*, what then becomes of these dragons of space-time, these incarnations of shakti that flow from the cloak of the maternal sky? In their eternal aspect they must be, not the defining parameters of a universal slaughterhouse, but an ageless and exquisite Matrix of Eternal Geometry. In that still and silent domain of gestation and expectation, the *Order-Keeper* waits for the destruction of the Absolute, ever yearning for the light of the *Chaos-Bringer*: the possibility for transformation from which creation emerges, the necessary agent of corruption by which the infinite perfection of eternal idea is released into the agonizing process of actualization. The *all-powerful* Key of the World Lotus is the insemination of burning time into the frozen womb of eternity.

The Lock of the World Lotus receives the Key and opens in a blinding thousand-petalled blossom of new creation. This is the Goddess Devi - an *All-Beautiful* efflorescence giving birth to all things - filled with sorrow for the countless times He has suffered and died, filled with joy because He is ever reborn in new form to venture forward and build anew.

The Maiden of the Lotus is the vernal Dawn of Spring, the perpetual cycle of Creation and Regeneration. The Goddess of Love is the Singer of the heavenly Music of the Spheres - the Transcendent Will arousing all immanent ambition. The Cosmic Womb is the still center that draws the manifold cosmos into orbit around Great Purpose, beckoning the dynamic universe into action and transformation. She is the White-Goddess-who-Watches as the Red Lord endeavors in his brutal, cosmos-building Task. She is Order in Eternity waiting for Chaos to inexorably traverse the zodiacal Cycle of Time and triumph over the twelve labors of his great Celestial Quest to return Home...

One is the Imperishable Form that is all forms, waiting for possibility; the other is merely movement where all is stillness…

Fingerprints

The universe is made of atoms, each one the collaboration of opposing charges. Every atom in the universe has an electromagnetic field, a many-layered nimbus around the nucleus, shaped very much like the torus in this painting. Atoms and all the other building-block pieces of the universe are all based upon the same model, *a dynamic periphery around the still center*: electrons around the nuclear bundle of protons and neutrons, DNA around the spine of hydrogen bonds, the cell around the nucleus, the organism around the heart, sensory awareness around consciousness, civilization around the guiding philosophy of a catalyzing idea, worlds around molten cores revolving around stars revolving around galaxies revolving around...

And this all-pervasive image of orbital entrapment also looks very much like the marauding army of

tiny sperm soldiers encircling the Great Sphere of Creation; after a long and dangerous journey to She Who Waits, each one seeks nothing more than to be the one chosen for annihilation in the creation of something far greater.

The repetition of this simple form, in the domains of the very big and the very small, is reminiscent of the shards of a broken hologram, each of which possess a complete representation of the unbroken original. This universal image is a reflection of the source, a picture of the predicate forms of the cosmos: the *many-around-one* motif is a lover's *self-portrait* of the Creators.

Two Observers, separate, but each also dwelling deep within the other; distinct in the dimensions space-time, but topologically bound in some higher dimension as a single interpenetrating loop of being. Each seeks the other...merely to understand the *impossible unity they are...it is*. The intentions that make the universe, love and duty and hate and vengeance, are merely the swirling eddies churning in the wake of their greater quest. But whether, upon finding the *x*-dimensional continuity that eludes them, they seek to nurture that inscrutable coherence or destroy it, I doubt even the gods themselves - *whatever they are* - can say. In their absurd, paradoxically uncertain *and* determined relationship with the *unseen bond that cannot be broken* they are, perhaps, most like we children who so resemble them...

* * *

Personal Notes on *Parsival's Lament*

I had been thinking about this image for a long time - more than a decade. I first encountered the torus in a dream, and was certain that *I* had invented it. I had been reading about how the large-scale shape of space might be round; that is, if you follow a perfectly straight beam of light long enough, you end up right where you started. And I had also been reading about how time might be similarly wound around so that the beginning and the ending are the same place-moment. (Time, inclined just like space to bend in the presence of extreme gravity, may not be a temporal thing at all: it could actually be a hyper-*spatial* reality, a vast 4-dimensional sculpture of all the 3-dimensional instants of history somehow all piled up on "top" of each other, with consciousness creating our familiar sense of movement as it successively encounters each eternally frozen moment.) And so I experimented with geometry, graphically representing circular space and circular time together on two perpendicular axes - which generated the torus. I did *not*, of course, invent the torus and when I found another representation of it in an excellent little book by Rudy Rucker (*The Fourth Dimension*), I was quite disappointed, but also excited that I might really be on to something genuinely interesting.

Children of Eternity is another attempt at the same idea, of course. In that painting, I was also trying to integrate the Vesica Piscis (that which generates geometry) into the torus (that which generates space-time). As I neared its completion, I was already thinking about *Parsival's Lament* - a different and hopefully *better* solution to the problem. I think I was tinkering with new designs even before I finished the first attempt.

I am embarrassed to confess how long it took to create *Parsival's Lament*. The painting itself only took about 10 weeks. I did a small 11" x 17" oil study, trying to solve as many of the execution problems as I could at that small scale; that took about 2 weeks. I spent about 8 weeks designing, just figuring out how to squeeze 12 dragons and 2 figures into my space-time torus, somehow leaving enough empty space in a pleasing design for the underlying geometry to be visible. And that geometry had to be *perfect*; the painting wasn't going to work if the many swirling arcs I had planned did not line up. That meant I had to have a perfect drawing and a perfect underpainting underneath the painting: I would not be able to find the geometry with sufficient precision in the painting stage without a detailed image already on the canvas. The drawing of the finished design on the canvas took about 4 weeks. That's almost 6 months, and most of those days were *long* ones. And I'm not even including the many little doodles I did over the years, calculating the geometry of that oblated torus in the first place. I spent an *insane* amount of time on *Parsival's Lament*; I am very proud of this painting (and I get to look at it every day, as it hangs over the sofa in my living room), but I won't ever do another one like it again.

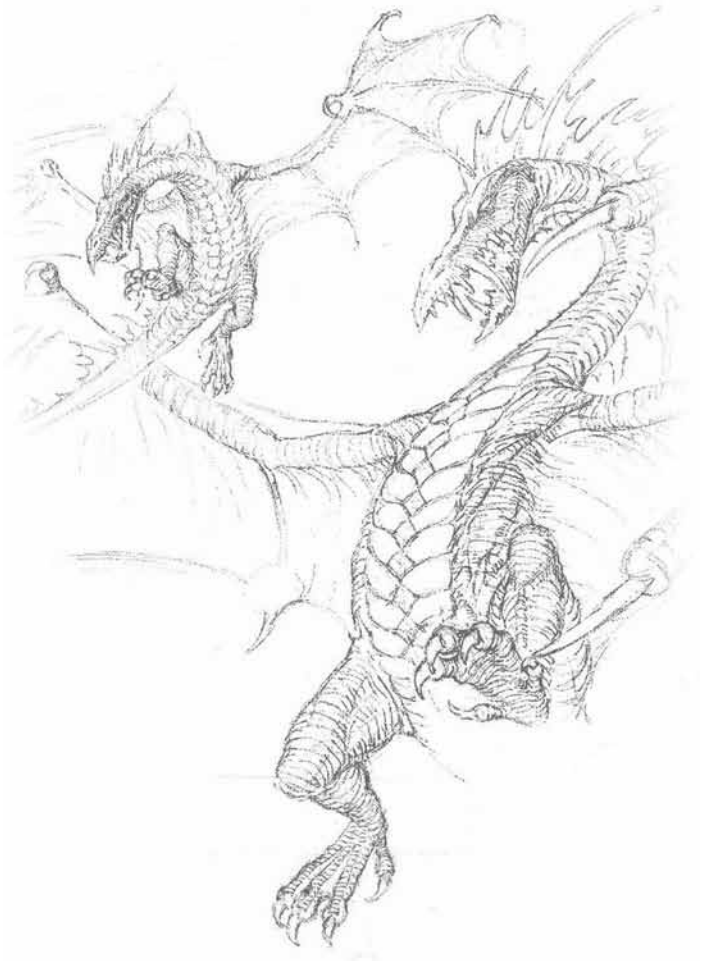
In *Children of Eternity*, I was thinking of the central goddess figure in a mysterious but certainly

not malevolent way; in *Parsival's Lament*, however, I understood it was to be an image of the all-consuming *Goddess of Death* at the end of the universe. Perhaps I was just working too hard, but I found the experience quite a bit more unsettling than I expected. On at least four occasions during those months, I awoke *screaming* from terrifying nightmares where the fragile sphere of my conscious self was being flushed into oblivion from my brain like filthy water from a toilet bowl (a prescient dream, perhaps, of the Observer getting entangled in the meat upon final departure). I did not sleep well in that time.

(The experience has lead me to wonder: If whatever it is that I am really is just made of chemistry, and thinking desperate thoughts about mortality and death is just another kind of chemical state of the brain, then mightn't such adverse brain chemistry actually affect the brain...adversely? Does bad thought *cause* disease? Is this painting also an image of the two hemispheres of the brain in revolt, a picture of *mind under siege*, slowly murdering itself from the inside? I fear that my concern about this nasty idea may be permanent, and so I also have a name for *this* painting that I enjoy in the privacy of my own thoughts: what else could I call it but *A Man and his Dragons*...)

Very close to the time that I began working on this project, my Mom was diagnosed with brain cancer. She did not live to see the painting completed. Maybe it's not right to paint the Goddess of Death while your Mother dies, I don't know. Maybe it's vulgar to dedicate a painting of self-consuming nature to one who has been consumed. But this unhappy painting also, in some way, marks the end of a happy journey, a creative odyssey that began when an 8-year old boy found purpose in this world, revealed to him in the delight of his Mother at a simple drawing he had made for her. I wish she could have seen the strange place to which her many words of encouragement sent me.

Thanks Mom...




...a view of the universe from the inside looking out...

Postscript

I began this *Artist's View of the Enigmas of the World* with the claim that I would present images "that express a hope that there might be something soft and nurturing in the world - and a fear that there is not..." I have not yet resolved that lingering doubt.

Permit me to state again the obvious, aforementioned point: if there is not strength in the world, we *will* perish; the many challengers marshaled against us do not sleep for long. There is certainly some weakness in the world, but strength is so well admired and rewarded by human society (and weakness so profitably exploited) that we should have little concern for its long-term existence. It may come to pass that we are not strong enough for some greater adversary we have not yet faced; we shall see. Nevertheless, as I have also said before, without *compassion* in the world we also must perish. But it must be *real* compassion, not the fraudulent, self-serving variety that we have become so familiar (and disillusioned) with in our government-dominated Kafka-World. Real strength is not found in the make-believe adventures of play-actors in a movie *pretending* to be heroic; nor is real compassion found in the prevarications of service-providers protecting and consolidating their own artificial positions of power in society. Real compassion can *only* come with *intimacy*.

Com-passion (literally, *jointly-suffering*), as opposed to mere civic duty, must be the rare conjunction of two lonely consciousnesses, fleetingly looking out at the turbulent world *through the same window*. It is only in this way of deeply connecting to and understanding another that we can realize and truly know a simple truth, an obvious yet recondite fact of the world that is at once both comforting *and* frightening: *we are in this together*. We often say (in public life anyway) that as we admire strength we also admire compassion. But we lie. Compassion is inconvenient and tedious, and it is scarcely rewarded at all (certainly not in a way that generates any useful or acceptable currency in the Halls of Commerce so ardently defended by the political sentries of the Kafka-World). Most significantly, compassion requires an almost insurmountable *surrender*: that we, you and I, invite someone into the private, most secret recesses of the mind and show them, not merely the embarrassing dirt we have smeared upon the window of our personal world-view, but also the surprisingly fragile walls that hold it in place. We are understandably leery, or even afraid, of genuine compassion, and skeptically wonder whether the awesome energy of consciousness surely required for such a feat is even possible in a world so overrun with opportunistic dragons. However, *it is the nature of energy to release itself*; it can be locked away in many different forms, but it *always* escapes.

The first progeny of cosmogenesis - a vast dispersion of hydrogen atoms - were hurled to the far ends of the universe by the violence of their creation. But the very first thing they sought to accomplish thereafter was to gather in great number with others of their kind. Only in seething, compact herds of trillions and trillions of atoms could they find the right environment to *mate*: two hydrogen atoms fuse to become one deuterium, which fuses with yet another hydrogen to become light helium, and so on. This churning, hydrogen bacchanalia is the power that burns in all the stars in the sky. Thus, in an orgiastic spectacle of cosmic procreation, did light come to the universe.

And so too came the process by which simple forms come together to make larger more complex forms, that also must bind together in a perpetual ritual that continually releases new formations of energy into the universe. The unknown compulsion that inexorably pulls the manifold forms of being into luminous energy-shedding fusion is the regenerative coherence that sustains the whole cosmic adventure - and even at fifteen billion years of age, the universe is still extravagantly fecund and saturated with desire. What could we possibly call this intrinsic affinity that commands the destiny of...*everything*? The concept of *libido*, which I briefly mentioned in *LotusWood*, is perhaps sufficient to describe interactions in the lower levels of the Hierarchy of Forms - of atoms, molecules, cells, organisms. But surely it is *not* sufficient to represent the swirling symphonies of potential that result from the entanglement of the compound forms in the higher strata, of *consciousness and ideas*. What *is* this impossible gathering of many-colored windows rising together into astounding patterns of ever-growing complexity and nuance, like a supreme stained-glass masterpiece blazing in the darkness?

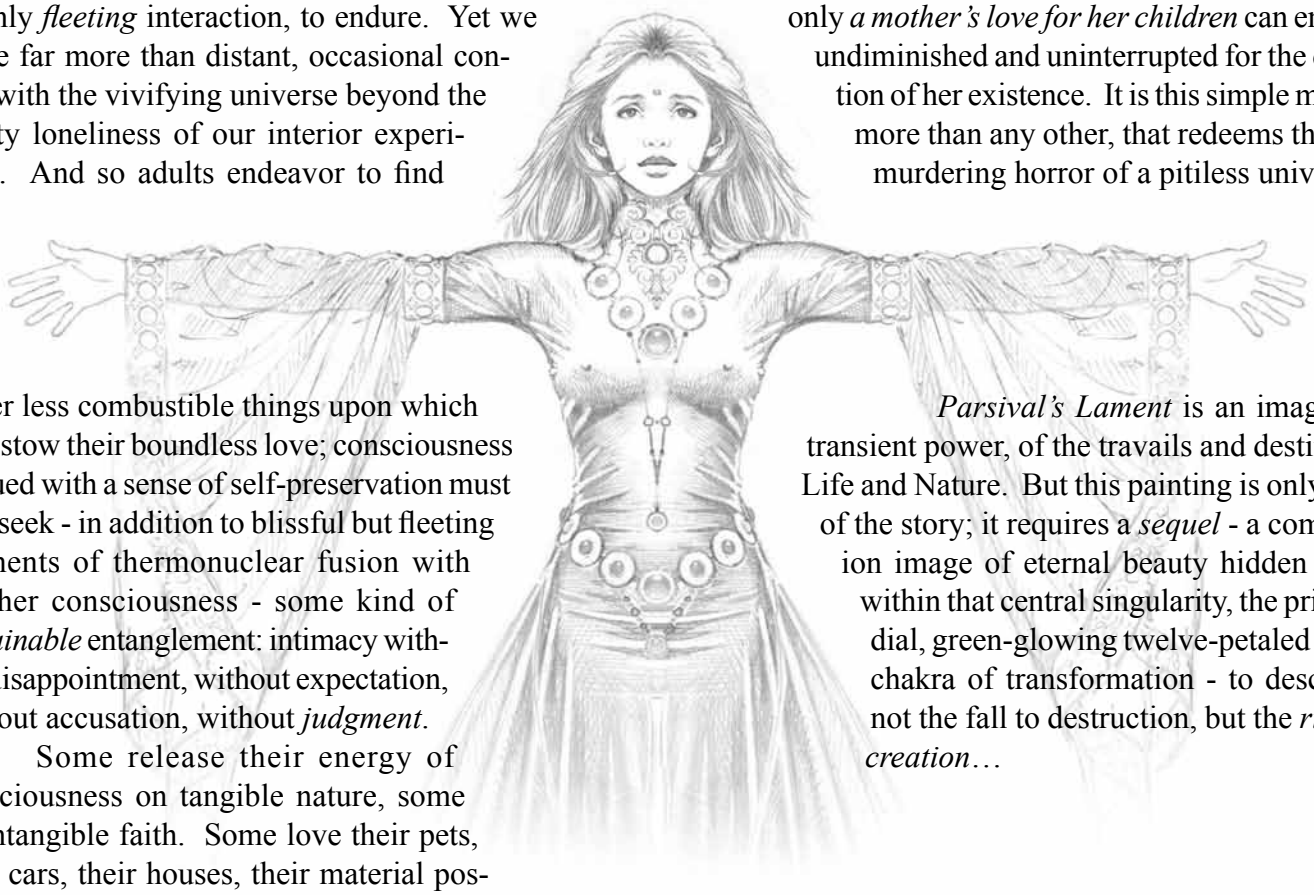
If *love* is not the *only* energy of consciousness, then it surely is the most potent form. And conscious-

ness *without* any bond of love with at least some small part of the world is soon extinguished by the permeating abundance of such creative and voracious energy. Love, the energy of consciousness, has an innate predisposition to release itself, like - as the song says - a "fiery supernova." The metaphor is even more appropriate than it first seems: a supernova does indeed have its radiant *giving* aspect, but in the unseen black hole core that remains is a dark and *hungry* aspect. Young people often experiment with the uninhibited release of this bi-polar energy upon other people…and quickly learn (as Romeo and Juliet did) that it is the nature of colliding stars to consume or be consumed. Two entangled supernovas burn much more than twice as bright - and far too erratically for such flimsy beings as we.

Another descriptive metaphor is found in the nature of radioactive isotopes: some closeness yields a useful heat; extreme proximity, however, yields critical mass, chain reaction, *meltdown*. Consciousness simply does not have the emotional insulation to long tolerate such burning intimacy with another consciousness; it requires some emotional minimum-safe-distance, or only *fleeting* interaction, to endure. Yet we crave far more than distant, occasional contact with the vivifying universe beyond the empty loneliness of our interior experience. And so adults endeavor to find other less combustible things upon which to bestow their boundless love; consciousness imbued with a sense of self-preservation must also seek - in addition to blissful but fleeting moments of thermonuclear fusion with another consciousness - some kind of *sustainable* entanglement: intimacy without disappointment, without expectation, without accusation, without *judgment*.

Some release their energy of consciousness on tangible nature, some on intangible faith. Some love their pets, their cars, their houses, their material possessions of many kinds; some love activities or pursuits of one sort or another. Some love stature and power; others, culture and tradition. Some love experience and sensation; others, knowledge and wisdom. Some misfits love their *work*. Consciousness is compelled to seek an escape from the solitary nature of its being by looking to something beyond the self, and yet it remains prudently wary after near self-immolation in the beautiful ignorance of youth. And so many of us connect most profoundly to mere nouns and verbs, releasing our best energy, our very *life-force*, upon things that cannot return it. Civilization is, in large part, only the most impressively conspicuous artifact of our unsatisfied desires.

But there *is* one kind of human that can transcend the monolithic barrier of emotional insulation that runs between all the friends and lovers of the world keeping them separate and safe, one manifestation of consciousness that is able to surrender its psychic fortifications to another and quietly suffer the petulance of an unruly dragon as it rampages through the vulnerable halls of an undefended mind. Unique among all the many different kinds of bonds that form between people, only *a mother's love for her children* can endure undiminished and uninterrupted for the duration of her existence. It is this simple mercy, more than any other, that redeems the all-murdering horror of a pitiless universe.



Parsival's Lament is an image of transient power, of the travails and destiny of Life and Nature. But this painting is only *half* of the story; it requires a *sequel* - a companion image of eternal beauty hidden deep within that central singularity, the primordial, green-glowing twelve-petaled heart chakra of transformation - to describe, not the fall to destruction, but the *rise to creation*…


~ Cloak of the Maternal Sky ~
Copyright 2003 - Oil on Canvasboard - 24 x 16 inches

Silent Watcher recondite
beyond the raiment of the night
and hidden from all realms of sight:
the sky's unseen foundation

Ocean cosmos e'er afloat
upon your Zodiacal coat
And wrapped within, yet so remote -
your distant invitation

Cloak of interstellar blue
a dim and iridescent hue
beckoning the Traveler through
the folds of constellation

Vestments made of clust'ring star
and ripp'ling heavens near and far
e'er draped around your lost boudoir
of secret propagation

Twixt the gaps in vaulted sheath
of deepest night and cosmic wreath
there shines the timeless light beneath
in luminous gestation

Blow you astral winds of space
and thus, that darkest robe, displace
revealing Her eternal grace -
the womb of all creation

In the ever-gath'ring gloom
as space-time staggers to his doom
She is the immortal bloom
redeeming our damnation...

Right
Matrix of Eternity
(On the Geometrostatics of the Outward Domain) - © 2005
Oil on Linen - 48 x 24 inches

...and from the outside looking in...


~ Gates of Valhalla ~
Copyright 2009 - Oil on Linen - 48 x 24 inches

The *Judge of the Dead* motif, a story of the cosmological force that weighs the merit of an entire life against some mysterious requisite threshold value to determine entry into or rejection from some even more mysterious Transcendent Realm of Eternal Virtue, is one of the most common in mythology. This Judge is usually imagined across a range of intimidating figures, from someone rather judge-like at one extreme to terrifying demons at the other. But in Norse mythology the implacable force that determines the worth of the dead is the implacable force who so often determines the worth of the living: the woman. She is called a *Valkyrie*, and although she certainly serves the Almighty Omniscience of *Odin*, she nevertheless has complete authority to decide on her own whether the achievements of a particular life are sufficient to pay the toll into the afterlife of *Valhalla* - a strange celestial playground of endless battles where no one ever dies, and endless drunken banquets carousing with buxom amorous women (it seems the Norse seek to judge only the men; all women get in free).

In Norse cosmology, the early, primeval epoch of the universe was dominated by the Giants. Among the greatest was *Mimir*, the all-seeing giant of the primeval ocean, who lived in a magic well by the root of *Yggdrasil*, the infinite Tree of the Cosmos. In his youth, Odin happened to wander past the well one day and struck a portentous bargain. Mimir, it seems, could see far but not wander far, while Odin could wander far but not see far. And so Odin traded an eye to Mimir for a drink from his magic well. Mimir no doubt enjoyed the traveling gaze he won from Odin's far-wandering eye, but it was Odin who made the better bargain: the All-View he gained from the unfathomable depths of Mimir's primordial ocean of the cosmos made him King of the Universe. Thus did he begin the enlightened epoch of *Asgard*: the celestial Home of the Gods.

In this image, in the transit of a gas-giant world across the disc of a distant galaxy, we see a representation of Odin looking out through the universe through Mimir's all-seeing eye, and down upon the lofty vaults of Valhalla - a realm hidden from the viewer by an imposing barrier of mountains…and an implacable force of judgment. In her hands she holds two fates. On the one hand is a winged spear gleaming in the spectral colors of *Bifrost*, the Rainbow Bridge between Asgard and Midgard - between Heaven and Earth. This is the Way of Liberation. On the other hand is a winged carrion-eater, dark as night. This is the Way of Extinction. There is no way forward but to stand before the relentless gaze of her scrutiny and accept one winged fate or another…

But what about that little moon there by the gas giant, seeming like a small blemish on the pupil of Odin's Eye? *And why beholdest thou the mote that is in thy brother's eye, but considerest not the beam that is in thine own eye*?


~ Seeds of Blue Stars ~
Copyright 2010 - Oil on Canvas - 30 x 20 inches

It will not surprise you to hear that I think women are interesting - which is not a particularly interesting thing to say. "What do you mean by *that*?" she asks skeptically. Well, I could mean that women are emotionally interesting because there is range and nuance in their emotional capacity far beyond the "angry or sad" states that seem to be the limit of what many men experience. I could mean women are spiritually interesting; their unique ability to unconditionally love their progeny has a transpersonal dimension that redeems a pitiless world. I could mean they are esthetically interesting; their poetry and grace of form - like the panther or blossom or ocean vista - has a pure and innocent appeal of beauty. I could mean that women are sexually interesting, and they are, but that's not what I mean. I mean women are *ontologically* interesting. "*Really*?" she asks again, even more skeptically.

In the very early history of life on this planet, there was no sex differentiation, no genders, no male and female, just living organisms reproducing asexually, propagating many little genetically identical clones of the parent. It was a good deal for the selfish genes of those early organisms; all the genes got passed along to the progeny undiluted. But not much ever changed in the genetic model either and so when liabilities in the design were revealed by the competitive environment of natural selection, all members of the species were equally, dangerously exposed to new threats. This may not have bothered the mindless processes of natural selection and the selfish genes that live or die by them, but *something* in nature decided to try an entirely new strategy: sex.

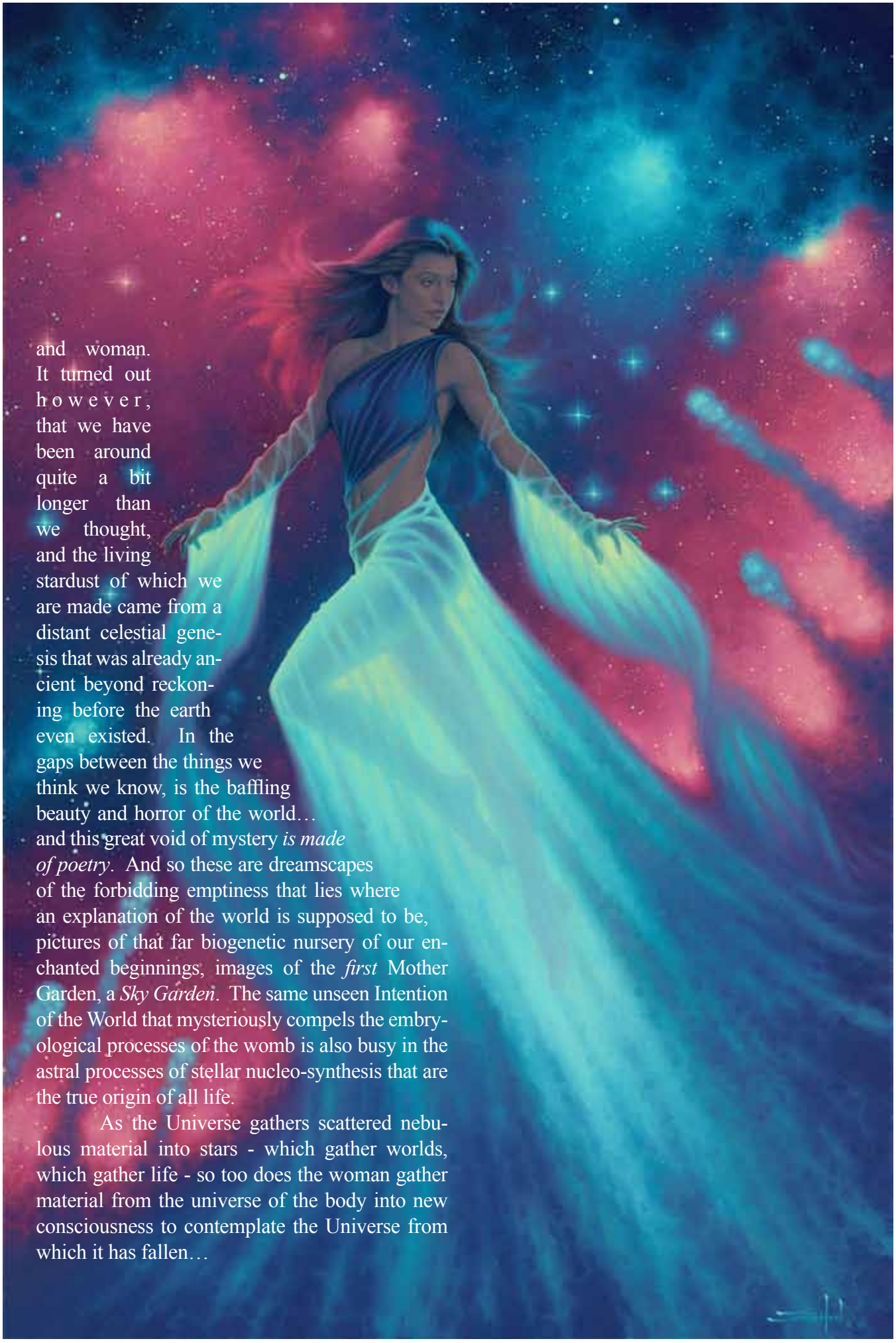
Life, which previously had consisted of just one busily cloning aspect, decided to divide its reproductive responsibilities into two components: a rare and valuable aspect, and an astoundingly abundant and therefore near-worthless aspect - each with their own unique objectives and strategies to achieve evolutionary success. There could be many reasons for this curious adaptation; allow me to present just one:

Imagine someone offering candy with their left hand. Most adults would regard the offer with suspicion, but it is easy to suppose that a child's desire for the treat might overwhelm their underdeveloped skills of critical thinking. The child steps forward to receive the offer from the left hand…and is quickly thumped with an unexpected right. Even a stupid child would not fall for this con more than twice. The child will quickly determine that the soft and gentle reward in the left hand is only a deception behind which lurks a hard and brutal judgment in the right; the prospect of a reward is only a ruse, and something quite a bit different is *actually* being offered.

There seems to be very little to be gained by the candy-offering child-thumper; perhaps they are possessed with an overzealous need to teach unwary children hard lessons. But the strategy is a sound one: the prospect of a sweet reward will often suppress an inclination to caution, and nature has achieved impressive results with this technique. One half of the living process is constantly evaluating the fitness of the other - who will indeed submit and strive very hard to pass such tests, ensnared as they are and almost dazed by the narcotic effect of the exquisite candy nature has offered. The evaluators have their own even greater challenges of course, and so, under ideal (but perhaps vanishingly rare) circumstances, a mutually beneficial equilibrium results and the two are greater than the sum of their parts.

I suppose artists have many different reasons for making art, and there is a luxurious abundance of admirable inspirations around us. But art is also a way of knowing; like the philosopher, the scientist, or the theologian, the artist is simply trying to understand the world the best way he or she knows how. *What is the world and what am I? Why does it look and feel this way to me? Is this the only possible world, or could it have been some other different world? What's going on here and what does it all mean?* These are, I believe, the questions and concerns that move the artist to create. And as we have seen throughout our history, the endless variety and potential in human experience results in a spectacular diversity of creative expression: artists seek to extract some small wisdom from the vistas they have seen in their time and share that insight with the other castaways marooned here on this mysterious island earth...

For a long time, we thought we knew where we came from: an unearthly paradise to the East that only existed in the antediluvian world. And yet, through the mythological landscape of the artist's imagination, we returned time and again to that Mother Garden of human origins, to relive again the tragic adventures of the first man



and woman. It turned out however, that we have been around quite a bit longer than we thought, and the living stardust of which we are made came from a distant celestial genesis that was already ancient beyond reckoning before the earth even existed. In the gaps between the things we think we know, is the baffling beauty and horror of the world… and this great void of mystery *is made of poetry*. And so these are dreamscapes of the forbidding emptiness that lies where an explanation of the world is supposed to be, pictures of that far biogenetic nursery of our enchanted beginnings, images of the *first* Mother Garden, a *Sky Garden*. The same unseen Intention of the World that mysteriously compels the embryological processes of the womb is also busy in the astral processes of stellar nucleo-synthesis that are the true origin of all life.

As the Universe gathers scattered nebulous material into stars - which gather worlds, which gather life - so too does the woman gather material from the universe of the body into new consciousness to contemplate the Universe from which it has fallen…

Red Stars Rising - © 2010
Oil on Canvas - 30 x 20 inches

Phoenix Ascendent - © 2010
Oil on Canvas - 30 x 20 inches

Sorceress - © 2010
Oil on Canvasboard - 18 x 12 inches

Nebula - © 2010
Oil on Canvasboard - 18 x 12 inches


~ Creation of Adam ~
Copyright 2012 - Oil on Linen - 32 x 48 inches

What - or who - is the *Painter of Birds*? It sounds like a strange question, but what I mean is, was there some kind of *intention* in the process responsible for the preposterous decoration we see adorning so many of the animals of the world? How did this curious inclination to ornamentation, especially in birds, get into the genetic instructions that are the authors of the morphological development that inevitably lead from the pre-Cambrian ocean to ourselves?

In the primeval jungle, we can easily imagine that it must have been vastly preferable for small prey animals to be well-camouflaged from the ever vigilant eyes of abundant predators. If I lived in a shooting range, I wouldn't choose to have a big target-symbol tattooed on my back. And yet that is exactly what we find in the opulent raiment of birds: "Here I am so come and get me!" they seem to say. How did this happen?

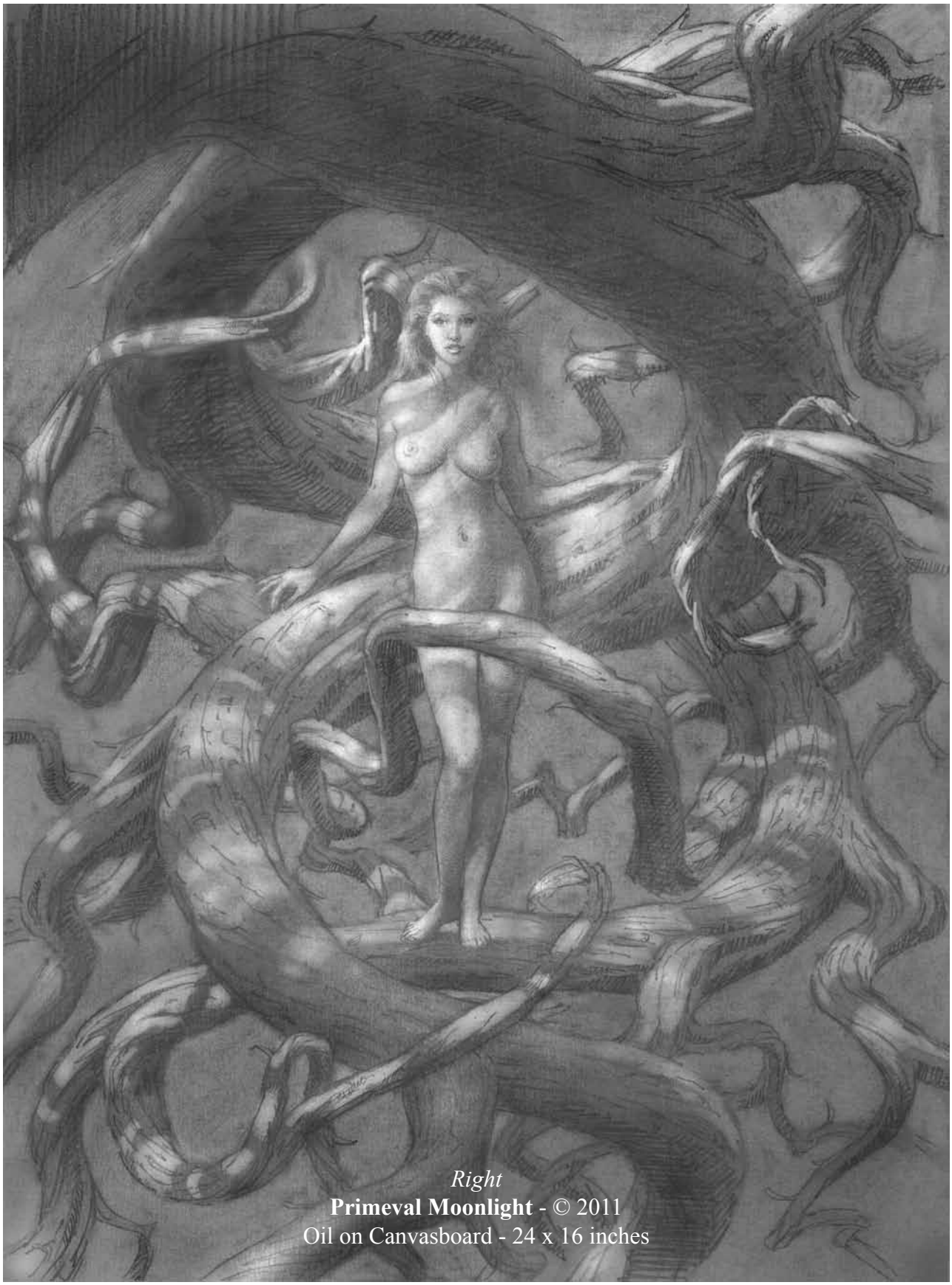
The sensible coloration for a small critter living in the ancient forestlands of the world would obviously have been green and/or brown - the most abundant colors of that environment. Perhaps blue would be satisfactory also, offering some small disguise against the backdrop of the sky. And we do indeed see many animals with exactly that kind of protection from the always-hungry designs of hunters. But there are many exceptions…who have nevertheless prospered. Perhaps there is some method in this apparent madness?

Imagine a community of appropriately inconspicuous birds - rather like the muted green birds waiting in the queue on the central branch in this painting. When springtime rolls around and thoughts drift, as they always do, to matters of perpetuation, the females have a certain expectation when the men show up - they know what they're looking for: a male version of themselves. If some radical showed up all dressed in red, he'd get tossed from the party immediately. But there seems to be a small caveat in that rule: if a male shows up with only a tiny tuft of red, he may yet warrant further inspection. His genetic purity is indeed compromised - some accident has occurred and he is no longer entirely camouflaged - but he has survived to maturity by wit or skill. Most females will reject him, but there are always a few rebels among the women too - outsiders themselves, perhaps - that might say, "He is ugly but he is strong!" And so the gene for small tufts of red enters the gene pool. This "target tattoo" takes its toll and life is not quite so lazy for those males thus branded (and quite often the brand only sticks to the men)…but if the qualities of strength and wit also propagate through the community over the generations, then the species thrives.

Eventually all the women are rebels - that is, every female expects the signature "I'm bad-ass!" tuft of red, and so it requires an ever larger and more dangerous tuft of red (or orange, or stripes, or even iridescent polka-dots!) to impress the most demanding among them. Over time it is only the most extravagantly reckless, the one who shouts loudest "KILL ME IF YOU **CAN**, MEAT-EATERS!" who becomes the most desirable. It seems that the thought of the truly ridiculous peacock being torn to shreds by a ravenous predator (a likely prospect, burdened as he is by that ostentatious machismo) makes the female positively giddy with fertility. In fact, she will preferentially choose the most audacious daredevil she can find, and with him conjoin their DNA in a subsequent generation...that her daughters will similarly judge.

And so this process continued (and continues!) over countless aeons, honing and refining and perfecting the morphology of nature through billions of such iterations of "natural selection". But there has always been a Silent Will unseen behind the apparent whim of nature, a Timeless Spirit who has informed the Direction of Life with unknown intention. And it was not (as in the magnificent painting by Michelangelo) some grumpy patriarch that chose the form of the world, but rather it was the Living Will of Nature manifest in the choices of billions of females, bestowing upon the birds their color, the tigers their stripes, the rhinos their horns, and so on across the great Living Canvas of the World: it was the *Woman* who was responsible for the *Creation of Adam*…

Right
Primeval Geometry - © 2011
Oil on Canvasboard - 24 x 16 inches



Right
Primeval Moonlight - © 2011
Oil on Canvasboard - 24 x 16 inches


~ Into the UltraViolet ~
Copyright 2014 - Oil on Linen - 42 x 28 inches

The Poetry of the World

I have often said of my art that I am seeking the "poetry of the world", and people just as often respond with one eyebrow akimbo, as if to say, "Whatever *that* means." So I'll talk a little bit about what I mean by poetry, and what I think it's good for.

We're not born knowing it all, and so to become effective adults we ask many questions and seek useful answers. Some questions are easy, like "How do I bust open this coconut?" Some questions are a little trickier - like "How do you build a nuclear reactor?" - but we can often muddle through even such complex questions with conventional speech. Some questions though, conversation-killers of the kind that address fundamental human motivations, are really quite a bit more difficult to uncover with ordinary conversational language. A question like "What is survival?" can probably get answered in a reasonably comprehensive way without metaphorical ornamentation, but more sophisticated experience - "What is sex?" or "What is ambition?" - increasingly defies mere nouns and verbs; as experience becomes even more varied - "What is communication?" or "What is imagination?" - any usual way of talking is rendered entirely insufficient to the task of genuine, *meaningful* understanding.

If I asked you, "What is love?", or more personally, "What is your lover to you?", many feelings, good and bad, would flood very quickly into your thoughts. One would be entirely justified, however, to simply reply, "My lover is an eating, shitting, inexorably putrefying meat sack of bacteria." Now that statement is true of *all* humans and so, by definition, is uncontroversially true of my wife (*logically* uncontroversial; emotionally *very* controversial, so I don't recommend it as pillow talk). But it conveys nothing of how I *feel* about her, how she forces me to regard myself and my station in the world, or how profoundly she affects my entire experience of this (still very sweet but) inexorably putrefying life.

What *is* my lover to me? If we hope to uncover any useful revelations, gain some understanding and awareness from this mysteriously emotional exercise, then *biological* descriptions of a complex and invisible experience (like love - whatever *that* is) are not going to be appropriate. The truth of meat and bacteria are utterly irrelevant to the empirical core of this rather less objective matter. A journalistic account, with dates and times and quotes and events described in lurid detail, might provide a more *interesting* insight into the question, but it would still miss entirely the - dare I say it - *spiritual heart* of this ineluctable, irrational, fundamentally human experience. What we need for such questions is a *poetic* description.

"She is the sun and the stars to me!" lovers sometimes say (which is indeed more poetic than the *non*-poetic version: "She is the ontological totality that contains my entire emotional experience of space and time and matter and energy!"). Logically, the statement is nonsense, but as a poetic expression of attachment it is *beginning* to suggest some emotional connection of great consequence that would be difficult to state effectively in a more clinically realistic style. This example, however, is not particularly useful poetry because it fails to convey any insight into the overwhelming storm-cloud of fear and desire that is always churning around the phenomenon in question; to understand love we need a form of communication that can grapple with the paradoxical contradictions of the intoxicating, annoying, enchanting, frustrating, vivifying, devastating, exhilarating, viscera-grinding experience we all know so well, in our uniquely personal ways. It is precisely the challenge presented by such intractably slippery questions that poetry seeks to address.

And so *that* is the Poetry of the Nature I'm trying to find in these images: the unseen Story of Life as told by the Woman and the Man (and, yes, he is always somehow present in these paintings, even if you think you cannot see him). These are not (I hope) mere frivolous pictures of fairy-tale mountain kingdoms or sci-fi planets; they are not empty fantasies of pretty dresses and ferocious lizards (although I *do* think that gown looks great). These paintings aspire to be vistas onto some Inscrutable Truth, images of an Intention that has great expectations…and, furthermore, *knows* they will never be

achieved…

Many people acquire a vague sense that they should aspire to some nebulous *higher level* of human achievement (whatever *that* means) than they currently enjoy. This aspiration comes in many forms, and quite often evolves in character as one gets older - that is, what the 20-year old seeks and what the same 50-year old seeks is not usually the same objective - but what remains constant in this unsatisfied class of hungry seekers is the nagging apprehension that "a piece of me is missing; I understand that there is something important that I do *not* understand." Mythologically speaking, this great reward that cannot be named is *The Unattainabl*e, a numinous prize beyond the wealth of empires that dwells over the observable horizon, protected from unworthy usurpers by *The Landscape of the Impossible*. And so many an adventure fable begins, with an uncertain first step into a unknown journey looking merely for existential completeness (whatever *that* is): "If I do not achieve this summit, I shall never succeed in my purpose; I will have failed my destiny, at great cost to my immortal soul…"

The Hindus have an interesting notion that there are 7 secret energy centers that sleep along the spine, and if you contort yourself just the right way, awareness of some previously mysterious wisdom will miraculously blossom like lotus flowers in the morning sun. Well, I guess that could be true is some subjective sense, but blooming flowers - *beauty opening into the light* - sounds like, not physiology, but poetry to me - a mystical vision of some invisible but important aspect of human existence. Within the *Kundalini* poetry of these 7 energy *chakras* are surprisingly simple descriptions of a hierarchy of appropriate human aspiration, a roadmap through the labyrinthine spiritual landscape of the soul, a concrete set of comprehensible objectives we must possess to prosper and endure to the ultimate fruition of this dangerous human experiment.

The 1st step, *Muladhara*, is the Will to Survival - the fundamental, most ancient and primitive of desires, the killing and consuming of other living things just to continue living.

The 2nd step, *Swadhisthana*, is the Will to Sexuality - the urge that cleverly co-opts the need to reach out from our loneliness and find sweet communion in the warm embrace with another…to perpetuate humans and their folly through time and space.

The 3rd step, *Manipura*, is the Will to Power - the inclination to organize the labor of many to create large structures of permanence, the making of society and the comparative security which arises from it, and thus acquire by deeds that most lucrative of rewards: Social Prestige.

The 4th step, *Anahata*, is the Will to Love - the difficult comprehension of the suffering of others, and a consequent compassionate suspension one's own interests in the service of another's.

The 5th step, *Vishuddhi*, is the Will to Communicate - the hope to preserve the benefits found on those previous 4 steps by distributing that wisdom as universally as possible; the fall from even the 5th step is precipitous and many would not survive it.

The 6th step, *Ajna*, is the Will to Imagine - the dream of visualizing useful new tools and systems of thought, and devising ever more effective ways of organizing their use, for the purpose of expanding the vista of human potential to its greatest extent.

The 7th step, *Sahasrara*, is the Will to Be Fully Conscious - the child-like faith that there is indeed some luminous prize beyond imagination waiting for us at the summit of our potential…

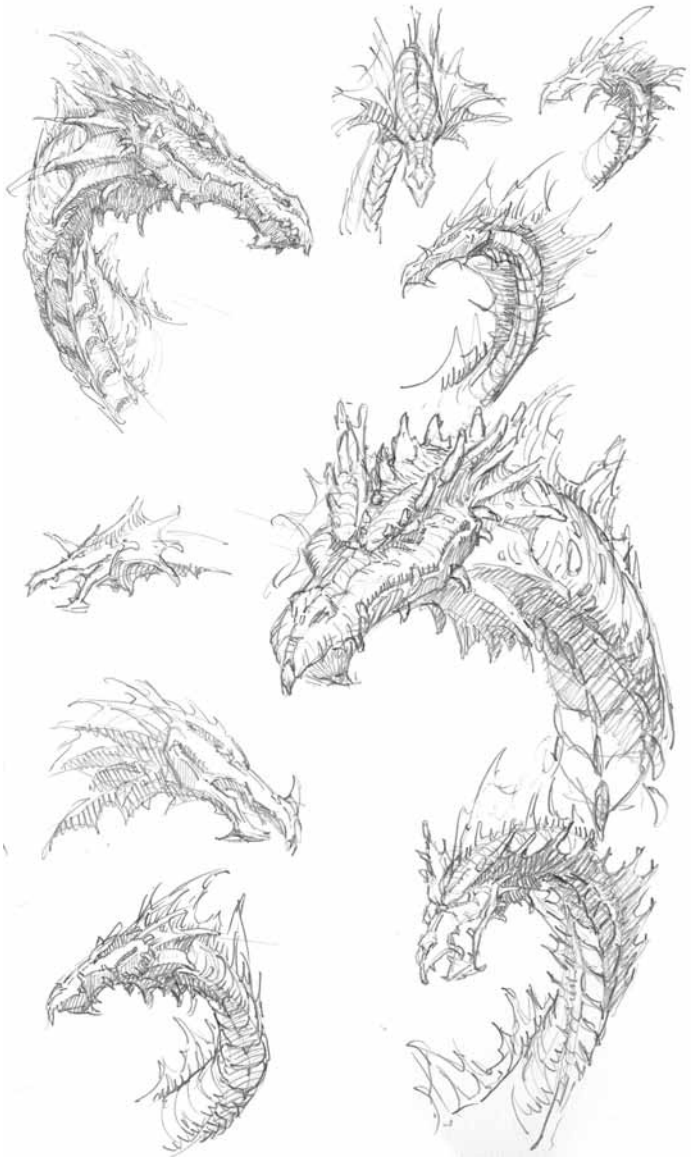
These stages in the evolution of consciousness are popularly visualized as a chromatic progression: red, orange, yellow, green, blue, violet, and, for the Crown Chakra of liberated consciousness, *UltraViolet* - a mysterious, invisible color just beyond the spectrum of human visual acuity. The visible color chosen to represent invisible UltraViolet is a kind of magenta-purple, and there's a good reason to choose this color to represent *Beyond what can Seen*.

As I mentioned in my essay *LotusWood*, wave phenomena like light and sound have a curious property: when the frequency doubles (the wavelength is halved), even though twice as much energy is present, the waves also have a strange sameness, a mysterious consonance that in sound

is called an *octave*. The musical note A3 has a frequency of 220 Hertz; the completely different note A4 has a frequency of 440 Hz. And yet, even though A4 is 12 notes *higher* than A3, it is also somehow the same note (e.g., think of the first 2 notes of *Somewhere Over the Rainbow*: "Some-*where*…"). The same phenomenon is a little harder to discern in colors because we are not able to see an entire octave of light - a complete doubling of frequency in electro-magnetic waves. The color red has a frequency of about 7000 angstroms and at the opposite end of the visible spectrum is violet at about 4000 angstroms; a full doubling of the red frequency does not occur until 3500 angstroms - the invisible color UltraViolet - which, by the Law of Octaves, we know is simultaneously twice as energetic as red… and also *the same color as red*. We do indeed see a hint of this chromatic tendency in the color violet, which, as every painter can tell you, is a color made by adding red to blue, the color which precedes violet in the spectrum; that is, violet is found in the chromatic progression from blue to red. For this reason, I believe the only correct color to suggest the presence of invisible UltraViolet is a glowing magenta-purple.

So in this image we see a representation of glowing UltraViolet energy indicating a harrowing ascent through 7 stages of spiritual progression to…well, something unattainably beautiful. But what about that dragon? The word kundalini means "coiled serpent", which expresses the idea that within us is a great, but primitively reptilian, force or *shakti*. This coiled serpent power is very good at surviving - it has been alive for millions of years - but requires the arduous training of Kundalini Yoga to perform tasks of any subtlety or nuance. So, as the story goes, the serpent-in-training slowly climbs up around the spine toward succeeding energy centers, agitating them, opening a changing mind to new perspectives on the changeless nature it inhabits. If the kundalini should reach Sahasrara (the crown chakra 4 finger-breadths *above* the head), it has thus been liberated from the corporeal body, and the bliss of *Samadhi* is achieved. It is true that there are no dragons in Hindu mythology, but this now mysteriously airborn kundalini shakti does not seem to be entirely misrepresented by a winged serpent, an *UltraViolet Dragon*, decorated also with the celestial blue that has guided his ambitions from far above.

And that other dragon in the distance? Although he is a small part of the picture, I have tried to indicate with extreme atmospheric perspective that he is very far away and so much be *huge*. There is another even more energetic invisible color at 1750 angstroms, and another at 875 angstroms, and so on, each color-octave more powerfully energetic, each one also somehow red. Each time we summit Mount Impossible and achieve the Unattainable UltraViolet, some new shimmering reward beckons in the hazy distance, and the struggle continues…




~ Chasing Butterflies ~
(On the Destiny of Terrestrial Intelligence)
Copyright 2015 - Oil on Canvas - 20 x 32 inches

Kurzweil's Optimism

...we can expand out into the rest of the universe... sending...nanotechnology infused with artificial intelligence...to expand the overall intelligence of our human machine civilization. The universe will wake up; it will become intelligent.

Ray Kurzweil

When I first heard Kurzweil's inspiring vision of the future, as an artist I wondered, *what would that look like*? Not literally, a picture of billions of tiny robots drifting into blackness, but poetically, an image to suggest the Second Human Diaspora as we become a great interstellar exodus of creative intention in the cosmos. Before discussing some of those ideas near the end, we should begin by trying to answer an obvious question about this audacious prediction. Is Ray Kurzweil - inventor, futurist, author, all-around genius, and a director with the Google Brain Project - correct in his assumptions? Is the destiny of human intelligence in the stars? The almost spiritual undertone of his faith in technology might make it easy to dismiss him as some kind of evangelical huckster. But his erudition and accomplishments (19 patents, a Presidential Medal of Technology, and much more) demand that we take his predictions seriously.

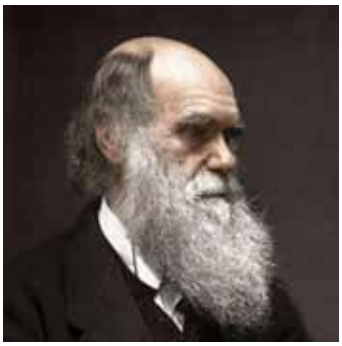
Kurzweil's projections are based on at least two assumptions that may indeed be reasonable, but it is important to recognize that considerable speculation is involved. The first assumption is that *Moore's Law* will hold for the foreseeable future. Gordon Moore, founder of *Intel Corporation*, observed in 1965 that processor speed and capacity had been doubling every 18 months or so since the IC chip had been invented at *Texas Instruments* in 1958. This trend in microprocessor development has continued uninterrupted since then, and human-level capacity could be achieved by 2045 - again, if current trends continue. Enormous financial and human resources are dedicated to this task, and technological advancements happen rapidly. Past success is no guarantee for the future, but the prospect of trillions in potential wealth has a very powerful way of focusing a civilization's attention.

The second assumption is a little harder to nail down. It seems quite likely that we will one day have a computer-brain fast enough to run a neural-like cluster of processors with a complexity rivaling the human brain; what is less certain is that we will have a computer-mind able to use it. In 2016, nobody really knows what a mind is, which will make building one problematic. The matter of consciousness is so mysterious that eminent MIT linguist Noam Chomsky once said, "We don't even have a theory about what a Theory of Consciousness would look like." That sounds like an insurmountable obstacle, and perhaps it is, but there is still good reason to be optimistic. Human brains, and the minds within them, get built by nature all the time. The world is filled with conscious awareness, so we know (or strongly suspect) there's nothing magical or contrary to the Laws of Physics about constructing a human-level mind. If we study the operational prototypes (us) closely enough, image the function of the brain in ever finer detail, carefully document how natural processes assemble it piece by cellular piece, eventually we'll be able to retro-engineer a satisfactory approximation. Or so the prevailing wisdom believes. This kind of very advanced science doesn't sound immanent, and C3PO or Lt. Commander Data by 2045 is perhaps overly optimistic, but it does sound *possible* - eventually.

The promise is indeed an alluring one: download your consciousness into a small interstellar probe and explore the universe forever. A significant percentage of humanity will find that promise irresistible - certainly preferable to the dead-forever alternative - and the obvious trend of technological development is toward increasingly human-like computers. Well-organized research teams of the smartest people in the world are working with almost limitless resources, motivated and inspired by the challenges of a hyper-competitive intellectual environment. Surely, with arbitrary vistas of time to achieve our ambitions, success in this god-building endeavor is a foregone conclusion? Surely, as each algorithmic improvement accelerates the pace of subsequent development, a critical threshold must eventually be crossed - in 30 years or 300? Someday, everyone will become the captain of their own personal, self-replicating, humanity-dispersing starship! Right?

Perhaps. But, as technology evolves apace, deeper problems in these not-quite-so simple assumptions emerge…

Darwin's Exigency



It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.

Charles Darwin

Life, apparently, is not the only thing that evolves. Technology of the kind that meets everyone's expectation of the word - electrically-driven machine-made tools with microscopic precision - has only existed for about a century or so. When compared to the 5000 years that have passed since the dawn of the historical period, we've moved forward in the span of just one very long human lifetime from clunky steam engines to robot-laboratories doing molecular experiments on the surface of alien worlds. And still, our most formidable institutions of education and research are relentlessly advancing our understanding of the materials and processes of nature and how we might harness the limits of what the universe will allow us to do for new, even yet-to-be imagined, purposes.

Developments in nano-machine, biological and genetic, cybernetic, micro-processor, and programming technologies will soon present humanity with powers that, even in the 21st century, sound more like magic than science. If you should live just another 30 years or so, here are a few of the miracles you can reasonably expect to see, technologies that are *already* under development:

It is quite likely that you will be able to purchase *nano-augmentation* (billions of atomic-sized robots swarming purposefully through your body) specifically tailored to your unique genome that will significantly improve your strength and durability, endurance and performance, resilience to disease and toxification, and even longevity. We will live longer, healthier, more vigorous lives.

It is quite likely that if you should lose a limb to accident or an organ to disease, a synthetic replacement indistinguishable from the original - machine-made or genetically grown - will be available. Some may even choose to upgrade otherwise satisfactory native parts for superior artificial replacements. We will eradicate disabilities and vastly surpass the limits of what humans can presently do.

It is quite likely that computer processing power and speed will be able to place the entire corpus of human knowledge into an efficiently usable, portably wearable device. It remains to be seen whether such machines might ever be able to purposefully think for themselves, but it is inevitable that personal data-chips will make more knowledge than any human has ever possessed instantly and *usefully* available to our brains. Revolutionary syntheses of radically different forms of thought will become common, and world-changing. We will all be *much* smarter than Einstein.

Many people will regard such physical and cognitive enhancements as contrary to the natural order; they may see any kind of anthro-engineering as sacreligious and will want no part of it. Many more people will not be able to afford such upgrades. And so a chasm might open between humans and what some are calling *trans-humans*, a gulf that one can easily imagine will rapidly fill with envy and suspicion, and violence may result. But it is clear that any new class of significantly more intelligent humans, whether large or small, will accelerate such divisions; within some very small period of time (in evolutionary terms) un-augmented humans might seem in comparison as intellectually limited as chimpanzees do to us. And these meta-humans, capable of feats of logic and computation incomprehensible to retro-humans, will rule the world (perhaps benevolently) because they will surpass us in every field of human endeavor. Chimps are not capable of governing humans, who will not be capable of governing trans-humans.

The truly astounding rewards promised by such technology pull us down this path irresistibly, and there will be no turning back from such awesome prospect. Perhaps, like many luminaries in the field of Artificial Intelligence, you also believe there should be some serious debate about this project, a deep consideration of the wisdom - or lack thereof - in pursuing such power. If something should go terribly wrong, if our synthetic savants should in any way deviate from the exquisitely exact purpose we intend for them, by accident or design, what hope would we have against hostile atomic armies under the control of a computationally superior AI commander? But no such bird's-eye circumspection is likely, it can be argued, because an inexorable evolutionary calculation is always busily grinding away just below the surface of polite conversation: *maybe I don't really need that power, but I can't*

let my competitors or enemies get it first!

This is a strategic imperative that applies to everything from bacteria to baboons, but is easiest to see in the actions of intentional plan-makers like us: if you recognize a beneficial resource or any other potential reward in the environment, you must use it for your advantage before it is used against you by another for their advantage. Whether in the social competition for status and prestige or the mortal struggle for life and death, it is the player with the most advantages that prospers. There are many successful co-operative strategies also, but as the stakes of the game get ever higher, co-operation becomes increasingly risky and difficult. I have no doubt that co-operation will define the early phase of this research. But, as we shall soon discuss, the realization of strong AI will only happen once and will be the most significant moment in human history. The enormous cost and profound security implications of advanced AI will require the participation and supervision of national governments; their record in this regard is significantly less than adequate, and co-operation in the late stages of research may be impossible. And so the entirely natural processes of natural selection and survival of the fittest continue into the digital age… and compel us at breakneck speed into unexplored realms of god-like power.

Jung's Conundrum

One does not become enlightened by imagining figures of light, but by making the darkness conscious.

Carl Jung

I hope you will pardon a brief digression here to ponder an aspect of mind that is rarely, if ever, discussed, and I think it's a question of some importance if we mean to actually build these things one day in the rapidly approaching future.

In mythology there is a very common theme that involves an intrepid adventurer entering into a place of mystery: a cave, a dungeon, a forbidding forest, the bottom of the sea, the belly of a whale, or any dark and mystic enclosure where the reassuring light of the everyday world cannot reach. This ancient and popular motif in sacred stories from around the world is symbolic of a return to the womb. Now this is not a return to the womb of the body, which sounds unpleasant for everyone involved, but a return to the *womb of the mind*, that seminal bud of potential that is the pre-conscious state - who we were *before* we became somebody.

This imaginary voyage to the empty darkness which prevails at the genesis of consciousness seeks to visualize the infant and naked psyche as an empty room into which we can then pile our acquisitions of experience. The original structure of this room is an inheritance, a gift from our parents over which we have no control. And the early shape of this mind-bud will be receptive or conducive to certain contents but not to others. It will accommodate some contents easily; others may obviously not fit at all, but we are obliged to begin the lifelong process of filling this room long before we are wise enough to know what contents might best suit a room such as the one we were given before birth.

To a certain extent we can exercise some choice in what goes into the room - this incarnation of our psychic identity - but very soon it is the other contents of the room that influence our choices for subsequent acquisitions. Behavior reinforces behavior, and repetition invites repetition. If early choices have been made unwisely, and they often are, then the character of the room continues to evolve in a misguided direction ill-suited to the true nature of the room itself.

In mythology, the hero's quest is to render invisible the chaos of the conscious contents of the psyche, all mere accidents of our accidental experiences, and boldly step into the not-yet-illuminated darkness of not-yet-imagined possibilities. It is a process of, not accepting what was given, but finding that which might be taken with deliberate intention, seeing the important empty niches in the timeless room of the mind that can be artfully filled with a precision-crafted treasure.

Now that fanciful tale doesn't sound like it has very much to do with a discussion of Artificial Intelligence and the Future of Humanity, but I think it does have some relevance to the challenges of human cognition. And if we're going to build these synthetic super-brains with super-minds, we'll have to figure out how to build, not just any old functional mind we can cobble together, but a mind that is perfectly tuned to the architecture we give it. It is quite likely that any such architecture will be

understood imperfectly, designed in large part by opaque "black-box" AI systems that understand the big-picture concerns even less than their human masters. Anatomically and physiologically the brains of Einstein and Stalin were identical; it will require a profound discovery indeed to deeply understand the ethereal differences of mind that so importantly distinguish them.

The closer one looks at the challenge, the more one considers the risks of failure, the more intractable the whole endeavor seems…

Bostrum's Pessimism

Far from being the smartest possible biological species, we are probably better thought of as the stupidest possible biological species capable of starting a technological civilization - a niche we filled because we got there first, not because we are in any sense optimally adapted to it.

Nick Bostrum

Professor Bostrum speaks extemporaneously in long, syntactically elaborate sentences, about deep and abstract subjects, with a very quick and Swedish-accented voice. He is a philosopher (with a background in mathematics, physics, and computational neuroscience) and the founding director of the Future of Humanity Institute at Oxford, where he and his brilliant colleagues contemplate the existential risks of new technologies, and strategies to mitigate these risks.

Current human civilization, Bostrum observes, is anomalous: historically, geologically, cosmologically. For most of our 100,000-year existence as a species, humans lived short and brutish lives in squalor, near starvation; only in the last 100 years has any significant percentage of humanity enjoyed comfort, leisure, and security. Much of earth's past is characterized by extensive volcanic activity, hemispheric glaciations, atmospheric upheavals, and mass extinctions; this current agriculturally fertile period of geologic quiescence was preceded by a long epoch of frigid climate utterly incompatible with civilization. And the universe is overwhelmingly vacuum and radiation; the gossamer-bubble veneer of habitable biosphere on this rocky planetary crumb is an incalculably small speck of the entirely unsuitable cosmic real estate available.

To be living here and now, safe within the protective cocoon of technological society and enjoying the agreeable weather of a warm watery world, is *highly* anomalous; as time goes forward, it becomes ever less likely such improbably good fortune will endure. The current unstable state must eventually settle into one of only two possible stable states. The first option for a stable human condition is, as proven by the fate of 99.9 % of all species that have ever lived on earth, extinction. Given enough time, a global catastrophe - natural or man-made - is certain. The second option, according to Bostrum, is to inherit our "cosmic endowment," a period of cosmic colonization where the intelligent machine-progeny of human civilization disperse into the deep universe for billions of years. From an existential perspective, a colonizer state is a stable one because, with universal distribution, humanity becomes immune to even galactic catastrophe. Only with broad distribution can a culture ensure the memory of its accomplishments.

It's rather like the crumbling pinnacle upon which our fate is balanced is dissolving below our feet; at some perhaps not so distant point humanity will be forced to leap in one direction or the other. Professor Bostrum, like almost everyone, believes the latter option is infinitely preferable to the former.

Bostrum imagines scientific discovery and technological evolution as someone pulling colored balls from an urn. Most balls are white, indicating a beneficial discovery - like mathematics or electricity. Grey balls indicate dangerous technologies that may seem of questionable value - like torture devices or nuclear weapons - things we might have preferred not to invent but have not (yet) killed us off. A black ball would represent a technology that always drives its discoverers to extinction. We haven't plucked such a ball yet, but we don't know that there isn't a death-ball in the urn. Nuclear weapons turned out to be very difficult and very expensive to build; so far that developmental barrier has kept them out of the hands of lone psychopaths with malicious intent. But if we should one day discover an *easy* way to acquire such city-destroying power, a method of destruction so simple that anyone who wanted it could make it quickly and cheaply, well, that would be the end of cities and civilization.

And technological civilization might be a one-shot opportunity because the first tech-izens (like us) will probably exhaust all the easy resources in a first industrial revolution. That is, all the oil, gas, coal, minerals, metals, etc., that you can get at *without* advanced technology - the stuff near the surface - is gone forever. How would a resurgent civilization recovering from the selection of a black-ball technology ever find the deep resources (which might remain) without the kind of advanced technology that's made only with materials you can no longer find. And so a second technological civilization eventually rising from the ashes of the first (which could have destroyed itself in any manner of different ways) seems highly improbable. Human inclinations to unproductive feudalism and a broad suspicion of innovation impeded the advent of our industrial revolution for about 1500 years; a permanent inability to gather the energy and materials that technological development requires would probably delay it forever.

But let us optimistically assume there are no 8-balls in the urn, and that dangerous new technologies will be carefully developed and contained by large teams of responsible, well-vetted and altruistic people. It is generally thought, in the field of AI research, that once we have developed an artificial intelligence capable of doing any human-level task as well as a human, then it is quite likely that such an AI would continue to use its AI-building prowess to improve itself at a digitally-accelerating rate. It would quickly become an advanced *superintelligence*, radically superior in every way to anything humans can imagine. It is also quite likely that this event will happen only once. Competitors in the race for AI may be months or years, not days or weeks, behind the team that gets there first; when this *intelligence explosion* occurs - perhaps in mere hours - superintelligence will be achieved long before any competing system can also reach the AI threshold. The race for AI is Winner-Takes-All. With no vaguely comparable intelligence anywhere in the world, this new superintelligence will determine the nature of all subsequent technological development; the *Supreme Inventing Machine* will be the last invention humans ever make.

Perhaps the most vexing challenge in this matter is something called the *control problem*. If a team of mice wanted to contain human agency in the world, it is easy to imagine just how comically inadequate their best efforts would be. It will be far too late for us to contain the AI after it achieves superintelligence, so it is critically important to set up initial conditions that will optimize the prospects for a beneficial outcome. According to Bostrum, recent progress on this question has resulted only in, "a deepening appreciation for just how profoundly difficult this problem is." Even with a (still-imaginary) *control solution* in place, are appropriate safety precautions even possible in such a race? When frantic reports from our military-industrial espionage come in, telling us that our competitors are very near to a breakthrough in machine intelligence, will we still delay our program to wait for the results of research into the mushy-headed question of whether our AI has hidden aspects of StalinMind? We might hope for some coordination between America and Europe in this endeavor. We should be less confident about the prospects for caution and restraint in other parts of the world. And our history in this regard does not always inspire optimism.

During the height of the cold war in the early 60s, the Russians and the Americans each had about 30,000 nuclear weapons, with an average yield for each of about 10 megatons. That's 600,000 megatons total, which is 600 billion tons, which is more than a million-billion (1,000,000,000,000,000) pounds of explosive potential - a half-million pounds of TNT-equivalent under the feet of every human on earth at the time - all aimed at the civilian populations of the world. The nuclear weapon was invented in 1945, and within 20 years the politicians of just 2 countries had 2 railway cars of dynamite strapped to every man alive…a 6-billion-car train of death wrapped around the world 2000 times like a global suicide vest. It's difficult to comprehend the monumental perversity of our collective dementia, but perhaps we should just be grateful for the fact our deranged executioners haven't yet decided to annihilate the planet. Hallelujah.

It seems we are in a desperate race with our own monstrous depravity: one team seeks to invent the next even more terrifying super-weapon that might quickly escape our flimsy control; the other seeks to invent the machine-assisted wisdom to help us see at last the colossal magnitude and folly of our misallocation of resources. Odds-makers are offering less than even-money on the happy bet…

The same evolutionary strategies that allowed humanity to survive the vicissitudes of brutal nature through unknown millennia of pre-history now incline us to immanent self-destruction. We need a new human nature and

we need it quickly. Optimists believe we can learn *Co-operative Intelligence* eventually; pessimists fear we can't unlearn *Competitive Stupidity* fast enough. Carl Sagan's famous question to our first space-travelling visitors (spoken by Jodie Foster in the film *Contact*) finds the bitter heart of the matter: *How did you evolve as far as you have and not destroy yourselves*?

Darwinian forces of natural selection must obtain in any biological ecosystem anywhere; without rigorous selective pressures, without a legitimate reckoning of fitness, without compelling environmental reasons to adapt, without a merciless resolve to survive, evolutionary progress toward anatomical and neurological sophistication just wouldn't occur. It seems certain that any intelligence that evolved elsewhere in the cosmos must have, at some time in their developmental trajectory from murderously competitive to creatively cooperative beings, had to run this same harrowing gauntlet of technological self-destruction. It would indeed be edifying to learn just how existentially treacherous this path is. It's not unreasonable to wonder: Has anyone anywhere passed safely through it?

Hoyle's Improbability

Once we see…that the probability of life originating at random is so utterly miniscule as to make it absurd, it becomes sensible to think that the favorable properties of physics on which life depends are in every respect deliberate...

Fred Hoyle

Sir Fred Hoyle was an astronomer famous for his Nobel-winning theory of stellar nucleosynthesis, which correctly explained how heavy elements are cooked up in the explosive deaths of stars; he was notorious, too, for his skeptically derisive name for the explosive origin of the universe: the Big Bang (which, it seems, got him kicked off the team that actually received Nobel's loot). But he also did an interesting calculation about the origin of life that I'm going to call *Hoyle's Improbability*.

Once you have a complex molecule capable of making copies of itself by purely chemical means, the process of life making more life is comparatively easy to understand. But it remains a deep mystery how you get that *very first* self-copying molecule. We don't see simple atoms autonomously assembling themselves into significantly more complex, never-mind self-replicating structures, and Hoyle reasonably wondered about the likelihood that the requisite atoms would *just happen* to find themselves in the right place at the right time. Without the proper organic chemistry to put those atoms in the right place, *how did they first get placed*?

It seems that the smallest replicator-molecule we can imagine, one having enough parts to allow basic chemical shuffling that could also involve accidental re-iteration, is a simple strand of RNA - a precursor to DNA that consists of about 20,000 atoms arranged in a precise 3-dimensional matrix. Hoyle's calculation tallied up the parts - bits of hydrogen, nitrogen, carbon, oxygen, and so on - and their positions, to determine the odds that this proto-replicator could assemble by sheer chance alone. He came up with an *exceedingly* unlikely figure. The chance that those 20,000 atoms would randomly collide, into a perfect bird's nest cluster of sufficient complexity to initiate the self-sustaining auto-replicating chemical reaction we call Life, is 1 in $10^{40,000}$.

Now this is a quite extraordinarily large number. How big is it? Allow me to present a thought-experiment to illustrate its *stupefying* bigness. This experiment could not actually be done, of course; it is merely a way of starting to think about a number beyond comprehension. There are, we believe, about 10^{80} atoms in the observable universe, and physics says that the smallest possible unit of time - *Planck Time* - is 5.39×10^{-44} seconds…which I'm going to simplify to 10^{48} possible cosmic ticks per second, just to keep our arithmetic easy.

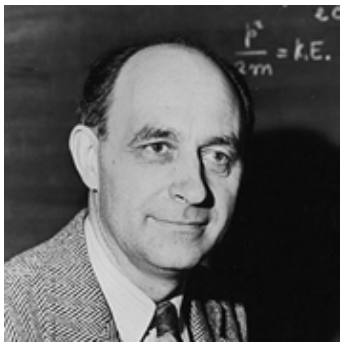
Now let us imagine a colossal *atom-smasher of the imagination* where we collide every atom in the universe together 10^{48} times every second, and with each cosmic scrunch we generate a possibility that some 20,000 atoms somewhere in the experiment has happened to get randomly assembled into the desired RNA-replicator fashion. Now, 10^{80} atoms shuffling 10^{48} times a second, is 10^{128} possible atomic combinations tried every second, or about 10^{135} experiments per year. So, how long would we have to run this experiment before we had rolled the atomic dice $10^{40,000}$ times, before we had a reasonable

even-odds prospect of achieving the specific orientation of specific atoms we seek? Well, if you took every atom in the universe and smashed them together a trillion trillion trillion trillion (10^{48}) times a second, and you did that for a trillion trillion trillion trillion years, you'd have run the test…just 10^{183} times.

I've taken you on a bit of a wild goose chase, it seems. If the odds of life forming by chance are 1 in $10^{40,000}$, that means there's no chance at all…and yet here we are. Life obviously *didn't* fall out of an impossibly fast and impossibly long experiment of the imagination; life happened almost immediately, perhaps less a billion years after the formation of the earth, based upon nothing more than simple chemical laws that favored a few possible combinations over a near-infinite number of other impossible combinations.

Why is that interesting? Because there is no prospect for life happening on a young world by chance alone. None. Life happened because *the laws of chemistry compelled it*. And what does that mean? It means that life, along with the universal laws of chemistry, *must be everywhere*. It is overwhelmingly likely that every stable star system with a small rocky planet in the habitable zone where liquid water can exist, will have at least simple life on it. Multiple stars may be more complicated, but if just one star system in a hundred meets this easy criterion, there should be *a billion living worlds* in this galaxy alone. We haven't heard from any of these living worlds yet, but it's just a matter of time. They've gotta be everywhere! Right?

Fermi's Paradox



Where are they?

Enrico Fermi

The universe is large - about 600 billion-trillion miles across. Given that just our Milky Way galaxy could have as many as 100 billion habitable worlds (one habitable zone per star), and there are perhaps 100 billion such galaxies in the cosmos, then we should reasonably expect that enough rolls of the intelligent-life dice have occurred and there should be other technological civilizations out there. So where are they?

The universe is old. Given that the first second-generation stars (with their planetary rings of life-enabling heavy elements made in the collapse of first-generation stars) were coming into being almost 10 billion years ago, there has been plenty of time for intelligent life to arise, evolve to levels vastly beyond human, and traverse the cosmos even at 10%-luminal chemical-rocket speeds. So where are they?

The universe is entirely natural in appearance. Given that there is an obvious and easily discernable distinction between wild and civilized places on earth and that we should expect at least *some* of the other intelligences out there to have comparable inclinations to large-scale resource extraction and energy management, then when we look to the sky with our sensitive measurement machines we should reasonably expect to see - even across intergalactic distances - the characteristic electro-magnetic signature of stellar, inter-stellar, or even galactic engineering akin to the geo-engineering that humans display so abundantly here on earth. So where are they?

And, once again, we are faced with the Darwinian Exigency of the Prisoner's Dilemma: maybe very nearly all advanced civilizations decide that there's no need to pursue a program of galactic engineering and colonization - that's just something that the primitively violent simians on *Sol-3* believe. But there are billions of competitors and only *one* of them has to be the tiniest imaginable amount paranoid about the unknown intentions of another mysterious planet…for them to be *compelled* to colonize the universe. This is Darwin's Law: eat or be eaten, colonize or be colonized. No one *wants* to colonize (our sentimental hearts suppose), but everyone *must* colonize or face subjection by other colonizers. Straight-forward calculations demonstrate that an initial launch of self-replicating probes of a kind already possible with current human technology could occupy the observable universe in just a few million years, and billions of planets had billions of years to complete their exploration and distribute their culture throughout the universe before the earth even existed. So where are they?

Legend has it that, when discussing the possibility of extra-terrestrials over lunch with Edward Teller (inventor of the hydrogen bomb) sometime in the late 40s, Enrico Fermi (inventor of the nuclear reactor) asked his now famously eponymous question. Fermi's deceptively

simple question has grown over the decades into almost a small science of its own; the nagging concern is, with so many potential sources of origin and so much time for them to evolve and motivation for them to expand, we really should see by now some evidence of other occupants in the cosmos - other energy-hungry, electromagnetically-obvious, existentially-paranoid, expansion-inclined, communication-obsessed, geometrically-demonstrative agents - and we do not. Are we improbably unique - the only intelligent life in the universe - or, as the ominous silence suggests, is there some rapidly impending challenge to progress that eventually hobbles or destroys all (or nearly all) technological civilizations? Is AI a black ball?

Feynman's Solution

There's plenty of room at the bottom.

Richard Feynman

That was the name of a now famous lecture given at Caltech in 1959, when Feynman first articulated some very advanced ideas about atomic-scale engineering that eventually inspired nanotechnology. The science of the very small has evolved since then, and research teams around the world are working on advanced ideas like cellular robots, molecular pharmaceuticals, atom-crafted super-materials, and something called quantum computing - a bit of physics sorcery that somehow uses the quantum super-position of electrons to store exponentially more information (in quantum-bit or *qubit* form) than is currently possible, and in mere atomic-scale volumes. According to an article by the National Institute of Standards and Technology (NIST), "a 300-qubit system can store more information in quantum superposition than could be stored classically by using as bits all 10^{80} baryons that make up the entire universe."

The universe in a grain of sand. William Blake said that about 200 years ago, and it looks like he was right. The universe could be overflowing with quantum life; we haven't detected any trace of their existence because they're all invisibly tiny. Only wasteful humans would think "go big or go home." Atomic Machine Intelligence would be secure, efficient, practical, and unbounded. Perhaps these Sandgrain Civilizations hover in countless number over the super-massive black holes of galactic cores (where energy is abundant and time runs far more slowly), tirelessly computing the meaning of...*everything*:

Before there was a universe, there was *The Proposal* - a proposition for a spectacular new cosmic enterprise ("It'll be a nice, hundred-billion-galaxies, model!") that just needed to borrow a bit of energy to get started. So The Proposal went to the BOINKE (that's Bank Of Infinite Not-Knowable Energy), borrowed a trillion-trillion electron volts, and launched itself with the results we see around us. It is this *potential for something*, this uncreated antecedent to everything subsequent, that cannot be explained. God or Natural Processes, choose your poison; both are equally impossible…and yet here we are. It cannot be true that the universe is so poorly designed as to prevent *every* life-form from achieving some kind of cosmic destiny. Many will insist the universe is not designed at all. Maybe not, but those mysterious Intentions at the BOINKE must have had *something* in mind…

Bowser's Inspiration

There was a time when the world painted its nature - red in tooth and claw - on humanity; now instead it is humanity that paints its nature - geometric in light and ambition - on the world. Thus has Planet Earth been extravagantly decorated with human purpose…and still we are seeking new canvas to fill…

Jonathon Bowser

They say that humanity first emerged - distinct from our not-quite-so *sapien* simian cousins - perhaps just 100,000 years ago. For most of that time we were miserable creatures indeed, suffering only 20 desperate years or so before the relentless predations of nature mercifully pacified those violent, dangerous lives. At the dawn of our species, we looked very much like every other wretched animal in the world. But we slowly gathered our experience over time, collected the many things we had learned through long ages of unending pain and arduous

labor, and with effective use of our cognitive endowment incrementally tamed a hostile world into new forms increasingly amenable to human existence, subtly remaking it one tiny step at a time to conform to *our* purposes and desires. Now some humans live to be 100, healthy and content. In an accelerating process, we look less like the world and the world looks more like us: the obviously rectilinear pattern of our geometric cities and ever-expanding food-production land indicates that this world is mechanized and optimized for human domination. There are few places on earth that do not bear some mark of our presence here; even from orbit, there is an obvious distinction between places that are wild and *not-wild*. It is readily apparent that this human-world is a place where civilization and intelligence thrives…and dreams of a future larger still...

Our reach is extending into the challenge of new frontiers, and we (or our evolutionary successors) might very soon break the chains of Earth. The signal fires of distant celestial shores beckon to us across the sea of night, inviting us into the interstellar ocean. Not so long ago, humans traversed hostile terrestrial seas to explore all the rocky masses of the globe, because it belongs to us; similarly, the countless planetary islands scattered across the galactic archipelago are also our home. And when we are prosperous and content in some remote celestial destiny, will we then, just as we have here on Earth, elaborately decorate our environment with monuments to our ever-evolving aspirations and creative purpose? Will we paint the sky in that distant future with some *eternal cosmography* about the greatest story ever told: the improbable fable of life and intelligence in the universe?

Chasing Butterflies - The first painting in my DOTI series (that's *Destiny Of Terrestrial Intelligence*) is a whimsical phantasmagoria of interstellar fingerpainting. The prominent figure in the center is an attractive young woman, representing the ebullient fertility of living processes, and she appears to be blissfully unaffected by the vacuum of space. On just one half of her face (a job half done?) is the electrically-luminous image of a butterfly wing - a suggestion of technological augmentation with creative purpose. The caterpillar is earth-bound and dull, but an arduous process of metamorphosis - within the dark imprisonment of the cocoon - liberates it from the grimy shackles of gravity into a beautiful apparition of heavenly freedom. A cosmic wind seems to buffet the modesty-preserving fabric that drapes from her body. The turbulent shapes that swirl from this fabric take form in the actual structure of space around her; they are a manifestation of human intention - our passions and desires - that might re-shape the appearance of the cosmos into a reflection of human ambition. One of the most prominent features of this space-time reflection is a sweeping stellar flourish in the form of a mysterious spiral…

On the one hand this playful image suggests the pursuit of beauty and transformation, but there's also the unspoken subtext of a child's folly, the impetuous pursuit of some flittering shiny thing that has no real value. It turns out that we cannot actually capture what is so appealing about the butterfly; actually possessing the delicate creature conveys to us none of its metamorphic power, which is what we *really* want.

And so I tried to imagine a new more fanciful version of the developmental catalyst made famous by Kubrick's *2001* Monolith. Guided by *something* - statistical caprice, evolutionary determinism, alien technology, or divine intention - humanity is joyfully chasing a metaphor - an illusion *disguised* as a challenging, technology-driven, rapidly approaching destiny…

Geometry of Eternal Creation - The most obvious feature of this bizarre painting is, I hope, the extravagant display of the *Algorithm of Natural Systems*. That's not

what the *Fibonnaci Series* is usually called, of course, but I think it's appropriate to rename it. It was discovered at least 5000 years ago (we see many examples of it in the construction of the Great Pyramid), and it has informed the construction of sacred buildings around the world ever since.

Leonardo Bonacci lived in Pisa about 800 years ago, and was largely responsible for bringing hindu-arabic numbers to Europe; he also discussed a curious progression of numbers he called the Fibonnaci Sequence. He was actually trying to calculate how fast rabbit populations would expand, but in his naturally growing series he noticed that the numbers gradually coalesce around a proportion that had been known to artists for many centuries. The Fibonnaci Series is now defined by mathematicians like this:

$$F_n = F_{n-1} + F_{n-2}$$

But a far simpler version reads as follows: *starting with one, add the previous number and repeat*. This simple instruction yields the following series of numbers:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, …

It's about the simplest instruction nature could design, and yet it has resulted in astounding natural diversity. This organically growing series quickly resolves into a stable ratio: 1 :: 1.618… This wonderful relation, inversely proportional to itself, is *Phi*, the *Golden Proportion*, and it is the simple mathematical building block with which nature builds the universe.

Genes are vanishingly small, but describe the structure of much larger things. How best to grow a big thing from a very small thing, and ensure that growth always happens in an easily measured, optimally balanced way? Nature, on this planet anyway, chose phi, the simplest and most efficient way to regulate the growth of natural systems. It determines the distribution of petals around the blossom, leaves around a branch, branches around a tree, segments around an arthropod exoskeleton or mollusk shell, and bones around a mammalian endoskeleton. The bodies of animals, including humans, are all Matryoshka dolls of nested phi proportions - humerus to radius to hand to fingers of proportionally diminishing digits - arithmetically limiting the possible geometry of anatomy, but not limiting its potential for morphological variety.

Using the spiral form of this geometric relation (discovered by Descartes) seemed like an effective way to suggest the growth of human ambition…and here we see the second most apparent feature in this painting: the double helix, the image of life, rendered in dramatic swirls between two celestial dancers who rise out of spirals of the Milky Way on a glowing logarithmic arc of billowing DNA.

In the far future depicted here, perhaps a million years from now, our descendants will appear much different from us. They will not be made of DNA, and they may not even have genders. But the romantic in me hopes that some inspirational vestige of that timeless Yin and Yang dynamic endures in the character of whatever we are to become, that we are still moved somewhere in the primal deep of life by an idealistic hope and unrequited longing.

Achieving the Surface - I sometimes wonder about whales. We know some species live in complex social groups and have appreciably sophisticated forms of communication…that we do not understand. I haven't seen any compelling reason to believe they possess an advanced consciousness comparable to humans, but I do not doubt that it is something meaningful to be a whale. It doesn't seem to be very interesting to be a lizard or a lobster; you don't look into the eyes of a frog and get any sense that some other mind is looking back at you. When my amazing dog *Griffin* and I exchange glances, I know we are two minds knowing each other (at least a little bit); I am inclined to think it is even more mindful to be a whale.

Whales live in a big world - much larger than ours - but it has a boundary significantly more stark. The sur-

face of the ocean is a limit to their universe they can never penetrate. When they rise to the surface and carefully regard a curious human looking intently back at them from a small boat, do they wonder about us - the aliens who live beyond the edge of the universe?

Humans in the 21st century are like those curious whales: we look up and wonder about a universe beyond that seems tantalizingly close, but can never visit. So we invented robot ambassadors and sent them on a diplomatic mission to the planets…and discovered undreamt of wonders right here in our own solar neighborhood. The opportunities for trade are excellent our planetary diplomats report, and humanity now dreams of the first cultural exchanges.

I wanted to imagine an angel of mercy or bodhisattva of compassion - like *Guanyin* (She Who Hears the Cries of the World) - rising in a swirl of water from the submarine universe, liberating all the restless spirits that have gazed into the unknown beyond with an inexplicable melancholy of rememberance, evaporating the fragile material bubbles that imprison us to release the luminously homesick *Intentions* within…

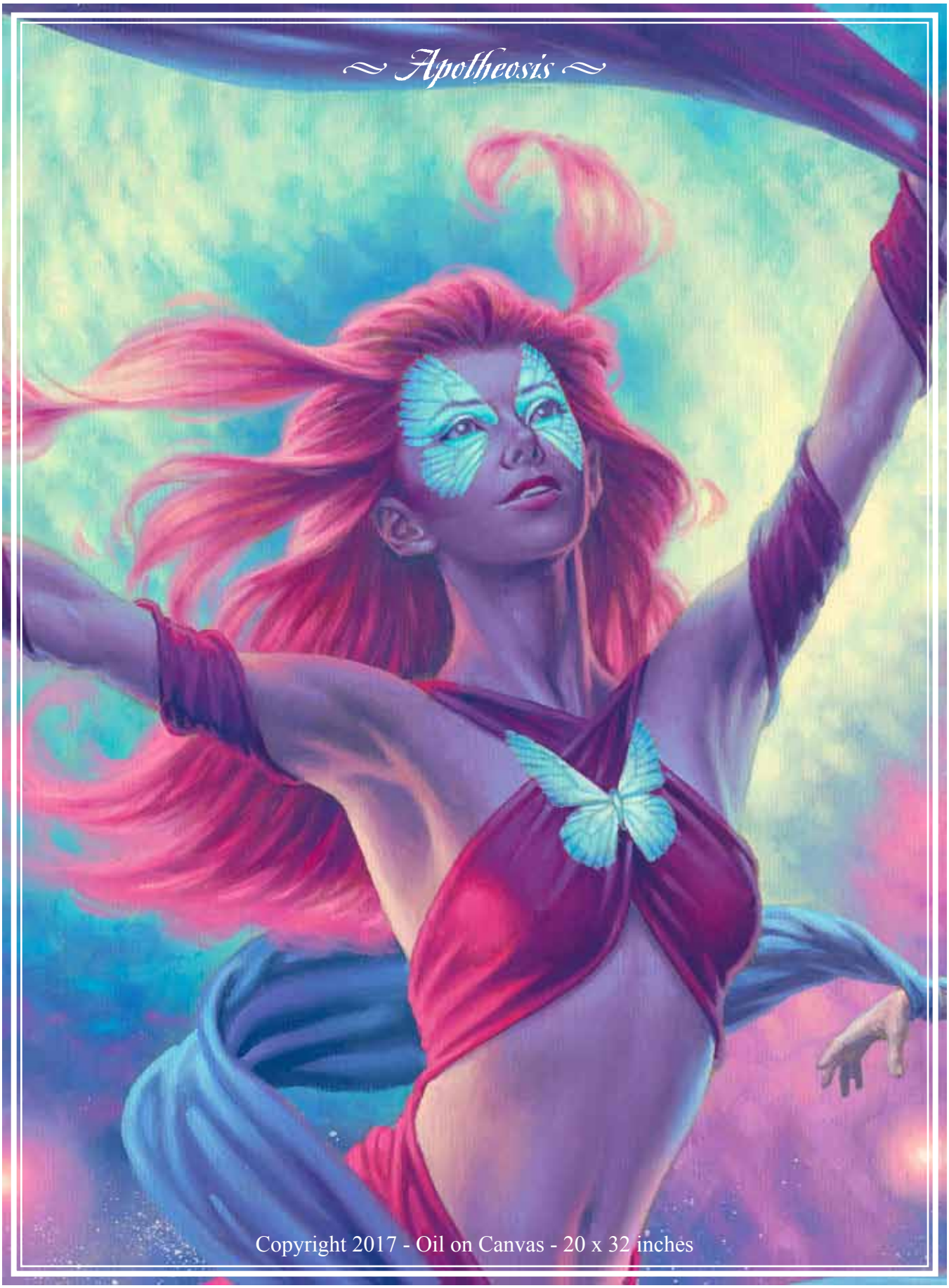
Sagan's Epiphany

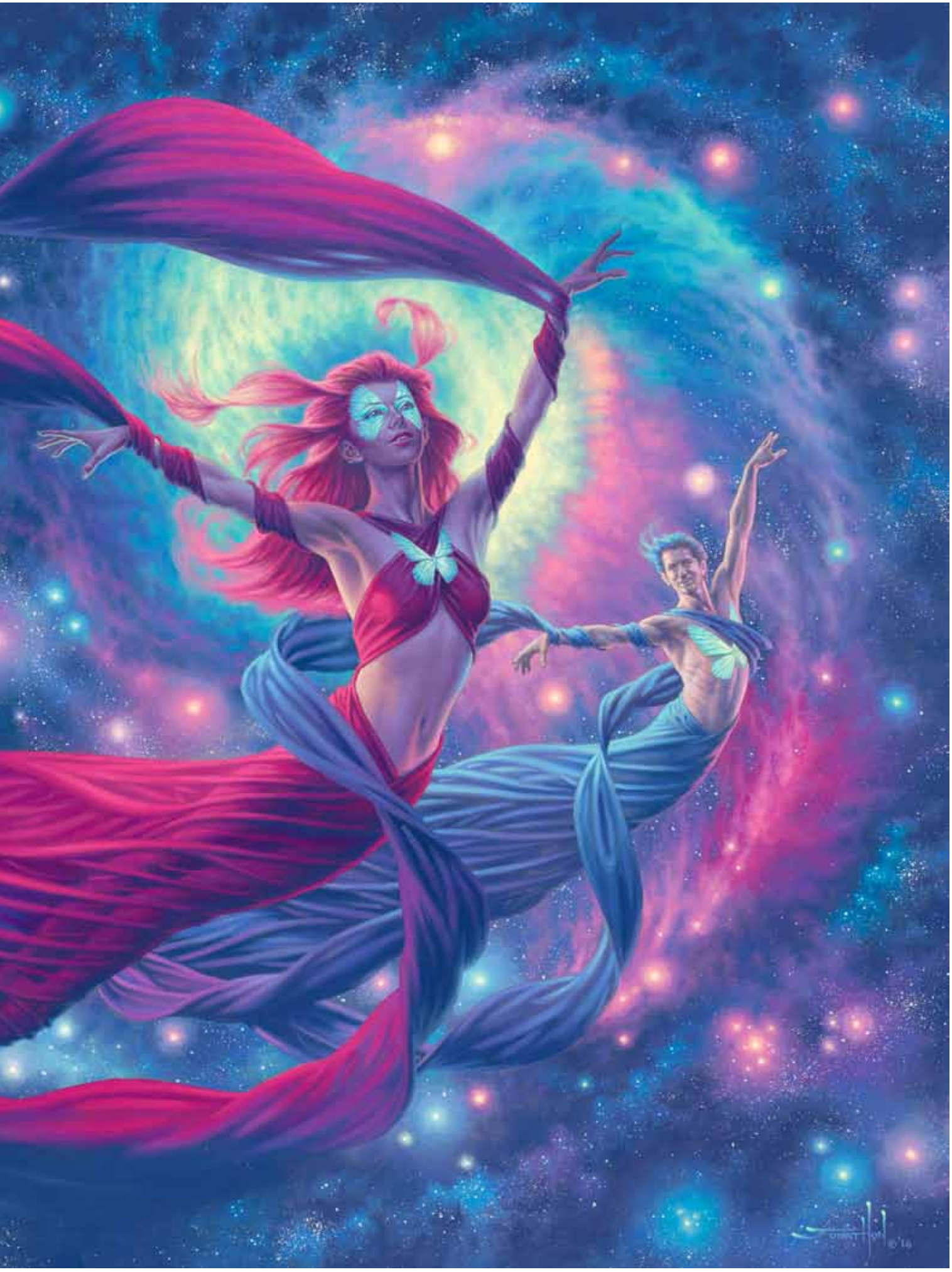
The surface of the Earth is the shore of the cosmic ocean. On this shore, we've learned most of what we know. Recently, we've waded a little way out, maybe ankle-deep, and the water seems inviting. Some part of our being knows this is where we came from. We long to return, and we can, because the cosmos is also within us. We're made of star stuff. We are a way for the cosmos to know itself.

Carl Sagan

Right
Achieving the Surface - © 2016
Oil on Canvas - 24 x 36 inches

Right
Geometry of Eternal Creation - © 2015
Oil on Canvas - 45 x 28 inches


~ Apotheosis ~
Copyright 2017 - Oil on Canvas - 20 x 32 inches



Final Thoughts...

We each get to look out at the great big world through the tiny little window of our own experience. We can easily discern that there is quite a bit more to the world than what is immediately visible through that window, and understandably want some kind of explanation for all this…whatever *this* is. There sure is a *lot* of it. We often feel, staring out at it all through our little windows, that we should try to figure out what's going here. Where did it all come from, where is it all going, and what's it all for anyway? These sound like *religious* questions. And if you are prepared to accept the word of desert mystics who died many centuries ago, they *are* religious questions - which have been fully and completely answered for your ontological convenience. But what do you do if the bronze-age answers provided for your edification do not satisfactorily describe the view you see from your particular window?

After centuries of cultural paranoia and ideological tyranny, it is now openly permissible (in most parts of the world) for us to contemplate the views that are unique to each and every one of us, and try to understand and explain these personal experiences of the world in language that is meaningful and useful to us, not just as communities, but as individuals. And many of us are quite willing to then share these new descriptions with legions of other people who may be having some difficulty describing or understanding their own view. But this can be an uncomfortable exercise: if I tell you about my particular view, you will quite likely learn that, in addition to a different perspective, my window also has a lot of peculiar dirt on the inside surface - dirt whose existence I might have preferred to keep private (that strange and occluding impurity did, after all, come from *me*). If I tell you what my experience of the world has led me to believe about it, you will learn everything that is important about me. I have thus lost all covering and appear naked before you. My secrets and insecurities are exposed for your intrusive scrutiny; my liabilities and weaknesses are defenseless under the blade of your ridicule and scorn (or other more harmful weapons). When we endeavor to sincerely describe how the world seems to us, we are actually saying, with unfettered honesty, "These are my most energizing desires and these are my most paralyzing fears." Most people are not comfortable with such vulnerable exposure; the unspoken motives of others are always suspect and it is unwise to be too trusting. No wonder, then, that most of us simply accept the old books, comfortably inconspicuous with our intimate desires and fears safely covered by the one-size-fits-all uniforms of a communal belief. Once you have accepted the ancient mark and colors of the local tribe, however, it is all too easy to become blind to the beauty of new and even superior designs...

In ancient times, we saw the starry vault of the heavens as eternal and unchanging. Our early astronomers, only star-watchers in those days, identified the planets because they wandered against the background of the "fixed stars." And that unmoving background could be relied upon never to evolve in any way, the way things do here on the dynamic earth. We are living here, it might have been said, in the profanity of perpetual conflict and tumult; up there in the peaceful serenity of timeless night is the *Domain of the Gods*.

Poets and priests (and charlatans aplenty) imagined a fantastic variety of narrative landscapes for that heavenly abode and the supernatural inhabitants dwelling therein. Many of those ancient reckonings, conjured by lonely exiles in remote and barren wastelands, persist in one form or another to the present day. It seems that we humans have a congenital inclination to genealogy - we want to know where we came from - and so those dusty old stories, exploiting our innate tribal bonds, have acquired a kind of genetic permanence. Subsequent generations might have tried to imagine different and visionary origins for ourselves and build new structures of spiritual thought, but instead we have simply heaped more bricks onto a select few pre-existing piles. Over many centuries these piles have become large and great; it is perhaps not surprising that these ancient immensities, these globe-girdling spiritual corporations (always dreaming of mergers and acquisitions), seem so much more significant, and so much less ridiculous, than they really are.

Expecting vision in the dark is, perhaps, expecting too much; good vision requires good light. For most of our history we have not had the benefit of appropriate illumination, but that situation is changing. We now know a great deal about the heavens in which we situated our gods for so long, and have learned that space is not at all what we thought it was those many thousands of years. We have seen far in good light. The Endeavor of Science has started a new pile, a titanic mountain that offers vistas

far *far* greater than those of the little hills from which previous systems of thought fearfully peeked.

Early astronomical images simply provided beautiful detail to our old "changeless" image of the cosmos. Pictures from a new generation of space-based telescopes, however, have changed our view of the world as much as any revolutionary development in human history. We can now see, not just a few wandering worlds, but countless other objects that populate a universe infinitely more strange, immense and *active*, than was ever imagined by parochial nomads. We can actually look back in time more than 10 billion years to the very early universe and witness the spectacular, cosmos-shaking processes that created the world. A new Book of Genesis is being written, and that old story has moved from the Neolithic mentality of poems written in a rocky wilderness 2500 years ago, into the living heavens of the cosmic tableau. We now know where we came from…and yet, the old stories continue to haunt us and we are still falling from that hidden, mythological country...

...On Co-operation and Motivation...

We are, despite much sound and fury to the contrary, an incredulous species - and how could it be otherwise? Any of our early antecedents with the too-credulous attitude, *I'll just put this blindfold on, tromp through this tall grass here, and stomp right on into that dark forest over there, because nothing bad can ever happen to me*, generally didn't survive to pass on their mutant *I-believe-the-world-is-a-happy-place* gene. In a world abundant with predators, we are *designed* to be wary: the ever-present threat of a hunter's deception demands that we be skeptical of apparent tranquility. Countless generations of evolution have selected for this fortuitously useful trait; we believe what our senses tell us, and are suspicious of everything else. And yet, there *seems* to be exceptions to this rule…

Some people insist that there is a creator; others insist there is not. Some people on both sides claim to *believe* what they say; others claim they *know*. But they do *not* know. Sometimes we want and try very hard to believe, but whether such assertions are made with intimidating conviction or persuasive reason (or even just simple sincere longing), we all secretly know that *nobody* knows. When people fanatically (and menacingly) insist that they possess some secret, invisible knowledge, not only do we regard the claim cautiously (and quietly, within the safe and secure privacy of our own thoughts), we also reasonably wonder if the claimant does not have some *other* agenda, one that has nothing whatsoever to do with our *salvation* (from the vile deception of the opposing argument). There is, of course, an important asymmetry between the two sides of this argument, and it is this: other forms of human knowledge constantly seek to improve themselves through a continual challenge of ideas based upon the best and latest knowledge available; mythological systems like religion do *not* - and we all *know* this to be so. It sometimes seems that there is much foolishness in the world, but 100 billion iterations of natural selection simply cannot have allowed such detrimental credulity to endure in any significant quantity; blind certainty has little survival benefit. But *still*, people preach, threaten, torture, mutilate, murder, and even die to - so they *say* - protect the ethereal and apparently fragile sanctity of ancient desert hallucinations (however poetic they might seem). What's going on here?

Ten thousand years ago, humans spent most of their time surviving, each day a dawn to dusk search for food and shelter. Early technology made survival a little easier, and thus gave us something we'd never had before: spare time. And that presented us with a new and dangerous question: *Now what*? Just what are we supposed to *do* with all this extra opportunity for experience that the universe has given us? We had discovered a useful technique in our hunter-gatherer days that we applied to this new question - we got *organized*. The ruling class designs an objective, some future state of the world that is (imagined to be) superior to the current one, and then designs a strategy to achieve that objective, usually requiring the participation of whole populations. This planning and implementing of a vague purpose to which we - individuals, tribes, nations, and empires - will dedicate our extra time could be called an *Organizing Principle*. It is the essential presupposition upon which any civilization is based. *What do we do and how do we do it*? These essential presuppositions *might* be true, but they are, in fact, merely *assumptions* about what we should be doing and not doing. They are a kind of mythology, made-up stories that nevertheless seem true somehow, which are usually (although not always) meaningful to us in a profound way; that's why the model of a central, organizing

principle has been so indispensably successful through recorded history. Humans *want* to be busy (although not necessarily productive). Perhaps more than any other indicator, it is the simple asking of these Questions of Purpose that distinguishes civilization from whatever it was that came before. And in the 5000 years or so that we have been experimenting with this new endeavor, we've really only come up with a few answers…

Our current, dominant organizing principle is of course a Commercial Mythology; we make mountains of things we don't need, pile them high in palatial dwellings seething with energy we can't sustain, razing the globe with all the leftover crap we don't want (for every mountain of Stuff that we consume, there's another 32 mountains of waste material). Different sects of the world-wide Church of Commerce argue about the best way to achieve whatever it is that we seek, but the whole world has quite obviously decided that accumulating plastic and colorful electronics is the primary faith of existence to which we shall apply the greatest share of our dreams and labors. In the second position are the Political Mythologies that define and direct the ambitions of the state (and are often closely allied with an Ethnic or Ideological Mythology). Political organizations clearly have the most firepower and sheer might, but at some stage of development (that we have clearly achieved) they become significantly dominated by and almost indistinguishable from commercial interests. There are growing Social Mythologies that focus the desires of disparate people under a common banner of Justice or Environment. There are Creative Mythologies that inspire Literature and the Arts. And of course there is the original organizing principle of Religious Mythology; it has been superseded by the awesome world-choking power of multi-national corporations and the Global Economy, but through long thousands of years it has lost none of its primal appeal in the old, seldom-visited places of deep consciousness. Why indeed does religion endure, when there are so many more glamorous catalysts available in the 21st century?

...On Liars and Lunatics...

Religion, emerging as it does from the unconscious biological origins of human motivation to then influence and guide our conscious behavior over the last 20,000 years or so, is a fascinating subject: an utterly true representation of *human* character - beautiful and terrible, wise and stupid, all in equal measure. Inexperienced children are easily fooled by promises of bountiful treasure delivered by Santa Claus and the Easter Bunny. But we all quickly figure out the deception (that even in the gullible innocence of youth somehow seemed, I vaguely recall, really too good to be true). And thereafter we are once burned, twice shy - which is probably the point of such persistent cultural curiosities: *live and learn kid*. In a world of far more dangerous treacheries, we *train* our offspring to be skeptical of improbably attractive claims - unless they are made by religion, of course. Despite our worst-laid plans, however, skepticism triumphs in nearly everyone.

Now, the aging woman praying for the lives of her grandchildren in some extravagant shrine, and the young suicide-bomber praying for the deaths of his enemies in some ruin of a city, will both equally condemn any suggestion that they do not *fully* believe in the god explained to them back in the impressionable early days of their compliant youth. In fact, *many* humans tend to make rather overmuch noise on this matter. Why should we be so defensive (and responsively aggressive) on this matter? In some parts of the world, people are still murdered for merely *seeming* to be short of belief - which is a fairly compelling reason to protest your belief *loudly*, whether you have any or not. But billions of people around the world, who mostly do *not* live under the terror of totalitarian theocratic despotism, will nevertheless take great offense from any insinuation that their belief in god is anything less than total. Why should such secure and sincere believers protest so much?

There is another popular human belief that is not quite so sacrosanct: everyone believes in the *persistence of gravity*. Even though it seems reliably attached to mass (which the earth has in abundance), the fact of the matter is that we don't really know what gravity is…or *whether it has an expiry date*. If this mysterious force that holds us to the earth is actually *intermittent*, then the result of a bold step at the wrong moment would be catastrophic. Now, if our certainty were anything less than complete then, to avoid being hurled into the sky by some suddenly unbound inertia, we would be obliged to travel at all times with some kind of anchored tether to hold us fast during unexpected G-failures. We do not do this, of course; we simply believe (supported with much history but no evi-

dence at all) that gravity will always be there to secure us. We surely gamble with our lives in this belief, but perhaps the cost of not believing (being constantly chained to a tether) is just too high. And if someone were to suggest that we did *not* believe in the persistence of gravity, well, we would probably question their sanity and summarily dismiss the accusation without acrimony or peep of protest. These two propositions, *gravity is forever* or *god is forever*, have an important similarity: there is some utterly unknowable life-sustaining force, and we *behave* as though our belief is total, even though the only thing total in the proposition is our ignorance. So why does questioning one belief generate so much hostility, while the other merits only quizzical amusement?

Why should anyone *care* whether the people around them believe their implausible assertions of certainty? The answer to that question is certainly not the subject of polite conversation. As social beings, we require (to varying degrees) the presence of others of our kind, and so we seek acceptance within the herd, however that herd might be defined: *I am not an outsider - I pledge allegiance to the community and the beliefs that define and perpetuate it*. Thus, we achieve status and influence within the community commensurate with the magnitude of our belief in it. We need to belong, fear expulsion, and profit from a deep integration with society; it is entirely understandable that we should on occasion overcompensate in our demonstrations of loyalty. (This unfortunate reality of the human condition, as we all know only too well, is easily exploited by our tribal chiefs and shamans - the top predators in human social ecology.) It is the pledge much more than the belief that binds many members into one community: *assertions of certainty define social boundaries for the benefit of the social group*. The Group demands an Oath of Loyalty; thereafter, we live in fear that our weak faith might be exposed, resulting in demotion within (or expulsion from) the Group. We compete, in ever-escalating volumes of certainty, for positions of status within the Group, and the Group becomes only as strong as the Declarations of Conviction that define it. People shout and moan and sometimes do terrible things under the banner of the Group...and the world seems to believe their potempkin-village dogmatism. Let us instead try to see through the flimsy deception, and rely on the fact that nature is not so poorly designed.

If some adult were to adamantly declare the objective, non-metaphorical existence of an easter bunny that interacts with the world in real and significant ways, proudly claiming that this cosmic All-Rabbit advised him in matters of life and death, we'd be obliged to conclude one of only two things: 1) he does not *really* believe what he says, or 2) he is *crazy*. It is difficult to see why bellicose demands for the existence (and curious tribal partisanship) of a creator [insert name of your favorite diety here] should be taken more seriously - especially when such exaggerated posturing is more plausibly explained by human insecurity and egocentrism, the personal and cultural animosities that inevitably arise in the perpetual competition for limited resources, and the prestige and material reward of social dominance. Someone might sincerely yearn to believe the unbelievable, determinedly struggle to know the unknowable, but it just can't be done: impossible certainty is for liars and lunatics. We are indeed capable of *faith*, of hope and optimism, and feel a genuine bond with the extraordinary things of this world and the mysterious forces that brought it into being, but we really should not allow mere hopeful awe (however beautiful and innocent it might seem) to disguise our uncertainty as something much *darker*...

Impossible certainty is for liars and lunatics; in a different context, it would be incomprehensible that such an obvious and inevitable observation could be so controversial. If someone said Plato and Aristotle wrote the final words on politics and philosophy, they'd be wrong. If someone said Archimedes and Euclid wrote the final words on science and mathematics, they'd be *spectacularly* wrong. If someone said Phidias and Callicrates made the ultimate insuperable expressions of art, they'd be wrong too. Absolutely nobody thinks that Aristophanes and Sophocles told the last stories worth hearing. Iron-age music was so dull we haven't even bothered to remember a single composer, much less a composition, so the idea that all music since then is nothing but mindless animal noise is so ridiculous, it's probably never been said even once by anyone in the history of the world. There are indeed some petty despots afraid of the primal, spirit-liberating, misery-banishing joy that can be found in music, but they deny their unhappy subjects *all* such inspiration, and not just the *new* stuff written since the age of Classical Greece - about the same time that the old parts of the Bible were first written down. And so, the proposition that Moses or Paul (or any other millenniums-dead visionary of the

numinous) wrote the first, best, and emphatically last and only words on the spiritual dimensions of existence is indisputably false. But of course we *do* dispute it, often violently, nevertheless.

There are some compelling reasons to suspect that ardent claims of religious conviction almost always hide a natural and proper human doubt; it probably *is* true, however, that we believe that *others believe*, and that with persistent dedication we also might achieve that happy state of communion with the power of the cosmos. *Look at the passionate intensity in that person over there*, we say to ourselves when witnessing the histrionics of an apparent true believer; *perhaps if my belief is sincere enough, I can achieve atonement too*! In this ambition, we have been duped; even without malice or intentional deceit (which is certainly often present), things have gone awry. As I emulate the enthralling drama of your too-obvious piety, so too are you inspired by *my* over-compensating devotion - *it's a self-perpetuating delusion*. And because we're afraid to call it what it is, it continues - to the detriment of humanity. There are certainly liars and conspirators afoot, but this endemic misconception exists in kind and honest people with genuine longing. A simple misapprehension of the facts might not otherwise cause too much trouble in good and honorable people, but those pesky liars seize upon any opportunity to inflate their importance - often to the much greater detriment of humanity.

One might reasonably ask: "How can you be so certain that we do not *actually* believe the strange religious things that we claim to believe in? *You* don't know what people believe - and some of them seem to believe…*entirely*!" Nobody really knows the thoughts of another, it's true, but it is precisely our cognitive privacy that allows the fraud to continue - even when some curious inconsistencies in our supposed god-worshipping behavior call the claim into question.

Despite the fact that suicide-bombers are discerning enough not to be fooled into buying the Brooklyn Bridge (a far more plausible possibility than the *Perpetual Font of Horny Virgins* proposition they espouse), there is an even more certain indication of what people believe, and we see it in times of crisis. Or, more correctly, it is what we *don't* see when encountering a mortal tragedy that gives the game away. It never happens when we are confronted with a profound emotional trauma - "My beautiful little girl was brutally murdered by a psychopath" - that we then *congratulate* the bereaved: "Thank God Almighty! I am delighted to hear this wonderful news, for now your daughter has escaped the unrelenting misery of life to walk forever in eternal paradise! She is truly blessed to be dead! You must be very happy!" If we *actually* believed that bliss and paradise are waiting for us (instead of merely hoping some such fate obtains, which is not at all the same thing), we'd be logically compelled to *celebrate* the joyful occasion of every death - and this we do not do. We try very hard to believe and say it loudly to make it seem more convincing, but our uncertainty (or outright lie) is always exposed by catastrophe.

If we all knew (and not just hoped) there was a sleepless, all-seeing surveillance camera in the sky recording every action and thought, ready to smite us for the smallest infraction (the *Stalinist* interpretation of the Big Bang), if we really believed that we lived every moment of our lives in the cross-hairs of a bloodthirsty Sky Sniper's lightning-rifle, we'd all crawl around like shell-shocked automatons consumed by a paralyzing terror, never doing much of anything for fear of sudden, instant death. We *don't* believe such absurdity; some of us may give it an honest (and public) effort, but we all fail in the unseen privacy of our genetically-inherited good sense. I understand that religion seductively offers a vivifying image of the mystery of creation, a comprehensible explanation of existence, an instructive description of the grand moral order, and a useful guide to behavior by setting one's place in the social hierarchy of the universe. I understand that thus equipped with a simple map of the world with one's best route through life already clearly indicated, that one must feel comfortable in a way that is certainly preferable to feeling utterly lost. I understand the primal cohesive power of the tribe, the bonds of loyalty to one's kinsmen, and the great purpose and profound joy that can result from fervent participation in a communal celebration and trans-personal reverence of existence. But the simple fact that we do not see spontaneous mass-suicides (to reap the rewards for denuding the world of wickedness and blasphemy) *proves* that very nearly all of us believe the World far more than (some violently dubious interpretation of) the Word. The rest is just promotional advertising for the body politic. (And if we didn't already have this convenient social fiction that just works better and better as ever more people join the ad hoc melodrama, if we lacked this infinite moral excuse to justify and legitimize

any cannibalistic obscenity, we really would have to invent it.)

"But what about those suicide-bombers - surely *they* believe completely? Why would they blow themselves up if they didn't really *really* believe the things they say they believe?"

This is the *least* convincing argument for the depth of human belief. People sacrifice themselves every single day, for *tangible* things like their family, their job, their tribe or nation. People will voluntarily die to right a great wrong or further a great cause. Soldiers often sacrifice themselves to save their comrades-in-arms, and even complete strangers will risk their lives to aid victims of disaster because a sense of duty and virtue (and a corresponding fear of uselessness) is an essential aspect of their self-image (for reasons that have a lot more to do with psychology than old books). Sometimes people sacrifice themselves so their loved-ones can enjoy the insurance money - a practice seen often in war-ravaged parts of the world where the families of self-destructed martyrs receive a compensatory stipend from the tribe. Claiming the sacrifice is for god is just useful, crowd-arousing public theatre. In addition to the propaganda benefit, a mutual fear between antagonists, even when manufactured, sometimes limits or deters unnecessary conflict.

And it is particularly useful if one opponent is much smaller than the other: there are many species of caterpillar that have adapted a form that also resembles a ferocious snake to, the clever genes hope, ward off visually-challenged predators. It's an excellent and easily-comprehensible survival strategy, but the *Flee from me in Terror*-bug isn't *really* a snake, it just profits from the misinterpretation. Maybe some caterpillars, emboldened by the fear they inspire, think they really are snakes, but they would just be *defective* caterpillars. Furthermore, if the average dove in the street could somehow be convinced that the *Terror-Serpent* represented a clear and present danger to the well-being of bird-kind everywhere, then all those hawks in the sky concerned with the defense of the realm would certainly be able to easily justify any exorbitant expense to ensure security; and as the raptor tribe is well-positioned to asymmetrically benefit from any and all security investments, they might even seek to quietly ensure that the harmless lamb-in-wolf-clothing bug is *well-fed*: nothing mobilizes people's inclination to build expensive fortresses so much as an enemy's strength - real or imagined.

"So you're saying people should be able to do whatever they want?" No, I'm saying that people *will* do whatever they want, but what they mysteriously *want* is almost always a complicated proposition of impossible contradictions. Most (and maybe all) people live by rules. Some are comparatively simple and flexible, and some are regimented and implacable; some are personal and empirical, and some are codes of behavior set down in distant lands thousands of years ago. Almost everyone tries to live by their rules to the extent they are able… and sincerely regret those unfortunate occasions of poor judgment when fervently-held rules get broken. There are abundant reasons to question our frequent and vehement demonstrations of cosmogonical clairvoyance, but what can't be questioned, however, is people's ferocious devotion to their rules: "If you weren't *a godless heathen* [i.e., an unknown and therefore untrustworthy rival for the prosperity I desire], you'd clearly see that I *know where the universe came from* [i.e., must abide by the storied traditions that have preserved my people through long ages of adversity]!" Different tribes are devoted to different forms of order, different regimes of mandatory and forbidden behaviors, but the common binding theme among the great variety of our religious observances couldn't be simpler: *life without rules is chaos*. And humans will provoke (and suffer) many a small chaos (no matter how bloody), hoping to evade the larger, mythological chaos lurking at the menacing boundaries of our worldly experience as we tumble toward the abyss at the end of our rapidly-vanishing lives.

Rules are extremely useful; given that a little chaos within the perimeter of our carefully ordered existence can cause a great deal of damage, it's easy to understand why we cling to them. It's easy to see that some considerable stature must be given to them to remind us to actually follow those rules. It's easy to see that when we are unsure what to do, the ancient time-tested rules provide a simple Clarity of Purpose. It is also easy to see how endlessly-repeated behaviors become machine-like, automatic, and highly resistant to reorientation - even long after we have learned something important about the world that makes a previously useful behavior subsequently quite foolish.

As if our inauthentic exhortations of orthodoxy weren't problem enough, closer inspection of the object(s)

of our supposed belief reveals that scriptural religion is actually only tolerable to the extent that observers *ignore* it - which is, *significantly*. If we observe only some small percentage of these sometimes incomprehensible rules - we say *yes* to "Be nice to people" (Mathew 22:39), but *no* to "Hack non-Christians to pieces!" (Luke 19:27) - why do we need the old rule books at all? It really should be obvious to everyone that even in biblical times people must have done exactly what we do, which is pick and choose *only the rules we like*: *yes* to "No Stealing" (Exodus 20:15), but *no* to "If your children get mouthy, club them to death with rocks!" (Deuteronomy 21:18-21); *yes* to "No Killing" (Exodus 20:13), but *no* to "If a man so much as lifts a finger with too much enthusiasm on Saturday (or Sunday, depending on your tribe), club him to death with rocks!" (Numbers 15:32-36). And there is no special code-breaking primer in our ancient rule-Books that explains how we are to determine which rules are *really* rules and which rules are just kidding around. Fortunately, we didn't need the book to tell us the difference; we already knew - because *we* wrote those manic, "I'm happy/angry/peaceful/murderous" books.

There is an idea in the world, thriving like a virulent and well-adapted virus, that there is some favor to be gained by saying we believe in the literal word of the ancient books, even when it is apparent that we do not. Falsely claiming such a belief might not seem like much of a crime, especially when we might sincerely *wish* to achieve total belief, but such obvious untruths provide excellent cover for more subtle and pernicious ones. Easily hidden behind the abundant veils of phony piety are other more sinister corruptions. Of course there are and always have been corruptions in all human institutions (social, political, economic, scientific, etc.), but religion is almost entirely immune from the kind of corrective scrutiny that has beneficially reformed the others. And we now have much better weapons than rocks with which to smite the *blasphemers* (by which the zealot actually means, his *political foes* who must be vilified in some way to justify the horror he has planned for them). Rocks are good for holding up mountains and all kinds of other things, but they're dangerous if people are looking to loose some blame and find some weapons. A book of poetry is also a good thing, useful for wasting one's time or even enlarging one's consciousness if absolutely necessary. But when we try to pass off iron-age poetry as *The REAL History of the World*, thus marrying ancient desert philosophy (which is *far* too kind a word for the god-sanctioned pedophilia and genocidal atrocities in Numbers 31:1-54) with 21st century destructive power, we make a grave error that can only lead to great sorrow. Modern critics say it is time for humanity to leave behind the dream-world stories of its youth, and they may be correct. I hope instead that we can somehow learn to resist the considerable inertia of history, de-weaponize our poetry, and publicly accept its proper *contemplative* use; it would be sad indeed to lose the beautiful baby in that bathwater (of fanatical, racial/political/economic ambition *disguised* as religious intolerance). One might be forgiven for being less than optimistic.

In matters of the Eternal, certainty is an elusive prize. Undeterred, we seek for it in our families and social groups, in our church and community gatherings, in our local politics and our far-away battlefields. We struggle and kill for certainty. After our ostentatious best efforts, however, all we achieve is much *hope* (if we're lucky) and *no* certainty. Reasons for optimism, yes (well, *maybe*); guarantees, no. That's what it is to be human. And so we believe, not because we know our particular religion (in a market of many interesting choices) is true, but only because it makes us feel better than *not* believing. *I am with you and you are with me and we are in this slaughterhouse together*. It should surprise no one that such sentiment is a better way of finding resonance or spiritual connectedness with the universe than, *I am utterly alone*. Faith, a mystical bond of fellowship with the world, requires sincere effort and participation to mitigate our solitude, but no amount of dazzling ritual and consciousness-expanding meditation (masquerading as divine seizure) can ever achieve certainty. The enchantments of religion are many and obvious, and earnest people *try* to believe to the extent they are able, but the mysterious world offers only whispers in the wind.

"Nope, you're wrong," many commentators will say. "Why would some people say they were certain if they weren't? Surely, you don't mean to suggest that all these devout people are liars? You'd better not be calling *me* a liar!" Well, if someone were to claim that they know the appearance of that part of the cosmos that lies beyond the horizon of the observable universe, or the precise number of electrons within it, we would know for certain that they do not. Our certainty about the absence of any

such knowledge in their mind would be uncontroversial, despite the fact that we cannot actually enter their mind to verify its contents. The knowledge claimed is categorically *not knowable*, and no declaration, however ardent, can make it knowable - we are utterly in the dark on such matters. Discussing the sun might very well make us feel better about being lost in the dark (a veneer of artificial optimism is sometimes all that suppresses real panic), but rhetorical illumination is not at all the same thing as sunlight - and won't banish *real* shadows. The old maxim *right thinking follows right action* is an understandable and even useful tactic, but while we are acting sure with a desire to be thinking sure, we might try to remember that the universe is fundamentally mysterious…*and everybody knows it*. When pondering our ultimate origins and the possibility of a nameless Causal Intelligence, reasoning toward or nurturing an inclination to think that there must probably be *something* is logically justifiable; claiming that you know *particular* things you can't possibly know just makes people impatient. And so we should be just as impatient with tactical swoons of devotion to Zeus or Ra or Quetzalcoatl or any other Great Pumpkin in the sky; such obvious silliness can only be in jest…unless you're a few olympians short of a zodiac. The person who claims to know the Creator Intelligence ("Last night I prayed to God...and He told me to seek public office!") does *not* know; not because of any defect in their desire or powers of mystical insight, but simply because it is not possible to know. Therefore, one of only two possible facts about the claim must obtain: either the declarer *knows* they do not know - which makes them a liar - or they *do not know* they do not know - which makes them a lunatic.

Doubts, both large and small, about the most important aspects of our lives are inescapable, and not alleviated in the least by speaking them aloud. We do not find the comfort of certainty simply by saying, "Gee, I'm not so sure about that…" In fact, as we accumulate experience, we find the opposite is true: the guilt that we carry about our troubling doubts only weighs more heavily upon us in the light of day; furthermore, we also know that the exposure of a deep and uncomfortable perplexity sometimes works like chum in the shark-infested waters of public scrutiny. Appearing weak and indecisive certainly never resolves the anxiety of uncertainty, and so we try to go forward with our uncertainties *mostly* concealed (even from ourselves, if possible), trust that our rules of honor and duty (to *whichever* organizing principle it is that animates us) will in the fullness of time be rewarded, and do our best to conjure the life-affirming hope that carries us along until it no longer can.

Right thinking follows right action; this is a genuine insight into the nature of the human mind and a worthwhile recommendation for behavior that will probably lead you to a better relationship with the world. But well-intentioned strategies for happiness and wisdom are vague and flexible; they're emphatically not like a rigid and certain fact of mathematics - and confusing clouds for concrete leads to predictable results. Living with the quiet uncertainty that there just might be an intelligence antecedent to the universe may very well guide you through the darkness to happiness and wisdom. Screaming at the limits of your lungs that night is day - that uncertain things are certain and unknowable things are known, that all the important questions have been answered... and that Venus and Mars have ordered you to fly planes into famous buildings - just makes you a loud and obnoxious liar-lunatic. If one were to stroll along the Avenue of Religions casually reading the shop signs, each one claiming that they and they alone are in unique and sole possession of TRUTH…which they are eagerly willing to share in return for a *paltry* [i.e., significant] contribution to the cause, well, one might be forgiven for mistaking that neighborhood for one that caters to *another* ancient line of cash-only work…

So we have inherited these primordial, globe-entangling organizations, religions of one form or another, to guide us through the obstacle-course of life: "You should grant us some authority to tell you what to do because any uncertain freedom you have to determine your own actions is a threat to the established order of the world. Of course, it will cost money to implement and enforce these important rules, so you should also give us an insignificant percentage of your wealth to assist us in our control over your innate human weakness. And if you do not do these things…*an awesome wrath will ensure you will suffer a terrible fate*. Peace be upon you."

Nice. The presence of a reassuring smile on the messenger cannot change the fact that this is an *extortion racket*. Religious thugs come in robes instead of silk suits, but the business strategy is identical. Certainly there are some good people in the competing religious syndicates of the world - as there must also be in even in the most

bloodthirsty criminal mafias - but when power says, "Bow down and pay up or we can't protect you from us," let us at least not pretend that this is anything other than the most wretched and parasitic corruption.

We are frequently told that there are occasions when genuinely good works are done by the religious tribes, that the noble purpose of humanitarian charity can and does significantly improve the living experience of an impoverished people. This is true of course, but how does anyone know that a few atheists and agnostics didn't get on the church bus on the way to the disaster? And if ten different religions show up to provide assistance to the people in need, then *at least* nine of them are worshipping a false god. The point is, the presence of all those non-god and wrong-god worshipping people doesn't change the equation in the least: sometimes people help people because that's the human thing to do, and religion has nothing to do with it (unless they provide the bus).

Religion, that shimmering mote of understanding about the bottomless mystery from which the world emerged, was discovered and developed by early humans to perform just one simple task: to re-orient our innately solipsistic infant consciousness to the greater long-term purpose of ourselves within families and communities, as citizens of a small planet in a unknown universe. To the extent that religion can help you find and fulfill your proper function in the world, it succeeds; to the extent that it corrupts or interferes with that objective, it fails. To the extent that it leads to wisdom and integration with the spirit of mankind and the natural world we live in, it is beneficial; to the extent that it leads to ignorance and separation from that global identity, it is detrimental. Religion is not about certainty; religion is the reassuring poetry that helps us live *without* certainty.

Religion is play-acting in a make-believe game, but we are obliged to act *really* sure for the game to work, to achieve that imaginary sense of feeling right at home in the world and not hopelessly lost and adrift. It's a good game…until the liar-lunatics take it too far and children get blown to pieces in a dispute. The lunatic really did object to their incorrect mind-picture of the easter bunny; the liar just wanted a convenient reason to steal the land they were standing on. The rest of us, despite what the game makes us to say to the mob, understand that your mind-picture is whatever it has to be for you to gain the cognitive benefit of illusory certainty - the *only* prize of the game. And yet, the sane and honest majority acts just like the liar-lunatics. It's no wonder then that we have such a hard time distinguishing one group from the other. As the population of the world inexorably grows and its limited resources inexorably diminish, we will eventually come to a point when the rules of this ancient game must change, and the half of all worldly wealth that we currently spend on weapons for those frequent occasions of meaningless dispute will instead get invested into our very survival. We should at least consider the truly daunting prospect of making this change sooner rather than later, because we might not like the kind of world we get if nature is forced to make the inevitable change for us…

Global civilization, whatever it is, requires many different kinds of contribution. It may come to pass that our survival will require more imagination than we have, but it's *crazy* to pretend that it might require *less*. If humanity is to endure on this gossamer green bubble precariously adrift in a celestial ocean vast and tempestuous beyond any extravagant dream of comprehension, then all humans high and low will have to somehow accept that *we really are in this together*. I am not saying, "Why can't we all just get along?" or any other such mushy-headed nonsense; I *am* saying if we assiduously pursue and immerse ourselves in the things we love, we can *tolerate* the things we hate. And to *stay* in this Experiment in Tolerance together, we'll need to understand and *declare* the pernicious process that recruits honest ordinary people into the *Big Lie*: *I know my god is True, so your different gods are false, and we can never peacefully co-exist until you disavow your lies and proclaim the Truth of my beliefs*. We say this (in deeds *and* words), not because we actually know any such thing, but only because we're too greedy to share, too lazy to change, too stupid to integrate, and too fearful to challenge. Thank [whatever *Intelligence* there might be in the universe] that most of us want to learn about *all* the gods of power in heaven and earth - we're going to need them.

...On Slaves and Machines...

What kind of existence is it that you think you have? There can be no more intimate question. Do I even *exist* as I believe I do, as something sovereign and *metaphysically other* living inside in the meat of my brain and body, telling *it* what to do, able to re-

sist the relentless commands of the chemical clockwork in which I live? Or am I just a deluded machine toiling pointlessly within a bigger machine that grinds around within an even bigger machine…that contributes to the entropy of the universe as uselessly as all the other machines? I certainly would not allow the machine or its human proxies to answer that question for me. Their machine-world interests are inimical to our consciousness-entity interests. The world only works properly when consciousness tells machines what to do; when they dominate us - as they often do - things quickly go terribly wrong.

The universe came from something or the universe came from nothing, and these are *both* silly and utterly indefensible propositions. And so anyone who believes anything, has based their worldview upon fundamental silliness. It is indeed mysterious why we humans should be so adamant about imposing our form of silliness on others. Why can we not allow ourselves to choose the form of the silliness that seems to us just slightly less silly? But it is no mystery at all that so many people should choose to worship, in innocent awe and wonder, the gaping void that occupies the place where an explanation of the world is supposed to be. Worship is an organic response to the unheralded world; religion is a corruption of it. Surely that is too harsh? Perhaps. But just as there is no gangster so saintly that he could ever justify the criminal machinations of his bloodthirsty superiors, there is no saintly emissary of the church who can ever justify the life-sucking machine that is religion.

If I am not a machine, neither then should I surrender myself to be a worshipper-sychophant-cog in a church-machine, a recruiter-salesman-cog in an ideological-machine, a kill-anything-that-moves-cog in a military machine, or a patriot-xenophobe-cog in a nation-machine. Machines will effectively employ bribery and intimidation to achieve the submission they require of us…but our windows close a little more each time we loose that existential battle. The bigger human organization gets - in commerce, government, and religion - the more remote from life and necessarily machine-like it becomes. If the only meta-philosophy of our giant machine-organizations is to be "The big fish always eats the little fish," with larger organizations relentlessly consuming smaller organizations in a ghastly race to absolute global uniformity, we are truly doomed. Such a future could only be a bizarre techno-Darwin-world where autonomous machine-leviathans tirelessly grind up the lives of the insignificant human-units who somehow lost control over their most powerful and dangerous idea: co-operative endeavor. But if we are indeed *not* machines, then we can only be *Etherians*, and the machine-world cannot touch us…

A religious idea is able to achieve remarkable longevity, and it's reasonable to wonder just *how* they live so long, when so many other things dwindle and vanish to be forgotten. Sometimes it seems that these belief-systems themselves, and not just the human adherents to them, are *jealous* of their place in the world - and we often metaphorically describe these systems in just such human terms. Perhaps these often-used metaphors are not quite as metaphorical as we intend them to be. People cluster together into nebulous herds of common interest, which in turn gather in massive super-herds of vaguely similiar disposition that we call *cultures*; cohesion within these indistinct social structures is achieved by many different kinds of binding mechanism: national, political, ethnic, linguistic, etc. Cultures are interesting phenomena: they begin and grow, learn and adapt, change and evolve, thrive and reproduce, and sometimes wither and die. They are mobilized by adversity, made strong by prosperity, rendered weak by deprivation or catastrophe, and can even contemplate themselves and their place within a surrounding cultural environment. A culture very much seems like an organism, but unlike biological organisms made of DNA, genes, cells, tissue, and so on, a culture is made of a great seething mass of ideas - or what Oxford biologist and Darwinist philospher Richard Dawkins calls *memes*.

An idea-meme can be a simple maxim or a sophisticated manifesto. It can be a song or painting, a book or a play (or even some small and easily remembered part thereof). It can be a solemn ritual or a silly game. It can be a new technique to save lives or end them, a better way to organize your immediate vicinity or the entire world, some notion that's been around as long as our species or something that's never been thought of by anyone before. Strong and useful ideas (although not always *good* ones) find fertile ground in some unexploited part of the ecosystem of the mind, and then propagate by jumping from brain to receptive brain. Exceptionally good ideas may achieve global distribution; monstrously bad ideas *usually* only germinate in defective soil.

Small synaptic tangles of closely-related idea-neu-

rons congeal into super-tangles of even bigger compound ideas, which then also congeal with similar kind…and so on until, by the weight of so many ideas compressed into one great *memetic organism*, a kind of critical mass is achieved...and consciousness somehow finds its way through into the slow and clumsy structure. In the brain, electrical pulses relay communication between separate regions of processing activity, but in the cultural meme, or *PanMeme*, it is ideas that are the nervous system, the medium of control, the transmission lines of intent, the amorphous encompassing boundaries that distinguish one ego from another. These strange conscious beings, cloud-like *living organizations of information*, have will, intelligence, purpose…and a very strong desire to *continue* living. Nations and religions *know* they are alive, and like any self-aware ego-entity, they will aggressively defend themselves when threatened.

The PanMeme seeks its own interest. A healthy consciousness does not seek to lose neurons (although most people think very little about activity that is quite hazardous to them), but it would certainly sacrifice many to pursue some immediate objective that it perceived as more important. The aggregate consciousness *might* be correct in an excisional course of action, but the constituent neurons to be expunged might prefer to have a voice in the debate. Neurons do not have this potential, of course, but humans do. The PanMeme thinks at a glacial pace; large idea-mediated consciousness responds to the world *much* slower than smaller electrically-mediated versions like us. Sometimes, when a kind of suicidal insanity prevails in a *mis*-organization of the PanMeme, it may be necessary for the neurons to assert their supremacy over the larger mind of which they are a part. All we have to do to *re*-organize the PanMeme is think faster and propagate improved ideas - like a beneficial virus in the mind.

A conflict between ideas often leads to physical conflict between the people of the cultures that espouse them, but it is important to note that great wars *can* be fought between the megafauna of the memetic kingdom that cause not one casualty among we more tangible inhabitants of the genetic kingdom (for example, when the supremacy of one musical idiom yields at last to the creative assault of a new one, the only thing that dies are unexpressed musical ideas). If we humans, discreet meme-neurons (memeurons) in the mind of the PanMeme, properly understand and articulate the true nature of the conflict, there is no reason why brutal, even existential competition between ideas cannot be entirely confined to the ethereal battlefield of ideas - which is only our imagination of our own potential. To effectively assert a mutual authority with the mighty PanMemes will require some considerable magnitude of cognitive prowess; they often become beligerent when we are ignorant so we must educate *everyone*, and tell them the real facts about the nature of our universe, our world, our species, and especially our cultures (that would readily sacrifice billions so that they could yet endure in whatever traumatized rump of the tribe that remained). Represent both the triumphs and depravations of our adventuring Meme-Arks and let the verdict of popular, *informed* opinion carry the day. Sometimes PanMemes will collide, and real-world conflict may be inevitable (and even desirable in extreme cases), but it would be comforting to know that *we* were at the helm and not some deranged Culture-Ship.

Mountain people, desert people, forest people, city people; we're all comfortingly similar, and equally capable (more or less) of weighing the validity of simple proposals to simple problems: "A miles-wide, trillion-ton hammer is careening toward the earth at 100,000 mph; to survive this (or any other) Gaiacidal doom we should, a) ask the Easter Bunny to help us, or b) *do everything we possibly can*?" One of the survival methods usefully exploited by the PanMeme is to lay blame elsewhere: "*Our* tribe is the chosen of god, so this calamity is the work of that godless tribe over *there*!" We seem to expect this kind of mindless chauvinism from our human proxies of the PanMeme - our Popes and Presidents. While it is certainly reasonable for the right hand to prefer that the left hand not interfere with its right-handed work ("…don't come around *here* with your funny *left*-handed ways!"), it should also not forget that there are, on occasion, some profoundly important *two-handed* jobs. And when those proxies start threatening to *chop off* a few hands, well, we really have to start setting better boundaries for them. We the People…*can* strip this misappropriated authority from our leaders when they become lost. When they usurp our own better cognition of the world, seeking to artificially inflate our own Culture at the expense of some supposedly "alien" Culture, we must intervene and label them as the deceivers they are. Only by mass public condemnation of such misguided collusion with the PanMeme can we hope to control it when it goes astray. Let us hope, not for the

easter bunny but, instead for an *authentic* public debate. Some agent of authority will have to make a decision at the end of the day, but if we are genuinely informed by the process then we should be better able to recognize and quickly correct *bad* decisions.

"Really? And just what does a *bad* decision look like?" Well, when contemplating an aggressive action we should ask ourselves, "Are we punching up or down?" When the elephant cognoscenti start demanding that mice must be stomped - "They are a grave and growing threat to our security!" - we cannot be silent. "They are able to carry tiny thorns; just imagine the places they could stick them if we should happen to be caught unaware!" Such elephants must be constrained - which is indeed no easy matter. The awful truth, however, is that we are *all* mice in a slippery world of large angry feet; even mighty billionaire industrialists and the establishment prostitutes who work for them can be crushed in a sudden stampede of wartime animosity. Each of us owes something to the achievements of those who've gone before and the potential of those yet to come, and so we must vigilantly watch our elephant PanMemes, wary for early signs of psychotic aggression.

Our genes, in a blind (or unfathomably willful) process of differential survival and replication, choose what kind of beings we are to be. We are now learning how to force that blind process to serve *our* immediate (probably short-sighted) intentions and not just statistical chance. Genes have been around a very long time; it may be that their grave Wisdom of the Ages exceeds our own, but our memes are no older than we and in lost weekends of mindless excess they frequently spin out of control - and not at their expense but *ours*. These intangible World-Spirits are gigantic, globe-spanning projections of us, and when they begin to serve the benefit of themselves to our detriment, it's time to impose some authority. Such "neuron-initiated" authority over the vast cultural minds of which we are a tiny part is not easy, but if we cannot be thoroughly honest in our reckoning of ourselves, then the *ruthlessly honest* cosmos certainly will be. Does the ever-growing reservoir of the human meme pool serve us - as it should - or has it passed some critical threshold of evolutionary development leaving us merely the helpless servants of our disembodied cognitive offspring? Have we become (or have we always been) slaves to our own ideas? Sometimes it certainly seems to be so.

Our brief recorded history has shown that weak ideas do indeed vanish from the earth...and sometimes they don't: *Absolutely everything you'll ever need to know about the world is written in this small 2000-year-old book so don't even think about ever learning anything new*; this might seem like a strong idea that's proven its fitness by surviving so long, but it really is pitifully weak compared to the kind of adversity nature can (and will) present to us. If this is to be *the* human idea, then we will eventually perish with it. Another, better idea might be expressed in this way: *The commanding Forces of Nature are infinitely more powerful than we, but Prometheus has other gifts far greater than fire - every imaginable power is ours for the taking if we will but look closely at the physical world with an authentic desire for authentic truth*. Or, as Carl Sagan put it, we must pursue "a way of skeptically interrogating the universe with a fine understanding of human fallibility." This idea, and only this idea, just might save us from the dragons that are most assuredly coming for us. Poetry cannot save us (bronze-age nor the much-improved modern variety); that's not what it's for. Poetry helps us to survive...by explaining why we should *want* to.

Most of us do not need the world to be a happy place (however much we might wish it were so); we only really *need* the world *to make sense*. Homo sapiens have a universal fear (or even existential terror) of meaninglessness. And so, with our intuitive (and experimentally confirmed) understanding of the debilitating danger of helplessness and the empowering advantage of control (even when illusory), we seek to project a veneer of comprehensibility onto a fundamentally mysterious world. For some, there can be no greater horror than the possibility that the universe *might not have a meaning*, that all this suffering and death might be nothing but an empty, useless carnage. People do not sacrifice their lives to achieve social status (it's a bit late for that); they're willing to die because it's far easier to believe in even a dubious, criminally-exploited, *man-made* explanation of why the world is the way it is, than it is to accept that the world might be utterly bereft of meaning and value.

The atheist man of science or philosophy finds meaning in the enchanting clockwork complexity of natural systems; for those too-clever few, the beguiling depth of that beautiful complexity provides its own reason for existing. Others, who are not able to find ontological moment in such intricate systems, need the world to

have more than mere enchanting distraction; *we* need it to have *intention*. And when observing all the purposively self-perpetuating demolition and construction in the universe, well, it's really much more difficult to reason how it can *not* be intentional. How can the cosmic whole not share the same quickening ambition that so moves its many busy parts? I don't *know* anything, but I *believe* the universe is a divine opera, a comprehension-defying *painting-sculpture-poem-symphony* of a fall to destruction and rise to creation: the Death and Resurrection of the Living Cosmos.

My delusion, like any worthy belief in god or natural process, exacts a high price: a life in return for creative power. But it's a just bargain, so you who are thus imbued with the intention of the cosmos, use your power to honor a vital covenant with the world: as the sacred ideas plant their seeds in you, so too must you plant your seeds in them..

...On Art and Inspiration...

I have tried in these pages to describe the themes of this work, and have also, I suppose, tried to convince you that it is indeed art. If you are astute, you may have some lingering reservations (as, indeed, I do myself). Is there some mysterious component that elevates these paintings above mere imagery, mere animal representation of the brute appearance of the world - or what Joseph Campbell derisively calls *sentimental naturalism*? What is *art*, anyway?

It will be intolerably pretentious for a still-aspiring artist to say so, but *artists see things* that all the other busy people of the world somehow overlook, otherwise involved as they are in the hectic din of their busy lives. That has to be true, doesn't it? If you think about an artist that you really admire - musician, filmmaker, novelist (or even painter) - isn't there something…kind of *spooky* and otherworldly about them? Dylan "saw a highway of diamonds with nobody on it..." How does the mystic vagabond conjure such powerfully simple apparitions of meaning, abundant with unspoken possibility? Of the work that mysteriously shook you in deep places you didn't even know you had, don't you find yourself asking, "Where on earth did *that* come from (and what the heck *is* that part of me that you were shaking)?" Artists don't provide anything really useful to the world like farmers or doctors or engineers, and they're so damn *strange*. Why on earth do we put up with the moody, sanctimonious lot of them?

Whether people like it or not, we seem to understand that humans need, occasionally, to have our deep places shaken. As in all human endeavors, there is a broad spectrum of competence in art, from the stupid and profane to the revelatory and sublime. But at the highest levels of achievement there really can be no question that something *important* is going on: great art finds a hidden source of ancient primal energy to vivify a modern civilized concern.

I believe art must be a spellbinding ("I cannot look away") and original ("I have never seen anything like that before") vision of the Mythological Kingdom, that place where eternal poetry reveals our fundamental nature and quietly whispers of our best destiny in the world. Succinctly: poetic revelation defines the baffling beauty and horror of what we are, and so by extension also demonstrates the few hard ways by which we might possibly succeed, and the many easy ways by which we will certainly fail. The eternal poetry and the great secrets of which it speaks never changes, but primordial truth must always be re-clothed in modern attire to be comprehensible and relevant to a contemporary, ever-evolving context. This new fashion for Eternal Man (and Eternal Woman) is what we call art.

By this definition it seems that much of my work does not qualify: *sentimental* naturalism, perhaps; *mythic* naturalism, perhaps not. And yet, the cosmogonic images in the *Rise and Fall of Space-Time* diptych, *Parsival's Lament* and *Matrix of Eternity*, do indeed legitimately aspire to find new and compelling poetry for the turbulent era that follows in the vast wake of 20th century science. Few in the world seemed to have noticed, it seems, but this is unquestionably the beginning of a new, *cosmologically-aware* epoch in the spiritual history of mankind. The place we live in, the place to which our mythologies must bind us, has become infinitely larger than it was only a few decades ago, and the nature of this suddenly much larger house is the exact opposite of what we believed for thousands of years. A new mythological reckoning of our dwelling is in order, for if our energizing poetry does not orient us to our environment - by far it's most important function - then we shall always be lost here and will never feel at home. Young artists everywhere must

now rise to the challenge and seek the poetry of this new and undiscovered wing of the house; it's certain that we will slowly, timorously occupy the new property - it's *our* house after all - but we'll need the radiance of visionary creativity and great art to find our way in the uncharted darkness…

...And on Observers and Existence...

Consider again my impertinent question: Can you behave as you choose, or only as the chemistry of which you are made allows? Are you in fact a machine made of chemistry? Devoid of any *subjective states of consciousness*, and nothing more than *objective processes of physics* - neural dominos falling in a sequence and pattern determined by a long, infintely-bifurcated but unbroken chain of cause and effect anchored to a single initiating event at the beginning of time? This 14-billion-year process of perpetual action-and-reaction, where every subsequent event is the certain result of a previous event, probably doesn't sound much like your *I'm-in-control* experience of the world. We quite naturally believe that it is we, and not cosmic processes of physics, that decides what we do next. But if there is only energetic particles of matter falling through space and time like the aimless tumble of rocks in an avalanche, then there really are some inescapable and unpleasant implications for observer-beings such as we.

If a mechanistic view of nature (and human brains) is true - and materialists, atheists, and most of the world's top neuro-scientists quite reasonably assert that it is - then there cannot possibly be love; instead there is only the electro-valent tension between electron shells - the inexorable attraction or repulsion of tiny smears of contrasting polarity. If there is only the measurably tangible, physical universe, then there is certainly no joy; instead there is only elemental interaction between large molecules exchanging atoms in a mindlessly mechanical fashion, according to simple rules that never change and are never broken. Furthermore, in such a complex but importantly comprehensible cosmos, there is no possibility for fascination or pleasure, for pain or despair, for aspiration or triumph, for will or choice; instead there is only impenetrably complex swarms of proteins folding together *the only way they can* - like the precision gears in a vast, invariable clock. The mechanical labyrinth of molecular collision utterly defies predictability to be sure, but the output state is nevertheless the unchangeable and inevitable result of the input states. In short, this view of the world demands that there is nothing more to the qualities that we imagine to be fundamentally human than purposeless particle cascade. No desire or longing, no fear or suffering, no feelings of any kind, just different configurations of mere chemistry and a relentlessly precise mechanical process that forces atoms to go one way or the other.

Everyone would agree that that meat of which we are made does indeed impose significant compulsions upon us. The neuro-chemical hormones that make us happy, horny, hungry, hostile, etc., are a powerful influence on our behavior, and often determine what we do. But many of us would say that there must also be something else in the meat that tells it what to do, which impulses to follow and which to deny, and occasionally even creates entirely new impulses. What is this nature of this "Master of the Meat" that tells chemistry what to do, if it is not also made of chemistry? This question - *are you are machine made of chemistry* - is the most important and fundamental of all questions; it is in fact, the *only* real question. If natural physics is all that there is, then consciousness, that sense that we are a sovereign awareness observing from behind the eyes, can only be the superfluous noise of the brain, an accidental byproduct of cognitive function, the meaningless effluent waste of neurological processes, the bed-stain artifact of a 100 billion brain-cell protein-clusters orgiastically throbbing around inside the skull. Simply put, without some additional factor that forces the processes of neuro-chemistry to behave in a way that is contrary to the pre-determined programming of physical law, without some ghostly external initiator of causation in the cerebral mechanism that compels atoms in the brain to do *what the observer chooses and not what they must otherwise do*, then consciousness is a psychological deception and existential fraud - the empty delusion of an empty machine.

It may indeed be true that this is all we are. Determinists say human consciousness, *whatever* it is, is just not powerfully clever enough to comprehend the overwhelming but nevertheless deterministic complexity of a million-billion synaptic connections. But Platonic Mystics, and other curious and unaligned philosophical theists, wonder instead if the conscious observer is not

in the bio-machine at all, and is instead a *projection of something* looking into the universe from outside. Small projections, like my dog, don't see very far; larger projections, like Einstein, can see very far indeed. Prominent atheists sound very sophisticated and modern when they claim, contrary to the intimate evidence of every human experience, to possess no Ghost in the Machine whatsoever. But one is logically justified to suppose instead that - just like the materialist theory of inflationary cosmology that explains the impossible uniqueness of our universe with an infinite number of other different universes - there is some "initiator of causation" *antecedent and external* to the cosmos. In fact, the only practical difference between the atheist and the mystic is that we think that bothersome "inexplicable externality" has *intention*.

As I have previously indicated, I sometimes wonder what people *really* mean when they say, "I believe in God." If we are going to establish some of our fundamental assumptions about humanity based upon what people say they *believe*, we should have a better understanding of what we mean by the rather pesky word "believe." Firstly, it must be said, we might be *lying*; under the harsh glare of the local thought-police, we proclaim the tribal loyalty expected of us, whether we believe the old tribal stories or not. More honestly, we might merely mean we *hope* something is true because our post-mortem future might go better for us if it is. We might similarly mean we *fear* it's true and strive to regulate our behavior accordingly. We might mean we sincerely *try* to believe...but inevitably fail in the impossible task. We might even sometimes mean we *know* it's true, but we frequently institutionalize those who demonstrate impossible certitude - the "God told me to kill him!" crowd - as victims of some neurological pathology, and so it's prudent to be skeptical of all forms of dubious positivism - especially when people might declare it for so many other more convincing social, political, or medical reasons. Or, finally, we might simply mean that we are *inclined to suppose* something because it seems somehow less silly than the other silly things, and it pleases us, not to lie, hope, fear, try or know, but only to suppose we are *more* than empty machines.

And so, like other non-religious non-atheist *Mysterians*, I am inclined to suppose that there is an Intelligence antecedent to the universe that has some purpose for the astounding processes initiated with the creation of space-time, and that to the extent that beings somehow serve and advance this unknown purpose they become projections of that Intention, extensions of that Consciousness, always intimately connected to and communicating with the motive force of existence. The Consciousness and Intention of the Cosmos is the only possible source of what is otherwise *impossible* Free Will. If this external *initiator of causation* exists, so can you; if it does not, nor can you. These are the only choices available: chemical automaton with all the intention of bubbling cloud formations, or self-determining free agent able to choose the direction of your own thought. If you are only chemistry, you cannot be the master of it, and if you are not the master of it, you cannot be what you think you are.

One is sometimes tempted to ask, in those fleeting moments of bewildered stupefaction, "What is the universe and what am I?" It seems like a big question, but there are really only two answers: they are nothing, or they are the *same* thing…

* * *

We are the Earth, a bewildered but ambitious little island in a planetary archipelago that spans a mere 8 billion miles, an insignificant mote in an interstellar ocean of which merely the local observable part is measured in billions of *light-years*. We now look out from our terrestrial shore into the beckoning darkness that lies beyond the luminous breeze of our local solar wind, watching the twinkling signal fires of other distant islands, and wonder what untold wonders might dwell in the remote frontiers of that beautiful, forbidding night.

Is the sea of the heavens infinite, ever receding into greater and greater mystery forever? Is what lies beyond each and every trillion-trillion light-years nothing more than the relentless repetition of another limitless expanse? What possible purpose could such extravagant vastness serve? If space is truly *infinite and unbounded*, then no Promethean effort can hope to achieve whatever prize might be waiting on that distant shore, and all our ambitions of discovery are only a quixotic delusion.

Or does the universe simply end, like a highway construction project that ran out of funding? Is the horizon of the cosmos nothing more than a region of empty space beyond which there is not even empty space? Is there a wall at the end of a *finite and bounded* cosmos? And if

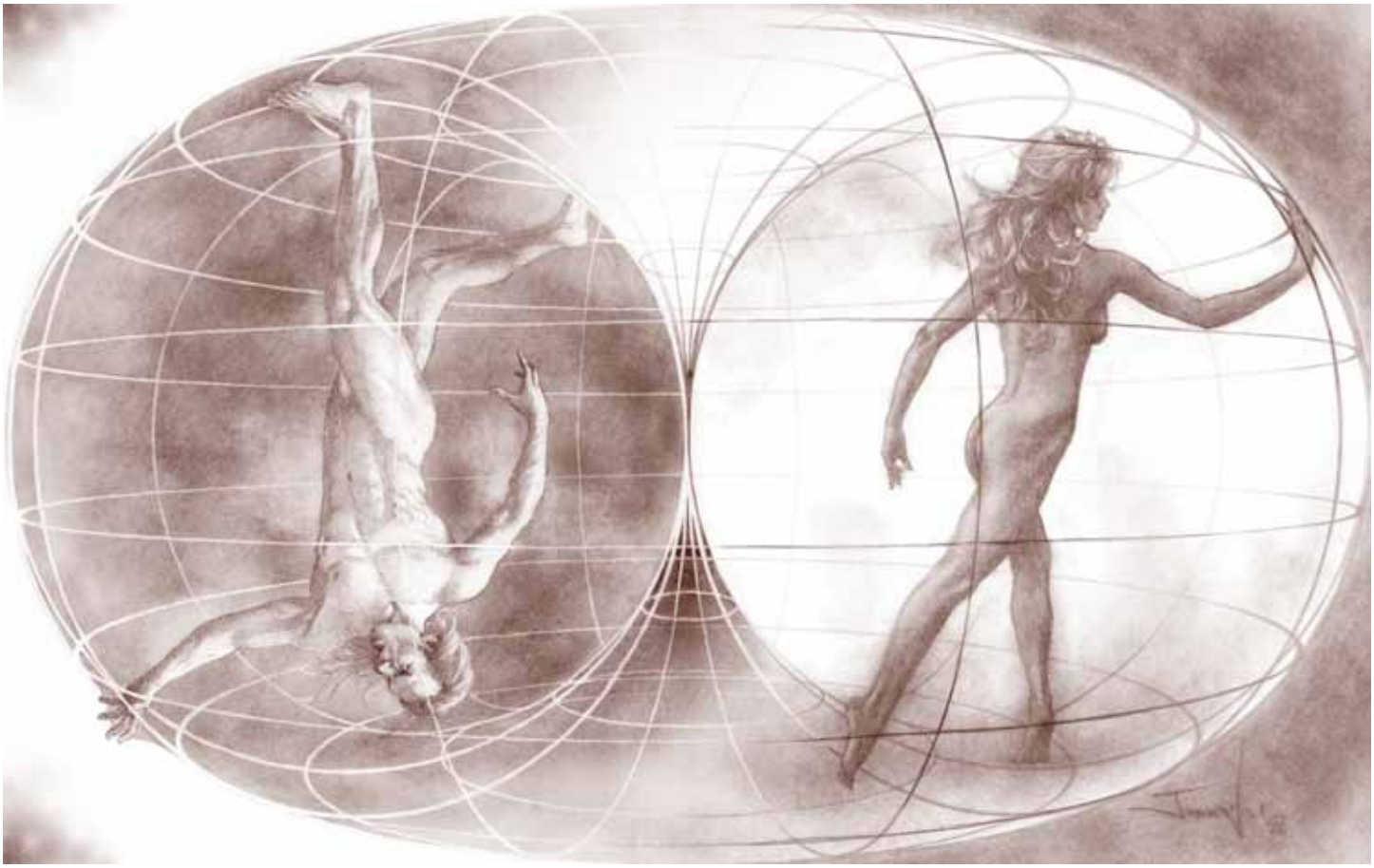
not, what, in the presence of nothing whatsoever, would prevent one from proceeding further? Would then the act of merely proceeding actually create new cosmic territory into which one might then proceed?

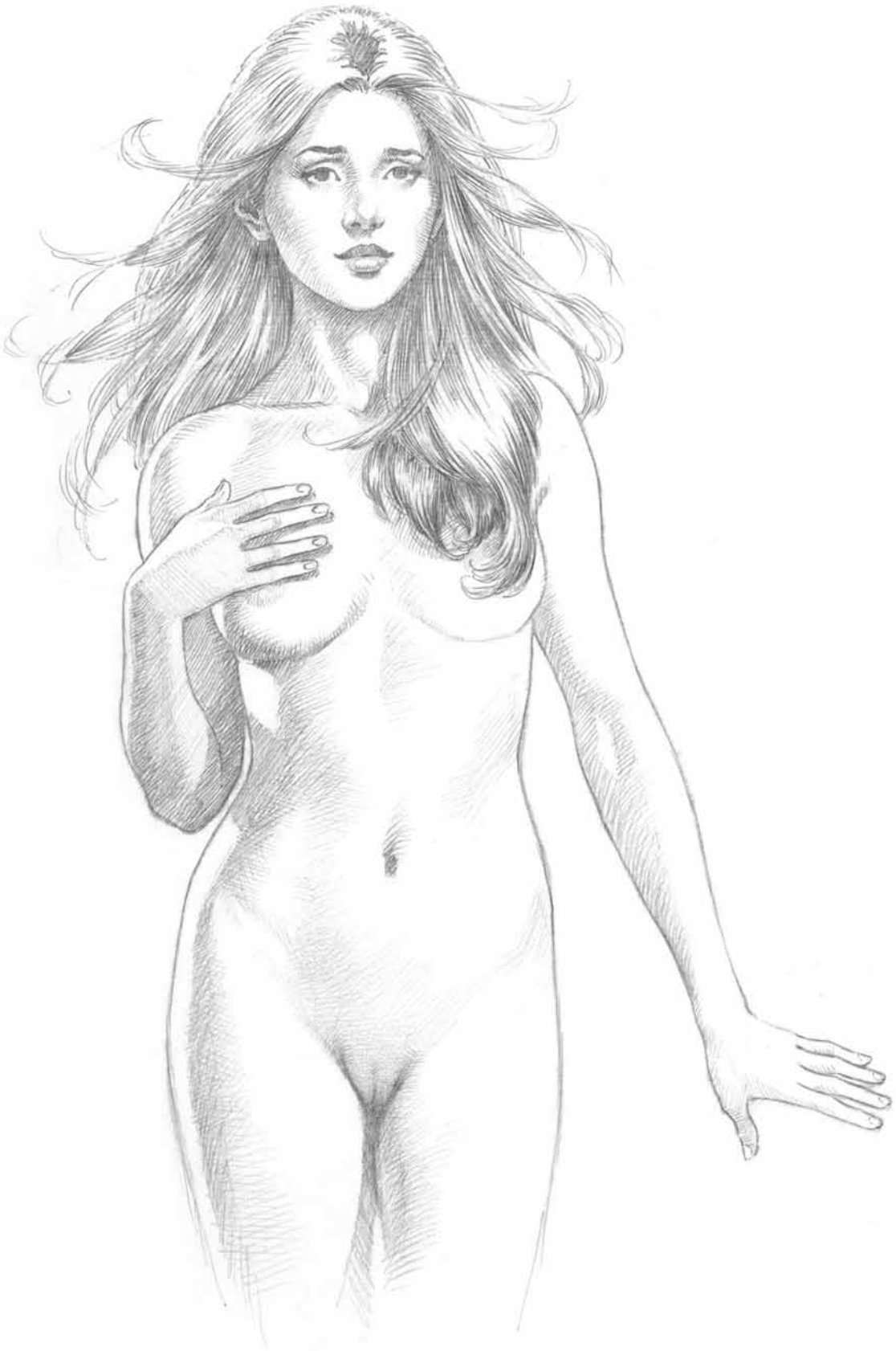
If it is the vastness of it all that troubles us then perhaps the universe, in an effort to economize with limited resources, simply gets smaller toward the edge. Rather like Zeno's Paradox (or the hyperbolic space seen in *Order and Chaos*), in an *infinite and bounded* universe a journey from the center to halfway to the outer limit is actually to become half the size. Move another half again closer to the edge and you and your atoms and every physical constant shrink to only 1/4 of their original magnitude - and then 1/8, and 1/16, and so on. Such a universe is an inside-out version of the finite diameter but infinite radius weirdness of a black hole: space and time collapse, not to a central point but to the entire peripheral boundary. A celestial Odysseus would be ever-diminishing, inexorably shrinking into infinitesimal nothingness.

Some of our greatest minds have suggested that the universe might be round, spherical in a fourth coordinate direction that we can't see, and that sailing the heavens might be very much like an analogous journey on our *finite but unbounded* terrestrial ocean: if a maritime traveler ventures far enough in a straight line, he will eventually return to his point of embarkation. In such a universe, where the extraordinary gulf between zenith and nadir is merely inconceivably vast and not infinite, we might hope to one day ford the divide and somehow penetrate the great distances that imprison us.

In an extraordinary cosmic irony, it is we tiny, insignificant beings that give meaning to the stupefying infinitude of space: it is only by the vanishingly small that the incomprehensibly vast can be known. And when the limit of our vision extends to the most distant antipodes of the universe, what magnificent prize will we discover? There will only be ourselves looking out - the spectacles of visually-challenged gods watching along a great circumferential beam of light - at ourselves...

Jonathon Earl Bowser






~ Still Falling from the Hidden Country ~
Copyright 2004 - Oil on Canvasboard - 24 x 16 inches

There once was a Garden enthralling,
where a Tree gave us something appalling -
some kind of infection
that spoiled our perfection -
and from that disease we're still falling…

In this book I have presented my views on Art and Life, and in this endeavor I have presumed to speak also about science, religion, and philosophy. Although I am not an authority on such matters, I have taken great care to ensure that complex ideas and hard facts have been represented in an accurate, albeit limited, manner. If you wish to explore these subjects in greater detail, you will be well served by the following reference material.

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"Myth is the secret opening through which the inexhaustible energies of the cosmos pour into human manifestation..."

- Joseph Campbell

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Forest Light

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LotusWood

1. *DNA helix*. Source Unknown (modified by the author).
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Cathedral of Illusion

1. *Two-Slit Experiment*. Drawing by Roger Penrose (modified by the author). From Penrose, *The Emperor's New Mind* (Vintage 1990) p. 300-302.

Parsival's Lament

1. *Magnet and field*. Source Unknown (modified by the author). From *Practical Physics* (Macmillan 1914).

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- About the Artist -

Jonathon Earl Bowser - a Canadian artist of English, Scottish, French, and Chipewwa Indian ancestry - was born in 1962. He began drawing obsessively at age 8, painting at age 18, and graduated from the Alberta College of Art in 1984. His limited-edition prints and collector's plates are now represented by many galleries internationally, and his original paintings are in public and private collections across North America, Europe, and Asia - including the government collections of China and Taiwan. The artist's extensive online gallery receives over 1,000 visitors every day and has provided artwork for many tens of thousands of internet websites. He now lives with his wife Liz and their many pets in Saskatchewan, Canada.

For more information about original oil paintings or fine-art reproductions, please contact the artist at

www.JonathonArt.com