EMBODIMENT: PARTICIPATORY WEBBING

by

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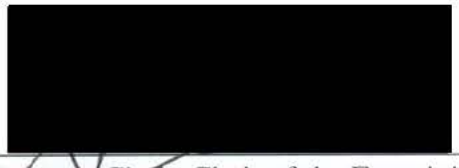

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Embodiment may be defined as the practice of recognizing that while we might think we exist within our bodies, we fundamentally exist as our bodies. Our thoughts and actions become our bodies and from this our bodily choices influence and transform the ecological systems of the planet that sustains us. Since the Western world embraced Descartes' mind-body split, we have practiced this disconnect, which no longer serves to sustain our culture.

Stories within this thesis encourage and allow readers to remember that our physical structures, ecological systems, and language that we use are created and shaped from this primary connection of mind and body. It provides an opportunity to participate in this way of understanding and illustrates other ways of seeing Western culture. The thesis also explores environmental awareness within disciplines, establishes relationships across disciplines, and insists on structural integrity at the most local of levels: our bodies.

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Preface: Embodied Sapiens

"Great discoveries have always been made at the intersections of disciplines. Reading Malthus, Charles Darwin was looking at demography; he was also looking at the works of an economist, Adam Smith—quite different—and at the works of the Belgian statistician Adolphe Quetelet. And then, out came the idea—natural selection. There are many examples of people working at intersections, simply to get a different perspective. It's like getting in a boat and traveling to the other side of a river and looking to see what it's like from there. I keep telling my students they've got to be open and try to learn about different things. I want them to have more than one kind of skill. I firmly believe in interdisciplinary work, and that's where all the excitement lies" — Elisabeth Vrba, Professor of paleontology and biology at Yale University; *Biology* 1999: 488).

In 1957, Karl R. Popper, one of the early leaders in the field of ecology, presented "Philosophy of Science: A Personal Report" to colleagues at an interdisciplinary conference. He opened his talk with the following: "Since the autumn of 1919 when I first began to grapple with the problem, 'When should a theory be ranked as scientific?' Or, 'Is there a criterion of the scientific character or status of a theory?' ...I wished to distinguish between science and pseudoscience; knowing very well that science often errs, and that pseudoscience may happen to stumble upon the truth. ...I knew, of course, what was the most widely accepted answer to my problem: that science is distinguished from pseudo-science...by its empirical method; that it is essentially inductive, proceeding from observation to experiment" (Popper 1957: 255). Popper believed that a rigorous inductive method could be used to explore questions in a variety of disciplines. Historically at this time debates over what constituted solid scientific inquiry were even more rampant than today, although within academic fields these questions continue. While science has become more technologically proficient, observation, experimentation and induction continue to play a significant role in the way the species human attempts to understand the world within which we live.

Methods for researching within interdisciplinary work are apt to be challenging. In order to reduce confusion as to the points this paper hopes to make and methods it uses, the following quote applies. "In applying a method, we need to be as sure as we can that the method itself does not either determine the outcome in advance of the empirical inquiry or artificially skew it. A common method for achieving this, especially in the studies we will be discussing, is to seek converging evidence using the broadest available range of different methodologies. Ideally, the skewing effects of any one method will be canceled out by the other methods. The more sources of evidence we have, the more likely this is to happen" (Lakoff and Johnson 1999: 79). According to Lakoff and Johnson, using multiple methods of inquiry helps limit skewing from subjectivity and observation. While this work applies observation and general research techniques for the most part, its multi-disciplinary perspective causes the information to be viewed across traditional boundaries of language and procedure. Attempts have been made to provide readers with the clearest ways of stating the points while still pushing the limits of language towards a more ecologically friendly way of writing.

In the following thesis, I focus on the experience of embodiment at both the personal and the political scales. By investigating the use of language across disciplines as it serves to shape our stories, I hope to increase awareness about our role in creating the stories. By recognizing the extent to which our personal participation webs the world, I propose that our embodied experiences not only web our environment but also create the world we live within. Through personal participation in complex community systems, both social and ecological, our webbing embodies our selves.

Introduction: Webbed Bodying, Body as Scale

You don't need to leave your room.
Remain sitting at your table and listen.
Don't even listen, simply wait.
Be quite still and solitary.
The world will freely offer itself to you.
To be unmasked, it has no choice.
It will roll in ecstasy at your feet.
— Franz Kafka

You don't need to leave your room.
Room leaves you, bodyou sitting, listening.
Remaining.
Still-ly, never a-lone.
The world might offer itself for a price, —
but Earth unmasks yourbodyself to herself, freely.
YouEarth roll in ecstasy, dirting your selves.
— Embodying

You are your body. There is no way around it. Your lungs breathe you, your heart pumps you blood that also is you. Your stomach digests you the food that is you, nutrients that are you because they are integrated into the cells that you are. New cells re-become you, replacing old cellular tissue with replicated information. While you might spend time meditating on the transcendental nature of living, you do it *as* your body.

Your thoughts shape you and become the you that you think you want to be, allowing you to practice nearly anything that exists in the physical plane around you. Thoughts lead us on into how we could live. In order to become this idea of you, you practice it in your thoughts and in your actions: a teacher, a mother or father, dancer, lawyer, musician, gardener, lover, farmer. You practice being what *represents*, what *is* those things as you notice others being them. You replicate the information that those ways represent to you, and you become their way and they become your way of being them as well.

We might think or feel as though we exist within our bodies, but in this time and place we actually *exist* our bodies. We live in them, but really we live them, because we-our bodies connect the world around us, being the world. We are taught that we are born "within" our bodies, and spend our lives waking and sleeping "in" them, conscious and unconscious of the presence of our bodies in the world. We have become used to thinking about ourselves as "connected to" our bodies, connected to the world "through" our bodies, but not wholly connected, as though we were able to float within our physical form like oil floats on water. This "partial" connection allows us to always remain essentially reserved in relation to the world around us. This is the story we've been taught, the shaping story for our existence.

How we tell the story of existence within our bodies affects how we relate to the world we live within. *How* we tell the story of our world affects how we make decisions that shape our world. In Western culture, some of the means and methods of telling our stories have been classified by historical directives such as those within institutions of a university, a religion, a political or an economic sphere. In the story of the Western world for example, the Judeo-Christian conception of the word "world" has been presented as something that we should be *in* but not *of*, in order to maintain the pattern of the culture. Were we to conceive of "world" as something we *are*, a process perhaps, maybe then we would think, act, and be our Western culture differently. The language that we use to shape our stories is our tool for creating cultural relationships within the world, and within the Earth that mothers us.

Our storytelling tools also come from cultural mores that are passed down and outlast institutions, from communities and ways of being that exist in deeper time than we recognize. When we become conscious of the tools we use to shape our stories, we release ourselves from habits of telling stories that shape the world in ways we would prefer to change, we would prefer to differ by *being* different.

In respect of the Cartesian worldview that has informed most Western institutions and long term cultural and organizational decisions, we have arrived at a moment of change. Multiple factors prompt this change, which has been arriving now for nearly half

a century. Historically, the change arrives slowly because inscription of its processes takes longer than the change takes to occur, but physically the change is already upon us and is already motivating our hearts that pump our blood. How can we describe this change? In words, the illustration looks something like this.

Our bodies are not vehicles we drive, we *are* our bodies. Our bodies embody our thoughts, our actions, our conscious and unconscious being; we embody our bodies. We are enter- and inter-embodied creatures, both stretching out to touch and opening up in order to allow. In our relations with the world allow us to survive, and fundamentally we *are* the very world around us, as it *is* us. Instead of thinking of these concepts as dual, subject and object, outer and inner, acting in relationship with something, we must recognize another deep shift in how we envision our embodied presence. We exist *as complex processes,* embody-ing.

Were we to name ourselves in grammar, we would be gerunds. We tell ourselves that we are individual nouns who *do* or *be*, but in our experience, we emprocess reality; we are emprocessing we's, or *we beings*. Instead of "being in relationship with the Earth": we would describe our relationship as, *Earth we relationing*. Instead of being the center of the picture, we would, like a Japanese landscape painting, be very small and off to the side, under a tree or crossing a bridge, barely seen from afar. This fundamental shift in language allows us the potential to recreate our self-perception and from that our shaping of the world, which exists within us and within which we exist, enter-existing, co-creating.

Language, for our cultural world, is like the DNA of our cellular matter. Our cultural world is like the DNA for replicating the species human to itself in the World. When our DNA does not replicate well, we break down cellularly. When our language does not replicate well, our cultural World breaks down. Our language also affects the integrity of our Earth, from which the World draws its energy. Language reflects the integrity of our Earth relationship, and when we do not uphold in language respect and integrity in relation with the Earth, our species and many others break down. Our culture, Western culture, our language, Western language, our thoughts, Western thoughts, our

actions, Western actions, are largely the culprit. Western world-culture is strong and individualistic, competitive and exploitative, unconscious and destructive to our place within Earth's relationing.

Based on how we learn our embodied relationing, the world-culture schools us in its embodiment. While this sentence is circular, it shows us the style of our existence, and it does leave many spaces for tiny changes, spaces for shifts in our learning and in the world's body. These spaces are created when we recognize the consciousness involved in listening and watching and translating what we notice into patterns of being and action that reflect what we notice. The more we notice, the more potential there is for changing how we act in response to what we notice. Within our bodies we tell the story of Us to ourselves, through means that we learn from others, and from creative and imaginative ways of describing the world on our own.

Our culture, our thoughts, actions and choices, our patterns for organizing and replicating our selves to ourselves, are shifting and need to continue shifting, fast. The stories that follow observe the old rules of languaging, and describe old ways of knowing, in hopes that these descriptions will seem archaic and outmoded. In keeping with the institution of the university, for which this work has been written, the format is constrained by Western modes of being and shaped by Western metaphors. While the work will not be able to leave the reader completely embodied (for the act of reading itself is an act of disembodiment, requiring a suspension of disbelief to keep you in that chair and concentrating), the focus here is to tell a story of other ways of understanding Western culture itself, and offer the reader an opportunity to practice participation in this way of understanding.

Chapter One explores the physical and ecological stories that science has provided us along our quest for understanding wholeness in the environment by which we are configured. Chapter One includes a formal presentation and scientific analysis of one social, community web-building species of spider in order that we may see in basic terms the process by which science hopes to achieve understanding and clarity about the world around us. It also introduces the ideas of systems theory and relates their

organizational force to the organization of every system's autopoietic nature. Patterns we explore in the natural world provide humans with models for conscious patterning in the cultural world. "By consciousness we mean subjective awareness, or the ability to be aware of and make conscious judgments about the environment" (Terry Dawson, *Biology* 1999: 989). This chapter offers ideas, mental patterns and metaphors for community application.

Chapter Two illustrates complex patterns that fundamentally organize social relations by looking in depth at the story of Critical Mass, the collective bicycle action that began in San Francisco and has spread throughout the world. This recent movement towards a number of social, political and environmental changes allows us to understand some of the fundamentals existing within social bodies that motivate and create collective action. Chapter Two assists us in understanding that patterns we participate in shape the world we live within, so that we may begin to pattern wholeness and health in daily choices, creating those fundamentals with wider communities in which we participate.

The last chapter, Chapter Three, opens with my experiences of collective, community action, based within the cultural system of dance. By understanding fundamental embodiment on a personal level, we become able to understand the play of physical, social, and philosophical conditioning that shape every decision we make. Beginning with our bodies we move outward in concentric circles of experience, developing our concept of self and applying that to our communities. Ultimately, our individual *and* collective choices will continue to position our evolution as a species in community with all of the other species and natural forces with which we are integrated. *Embodied, we have been given the opportunity to participate. Participating, we embody the Earth. Our process is the product, Earth we embodying.*

Chapter 1: Physical Ecology, Locating the Webbing

A noiseless patient spider,
I mark'd where on a little promontory it stood isolated,
Mark'd how to explore the vacant vast surrounding,
It launch'd forth filament, filament, filament, out of itself,
Ever unreeling them, ever tirelessly speeding them.

And you O my soul where you stand,
Surrounded, detached, in measureless oceans of space,
Ceaselessly musing, venturing, throwing, seeking the spheres to connect them,
Till the bridge you will need be form'd, till the ductile anchor hold,
Till the gossamer thread you fling catch somewhere, O my soul.

— Walt Whitman, *Leaves of Grass*

Have you ever watched a spider build its web? Have you sat until time goes into timelessness on the side of a log or in a garden or on a park bench near a spider bush and watched? The spider climbs up the side of a tree to attach its anchor link of its web, spins itself down the trunk of the tree and moves to the opposing side of its chosen space, attaching its second link of web. As it continues the process of pulling silken molecules of webbing out of its spinnerets, from the back end of its own abdomen, you begin to sense the proportions of its daily task of web spinning for food collection. Your mind goes into a zone of wonder and if you pull yourself away from this wonder you may also feel disbelief that you are watching something so gigantic in relation to a creature so tiny.

The spider persists and if it is a solitary spider it takes hours to pull silk into its place, forming its attachments in patterns of well-recognized orbs, half-orbs and partial orbs, into irregular tents, crafty drop nets, or into large complexes of silk, into tunnels and thick laces that tempt the prey. Other spiders work together to spin webs, catching and killing food as a group and maintaining the spider community with rules just as defined as our own social rules. Spiders web their world elegantly and deftly, avoiding attention by most often spinning at dusk or into the evening so that at dawn they will be ready to

greet food with silk and quick toxin in order to paralyze and consume their prey. Because of the beauty, delicate strength, and ferocity spiders exhibit, they provide us with an interesting combination of concepts about how life unfolds towards continuation.

A spider cannot be a mere automaton in the style of Descartes because of the infinity of potential variables that must be considered to simply accomplish the building of a web on a stormy night. Translate this into the world of 3-D modeling for example – if the spider's every motion had to potentially account for every possible angle of movement once subjected to variable wind speed, or the weight of every drop of water that had fallen on her web creation (like an infinite number of "if" statements) this would be a huge amount of data, requiring at the very least a bigger processing area in the brain. Instead we don't know how this is possible, for the same web design to be created under a myriad of conditions, which for us in our rational know-it-all mechanistic world view is tantamount to magic.

It could suggest that there are other ways of knowing, that the human field of perception is not the be-all end-all of information procurement. It could also suggest, as David Abram does in *The Spell of the Sensuous*, that humans are perceptual agents of the natural world set up to receive and transmit knowledge of a certain genre. Perhaps we operate on only one frequency of many, and would be better off recognizing the importance of other frequencies of life in deference to our own ignorance of how the complex magic that surrounds us actually functions as a whole. Without full knowledge of the whole, we will continue to reproduce partial patterns as we weave our web for catching life, weakening the wholeness as just one of many species.

Spider "Talk"

About 34,000 different species of spiders live in environments all over the Earth. They range in size from 2mm to 90mm in length, and their bodies are divided into two parts, the thorax and the abdomen. Spiders have eight walking legs, a pair of biting chelicerae, and two pedipalps in front of their walking legs, bringing the total extremities to

twelve. Spider communication has evolved to a variety of noticeable methods, which they carry out in a variety of social arrangements (Koomans et al.1974: 64).

Communication evolves as species push established interactions toward the boundaries of other communicatory messages, for example utilizing one message for both sustenance and for mating. One example of complex messages may be noticed in the poses of *Salticidae* and *Lycosidae* (Koomans et al.1974: 64). Their courtship positions often evolve from predatory poses; they use the same movements to both threaten insects and attract mates. Spiders that have emerged more recently have an increased variety of courting and hunting signals. As spiders evolve their messages vary both qualitatively and quantitatively; some affective factors include age, physiological state, and past experience.

Subsocial spiders came earlier than social spiders, who sometimes weave large joint webs and attack caught prey together, according to Krafft. Mutual tolerance among spiders leads them to become socialized, the theory being that young who are encouraged to linger with the nurturing spider(s) build social tolerance. Mutual tolerance fosters vibratory communication between spiders of the same family, and among species like *Agelena consociate* and *Stegodyphus sarasinorum*, family recognition has been documented to be reinforced using chemical signals. Another factor that may be necessary for spiders to become socialized and mutually tolerant is an abundance of prey. When food sources are consistently abundant and foraging is efficient, spiders may reduce territorial behavior (Krafft 1982).

Most spiders utilize silk to link themselves to their environment and to other spiders; it acts as their primary tool for survival. Spiders that function without silk, in fact, are not social. Silk spun into webs connects spiders and encourages cooperation and socialization. Spiders often infuse web silk with chemical compounds to attract prey and mates, or to send social messages. Chemical communication within web-building became standard first in sexual signals, when female spiders began using pheromones (Weygoldt 1977). Communication by vibration, on the other hand, may have started to help locate prey within webs. *Metabus gravidus* uses vibrations both for finding food and communicating antagonism.

Vibrations travel along the silken threads of web-spinners and inform the home spider of what is on the web. *Cyclosa turbinate*, for example, can understand the different frequencies of vibrations that each insect gives off when caught in its web (Suter 1986). However, it is extremely challenging to measure the frequencies of insects on actual webs because of technical difficulties. Not all threads in a web have the same amount of stickiness, and all webs have different sizes and shapes. A significant relationship has been found between larger species of spiders and webs with larger volumes, suggesting that the energetic requirements of spiders set web-size boundaries (Opell 1995). Spiders have clear environmental boundaries set forth by their webs, which for us may act as a metaphor for investigations into our own environmental constraints and social structures.

Working within the metaphor of the web, stretching across disciplines, our language serves as the silken thread of connection. The following section illustrates how writing within a scientific discipline calls for stylistic differences in language. Historically, "scientific" writing has idealized objectivity, while remaining, in reality, subjectively motivated and crafted. By presenting this example the reader will notice a clear contrast in the style of observations, and hopefully respond by recognizing the strength of diversity in these contrasted subjective styles. The study is presented in the accepted style of scientific language and methodology.

How Spiders Live Communally:
One Species of Social Spiders at Tiputini Biodiversity Station, Ecuador

In the following observational study, data was collected on one species of communal spider *Anelosimus eximius* (Araneae, Theridiidae) near the Tiputini Biodiversity Station, on the Tiputini River in Ecuador. Because of its communal status, key behaviors of the species were tracked. Findings indicate that certain behaviors occur within a regulated time frame, and that an identifiable number of these behaviors may be classified as communal, cooperative, or social. Behaviors among the social species of spider *A. eximius* were identified observationally. During observations the focus was on hunting, feeding, web maintenance and repair. Behavior was communally limited within

certain tasks, including web building and repair, whereas data showed strong communal tendencies within the tasks hunting and feeding. Overall communal behavior was found to be the norm in the social spider *A. eximius*, with only certain specific tasks performed individually. Results of behavior classification were graphed to show time of activity and activity type. Results indicate the highest amount of communal activity occurring in evening hours.

Introduction

Within the field of neotropical ecology the question of social and communal spiders has been studied in the tropics by researchers such as Christenson Furey, Henschel, Krafft, Leborgne, Lubin, Marques, Pasquet, Ulbrich, and Vasconcelos-Netto. Factors identified as influencing communal behavior in spider species indicate an evolutionary tendency towards either individual or communal life. Communal groups build webs together and cooperate as a group to fulfill survival needs. Resident spiders are classified by size, sex, and age, and the communities function using a caste-type system for distribution of survival tasks. Within a communal network of spiders, the size of the colony varies, as well as the shape and type of web built. The webs of these spiders usually occur on trees or tall shrubs in the jungle. Webs are constructed of non-sticky silk connected to large areas with branches and bunches of leaves contained within the structure. The leaves provide shelter for the groups during severe weather and for certain castes of the group during the day (Lubin 1994), for the young and for and instar development. Survival depends on a number of behavioral activities, which are typically divided among the resident spiders.

Some of the behaviors identified and described in social spider relations include hunting, prey capture, feeding, web building, web repair, web maintenance, and reproductive tasks. In communal webs the eggs and juvenile spiders were effectively protected by the group, and by the tent-like web. Because of this protective advantage, more spiders are able to survive in communal societies

compared with solitary spiders. Prey capture in groups generally results in larger prey and high levels of capture success (Leborgne et al 1998), potentially giving an evolutionary advantage to individuals surviving within a colony.

Anelosimus eximius is a species of social spider that has evolved entirely social behavior. These spiders are highly social; they can be seen touching each other continuously with their forelegs and palps (Wilson 1971). It is one of the few species of spiders that lives together on a permanent basis and completes all tasks communally, including web repair, hunting, and feeding. These activities as well as other social behaviors are easily observed in *A. eximius* colonies.

The purpose of the study was to observe and investigate the social behaviors of the spider species *A. eximius.* Some of the questions motivating the observations were as follows: What are the main behaviors of the communal spider *A. eximius*? When are the spiders most active? Do factors such as web manipulation affect the activity of the group? The sections that follow show the data collected as a group, analyze the data in Table I, and illustrate basic conclusions from the collected data.

Materials and Methods

A natural colony of *A. eximius* was used for our observations. This colony was found on Numa trail at Tiputini Biodiversity Station near the banks of the Tiputini River in the eastern lowlands of the Amazon Basin in Ecuador. The study web was 1.5 meters wide by 4 meters tall and held +/- 1000 individuals. Over a four-day period, five hours per day, data were collected for the time span 0800 hours to 2100 hours. Three data collectors took turns recording behaviors and time of behavior.

Description of Behaviors

The following paragraphs describe and classify behaviors observed.

Web Repair

Spider moves through the area that needs repair, attaching non-sticky lines weaving back and forth until complete. At a close distance, a spindle of silk can be seen emerging from the spider's abdomen, or its spinnerets, as it works.

Hunting

Spiders are seen scattered throughout the web. Perched motionless they wait, until an insect becomes trapped in the web. The nearest spider to this insect begins the hunt with a stop/start motion, and is the first to approach the prey. The size of the insect will determine the number of spiders involved in the hunting process. As a group, the spiders perform the same stop/start motion, stopping to sense from the web vibrations where in the web the insect is caught. The first spider to arrive will take the first bite and inject toxin to subdue the prey, then multiple spiders will begin to attack. Cooperative hunting has been observed in multiple social spider populations. Furey noted that cooperative hunting is the norm, especially when prey is larger and more difficult to subdue (Furey 1996). As the insect is bitten the spiders also begin attaching threads and wrapping the insect. After the insect has been fully subdued it is then carried to a leaf nest where feeding will take place.

Feeding

Feeding usually occurs under a leaf nest. After capturing and subduing the prey, the hunting group drags the prey to one of the established leaf nests. Spiders from the colony surround the insect on all sides, creating a spherical shape. As the spiders feed they are in constant motion and contact with the prey until the group completes feeding, leaving only the exoskeleton to be removed from the web during web maintenance.

Results

Social behaviors most readily observed were the tasks identified as hunting, feeding, and web maintenance and repair. Overall activity in the colony seemed to be fairly moderate in the morning, slow during the day, and then began to pick up at dusk.

Feeding was the only activity observed throughout the day, hunting slowed during midday, and web repair seemed to be restricted to night (See Daily Behavior: Table I).

Daily Behavior

Behavior	Time (hours) 0800	1000	1200	1400	1600	1700	1800	1900	2000	2100
Hunting	+	+	-	+	-	+	+	+	+	+
Feeding	+	+	+	+	+	+	+	+	+	+
Repair	-	-	-	-	-	-	+	+	+	+

TABLE I. Daily behavior of *A. eximius,* based on observations taken over a four-day period. The table shows behaviors and time of day they were observed (+) or not observed (-).

Discussion

The observations show that hunting, feeding, and web maintenance are a few of the major activities of *A. eximius*. All three of these activities were performed, in large part, communally. When spiders live, hunt, feed, and reproduce together within the same web, this behavior has been called cooperative. Within the spider family, cooperative behavior suggests a social species (Pasquet and Krafft 1992; Brach 1975; Jackson 1979; Krafft 1970; Riechert et al 1986; Vollrath and Rhode-Arndt 1983; Ward 1986; Ward and Enders 1985).

Within the colony observed, the population neared 1000 individuals, the web was very large and well-established, and there seemed to be a number of juvenile spiders in the group. Depending on the amount of food and shelter available, "Large colonies may contain several thousand individuals in a very small area" (Pasquet and Krafft 1992). This leads us to believe that large populations of spiders in a group nest may provide a survival advantage. Pasquet and Krafft also suggest that communal living in a group web provided a number of advantages to individuals of a colony, including protection from the elements, protection against predators and parasites, and better prey capture rates (Pasquet and Krafft 1992).

Over the course of the day, observations show that the lowest levels of activity were in the noon and afternoon hours, and began rising at dusk and into the evening. While spiders remained spread throughout the web and continued hunting and group feeding throughout the day when prey was captured, activities such as web maintenance and repair were not observed at all. This leads to the conclusion that web maintenance and repair occurred after dusk and into the evening hours. Marques et al noted lower levels of behavior from 1000-1500 hours, and that later in the afternoon and in the early evening colonies began web repair and higher intensity hunting (Marques et al 1998). They also remarked that when prey vibrated the web sufficiently during the day, capture was attempted by the colony (Marques et al 1998). In his study, Lubin observed that feeding activity in group nests continued throughout the day, while hunting, prey capture, and web maintenance and repair began at 1830 hours. Pasquet and Krafft also observed this pattern of daily activity, with high levels of web repair occurring at 1800 hours, low levels of feeding throughout the day, and almost no activity at 1200 hours. They named midday an "inactive period" and dusk as an "active period" (Pasquet and Krafft 1992). These studies support observed data of the times activities occurred.

Social spiders perform a variety of activities communally. These behavioral adaptations have allowed social spiders to claim a unique niche within the biosphere. While a simple observational study without previous preparation, this study on communal spiders proved to be both informative and interesting. Observations, upon further research, correlated with the rest of the research in the field of social spiders. Changes to the study would include the following: Increase the length of the total study period, from 30 to 60 days; conduct observations beginning at dawn, and continuing throughout the evening and night; select a higher number of group webs to observe; finally, consider more complex hypotheses instead of conducting a direct observational study. In conclusion, the hypothesis that social spiders perform a variety of activities communally was proven correct.

Perhaps you are wondering, at this point, what spiders have to do with embodiment or humanity, and why you've just spent your time reading about spiders in a

jungle you'll probably never see. While humans certainly are not spiders, there are many reasons why this study assists us as metaphor for our understanding of embodiment. First of all, the format of the scientific study contrasts with the language used in other disciplines that contain more awareness of their own subjectivity. The "objective" format gives us an important difference in style. Remembering that "objectivity" continues to be motivated by subjective variables such as the living systems we exist within, funding, time availability, and data synthesis can help us be aware that we construct the stories that we call fact. How we write our "stories" shapes how we "learn" the world around us. Without ecologically whole ways of interpreting our connection within the Earth, we construct and perpetuate deep separations.

Chapter 2: Political Ecology, Transition to Webbed Humans

"What a quantity of abstruse science for a bit of string! Let us not be surprised. A pellet of shot swinging at the end of a thread, a drop of dew trickling down a straw, a splash of water rippling under the kisses of the air, a mere trifle after all, requires a titanic scaffolding when we wish to examine it with the eye of calculation. We need the club of Hercules to crush a fly." — *J.H. Fabre, 1913,* The Life of a Spider

Once upon a time, once *within* time, a biological story was written and told: a human being is one of many animals, a mammal, located in the family Hominidae, belonging to the genus *Homo*, of the species *sapiens*. Biologically, Hominidae *Homo sapiens* names the space within which we, as humans, create and live out our time in human scale, on the planet Earth, our home. As an animal, the sapiens, we develop ways of surviving and reproducing in order to continue to exist as a species. Predecessors of our species, including *Homo habilis*, or "handy man," *Homo erectus*, or "upright man," and *Homo sapiens neanderthalensis*, "wise man" Neanderthal, have lived with this planet for nearly two million years, surviving within its natural ecosystems and perpetuating themselves. Our species today exists in this great river of continuation, making choices that contribute to the longer term survival of the Earth's systems that we are a process within. As a species, we are a living process within the whole.

In a social story, the species human lives in community. Socially, humans usually live with other humans, and spend a large part of their lives relating and cooperating in order to both survive and thrive in the world. The species human also learns to relate socially to the more-than-human world, and learns how to see and hear the more-than-human world because of the direct teachings within our community. When our cultural teachings neglect the complexity of our relationships within the

more-than-human system, we pass along incomplete and inaccurate stories of our place in the ecosystem. Learning to listen to specific ecological stories around us will better inform our stories and our choices for the species.

Keeping in mind the obvious differences between human social groups and the social groups of web-building spiders, let us explore a few of our similarities. Like *A. eximius* humans live primarily in social groups, and in the present day many of us live in communities of at least 1000. While groups must be large enough to ensure survival of the whole, they must maintain certain patterns in relation to their environment in order to ensure that other sorts of life patterns flourish as well. Cooperation is essential both within the group and in relation to these other life forms. While we may not know each one of these people or life forms personally, we work together to survive, continuing with our offspring the same work of our deep time ancestors.

Our basic needs are the same, "hunting, feeding, and web repair," when you think of these loosely and applied to survival for the species human. Hunting generally refers to gathering, growing food, and purchasing food already grown. What has changed is how the food comes to us and how we work to obtain it. Feeding ourselves starts with food, and then broadens outward to include nurturance of family, community, spirit. Web repair may be applied to both our personal shelter and clothing and also broadened, taking into account all our physical communal connections after we leave the home: paths, trails, roadways, streets, sidewalks, highways, public spaces, landmarks, squares, gathering areas, and modes of transportation that assist us in moving our bodies along these spaces to other places. In general, our tasks within human life conceptually are more similar to that of communal spiders than different.

The major difference lies in how we weave the webs we live within. Spiders use silk produced in their lower abdomens and pulled outward with rear legs from spinnerets, weaving the web that helps to contain their existence. They attach this web to the ecological environment in the same way that we build houses within ecosystems. Instead of silk, we use thoughts, intentions, and language, when we begin to shape the physical environment we exist within. Like spiders from their spinnerets, we write earth's webbed

world from our hearts, from our guts, creating the reality we want, as well as the reality we think we see. Like spiders, we catch food with well-woven webs, and if we do not maintain them as well as their connections to the outer ecosystems, our ability to survive as a community weakens.

Many thinkers have noted the development of language on the species human, and most believe its influence to be highly significant. Capra writes, in *The Web of Life*, "Human societies are a special case because of the crucial role of language, which Maturana has identified as the critical phenomenon in the development of human consciousness and culture. While the cohesion of social insects is based on the exchange of chemicals between the individuals, the social unity of human societies is based on the exchange of language. ...The components of an organism exist for the organism's functioning, but human social systems exist also for their components, the individual human beings. Thus, in the words of Maturana and Varela: "The organism restricts the individual creativity of its component entities, as these unities exist for that organism. The human social system amplifies the individual creativity of its components, as that system exists for these components. ...Organisms and human societies are therefore very different types of living systems" (Capra 1996: 211). According to this statement, as a whole the human social system should strengthen individual creativity. This requires a shift in the system's organization, one that prioritizes *both-and* relational principles. Instead of an either/or pulling between individual life and communal life, the organization of our communities should fundamentally sustain the creative energies of the individual. If our communities do not serve this purpose, than they must be re-webbed for whole pattern sustainability.

Gregory Bateson questioned the "differences that make a difference" to our social webbing, and wondered how we select information that will help the species human to become aware of and then shape our environments. He states, "Of this infinitude [of units], we select a very limited number which become information. In fact, what we mean by information—the elementary unit of information—is a difference which makes a difference" (Bateson 2000: 459). You could say that a difference that makes a difference

is a distinction within reality (physical, mental, emotional, spiritual) that creates space for an opportunity of otherness. Since ecosystems function interdependently, differences that make a difference are made obvious when one part of the whole shifts or is shifted, shifting the pattern as a whole towards another way of functioning. This leads us to the idea found in chaos theory that killing a butterfly in one part of the world will change the course of a hurricane on the other side of the planet. Differences that make a difference mean distinctions that allow spaces for change to be apparent. Our task in the moment is to be aware, to be conscious of these spaces of possibility because they are also the spaces for choice and change to occur.

Capra states that organisms, such as the spider community, are very different from human societies. The two are different types of living systems, it's true. In a sense though, because they are both living systems, they will both exhibit the main principles of how living systems function in their environment. Like the spiders we exist as a whole, and this similarity is the difference that makes a difference—as a whole system we are implicitly bound to our environment. Properties of the whole system will emerge in both the individuals and in their communities. These emergent properties form, contain, and reflect the gestalt of the overall system. In Bateson's words, "the mental characteristics of a system are immanent, not in some part, but in the system as a whole" (qtd. in Bowers 1995: 33). As a whole, *how* our social systems unfold reflects the gestalt of our environment's whole. Let us understand the basic principles of living systems, so that we may learn the rules of whole and healthy patterns, and develop metaphors that support the health of the whole.

Systems Theory

Life does not exist in a vacuum; living things do not exist alone. In fact, where life exists there are always complex systems of interrelating forces. Even in the simplest forms of life there exist complex processes. In the words of Henry Stapp: "An elementary particle is not an independently existing unanalyzable entity. It is, in essence, a set of relationships that reach outward to other things" (Capra 1996: 31). In

this statement we are told that no life is un-examinable, untouchable. Because life is primarily nested in a multitude of relationships, we may recognize it by its deepest tendencies.

Physicist Fritjof Capra writes about ecological complexity and living systems. In his work, *The Web of Life*, he describes the fundamental aspects of living systems that appear in even simple membrane-bounded cellular bubbles: "The vesicles are open systems, subject to continual flows of energy and matter, while their interiors are relatively closed places in which networks of chemical reactions are likely to develop. We can recognize these two properties as the roots of living networks and their dissipative structures" (Capra 1996: 32). From this we learn that life consists of a dissipative network of processes and patterns. The network acts non-linearly, a difficult thing to describe in words or mathematics. This stumped scientists for years before complex equations describing non-linear dynamics were developed.

Within any living system a few simple rules consistently apply. These may vary in how they are grouped and described, but basically they are as follows:

1. A living system is materially and energetically open; it needs to take in food and excrete waste to stay alive.
2. It operates far from equilibrium; there is a continual flow of energy and matter through the system.
3. It is organizationally closed, a metabolic network bounded by a membrane.
4. It is self-generating, self-maintaining, self-renewing; each component helps to transform and replace other components.
5. Dynamic systems under pressure are capable of very creative forms of self-transcendence in order to maintain the limits of their patterned form.

These principles shape all systems that exhibit life. While individually these rules are important, in this case looking at the five rules together will be more helpful for our discussion. In the case of life, it is the whole of the pattern that creates the parts. In living systems the whole connotes a fundamental pattern around which the organism may continually reorganize. Without the whole, the parts dissolve and reconfigure into something other than the original.

The irreducible nature of the whole and the assertion that the whole is greater than the sum of its parts, or a pattern's *gestalt*, was first named such by philosopher Christian

von Ehrenfels. This occurred just after quantum physics shifted from classical Cartesian mechanism to quantum mechanics in the 1920s. After three centuries of the Cartesian paradigm, Capra describes how the new physics radically shifted the nature of reality, with events having tendencies toward certain outcomes. He writes, "probabilities are determined by the dynamics of the whole system. Whereas in classical mechanics the properties and behavior of the parts determine those of the whole, the situation is reversed in quantum mechanics: it is the whole that determines the behavior of the parts" (Capra 1996: 31). Conceptually this shift is profound, and it significantly impacted developments in organismic biology, physics, and later literature and other fields.

The conceptual shifts in biology led to further understandings about complex systems. Where complexity studies have traditionally focused on structural analysis of complex structures, lately research has been directed towards the processes by which these structures self-maintain and emerge towards new levels of complexity and order. Studying processes creates a new way of understanding living systems, for it entails a consideration of flux and change as other scientific research has often avoided. As the mathematics of complexity has become more adept at modeling highly complex, non-linear dynamics, research has shifted to include more complex questions.

Metaphorically, the theory of living systems affects the way we lead our lives. Systems thinking starts with a whole, cannot be reduced into parts, and maintains a pattern through material flows. Cartesian thinking breaks down the whole to try to better understand its parts, but when reassembled these parts often do not add up to the original whole. Significant differences may be found between structures and patterns, which are self-organizing and self-maintaining. Patterns of the whole will re-emerge in the interactions and relationships, while the materials configuring the structure will change and shift drastically through time. Heisenburg, whose work in physics deeply impacted this paradigmatic shift, entitled his scientific autobiography *The Part and the Whole*, signifying how important he believed this conceptual revolution to be.

Heisenburg studied the impacts that observation had on the outcome of particle movement in physics. What he found was remarkable, that observers change the outcome

of experiments on the paths of particles. When one attempts to chart the path of a particle, this path will be affected in certain ways. This also led to the discovery that waves, when observed, would collapse into particle form, meaning that our observation fundamentally affects the way our environments are shaped.

Further research into these matters led to the development of the Santiago theory, which looks at consciousness itself as the tool by which we both observe and create the world. As a living organism, our structure both allows and prompts us to notice our environment in certain ways, reinforcing some aspects of our surroundings and decreasing the power and impact of other aspects. Far from reflecting the abstract world in reality, we bring forth a world based on our navigation techniques and perceptions. In this case our process of living creates both our bodily structure and our perception of the material world. This perception in turn changes the way we interact with our re-perceived and re-organized environment. Working as a whole, our process forms our structure and our perceptions of structure then affect our process. Cognition describes our "process."

Cognitive science explores the nature of consciousness and the role of perception in creating a world. Cognition includes all of what the species human defines as living our lives, what we perceive, our emotions, and all of our behavior. Researchers Francisco Varela and Humberto Maturana believe cognition to be the creative force that we use to regenerate and maintain our environment, and that "understanding it as a process that involves neither a transfer of information nor mental representations of an outside world requires a radical expansion of our scientific and philosophical frameworks" (Capra 1996: 286). As a species, we are on the edge of a new paradigm as we come to understand our experiences to be self-created and maintained.

Systems thinking supports this model, rejecting the idea of the mentally represented, independent world, and that we can glean certain pieces of information about that outside world by observing it "objectively". In the Santiago model of cognition, neither representation nor information helps us to know, leaving the "information age" empty of meaning. Our process of cognition becomes the most important way we create our experiences and environment. Varela and Maturana maintain that, "there are no

objectively existing structures; there is no pregiven territory of which we can make a map—the map making itself brings forth the features of the territory" (Capra 1996: 271). We exist our world, we embody it and see it unfold around us. Our consciousness contains the complex processes with which we engage and maintain Earth.

Landscape architect Robert Melnick notes the importance of our role in creating and perpetuating complexity in our living environment. He reminds us that, "We are engaged in a complex relationship with the landscape, which includes the intricacies of nature and culture as they are played out within that relationship and the manner in which we describe these places" (Melnick 2000: 27). Without complexity we relegate nature and therefore ourselves to a limited existence in which growth is scarce and creative opportunities for new emergence are limited. We need to release the tight hold we like to think we maintain on the world around us, and re-member ourselves to the creative possibilities within complex dynamics. When more variables play into the questions, answers unfold in ways we could never imagine.

Over-simplifying our environments has become one of the most dangerous effects of the industrial era and the technological way we organize our worlds. In order to maintain complexity we need to ask questions in a way that engages not parts of our existence, but healthy wholes. "When we have simplified the question, it may have become, minus its many qualifications, a different question. The gestalt configures the question, and the same question reconfigured can be different" (Rolston 2003: 451). We must balance, as Holmes Rolston III declares, "a love for persons with a love for nature", at times loving nature before we love persons (Rolston 2003: 460). In this way we will ask questions that support Earth with processes we may not even understand engaging, allowing Earth to maintain the complexity of its living systems without us getting in the way.

This leads us back to the principles of living organisms, one of which is that living systems exist out of equilibrium. While out of equilibrium, living systems continue to autopoiesis, or self-regeneration of the organism's material components. In the 1960s chemist Ilya Prigogine discovered that living systems tend to exist far from equilibrium,

in a state of constant material flux (Prigogine and Stengers 1984). This non-linear pattern of change actually enables organisms to maintain stability within flow. Prigogine's theory of dissipative structures leads to another of the principles of living systems: emergence.

It appears that systems which exist in disequilibrium, at the edge of what physicists call chaos, seem to be well-equipped and always ready for creative forms of emergence, or what science calls "bifurcation theory". Biologist Stuart Kauffman studies emergence in genetic networking and for cell differentiation (Kauffman 1995). He postulates that near states of chaos may actually be beneficial to the natural selection of living organisms. Because the pressure of energy flow and material instability is much higher near the boundaries of chaos, while the rules of self-maintenance, self-organization, and self-transcendence still apply, these organisms may be able to most rapidly express flexible and coordinated complex behaviors. Behavior accessing complexity and flexibility gives living organisms the best chance for long term adaptation through the process of natural selection.

Biological research reminds us that structure of living organisms emerges out of complexity. Nonlinear dynamics describe the process of emergence, which fundamentally is encoded in the epigenetic network of the organism. As a system maintains itself, it does so within the physical constraints of its environment. The pattern of emergence lies outside the realm of the genes though, "The genes do not provide a blueprint for biological forms. They provide the initial conditions that determine which kind of dynamics—or, mathematically, which kind of attractors—will appear in a given species. In this way genes stabilize the emergence of biological form" (Capra 2002: 28). The epigenetic network provides the initial conditions, along with the physical constraints of an organism's environment. From this stabilized space, creative emergence may occur. By understanding and embodying the principles of systems theory, we will begin to apply these rules to how we manifest and organize our environments.

The Mystery Ride

It's seven-thirty on a hot evening in July. Thirty-six bicyclists lay in various positions of recline in the center of a roundabout in Portland, Oregon, surrounded by rosebushes and rhododendrons and the golden summer sunshine of the Willamette Valley. The mood is quietly festive, with the cyclists gathered in small groups of friends or alone. There is conversation and some mixing but for the most part the riders merely relax and wait.

Suddenly a loud air horn is heard in the distance, followed by cracks, whistles, and whooping sounds. Ears perk up and the bicyclists come to a mellow attention about the approaching sounds. A small group of bikers appear at the edge of the neighborhood's horizon, coming quickly and loudly down the street, dressed in costumes with large sombreros on their heads. Whooping and yelling they skid to a halt around the roundabout and announce that the Mystery Ride has begun.

Those gathered on the green public space get up and prepare to ride with the large-hatted leaders, securing their pant-legs, fastening their gloves and lights, and clipping on their helmets. They don't know where exactly they are preparing to go, but they know that they will end up somewhere to watch some movie (powered by standing-bikes attached to a generator). The point of the evening is that they will bike together, the rest of the evening is the magical part of the Mystery Ride, as it's been named.

As they begin their ride they are joined by others, encouraged by pedestrians and even by some drivers, and about halfway through they meet up with the Mystery Riders from the other side of town and form a mass of several hundred. Like the Critical Mass events that began in San Francisco in 1992, this evening's ride is a political statement as well as a festive and free public gathering. Many of the participants are familiar with Critical Mass rides and with what it feels like to be a bicyclist in the automobile age.

Bicyclists in urban areas are well aware of the dangers of riding side by side with thousands of pounds of moving metal, oil, gasoline, plastics, transmission fluids, and glass. Bikers deal with this relationship in a variety of ways that include legal signaling, carefully staying to the right hand side of the road, and wearing proper helmets, lights, and reflective clothing. Many cyclists don't follow these standards though, and often

scare drivers with their subtle unlit presence on streets in the evening, coming off sidewalks unannounced, or streaking through yellow lights. When people who ride bicycles want the same respect on the streets as cars, their actions as political vehicles make a difference in how they are regarded. Acting in a fairly predictable manner allows drivers and pedestrians to trust their movements on the streets, and this type of action is desirable when looking at overall collective action.

Collective action within communities creates larger potential for social change than individual action. While the modern "I" has been revered since civilization provided some individuals with the opportunity to survive while living a fairly controlled and socially isolated lifestyle, most of the species human lives, works, and plays collectively, in communities and within social networks. When change begins, it usually spreads through those social networks like vibrations through a communally woven spider web. Those aware of the web, feel the changes in its vibrations, and respond to those changes accordingly.

For humans, the web is a complex and dynamic set of variables that include social and ecological components, among others. Based on our understanding of self-manifestation and creative emergence, our webs provide us multiple daily opportunities to create changes. Amitai Etzioni, in his article, "Creating Good Communities and Good Societies" provides us with a helpful definition of community: "Community is a combination of two elements: A) A web of affect-laden relationships among a group of individuals, relationships that often crisscross and reinforce one another (rather than merely one-on-one or chainlike individual relationships). B) A measure of commitment to a set of shared values, norms, and meanings, and a shared history and identity—in short, to a particular culture" (Etzioni 1996: 127). Culturally we exist in communities, and our cultures provide the initial conditions from which we make daily and fundamental decisions. While these initial conditions increase and decrease probabilities for certain outcomes, the potential for change occurs where there is more awareness about whole systems, and increased awareness occurs near the edges of stable society.

Collective Action and Social Change

Perhaps you've heard the "Hundredth Monkey" story, in which monkeys on an isolated island in the ocean slowly learn to wash the sand off their fruit. After about a hundred monkeys learn to wash their fruit, the monkeys on another isolated island in the ocean suddenly begin washing the sand of their fruit as well, and the "social change" spreads. Whether this story is true or not, there has been some correlation around the globe of cultures making certain leaps in technology or in religious organization historically at similar moments. Chaos theory has also found that what seems like insignificant happenings locally sometimes cause larger than "normal" changes in distant locations. Concerning environmental choices in Western society, stories like these are what some researchers cite in hopes that our society will make significant and necessary changes quickly. Collective action pertains to social change directly in that without large numbers collectively making radical (rootful) differences in material choices, our society will continue to function reinforcing socially choices that are materially destructive.

How do we realistically encourage changes like releasing our addiction to oil, scaling our lives back into the realm that we our bodies understand and can maneuver ourselves about energetically? In *Changing Cultural Practices*, Anthony Biglan explores questions like these in depth. He found that individual behavior can be influenced most effectively with appropriate reinforcing or aversive events and consequences for their actions within different scales of certain life-choices. He also believes that changing the behavior of individuals will have a positive impact on spreading that change through wider human society. He lays out the following strategies for positively effecting change, "We can change the cost/benefit of a targeted behavior through one or more of the following strategies: (a) increasing reinforcement for the targeted behavior; (b) decreasing aversive consequences for the targeted behavior; (c) decreasing reinforcement for competing behaviors; (d) increasing aversive consequences for competing behaviors" (Biglan 1995: 137). When we apply one or more of these approaches to the wider issue in which we want to create changes, we will have the potential for greater impacts in different scales of society, from the individual to the community to the state.

The Critical Mass rides have shown agents of community action that effective social change is mobilized on many different levels of participation. Mobilization takes the form of individuals embodying the basic principles of their idea of Critical Mass rides, which as we have seen, are diverse. Many participants, many scales of enactment, "Critical Mass' function as an embodiment of alternative transportation, is simultaneously local, regional, and global" (Blickstein and Hanson 2001: 350). This multileveled approach to community organization "...creates new communities and weaves networks of activists that span geographic scales" (Blickstein and Hanson 2001: 361), strengthening a diversity of movements all aimed in part at sustainable survival.

Because Mass organizers leave space for diversity in the creation of rides (where, when, how, what for, who), Critical Mass has been effective on multiples scales, all "aimed at shaping both beliefs and perceptions of problems as well as the material practices what will help to construct a sustainable future" (Blickstein and Hanson 2001: 348). With the gestalt of environmental sustainability, the material flow that supports this pattern will organize itself differently on every ride. According to the principles of living systems, the pattern creates the outcome, and the material structure will change each time the pattern's event is enacted. Were organizers to control exactly how the rides took place, the movement would be disconnected from the energetic reality of a living system. Initiators of Critical Mass rides create inclusiveness and stimulate creativity by their lack of an exclusive definition for what the rides offer.

The "mystery ride" described here is similar to hundreds of similar occurrences that have begun to occur internationally over the last eleven years. In the post-modern age of the automobile, individuals have begun to get out of their cars and back onto the streets in community. The Western species human has begun to wake up to its isolated predicament of oil addiction and embodied imprisonment and has gotten creative about how to deal with the situation. In the example above, some people have begun to act subtly but politically in the face of monied consumerism, and radically remind their city streets of their original heritage—spaces of connective community.

The bicycle is the perfect metaphorical and literal vehicle for their action—an inexpensive, durable, body-powered people mover that "behaves" like a horse in the way it allows for people to relate and move across the landscape together. It requires no "oil", not even for the bike chain, although most people do oil their bike chains with some form of the stuff. Its tires, which are still rubber, and toxic to make and to dispose of, at least can be made to last a very long time. It gives off little waste, except what the humans themselves excrete. Bicycles are, for the end of the postmodern age, the perfect mode of transportation in that they provide riders with an embodied experience of relativity.

Relativity Embodied

When the air crosses you from deep places by the river it smells muskily alive, holding the awareness of small creatures living in its mudded banks, in the roots of its riparian communities, in the rich waters that flow within the curved bottom of its bed. Your hands hold two round metal bars, your feet are placed carefully on pedals, you are illuminated by white light in the front and red in the rear. As you move along city streets near the river you make no sound except for breathing that is slightly heavier than when your body is at rest. You are riding on your bicycle at speeds faster than walking, rolling through the evening, with the air, as the air. You are fully and sensually connected.

You remember when you first felt the ground moving under the wheels of a bicycle, suddenly quicker than you'd ever understood motion to occur around you, somehow also through you. Directly connected to the ground under your body, the seat of a bike is in turn directly connected to the feel of the ground under the wheels. Bumpy or smooth you register the turf in the pads of your feet and on your seat. The muscles of your legs also register the surface, how level it is, the steepness of its curve, uphill or down, how hard your heart muscle has to pump to keep your legs occupied with sugars from your blood circulating. You are reminded with every breath, with every pump of your heart, with the temperature of the air, and with the smell of the river that you are very much alive as you ride through the streets on your bicycle.

This feeling may be part of what motivates bikers onto the streets every day, to travel to work or to meet friends across town. Sometimes bicyclists meet with aggression from drivers of automobiles, trucks, or buses, sometimes they meet difficult weather or road conditions—slippery, cold, wet, or steep. Perhaps they have to face the darkness of early winter days, or the similar deepness of winter nights with only the small bright lights and their foam helmets to make them visible to the other sharers of the roads. Bicycling often challenges its participants with the very nature of its process—seasons, weathers, social and political conditions—so bikers must have something deeply compelling that keeps them in their bodies, on their bikes, and on the streets. This drive, which is not the drive of a car driver, comes from experiences shared with the environment. For those who bike this becomes year after year of shared understandings. These include what it feels like to be alone on a road in the quiet of an early morning, in the rush of heavy traffic or going at faster speeds, and the feel of the motions of your body in relation with the motions of the bicycle along with the movement of the surrounding world as well. Bicyclists don't often discuss personal experiences such as these, but their experiences may motivate them towards actions such as participation in Critical Mass rides.

Critical Mass

In September of 1992 in San Francisco a group of people began what they've called, "foremost, a celebration...a way to bring various populations together in a festive reclaiming of public space" (Carlsson et al 1994: intro). The name "Critical Mass" describes a phenomenon that a few cyclists noticed while watching a film about China: bicycle riders would collect at an intersection, waiting until they had gained a mass large enough to then take the street and make other vehicles wait until they crossed. Their "critical mass" was the body of bikers that allowed the redistribution of energy in that intersection to include the "less powerful" mode of transportation, even momentarily shifting the balance of ways of traveling. In the U.S. cyclists began with that idea and began what was first called the "Commuter Clot," wherein the last Friday of each month

bicycle commuters would meet at a public square and ride through the city's streets together, en masse, taking the intersections as a group. The monthly "celebrations" caught on, and then spread nationally and internationally, so that now they occur on a large scale worldwide.

Cycling in a group feels very different, especially in an urban environment, on busy city streets. While bikers are always vulnerable, in the city they feel especially exposed to the amount of traffic, pollution, and noise of many people concentrated into a small amount of space. Larger numbers of cyclists in a group alleviate the sense of vulnerability, and provide the safety of more visibility on the streets, if nothing else. When the rides started they attracted small groups, 50-100 people. Later they grew, gathering momentum, metaphorically coming closer to a city-wide critical mass of cyclists. In cities all over the Earth bicyclers gather regularly to remember that they don't ride alone, and to remind drivers that they don't "own the road" uniquely. Critical Mass rides occur infrequently enough to surprise most people seeing the group of cyclists in the streets, and to act as a positive reminder of other-than-car ways of being, modes of transportation. The ride makes people participate in the event of it, whether they are watching or cycling, and this engagement creates the significance of each of the rides.

Critical Mass has been self-named by the group that conceived of it, as both "a large-scale, decentralized grassroots movement," and an "organized coincidence" (Carlsson et al 1994: intro). The pattern of the idea has never been about individuals who thought of it, always about the gestalt of the ride as its own living organism. This calls forth the principles of living systems that we explored in chapter one, including material and energetic openness, disequilibrium, organizational closure, self-organization, self-maintenance and self-generation. A living system continually changes its material composition and maintains its fundamental organizational pattern. If we consider the Critical Mass ride to have a foundational gestalt and to be a complex organism, we could apply the rules of living systems to its makeup. Because of its decentralization and lack of organizational leadership, when Critical Mass rides form, they are materially diverse, autopoietic, and spontaneously creative.

The founders of Critical Mass seek to preserve the creative flexibility of the ride, and every member has a different take on how that is to be done. One flier from an East Bay Critical Mass ride in November of 1993 states, "Critical Mass is, or should be, something different...A space where people do not have ideas or actions imposed on them, where people can take an active, rather than a passive role in building a livable future, in however small a way." Further, mass participants should be self-created within the collective ride, "Because no one is in charge on our monthly ride, and no specific ideology is set forth, participants are free to invent their own reasons for being here." The root of the ride is, "to build community [in diversity] and offer an alternative" (D'Andrade 1993: critique), in this case, an alternative world to that of pure competition, consumption and capitalism. In a sense, the ride emerges from the variables present at the time of its organization. Different people mass each time, ride different routes through different traffic and weather patterns, feel and participate differently during each moment of a particular ride. There are no fixed rules, only a gestalt held in common among participants, leaving room for the creative emergence of each ride.

The power of the ride lies with its participants, a present day resolution to the ongoing revolution of "other" empowered societies. Large societies carry with them the natural tendency of power being drawn by stronger or more insistent figures in the group from those with less directed or more gently oriented members. Within the critical mass rides, because riders have the opportunity to come with a self-set mission for the ride, some conflict often emerges concerning the overall reason for riding together. While the original bunch maintains that the ride is, centrally, a celebration, many riders attend with the agenda of societal change. Perhaps like a parade, there occur groups within the group of folks more or less interested in political statement.

One could say the main reason for participating in a critical mass bike ride is that you ride a bike. Without a bicycle, or sitting in a bike trailer, it is pretty difficult to be physically in the spirit of the gathering. Cars and pedestrians often cheer the bikers on, perhaps having been part of a ride at one point themselves, or maybe just enjoying the unique sight of a large group of cyclists, and this is participation in a sense, but in a

different sense than riding. Chris Carlsson, one of the original ideologers of the ride, describes other common reasons for participating. "Those of us who reject the 'deal' foisted upon us by corporate America and seek autonomy are increasingly turning to bicycling. ...At this point, bicycling is still a legal act, but make no mistake, it is a major threat to the larger dynamics of class exploitation that lie at the core of transportation politics in the United States (and in most of the world, for that matter). By bicycling the individual greatly reduces their personal cost of living—it also reduces the extent to which one continues to voluntarily participate in the hyper-exploitation of the transit system, which steadily transfers wealth from the bottom to the few hands at the top. Incidental benefits accrue as well: personal autonomy, solidarity, face-to-face experiences that promote convivial communication, better health" (Carlsson et al 1997: BART). In our case, the "incidental" reasons are perhaps the most deeply embodied reasons for riding. These constitute the daily meanings that move bikers when the mass ride has ended. Bikers participate, and their reasons for participating create the meaning of the ride.

Meaning is created from the collaboration of creative energies. Fritjof Capra describes emergence and meaning making in his article "Complexity and Life," "This spontaneous emergence of order at critical points of instability, often simply referred to as "emergence," is one of the most important concepts of the new understanding of life. Emergence is one of the hallmarks of life. It has been recognized as the dynamic origin of development, learning, and evolution. In other words, creativity—the generation of new forms—is an integral part of the dynamics of open systems, this means that open systems develop and evolve. Life constantly reaches out into novelty" (Capra 2002: 25). When systems do not reach out creatively, they slow their growth and reflect more signs of entropy. Systems that are alive evolve by emerging and re-emerging creatively *with* their environments, not *from*, and not *in spite of* their environments.

This leads to another point that needs clarification—that living organisms, the systems that we are describing here—are nonlinear, not describable by linear equations, not able to be fixed and reapplied in other environments. Nonlinear systems are

environment dependent (each variable part of the "equation" of process) and unique in both time and space. Rifts in the system's process provide opportunities for new combinations of variables, and configurations of the system in ways unavailable before the rift. When the rift is large, for instance Marx's description of the deep metabolic rift between humans and the soil (Foster 2000), loss on many levels will arise in the space created by that rift.

Like a treefall gap in the forest, where sunlight comes in new seeds have a better chance of rooting. Where there is room for life to emerge creatively, it will. The issue for humans is that our embodied time scale is short compared with how long new life takes to emerge. We get only 75 years or so to notice the world around us. The world is large and our bodies are small. This brings us to the heart of our embodied scale.

Participation as Webbing

When we participate as embodied creatures we are actively engaged in a co-creative process with our entire environment, a complex system that our brains can not linearly analyze but that our bodyminds have evolved within. As a whole system, indistinguishable from our environments, our bodyminds understand moving in relation, in connection with, a processing of ongoing and timeless both-and. This ever present, seemingly uncontrollable integrative and integrated space involves our bodyminds. Technology addresses and engages parts of our selves, but only the *entire* environment engages our wholeness. Participation in a Critical Mass ride reminds both the cyclists and their environment that wholeness is the reality we exist within.

Participation engages the self, the whole bodymind, in a connection with the wider community. This, of course, involves making choices clarifying an individual's particular needs and desires for action within that community. In the study entitled *The Critical Mass in Collective Action*, the authors describe the outcome of their research on collective action. "For each individual member, the group and its needs are usually only part of his life. He has a broader array of interests that he is attempting to realize through his activities" (Marwell and Oliver 1993: 5). Participating in collective action does not

necessitate that individuals will be motivated by rational motives towards a decision that is obviously self-interested. In fact, studies point to other motives such as solidarity and altruism as being important for choices that support collective action.

Within a community we both influence and are influenced, we create our cultural community and we are created by it. In *The Legal Geographies Reader*, Richard T. Ford describes the role and function of cultural community and asserts that it has "autonomy in that it can exert influence over individual members, construct morality, values, desires, and provide an epistemological framework for its members" (Ford 2001: 101). In the U.S. cultural identities are numerous, and cultural communities function to provide members with personal identity in ways that sometimes are challenging to verbalize.

While the debate between rational self-interested choices and altruistic collective action choices has gone on for centuries, looking at the physical reality of the ecological community shows that no one can in fact make a completely self-interested choice. Within a community we are neither only an individual, nor are we merely an aspect without internal self-identity. Therein exists a relational psychological model of *both-and*. Starting from this relational model allows the whole system greater strength and flexibility because it recognizes greater complexity and creativity in its participants. As creative individuals in multiple complex living and social systems, we contain far more potential for sustainable alternatives in our communities than we usually recognize.

One possible alternative that sustainable reflects the complex patterns of the whole involves the subjective interests of the community's individual. When we make "individual" choices, we implicate ourselves in the larger nexus of events that is us. In their research Marwell and Oliver have looked at the importance of personal interest, referred to as subjective interest in the community. They write, "It is our impression that the major predictors of participation are the level of subjective interest in the collective good, solidary ties to other collective actors, and personal satisfaction or moral rectitude from feeling that one is accomplishing good. These subjective factors are actually consistent with the microeconomic approach, which always contains subjective preferences in its equations" (Marwell and Oliver 1993: 7). A microeconomic approach

often fosters economic diversity and steadiness as well, and reflects patterns of non-linear dynamics. Non-linear dynamic systems would certainly bear light on the investigations of both individual and collective actions, as well as communal paradigm shifts, because of the interdependent nature of communities.

If we define interdependence as, "behavior that takes account of one's participation in collective action or the participation of others," and assuming interdependence among communal groups, taking interdependent action seriously makes sense to social scientists involved in the study of complex communal systems and resource sharing. According to their work in collective action studies, what Marwell and Oliver call "large contributors" play a crucial role in the generation and movement of large scale community changes. Large contributors are defined as "those who are highly interested and highly resourceful" and who vary their active roles in the action itself, sometimes generating support, sometimes contributing "collective good," and sometimes mobilizing the group to act towards change.

Mobilized Mass

Mobilization begins when a large enough percentage of any given population forms, termed a "critical mass." With critical mass, paradigmatic or larger scale change has the opportunity to occur. Within any critical mass formation, many questions of organization could apply. Looking at critical mass changes as a whole, a consideration of social networks within that critical mass will be helpful as we pursue the larger question of how to generate embodied environmental paradigm shifts.

How are large-scale environmental paradigm shifts generated? Social scientists have proposed a number of helpful possibilities when it comes to questions of collective action. Malcolm Gladwell, author of *The Tipping Point*, calls the energetic mobilization of change generating a "social epidemic." With a large enough percentage of the given population, changes of epidemic-like proportions will sweep through the entire population, affecting many deeply, and some less so. In order to create a large-scale movement, paradoxically you must create any number of smaller movements.

How are these initiated? In our "modern" society, these begin with changes within the individual. As we've been discussing, the changes begin within the embodied self.

When embodied individuals make decisions that honor their deepest values, and communicate their choices clearly to those whom they are most connected with, their trust groups absorb those changes and reflect them even more widely to larger culture. What does a "trust group" look like? According to Gladwell, individuals will most often consider 10-15 people closest to them as being trustworthy and sympathetic to their deeper growth. This small number Gladwell calls a "sympathy group," and generally includes family and one's closest friends. Sympathy groups are the smallest social unit within larger communities and from them most collective actions are generated.

After sympathy groups, the importance of the size of community groups generally has been questionable. Studies in social dynamics reflect that group size does indeed influence collective action. One example has been proven historically over the last 800 years, in the Hutterite religious communities. Nearly since the inception of the Hutterites, its religious leaders have ruled that upon reaching 150 members of a community, that group had to split into two and basically form a new "tribe." The reasons for this split were substantiated by religious beliefs, but the sociopolitical significance has proven itself not only over time for the Hutterites, but more recently in research.

Clinical psychologists have been working on the question of physical brain structure in relation to amount of social networking done in mammals, and while conclusive evidence has not been reached, the reigning hypothesis goes as follows. The larger the thickness of the cerebral cortex, the more likely the species is to live in socially dense networks and form complex cultural rituals. Similar to our other shared genes, brains of the species human are most similar in this case to certain types of chimpanzees, who also form larger social groups and act collectively at times.

Whether our brain shape determines anything, we have learned that the size of our social groups makes a difference in how change takes effect and spreads through a larger population, and smaller groups seem to make a big difference in the cohesion of the social network in a community. Empirical accounts of social movements and movement

organizations show again and again that relatively small numbers of extremely active group participants generate widespread changes over the larger community. Thinking of communities as a whole, trust is co-created between individuals, bound through interwoven sympathy groups, and essentially webs the entire planet. From people to domesticated pets and plants, to wild species and landscapes on the larger level, the trust generated at the smallest scale weaves the stories of the wholeness of the world.

The more we understand the complexity and wholeness of the systems we exist within, the more we will weave appropriate stories to maintain interdependent communities. The author of *Counting for Nothing*, Marilyn Waring discusses the importance of action in many realms. She describes the potential positive role of information, "If information empowers, and if power is the capacity to act…" then the "information age" potentially offers empowerment to the majority of those connected to the diversity of information flows. Waring affirms, "The capacity to act takes many forms, and the options available are limited only by our fear, our lack of imagination, or a belief that specific "politically correct" strategies must be followed. While there exists a capacity to act, there is the possibility of change" (Waring 1999: 256). Considering that information exists within our cognitive systems, we have the ability to negotiate all sorts of responses to our perception of it, as we relate to communities of action. Therefore, before you rule yourself out of an action group, consider the diversity of ways your action might be negotiated.

Generally there are always a small number of highly active participants in social and cultural change, with wider-scale change occurring after these few have affected many. Social epidemics are created by transmission of the change desired by those active few. After the generation of paradigmatic desire by the highly active, there are many roles that people fill in the spread of epidemic proportions. For instance, originating the paradigm shifts calls for people who connect others within the community; people who work to gather information about the change, notice how it occurs and communicate what it's good for; and people who work on the outskirts of the community, essentially promoting the change to other groups. Malcolm Gladwell termed these types of people connectors, mavens, and salespeople.

Next, larger social changes themselves have a shape created by a variety of participants acting at different times during the progression of an epidemic. These include, in general descriptors: innovators, early adopters, early and late groups within the majority, and laggards. Within each of these tag names are also people who act as social bridges or translators of the change at hand, communicating the change appropriately, generating cohesion in the group, and building momentum. Identifying yourself within a social network begins to look like taking a Myers/Briggs test, or some other multilayered personality test. Perhaps what is most important to remember in a social network is that at different times people play all sorts of roles, and having a general idea of the multiplicity of roles in any social epidemic will often be helpful for those interested in social change.

As any given movement gains its desired momentum and becomes "successful," others will attempt to clarify its means, flattening it and distorting it in order to apply its system elsewhere. Changes are systematically unique though, and while communicating the strengths of one social epidemic may be generally helpful in the creation of another, the essence of a movement is the only thing that in actuality may be passed along. Social epidemics are complex systems based within human networks, and the embodiment of their core values emerges as a gestalt, not something able to be easily or clearly communicated. Social epidemics are context created and tailored to the needs of the group's participants, they are inherently impossible to replicate directly, they are a complex webbed system in nature, with their own nature.

This is where the idea of a good story comes in once again. Gestalts are best captured by stories that embody an appropriate metaphor or two about the topic to be communicated. In the business world advertisers and marketers know it as well as powerful ministers and orators knew it in history. Storytellers working today also know that a good story includes a multiplicity of characters but one that gives them each special roles, unique talents, and important tasks to fulfill in the creation of social change. If we look at stories that stand the test of time we begin to see that Indigenous creation stories, the Bible with all its books, German fairy tales, Greek and Roman myths, and even early

American (United States) children's nursery rhymes have many of these things in common that have made them "good stories." The most basic strength of a good story comes down to the diversity of its interdependent processes.

In our case, we must come up with a good story to make people feel empowered within their own social networks. This paper attempts to remind us that within the "global village" we continue to be functional in reality only when we remember our original scale, our smallest scale: our bodies. By using our body as the nexus of choice, we are potentially more able to practice consciousness and health when it comes to all our decisions. Environmentally this awareness is fundamental to any social or cultural shift in paradigm at this smallest scale. Without our bodies on board, no actual shift will ever be manifest in society, and in the meantime virtual reality will continue to hold our attention. By looking at stories that assume reconnection of the human body with Earth's body, we begin the process of re-patterning our minds to the place of relational being. By reconnecting, we reassert our place within Earth's metabolism.

Embodied Metabolism

For our purposes in this exercise, the "smallest scale" is that of the human body. We gauge ourselves relative to the world around us from the central location of our bodyminds. Every thought that runs through us runs through our physical being and is amplified outwards into non-physical reality. Living the embodied scale as part of the species human during this historical time means that we encompass all of the opportunities for both connectivity with the multipluralistic world as well as the disconnection stemming from cultural practices of disassociation and disembodiment. As we have seen, our participation webs the community with a space of creativity, a space where new forms of connection, health, and wholeness have the opportunity to emerge.

When we are able to move as a body of one in the world, *as* the Earth, we will have succeeded in reconnecting ourselves as a whole into the Earth's metabolic whole. While we continue to keep our species removed from the environment as a whole, pretending to control our connection with the Earth, looking at situations as spaces for the

potential of re-sourcing our bodies, we will deplete our life-energies over the long term. As we allow ourselves to be reabsorbed into the needs of the Earth's body, of which we fundamentally exist, we will heal the metabolic rift Marx described. This means, at heart, closing the loop of energy exchange by transmuting all of our waste production into a non-toxic, high frequency return to the air, water, and soils of the Earth's body.

"Sustainability" has been the buzz word for this sort of environmentally friendly feedback loop. An Austrian biologist "[Ludwig von] Bertalanffy correctly identified the characteristics of the steady state as those of the process of metabolism, which led him to postulate self-regulation as another key property of open systems" (Capra 1996: 49). Conceptually, metabolism had surfaced in biology in the 1800's, near the same time as the word "ecology." Originally used to describe the physical processes that lead to the self-regulation of energy in animals, metabolism later has been applied to larger living systems as an overall descriptor of its energy processes. As a species living within Earth's systems, our actions effect the metabolism of our whole ecosystem.

Interestingly, near the same historical time as the spread of the concepts of ecology, the gas powered automobile engine was invented by Nicholaus August Otto in 1876. The rise of the automobile as primary mode of personal transportation affected the metabolism of the Earth with the same force that agriculture did. In agriculture, healthy soil contains microbial life that allows plants to exist in balanced exchange with air, sunlight, water and nutrients. When we eat plants (or animals, who also eat plants), healthy soil also becomes the main feature of our bodies. As soil becomes degraded, plants either grow poorly or not at all, and the soil takes years to recover. Like energy from healthy soil, the energy from crude oil used for gas production exists within Earth. Where the industrial complex extensively mines this liquid energy from below the soil, Earth's metabolism on the surface is also disturbed.

By looking at the process of oil production and consumption as a metaphor we discover richness in knowledge of the Earth's metabolism. Its substance comes from layers of organisms pressed together and covered over, layers of death and time, pressed together and concentrated. Energetically this process produces power because it takes so

long to create itself. Like an athlete in human terms, oil is highly disciplined, highly trained and skilled in forming its being. It holds the wealth of its energy close and keeps it under pressure, as a runner waits coiled at the start of a race. When it is set into motion, like a world-class sprinter it releases the potential energy it worked so hard to built up and stash away for this moment of use. Flying through the finish line of its own uncoiling, it burns itself out and leaving a trail of waste in the air it passed through. Our automobiles engage in the same process as our athletes, and we've compared the two as "high-performance machines" more than once.

As we've replaced what could be called "real" time with the highly concentrated time of oil pumped through our "time machines" to help us *save* time and *spend our time wisely*, we've also neglected our deep time awareness and connection with the Earth's surface and depths. "As production and consumption expand at the centers of modern culture, natural resources and traditional practices are pushed to the margins. In the late twentieth century, the balance between centers and margins has become upset. The margins have grown thin and fragile; the centers have become bloated with consumption goods" (Borgmann 1992: 62). Deep time allows us to release the promptings of unconscious consumer hunger that's been created by U.S. culture, and to remember the balance we hold in deep time, or as some have termed it—circular time. Consumer hunger creates our cultural rift within Earth's metabolic processes by forgetting our responsibility to Earth's functions as a living system. The story of Gaia reminds us of Earth's metabolism.

Gaia Eats

Gaia theory refers to James Lovelock and Lynn Margulis's idea that the Earth as a whole is a single, living being. Lovelock suggests that "living" refers to a self-organizing system, one that maintains its fundamental pattern by taking in forms of energy, metabolizing this energy in some way, and releasing the energy in yet another form (Lovelock 1991). On the structural level materiality might change, but at the pattern level the organism maintains itself. Of living organisms, Fritjof Capra states that the pattern of

organization is always embedded in the organism's structure, and the link between pattern and structure lies in the process of continual embodiment" (Capra 1996: 160). The Gaia hypothesis is a scientific story that describes biochemical processes that occur on Earth. The theory proposes that overall there is some organizing principle to the combination of these processes that leads scientists to postulate that Earth itself as a whole planet is a living organism.

If so, Earth would manifest physically the patterns of organizing forces that other living systems function within. "Summarizing those three characteristics of self-organizing systems, we can say that self-organization is the spontaneous emergence of new structures and new forms of behavior in open systems far from equilibrium, characterized by internal feedback loops and described mathematically by nonlinear equations" (Capra 1996: 85). Lovelock and Margulis looked closely at Earth's feedback loops and found that in combination they do seem to maintain a larger whole. For instance, as we described earlier, soil bacteria live in all ecosystems, and when temperatures increase, these bacteria become more active. Because of their increased activity, plant life is able to remove carbon dioxide more rapidly from the atmosphere. This climactic effect cools Earth, which slows microbial activity and completes the cycle. Other large-scale feedback loops perform similar ecological actions.

Russian scientist Vernadsky discussed the planet's similarity to smaller scale living organisms (Vernadsky 1998). He researched how solar energy is collected and transmuted into chemical energy in systems he termed "biotransport systems." An example of these would be how spider webs collect protein and nutrients from insects caught in them and consumed by spiders, who then have the energy to weave silken webs of the protein from the insects. This biotransport system connects to each loop of connectivity that the insects carry. Biological energy is transported around the living system as a whole through the processes of feedback loops, or biotransport systems.

Biotransport systems act to balance the energy loads of the whole, which reflect sometimes enormous disequilibrium, another principle of living systems. Non-linear dynamics account for states far from equilibrium, and the parallel self-organization that

occurs in the living system. Ilya Prirogine studied systems that showed states of high thermal and chemical disequilibrium, and noticed that they still reflected order. As mathematics developed to investigate chaos theory and complexity, it allowed researchers to better understand the patterns that emerge from seeming disorder. The mathematics of complexity illustrates self-organization and energy exchange in living systems with the help of nonlinear dynamics.

Near the same time as innovations were being made in both biology and mathematics, neuroscience also developed its own theory of life's process. Named "autopoiesis" by Maturana and Varela, two neuroscientists from Chile, this theory holds self-generation as the main component of a living being (Maturana and Varela 1980). Autopoiesis describes the rules by which living systems generate and maintain their unique conditions, including the relations of their complex processes. They define their own boundaries within space and time as well as the material conditions necessary to perpetuate the patterns of their existence. These patterns form networks within which life remakes itself continually, relating to other living systems within the whole. In this case life is defined as a self-generating system, making nearly all of Earth's molecules part of its own giant self-made living organism.

This does not dictate that Earth must exhibit a sense of purpose, as some critics of the Gaia hypothesis have argued. Earth "behaves" as itself, as the whole of its processes of life. Lovelock suggested the importance of Earth's self-regulation as a tendency of other living systems, but this does not have to imply purposeful development. Like our misunderstanding of Darwin's theory of evolution, it would be easy to put teleological conditions on a story not originally told that way. Social Darwinism does not describe evolution in the way Darwin originally intended, nor does a teleological drive describe the Gaia hypothesis as a scientific theory.

Darwin's Choice

Darwin's theory of natural selection carefully avoids the suggestion of a teleological drive, and avoids proposing a technique for understanding what species will

evolve or how they would go about evolving. His theory of evolution describes only the living results of natural selection, which *never* evolve *towards* an end. "In the Darwinian view, evolution is operationally reduced to the result of 'natural selection' working on a population of replicating or reproducing entities showing heritable variation and competing for the same resource (a Malthusian population). Darwinism cannot address either the evolutionary origin of the replicating ordering it assumes or the directed nature of evolution as a whole. ... Darwinism cannot address or even recognize global evolution (in fact, denies it) because there is no population of competing Earth systems on which natural selection can act: the global Earth system is a population of one" (Swenson 1992: 131). As one system, Earth embodies the species human in its fundamentally whole pattern of unfolding. Planetary perspective such as this helps to frame deep or geologic time, but for making choices as individuals this perspective is overwhelming and paralyzing.

Since as individuals we operate from an embodied perspective, it is more empowering, and perhaps more realistic for our sensory system, to consider the multiple scales to which humans relate. In light of his research into nested systems, one systems thinker has found, "that the problem of the evolution or of the stability of an ecosystem cannot be considered from a global point of view only and that the interactions between the individual, population, and ecosystem levels must be taken into account. A change in each of these levels will have an impact on the other levels. The whole evolution is governed by these coupled evolutions" (Auger 1992: 184). Coupled evolutions of nested systems sounds strikingly similar to the *both-and*, relational paradigm.

Auger proposes a method that allows us to study complex and hierarchically organized systems that contain many elements. One of the biggest challenges in proposing helpful alternatives to large scale environmental issues comes from the complexity of the systems involved, and although as we've seen, actual mathematically observed "solutions" do not take into account every element involved in the problem, thinking of the issues as nested complex problems can help us understand what some of the problems actually mean within the situation of our individual bodies.

A method for understanding nested complex problems suggested by Auger proposes to consider the following illustration. Initially, the system's conditions are expressed by strong tendencies towards a steady state wherein one species described becomes extinct. If this species, nearing extinction, modifies its behavior just slightly it will significantly affect the parameters of the linear aspects of the system. It will also shift the dynamic and multidimensional aspects of the system, expressed by complex equations. The species then alters its trajectory and shows a tendency to coexist with other species in the system as a whole.

Using this example as a prescriptive story, we would like to suggest that small changes in average individual behaviors may strongly modify the stability and the structure of the whole ecosystem. By selecting new activities, a species that is becoming extinct, or some individuals of this species, may survive and reach equilibrium. This example is a typical case of what can be called an interaction between the individual and population levels. As a species, it provides humans with one illustration of how personal behavior may alter the whole system in ways that seem unprecedented.

As individuals from the species human, we are a living system. Living systems carry within their pattern an integrated whole that is irreducible to parts. The parts, when divided and reconnected, provide us with a different whole than the original. Organisms exhibit properties of their unique patterns, and added together create another living system on a much larger scale. Natural systems also are wholes with energy from multitudes of parts that cannot be dissected from this larger whole.

To review the principles of living systems: creativity acts as a catalyst in systems that are already able to organize, maintain, and renew their fundamental patterns. Living systems deal creatively with physical constraints in order to maintain their gestalt, while continuing to re-emerge structurally, materially, and chemically. The difference between the structure and the pattern is that the pattern manifests autopoiesis and will continue to re-emerge in interactions/experiences while structures will consistently shift based on the materials that become available. By understanding the pattern we will be able to design for that pattern without worrying too much about

its structure. By keeping close watch on the networks of relationships and paying little attention to the structure, we will be able to clearly identify the system's larger patterns.

Indicators of unsustainable patterns include fast growth and chaotic behavior. Once we understand the patterns that certain values create we can find leverage points at which to shift patterns towards environmentally responsible relationships with Earth. Always keep in mind that the whole is greater than the sum of its parts, and that it is irreducible, and that exhibits emergent properties, and that its processes are dynamic and cumulative. The whole appears as a web of synergistic effects. Our behaviors fall under these rules, because as a species humans are a whole system nested within Earth's whole system.

Chapter 3: Personal Ecology, Locating the Self

Say not, "I have found the truth," but rather, "I have found a truth."
Say not, "I have found the path of the soul." Say rather, "I have met the soul walking upon my path."
For the soul walks upon all paths.
The soul walks not upon a line, neither does it grow like a reed.
The soul unfolds itself, like a lotus of countless petals.

— Kahlil Gibran, *The Prophet*

Do you know where your self is located? How do we go about locating the self? What is the self? Across fields, different cultures, and at varied times the answers to these questions have been answered in numerous ways by the species human. Often, even within the same realm the answers vary as historical moments unfold. This chapter presents a number of conceptions of self as related to other aspects of embodiment, along with the ways of being and organizing the self that we've discovered so far.

Charles Taylor, in *Sources of the Self: The Making of the Modern Identity*, discusses the challenges postmodern philosophy faces concerning self-generation. We selves, he illustrates, are engaged in a struggle to formulate the "good" while living by the already configured and impartial moral visions that philosophy (within culture) has put forth over the years. Within a philosophical dialectic one faces a never-finished unfolding in which a wider "moral topography" is not recognized or justified by the moral onslaught technology wages on the human soul. Taylor's suggestion for reconciliation of the "moral conflicts of modern culture" is grounded in what he calls "articulacy" (Taylor 1989: 106). Articulacy seems to describe a readiness to respond in the world to culture's call, by developing the ability to articulate what calls out for naming. This naming could also be called, in narrative, "meaning making." In this sense, being responsible to one's environment entails fluency with creating meaning by articulating the observed, or making "kinetic" what lies in the realm of the "potential." With naming, we participate in making the maps which are our territory of meaning.

In *Philosophy in the Flesh* the way Lakoff and Johnson define the self is, "that part of a person that is not picked out by the Subject. This includes the body, social roles, past states, and actions in the world. There can be more than one Self. And each Self is conceptualized metaphorically as either a person, an object, or a location" (Lakoff and Johnson 1999: 269). In this case we conceptualize our selves metaphorically, and as a metaphorical concept we may be a person, an object, or a location. Because we are first a concept, later identified by our connections with outer meanings, in all three of these cases we are fundamentally a pattern, a locus of ever-changing events, a gestalt of being. This describes the living system that we investigated earlier.

As a pattern we maintain stasis, and as a process we continually replace the material aspects of our physical being. We replace our cells with nutrients from the food we eat, which exchanges its energy with energy from the soil to grow. We replace our selves with offspring, children, so that the species human as a pattern will continue. We replace our cultures with stories that assist us in maintaining stasis within the larger ecosystems, and the perpetuation of these stories is where most intellectuals believe humans to be unique from other species. We create and maintain our patterns of being within the maps of meaning that we articulate.

We articulate stories that we believe will help us to survive. Where our stories articulate health and wholeness as the pattern for replication of our lives, we have a better chance of surviving. Fritjof Capra suggests, "The uniqueness of being human lies in our ability to continually weave the linguistic network in which we are embedded. To be human is to exist in language. In language we coordinate our behavior, and together in language we bring forth our world" (Capra 1996: 291). Where our stories describe the whole impartially or destructively, we are more likely to have difficulty surviving in deeper time than several generations.

Our stories are told in languages, and written down in text. Language includes more than just words, but in the "age of information" the written text is the form most widely disseminated. Written language has certainly changed the way societies function, which we will investigate briefly elsewhere, but as a whole language has developed

because it has assisted the species human with survival. Capra comments on this, "The crucial role of language in human evolution was not the ability to exchange ideas, but the increased ability to cooperate" (Capra 1996: 294). Language has allowed groups of humans to live cooperatively, perpetuating human life in relation with the surrounding environment.

Language has allowed the species human to locate itself on Earth in deeper time than the 100 year scale of the human life-span. Based on deeper time, geologic time, time that frees conscious awareness from linearity, humans become one of multitudes of species. Within the perspective of the whole, we are able to be both central as well as peripheral to survival; we begin to see that insuring our species' survival ensures the survival of other life on Earth as well. John Foster reminds us that without a healthy human-centered awareness we may have trouble modifying our actions enough to ensure survival, "It is to deny an essential anthropocentrism without which it is probably impossible for human beings to respond to the ecological crisis on the scale at which we must—that is, in the largest human terms, which identifies our fate with that of the planet" (Foster 2002: 72). As the species human reaches carrying capacity within Earth's global ecosystems, cooperation and self-awareness will determine our success in maintaining stability and diversity.

In biology, "mutualism" describes mutually beneficial relationships in which stability and diversity are equally valuable. While the beliefs that "nature is red in tooth and claw," "survival of the fittest," and "evolving towards" historically have influenced practitioners of science, mutualistic relationships have recently been recognized as highly significant to the evolutionary success of individuals and of species. Philosophically, Capra notes, this is profound. He suggests that especially for larger living organisms cooperation and symbiosis are imperative for longer term survival, "In the end the aggressors always destroy themselves, making way for others who know how to cooperate and get along. Life is much less a competitive struggle for survival than a triumph of cooperation and creativity" (Capra 1996: 243). The species human does fend for itself, but it does so in context of the larger system, in multiple co-existing relationships.

As individuals who are embodied in networks of relationships, our material choices shape the course of the lives of our communities as well as our own lives. When we make morally considerate choices, taking into account the whole system that each of our choices affect, we raise the level of consciousness around these choices. Daily we make decisions that affect us and others for that day, but these daily decisions also stretch to encompass longer term, fundamental decisions. We also make fundamental decisions in and of themselves, taking into account long term consequences with as much knowledge as we have at the moment we make the fundamental decision.

We often understand that fundamental decisions must resonate on multiple levels with our daily decisions; at times, though, we forget that our daily decisions add up towards the longer term as well. Borgmann discusses the consequences of what he terms moral inconsiderability in *Crossing the Postmodern Divide*, "[We] sense that daily decisions must be consonant with fundamental ones and that, should there be dissonance, the daily decisions will wither and die along with the aspiration assigned to them. ...Even more frequent than the failure to make a suitable fundamental decision is the making of a fundamental moral decision without responsible insight" (Borgmann 1992: 111). He concludes that most often our failure of consideration occurs within the level of material choices. In Western society, very often this seems to be the case.

It is obvious by now that in the U.S. there has been a huge clash between linear economic systems and non-linear ecological ones. "An economic system that places economic growth and profits before all else...brought the world to the brink of disaster" (Foster 1999: 107). Recently there have been proposals that the economic system be realigned with ecological principles of sustainable development, but critics of this movement question if even "cradle to cradle" flows of material production can be "developed" indefinitely. For any system with growth as its ultimate and final goal, there are low probabilities of non-linear sustainability within Earth's complex living systems.

Karl Polanyi refers to this systemic clash as a double movement of two "opposing logics" that are happening in the world. This opposition may be described as economics divorced from the limits of actual material resources, in comparison to the motivation

towards conservation of natural and cultural resources arising from a "principle of social protection." John Foster notes in *The Vulnerable Planet*, "The increasingly radical nature of the grassroots environmental movement in recent years derives from the wider protections needed by society and nature in the face of the growing commodification of life" (Foster 1999: 136). Mainstream environmental groups have historically emphasized political lobbying for conservative environmental legislation, but recently, direct action environmental groups at the community level have arisen to protect local natural, cultural, and social resources.

In capitalist countries, material choices have become political statements. Vaclav Havel considers the significance of our choices at the political level, and emphasizes the deep significance of self-organization and self-transcendence as part of the whole system's health. "What is needed is lively and responsible consideration of every political step, every decision; a constant stress on moral deliberation and moral judgment; continued self-examination and self-analysis; and endless rethinking of our priorities. It is not, in short, something we can simply declare or introduce. *It is a way of going about things*, and it demands the courage to breathe moral and spiritual motivation into everything, seek the human dimension in all things" (Havel 1993: 20; emphasis added). Havel suggests a pattern of living, a way of going about things that engages us in an ever-unfolding process of health within our political, ecological, and social communities.

Amitai Etzioni believes that the way we conceptualize our larger pattern of self will raise the awareness around our material choices. His suggestion prioritizes the both-and relational model of how we should go about things. He compares his idea to Martin Buber's conception of the I & Thou relationship, "In Buberian terms, the movement needed is not from an I-focused society to a We-focused society, as some have suggested, but from either an I- or a We- dominated one to an I & We" (Etzioni 2000: 189). We are both individual and community, both species human and one species out of multitudes. This paradigmatic shift will change the gestalt by which we organize our culture, fundamentally altering the pattern of survival and relationship for humans, and shifting it to encompass a more conscious, embodied way of being human.

Reduced Embodiment

Unfortunately, living a consciously embodied life challenges most people in the U.S. today, and even artistic or spiritual pursuits don't allow most people to fully realize the extent to which they co-create Earth's web. This reduction of a more fully response-able being within the Earth's body as our bodymind comes historically from a number of sources. One of the most powerful and destructive forces of environmental complexity is the "reductionism" of the Cartesian paradigm. When the fundamental goal lies in reducing one thing to another, explaining everything away by rendering it the "same" as everything else, we leave ourselves with everything in parts, and no whole.

We have participated in the search for the Unified theory in Western science—the theory that would give us at least the equation with which we could plug in everything in order to come out with the answers to everything. This theory would cross disciplines, linking ways of deciphering to each other and hopefully rendering all questions moot by the ability to give reasonable explanations for all phenomena. As we saw earlier though, what has emerged in physics is the realization that at the subatomic scale, nature exhibits indeterminism. At the fundamental wavelength of emergence, chance must be applied in the description of quanta, and at any one moment the movement of electrons is uncertain. Therefore, the Unified theory (based on Heisenberg's principle) seems to be that we cannot predict the outcome of events in the universe.

Even more basic than Heisenberg's principle of quantum objection to predicting outcomes is a premise that has been clearly developed in information theory. It goes like this: "Science is empirical. It is based solely on observations. But observation is a two-edged sword. Information theory claims that every observation obscures at least as much information as it reveals. No observation makes an information profit. Therefore, no amount of observation will ever reveal everything—or even take us any closer to knowing everything" (Poundstone 1985: 22). What we see here is that we can observe a system's gestalt, we can estimate probabilities of

maintaining its overarching pattern, we can describe variables within the system's process, but we can never know beforehand how that system will actually unfold.

The amount of control we would have to exert over a human-created model of a living system in order to definitely preserve its gestalt and structural integrity far outweighs logic. Nor is this sort of control actually possible, as we are discovering from our attempts at managing ecosystems while allowing them self-organization. "We're moving from a reductionist point of view to a more holistic point of view, taking a 'long' view in both space and time and trying to integrate sound ecological principles that are geared to the long-term health of whole ecosystems. We are looking at historic (natural) patterns in ecosystems, or watersheds, and how best to restore and sustain them over the long haul. Instead of looking at single organisms, we're looking at how all the pieces of an ecosystem fit together… to maintain the resilience of an ecosystem" (Michael Dombeck, *Biology*: 1999: 1025). Unfortunately, the challenges of "management" of an entire complex system are infinite and this goal seems unrealistic.

Carolyn Merchant warns us of the over-zealous simplistic tendencies of scientific reductionism. In her manifesto *The Death of Nature* she illustrates for us that, as seen above, even in ecology reductionism has at times cast its spell. For instance, "It is difficult, if not impossible, to successfully program contexts and patterns into a computer. Removing components or abstracting data from the environmental context can alter the whole, distorting its behavior" (Merchant 1980: 252). From our research into living systems, we may recall that reducing or altering the gestalt of the system fundamentally alters the pattern by which a system's initial conditions will be organized.

While we live within societies that manage human survival on a scale that does not embody the scale of the human body, we will continue to encourage evolutionary outcomes that neglect the health of the whole Earth system. Merchant suggests an alternative to the modernist pattern, "The organismic small-community approach, which relies on human decision makers and participatory democracy rather than on experts, represents an alternative to the managerial ethic that developed out of seventeenth-century mechanism" (Merchant 1980: 252). Once again the small group is suggested, a

pattern for the empowerment of individuals within the group, and small enough to encourage cohesiveness. When the group feels cohesive, it acts as a whole body, and as it makes choices as a body, its choices suggest a unified mind.

Disembodied Mind, Embodied Realism

How could a mind be outside of a body? Do we exist without mind? Does mind exist without us in our bodies? Is it possible to form concepts or thoughts without our bodies? Recent cognitive science research shows that what and how we conceive of the world around us depends deeply on our physical apparatus as a species. Seeing and hearing play a huge part in how we conceptualize our world and the structure of metaphor influences both our being and our actions in cultural literacy. George Lakoff and Mark Johnson delve deeply into what it means to contemplate the embodied and the disembodied mind in their text *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*.

Their idea of disembodiment is, "that the contents of mind, the actual concepts, are not crucially shaped or given any significant inferential content by the body. It is the view that concepts are formal in nature and arise from the mind's capacity to generate formal structure in such as way as to derive further, inferred, formal structures. Advocates of the disembodied mind will, of course, say that conceptual structure must have a neural realization in the brain, which just happens to reside in the body. But they deny that anything about the body is essential for characterizing what concepts are. …Our claim is, rather, that the very properties of concepts are created as a result of the way the brain and body are structured and the way they function in interpersonal relations and in the physical world" (Lakoff and Johnson 1999: 37). Starting from our bodies, we then have the possibility to view and interact with the world. Besides a starting point, our bodies also give us the original source for all our later learning.

Ultimately, Lakoff and Johnson observed in their research that as individuals, our conceptualization of the inner life is scientifically inconsistent with the findings of cognitive science concerning the nature of mind. It seems that we believe ourselves to

possess a rational Subject that metaphorically can exist independent of the body. Studies have found this to contradict reality, "And yet, the conception of such a Subject arises around the world uniformly on the basis of apparently universal and unchangeable experiences. If this is true, it means that we all grow up with a view of our inner lives that is mostly unconscious, used every day of our lives in our self-understanding, and yet both internally inconsistent and incompatible with what we have learned from the scientific study of the mind" (Lakoff and Johnson 1999: 268). Philosophically this is radical.

Embodied realism is the term Lakoff and Johnson have coined for this new philosophy, wherein our bodies are both container for experience as well as contained within, as Merleau-Ponty describes it, "the flesh of the world." This is a *both-and* philosophy, a relational one, neither subject/object dualism nor intersubjective alienation from contact with the world. Embodied realism "relies on the fact that we are coupled to the world through our basic interactions. Our directly embodied concepts...can reliably fit those embodied interactions and the understandings that arise from them" (Lakoff and Johnson 1999: 93). We have always been embodied creatures, with strong imaginations, connected from physical reality and not transcendent or divorced from it. Remembering this basic reality, "What has always made science possible is our embodiment, not our transcendence of it, and our imagination, not our avoidance of it" (Lakoff and Johnson 1999: 93). Created by us, science gives us helpful information about reality, but it also can be as misleading as a poorly chosen metaphor. When choosing how to live, we must carefully choose the stories that we tell ourselves to insure that they provide us with a helpful map.

Johnson and Lakoff focus on the importance of our physical structure, psychological makeup, and use of metaphor in their work, and have come to believe that our metaphors "are crucially shaped by our bodies and brains, especially by our sensorimotor system....The embodied-mind hypothesis therefore radically undercuts the perception/conception distinction. In an embodied mind, it is conceivable that the same neural system engaged in perception (or in bodily movement) plays a central role in conception" (Lakoff and Johnson 1999: 38). We not only engage our bodies in order to

perceive our environments, we also conceive meaning of our place within the environment through being in our bodies. Being *in* body expresses the fundamental pattern of humanity.

They continue by examining the role of metaphor in our neural perception/conception system, and relay to us that a variety of metaphors are crucial to our ability to become culturally literate and functional. Of metaphorical thinking they state, "Just by functioning normally in the world, we automatically and unconsciously acquire and use a vast number of metaphors. Those metaphors are realized in our brains physically and are mostly beyond our control. They are a consequence of the nature of our brains, our bodies, and the world we inhabit" (Lakoff and Johnson 1999: 59). Metaphor comes from our being *in* body, and with metaphor we are able to construct meaning and become environmentally literate. Metaphor allows us to navigate cultural discourses and embody the formal and informal spaces we inhabit. With metaphor we have navigated even the disembodied territory of mechanistic modernism, and the discomforting relativity of postmodernism. Let us examine briefly how in very recent history we have come to embody the paradigm we have today.

Modernist-I, Postmodern-We

Modernism arose, in part, as a response to the fundamental unsettling of moral orientation in Western Europe. Where religious duty had been a rhythm around which to settle one's moral and social expectations and obligations as well as create a cultural identity, feelings of deep anxiety and loss arose as religions were doubted. In *Crossing the Postmodern Divide* Albert Borgmann explores modernism's appeal as well as the historical transition to post-modernism. He writes, "Once these points of orientation had been shattered or obscured, a new method was needed to find one's way, something like a compass, a universal instrument of moral navigation that would work regardless of one's particular circumstances" (Borgmann 1992: 52). Science and philosophy attempted to fill the gap of unknowing, but philosophy itself did little to settle the anxiety brought on by modernism. The Cartesian and Kantian prerogatives both were part of a much

larger philosophical dialectic that lasted throughout the changes that occurred as human civilizations grew and their relationships with the landscape and modes of production changed.

Most would agree that philosophy has done little to ground the postmodern dilemma either. Probably because philosophy has remained outside the body all these years, intellectually elite and even politically distant, philosophy as a tool has appealed only specifically to individuals who felt inclined to engage in the practice of mental mastication for reasons that did not often connect to social circles. Fritjof Capra describes the roots of this disconnect. "This, then, is the crux of the human condition. We are autonomous individuals, shaped by our own history of structural changes. We are self-aware, aware of our individual identity—and yet when we look for an independent self within our world of experience we cannot find any such entity. The origin of our dilemma lies in our tendency to create the abstractions of separate objects, including a separate self, and then to believe that they belong to an objective, independently existing reality. To overcome our Cartesian anxiety, we need to think systemically, shifting our conceptual focus from objects to relationships. Only then can we realize that identity, individuality, and autonomy do not imply separateness and independence" (Capra 1996: 295). Modernism primed the historical way for individualism, mechanism, and technological changes so deep that post-modernism has struggled to define the relative strength of individuality and assert its belief in the essential reality of pluralism.

Postmodernism has begun a process of recognizing a diversity of ways of organizing the world culturally, and understanding that multiplicity may actually be beneficial to the species human. But as a species, we have not figured out how this pluralism and diversity might be obviously, physically helpful. Because of the strength and aggressiveness of the U.S. dream, up until now many countries want to emulate at least parts of our Western lifestyle. Calling it Western may be misleading at this point though, for compared with the U.S. most European countries have simplified their values around materialism and clarified their belief in the importance of community. Also, as the U.S.

becomes more politically obvious about the depth and thoughtlessness of its greed, developing nations are becoming more aware of what it means to live a "Western" lifestyle.

Drawn Meaning

Within linguistic theories of meaning, structuralists look closely at the way meanings of particular words are conditioned by looking at their relationships with other terms. "The study of these relations of 'difference' in networks of meaning underpins structuralism, post-structuralism, and more recently, postmodern approaches" (Parker 1999: 5). Julia Kristeva explores the complex origin of meanings in poetic language, and offers the idea that, for the process of meaning making, "its complexity [is] unfolded by its practices, the signifying process joins social revolution" (Kristeva 1984: 61). Where Husserl posited the synthesizing force of the transcendental ego, we venture beyond that to an enactive agreement. Established for both the "subject/object" dualism and the restoration of the power and voice to the "Other," this *both-and* relationship provides us the return of our own minds from a technology-obsessed embrace.

Postmodern framing has provided us with near nihilism concerning an embodied realism. Borgmann asserts that in postmodernism, "The only reality author and reader can be sure of are traces of ink on the page. These marks, no matter how real, would be forever silent were they not embedded in a communal context wherein they invite and instruct the reader to recall or call forth a certain reality. A text by itself is helpless; to require help is its virtue" (Borgmann 1992: 117). Postmodern thinkers reinterpreted modernism's structure and rigid postulations in the context of multiplicity. First they challenged any single dogmatic way of thinking, then deconstructed the modernist-I itself. With the unfolding of relativism, which even Einstein discounted to the extent that quantum physics has shown to be true, the ideal mechanism and pure truths of the enlightenment were unpacked in light of innumerable layers of context. Context became as important as content, and in this way the metaphor of quantum "waves" have become as socially understood and recognized as the snapshot of the particle.

Perhaps historically we are becoming aware that metaphorically, pinning down the particle's position is impossible if we desire to know the momentum of the particle. Similarly, either we can know a waveform or collapse it into a particle. Finally, we are becoming aware that when we observe the particle, we change the outcome of its movement—we are co-active in the process of forming our world. Our choices collapse reality into the moment of the now that we live, and with this awareness, our response-ability to our choices in that moment increases exponentially. We have power within choice. "According to Maturana, we can understand human consciousness only through language and the whole social context in which it is embedded. As its Latin root—*con-scire* ('knowing together')—might indicate, consciousness is essentially a social phenomenon" (Capra 1996: 291). Moreover, as a self-aware, self-generative species we often require the assistance of "meaning" in our process of survival.

We develop meaning both individually and within a cultural community, as we have seen earlier. In both of these cases our bodies condition the meaning we make as well as the way we make meaning. Both cognitive psychology and philosophy have recently discovered this important understanding. Lakoff and Johnson emphasize the significance of our body in our mind's creation of meaning, stating, "Meaning has to do with the ways in which we function meaningfully in the world and make sense of it via bodily and imaginative structures. This stands in contrast with the first-generation [cognitive science] view that meaning is only an abstract relation among symbols (in one view), or between symbols and states of affairs in the world (in another view), having nothing to do with how our understanding is tied to the body" (Lakoff and Johnson 1999: 78). Bodies allow us to make meaning, minds take in the complexity of the world around us and reflect this meaning. We are context dependent on the physical world while we are alive as human animals. In the way we require understanding of words in a text before we can read the text, without consciousness from our bodies we would be hard pressed to make meaning of the physical world that we exist within.

Quantum physics professor Amit Goswami describes the power of consciousness in his text *The Self-Aware Universe*. He believes that our consciousness is responsible,

essentially, for reality as we know it. He describes the historical challenges within science concerning this issue: "If reality consists of ideas ultimately manifested by consciousness, how do we explain so much consensus? If it is idealism that wins the philosophical debate and if realism is a false philosophy, how can we do science? David Bohm has said that science cannot be carried out without realism" (Goswami 1995: 142). Goswami works hard to convince his readers that "the essence of scientific realism can be incorporated under the broad umbrella of idealism" (Goswami 1995: 142). Like Chet Bowers he firmly states, "Of course, the picture is not the object. The map is not the territory" (Goswami 1995: 142). Internal pictures at times correspond with larger reality but still exist privately and are not easily subjected to empirical examination. In order to transmute the "paradox" of dualistic thinking, the *both-and* relational model of validating reality introduced earlier must be brought into play. In a relational model those involved are more vulnerable to the actions of the other, and the outcome of the interaction is context dependent. Both parties write the story, both draw the map of meaning.

Virtuous Vulnerability

"A text by itself is helpless; to require its help is its virtue" (Borgmann 1992: 117). Borgmann's statement may be taken in light of our storytelling analysis earlier—our stories, in text, both carry the weight of enactment as well as provide us with a pattern for development of reality. Inherent in text there lays a virtuous vulnerability that allows us to interpret our stories in multiple ways. Because of post-modernism we have tapped this potential for contextual analysis, providing multiple perspectives on the world connected with that text's meaning. The more we study the text in an attempt to pin down its location, the less momentum it seems to carry in its essential weight and meaning.

Let us take this idea of virtuous vulnerability to the conceptual level, where many applications could be made. For instance, a city, as a metaphorical text, also is helpless; its buildings and streets enlivened not only by people but also by electricity, oil, gasoline, money, rats, pigeons, street trees, and all of the cultural life that comes forth into city spaces. Now let us look at a garden, planted and tended by the human animal. Without

full care in most climates gardens too are helpless, requiring weeding and watering at the very least. What would a garden be without its soils turned over, its seeds planted, its boundaries maintained both inside and to the outside of the space.

We feel uncomfortable with this vulnerability. Borgmann analyzes our discomfort, stating, "In the context of technological concealment and hypermodern flimsiness, daily city life has an engaging sturdiness and comprehensibility, and order that has been familiar to humanity for thousands of years. Here are real spaces, bounded, shaped, inhabitable, and traversable. ...The ferial city favors a bodily vigorous, richly connected, and securely oriented life. Vigor, orientation, and connectedness, however, need to be extended. ...Daily reality needs to be linked to the natural..." In this case, he suggests that a connection must be made from the city to the country because, "People experience that transition from the urban to the rural not as a change of scenery that passes by on a screen or behind a windshield, but through bodily vigor, moving step by step from the built to the growing environment" (Borgmann 1992: 133). Borgmann gives us the example of a walker or runner on a trail, moving from urbanity to the space where city is left behind. An embodied experience of that participant would means kinesthetically and aesthetically becoming aware that another force organizes the landscape. Context is supported by experiential content, and the human is satisfied with a whole picture. The organizing force is full of itself, exhibiting its own emergent properties of living systems, and it shows the human animal another way of being bodily involved.

In our world of technology and information overload, our bodies are at once overwhelmed with too much to take in, as well as rendered inappropriate and superfluous. Without our bodies we would avoid the tedious jobs of eating, sleeping, staying awake within our bodies as we are subjected to the monotony of sitting, barely moving at a desk or behind the wheel of a car, staring into the lit face of flatness or out of a placid and protective windshield. In this passive stance we take in the artificial renderings and abstractions of once embodied reality. We turn to technology and the machine to give us what our bodies have not—immortality and infallibility. Bodies let us

down, bodies fail, we attempt to render them irrelevant in abstract technological time. Embodied realism in many ways has become the philosophy of pre-tech reality.

Intimate Reality

Perhaps reality has become too intimate, painful, lustful and generally full of the unexpected. We feel safer knowing that our futures are for the most part in control. Perhaps with our stories we have rendered our understanding of reality mostly safe. Western stories set us apart, keep us separate from, and cause disassociation with regards to embodied reality. As many environmental thinkers have noted, the great stories and religious texts of written historical times usually depict humans as disconnected from natural systems, sometimes from social systems, even from our bodies themselves. While we flirt with the death that living reality requires—the death of self in every moment as it unfolds into the next moment—we ultimately turn away from this sense of losing the self. Ironically, the self that we experience the loss of is no more than a story in itself, and one that we have told ourselves. In a sense we have learned to need the story to accompany the experience, for without this history we seem uncertain of our own existence.

Other thinkers have noted the human tendency to need both an experience and a story about it, as though these were two sides of one coin. Without the experience we feel ungrounded in bodily reality and without the tale to tell of our experience we think our experience fleeting and impermanent. On the other hand, at the dawn of Western literacy, Aristotle believed that human intelligence meant demonstrating an intimacy with reality. Thomas Aquinas enumerated this stating "in the human soul there is something whereby it becomes everything and something whereby it makes everything. Hence we must emphasize that there is an active intelligence" (Borgmann 1992: 109). Today our "active intelligence" has been pushed to extremes, shown in our participation in both activities like extreme sports and direct actions to the passive extreme of T.V. and virtual reality.

Would it be possible to engage both in active and engaged participation and balance it with grounded and embodied being? Could we cultivate moderation? Is the notion of cultivation itself too controlled? Benjamin Franklin proposed a formula for a

certain balance at the birth of the U.S, but his suggestion that "in moderation is everything" has faded in the face of "be all that you can be." As a species, humans calibrate our concepts of balance in a diversity of ways.

Scientist E.O. Wilson comments on the species human's attempts at cultivating equilibrium both on the surface of community life and near the roots of our beliefs in individual radicalism. He observes our evolutionary condition. In *The Future of Life* he writes, "Each of us finds a comfortable position somewhere along the continuum that ranges from complete withdrawal and self-absorption at one end to full civic engagement and reciprocity at the other. The position is never fixed. We fret, vacillate, and steer our lives through the riptide of countervailing instincts that press from both ends of the continuum. The uncertainty we feel is not a curse. It is not a confusion on the road out of Eden. It is just the human condition. We are intelligent animals fitted by evolution...to pursue personal ends through cooperation. ...Humanity is the species forced by its basic nature to make moral choices and seek fulfillment in a changing world by any means it can devise" (Wilson 2002: xxii). As a species our diversity of being and multiplicities of creative participation allow us the potential of making evolution's cut.

While we can spread ideas through our welding of language, influencing other people deeply with our beliefs and religious convictions, our genetic success lies in the simple reality of passing on our genes to new human beings, our own embodied children. We participate by engaging in social groupings, by cooperating with other species in Earth's systems, and essentially by mating and raising successful offspring. The meaning we create with the stories we tell ourselves about the workings of the world, the reality we believe we understand with the help of texts written by the most gifted scholars and spiritual gurus, all this is certainly how we shape our actions on Earth, morally and physically.

As we consider language in the shaping of the stories by which we live, what are the "differences that make a difference," as Gregory Bateson would ask? There are complex relations between physical space and bodily choices, in the interplay between the shaping of cultures and our choices in language. Meaning in many ways is rendered

meaningless without a physical form within which to embody it. Embodied realism engages the physical form in order to ground being in "reality." This bodily reality, "is dirty and interminably ambiguous. And it moves at the deliberate pace of daily, seasonal, and generational rhythms" (Borgmann 1992: 100). Within the complex rhythms of living systems, creative individuals are more empowered and better able to adapt to their environment. This constitutes the complexity and vitality of the living system of embodied reality.

How do we recognize embodied reality in the face of some virtual hyper-reality such as the "information age?" In philosophy, the ontologies we have traditionally used to describe theories of reality usually are unable to recognize or explain a difference between hyper-reality and what are calling an embodied reality (Borgmann 1992: 95). How do we tell the difference? Ontologically inert, hyper-reality provides us with no sense of eminent being within the sensory effects of its experiential offering. Embodied reality, on the other hand, is context dependent, experientially unique and oriented within the flesh of the world. Hyper-reality would be considered disposable and discontinuous, while embodied reality reminds us of our conscious challenge to respond, and again to remember to respond. Instead of re-acting to an internally recorded event, when we respond we re-member our bodies to the embodied reality that we live within.

Weaving the Self

Learning to remain aware through the difficult and painful process of growth conditions us to respond more fully to ourselves, to society, and to the Earth. Like the process of dissipative structures forming and remaining whole, growth assists us in forming the whole and complex living system of our self. How we choose to grow impacts the environment as much as any other of the questions we must ask. In the American Indigenous Dineh world view, self-knowledge is formed by a process of asking "Where am I?" as compared with our Western view "Who am I?" In the first question place constitutes the fundamental relationship and grounds the questioner in place. In the second one we are grounded only in ourselves, a self-feedback loop.

In the Dineh worldview stories affect the outcome of human actions, and their stories are often grounded in more-than-human-lives. In the story of Spider Grandmother, she weaves together images of the landscape with communities of human and more-than human lives. Embedded in the web, all communities participate, implicated in the relational aspects of the land. The story of spider's relational weaving, along with the use of our imaginations, is the source of the world the way we know it, "perceived world is woven together by the strength of the human imagination. Imagination is mental art and a primary function of consciousness....Unlike forms of projection, in which our worldview unconsciously and greatly influences perception, imagination weaves human consciousness into the world and may intentionally co-create the world we see and act upon" (Sewall 1991: 258). This implicates our imagination in evolution, with true reciprocity, because it leaves our world open to being effected by the unknown.

Surviving because of our implication in a web, our ecological self can be much more easily conceived of as a relational vortex of reciprocal energies. As an ecological self we realize, organize, and maintain ourselves as an "open circuit, destined for relationship: it is primarily through my engagement in what is not me that I effect the integration of my senses and thereby experience my own unity and coherence" (Abram 1996: 263). Without seeking the experience of the Other, we are still in need of contact with its living form. Other must be its own, not a projection of our fantasies or personal needs. Psychologically we have also proven our reliance on more-than-human life, states Frances Vaughn, for our intricate human web is formed of these multiple mutually conditioned relationships. Always in the webbed model we conceive of the self as an entire system of receiving, and interpreting, constantly responding to incoming signals, continued and continuous, Gregory Bateson affirms. In this way our Western self/I, subject/object distinctions are blurred into *within-with* as well as *both-and*. "We are only to the extent that we care; we are what we care for" (Sewall 1991: 267). In this case caring is active, like Heidegger's dasein—caring is attention giving, an identification with the other that extends into realms unknown to the self.

In this state of caring, *who* becomes *how*, and *who* as equated with *I* no longer assists our fundamental self-organization. We return to patterns of self-organization that we still know: *how=I* or *where=I* forms the self's gestalt, which allows ourselves to be formed by a process with and a processing within. Anthropologist Richard Nelson puts it, "My eyes are the Earth gazing at [h]erself." In these processes we return our bodies to their fundamental patterns, Earth's living processes. Plainly stated, we relegate ourselves to the possibility of being eaten.

Our Maps Will Eat Us

Merleau-Ponty wrote that, "To return to things themselves is to return to that world which precedes knowledge." If we consider knowledge to be our already mapped world then we live by pre-given sets of conceptions. Realistically, we share some of our experiences with those who have come before as well as drawing maps as we go of our own lived experiences. Our maps shift constantly. We begin with a range of possibilities for our lives and as we live our lives this range constantly shifts and changes. With awareness we have more potential to create changes if we want them. With intention we shift the outcome of our lives.

Neil Evernden talks about the role of society in the shaping of the natural environment in his work, *The Social Creation of Nature*. His words remind us of our range of choices in relating with that which is not the Western conception of *I*. He states, "In the face of any phenomenon, we have a choice between explaining it or accepting it. If the former, then we have not seen it, for it becomes just 'one of' something else, nothing but another instance of the same old thing. If, on the contrary, it is accepted in its full individuality, as a unique and astonishing event, our encounter is entirely different" (Evernden 1992: 117). When we accept that which is not our conception of it, we allow diversity to exist. Perhaps in recognizing a part of the "wholly other" fundamentally entails generating new conceptions of self and its manifestation.

If we find the absence of order difficult to tolerate, at times we also find ourselves difficult to tolerate. This is perhaps also the human condition. The web we exist within

contains both order and what seems like disorder. Chaos itself works without the imposition of human systems and allows patterns to emerge that engage consciousness in challenges of survival and adaptation. In the West "our whole mode of perceiving forces us to domesticate even as we look, and in so doing to deny the possibility of encounter with the other. Every question we ask, every solution we devise, bespeaks mastery, never mystery: they are incompatible. Wildness, otherness, is mystery incarnate" (Evernden 1992: 121). When we allow ourselves to recognize reality that is larger than our self, we recognize this fundamental mystery.

Patterns of recognition lead to our participation in the creation of what we recognize. In recognizing how we are part of that which seems other we generate space for growth of that other-self as well as our self-other, and in growth there lies re-creation. Evernden suggests that, "The so-called environmental crisis demands not the inventing of solutions, but the re-creation of the things themselves" (Evernden 1992: 123). We are remembering that we are fundamental participants in that process of re-creation.

Recognition provides the first space in which we can learn about more-than-human-life. This space contains only pre-time and pre-knowledge, it holds no pre-conceptions of the encounter, no expectations of its outcome. When we participate in recognition of the other, we grow. Without participating we become impoverished as a self, our idea of self disconnected from the material and energetic flow that maintains living systems. When we fail to recognize others outside of our culturally conditioned perspectives, we impoverish ourselves by closing the world in upon itself. In a system, where we know all the rules, having written the rules and created the system, we leave no room for the knowledge of life more-than-human, essentially, no room for evolution itself to be creative in its hindsight. This is not a living system, nor does it maintain whole selves.

In the West we have few models for what a whole self would look like, but this description from Chinese sociologist Fei Xiaotong in *From the Soil* provides us with an illustration of a dissipative self. "The basic structure of Chinese rural society is what I have called 'a differential mode of association' (chaxugeju). This pattern is composed of

distinctive networks spreading out from each individual's personal connections. It is quite different from the modern Western organizational mode of association (tuantigeju). In such a pattern personal relationships depend on a common structure. People attach themselves to a preexisting structure and then, through that structure, form personal relationships" (Xiaotong 1992: 71). In his description, Xiaotong shows the fundamental difference in the societal gestalt of the development of the Western and Eastern self-concept. Where one begins from the center and moves outward, the other takes on the pattern set up already in society and shapes the self upon that ideal.

The Western mode of relating is very different from Chinese conceptions of self, which begin from a root of cultivation of ego-connection. "In these elastic networks that make up Chinese society, there is always a self at the center of each web. But this notion of the self amounts to egocentrism, not individualism" (Xiaotong 1992: 67). From this, "extending out from the self are the social spheres formed by one's personal relationships. Each sphere is sustained by a specific type of social ethic" (Xiaotong 1992: 74). Social ethics include filial piety, fraternal duty, loyalty, sincerity, and benevolence, and these ethics condition every social interaction among family, relations, friends, and strangers.

A strict format of rules pertaining to each social encounter locates the Chinese self within designated, or mapped social spaces. Xiaotong goes on to state, "in traditional China, the concept of public was the ambiguous tianxia (all under heaven), whereas the state was seen as the emperor's family. Hence, the boundary between public and private has never been clear. The state and the public are but additional circles that spread out like the waves from the splash of each person's social influence. Therefore, people must cultivate themselves before they can extend outward. Accordingly, self-restraint has become the most important virtue in social life. The Chinese are thus unable to assert themselves against society to ensure that society does not infringe on their individual rights. In fact, the Chinese notion of a differential mode of association (chaxugeju) does not allow for individual rights to be an issue at all. In the pattern of Chinese organization, our social relationships spread out gradually, from individual to individual, resulting in an

accumulation of personal connections. These social relationships form a network composed of each individual's personal connections. Therefore, our social morality makes sense only in terms of these personal connections" (Xiaotong 1992: 70). Xiaotong describes a pattern of relationing that we lack in our Western concept of idealized atomized individuality. What the Chinese rural community member loses in terms of personal empowerment individually, she gains in terms of the survival of the whole. In deep time, or evolutionary time, the survival of the whole means that the pattern of our species survives through complex evolutionary changes.

Xiaotong considers the concept of cultural and species' survival later in his work. While other values may seem important to the human ego, in geologic time the survival of the whole is more important. In his words, "even though humans may have other values beyond mere survival, and even though a part of culture may be irrelevant or even harmful to human existence, a culture that does not provide the conditions necessary for its survival will be eliminated in due course, and so will the people who accept this kind of culture. Over time, they will become extinct. The reason for their gradual elimination is something not only internal to their culture but also external to it, as a part of a natural evolutionary process...unrelated to values...This process lays down only a few conditions; if they are fulfilled, you stay; if they are not fulfilled, you go.... Disease leads to death; only health is the condition of survival. Nature does not prohibit people from committing suicide, but no power in nature can give life back to those who have already done so" (Xiaotong 1992: 137). Metaphorically cultures commit suicide in the long term when they uphold values that lead to diseased patterns within the whole system, because as a living system nature maintains itself.

Chapter 4: Philosophical Ecology, Living an Embodied Philosophy

There is really nothing you must be.
And there is nothing you must do.
There is really nothing you must have.
And there is nothing you must know.
There is really nothing you must become.

However...
It helps to understand that fire burns,
And when it rains, the earth gets wet.

— Japanese Zen Scroll

Locating the self in the body, living at the center of our own universe, with our mind's eye consistently turned both inwards and outwards, we challenge our own conception of reality. When we lead a responsive, embodied existence, it seems that only then do we live in a place where we are both touching and touched. In order to embrace embodied realism, in short we must be embraced by the actuality of our own body and use it as the nexus of our understanding. "The embodiment of mind thus leads us to a philosophy of embodied realism. Our concepts cannot be a direct reflection of external, objective, mind-free reality because our sensorimotor system plays a crucial role in shaping them" (Lakoff and Johnson 1999: 44). Our bodies are our navigators, constantly re-placing our selves in the present moment, constantly maintaining our idea of reality with variables of the material world according to the pattern of our bodyminds.

Is it possible to live a relational existence, both embracing and being embraced by the environment within which we find ourselves? Some authors have noted the paradoxical nature of the perception that we must hold in context opposites so that we might live wholly. Natural systems seem to reflect paradoxes to our senses at every turn. How do we reconcile such an existence? It seems that we as selves are both known and unknowable; as animals we are both predictable and unpredictable; and as places we are both domesticated and wild.

Do with live within paradox? What does this look like and how would we resolve the tension of such an existence? Emerson presents the hydrostatic paradox as a metaphor for our relation as individuals to the whole of living systems. He describes, "The man whose part is taken and who does not wait for society in anything, has a power which society cannot choose but feel. The familiar experiment, called the hydrostatic paradox, in which a capillary column of water balances the ocean, is a symbol of the relation of one man to the whole family of men." (Emerson 1971: 164). Emerson's description of a hydrostatic paradox illustrates how humans balance each other in their social relationships, and could be applied to show how the species human also acts as a balance amongst Earth's living systems.

Physicist Richard Feynman explained that, "A paradox is not a conflict within reality. It is a conflict between reality and your feeling of what reality should be like." For our investigations into embodied realism this description assists us in remembering that the world is not always patterned as we see it. Dr. Gregory Bothun, physicist at the University of Oregon, tells us that a paradox apparently contradicts itself as a statement, but that when we scrutinize it more closely we can reveal its underlying meaning. He believes that by using paradoxes we attempt to stop people in their tracks and get them to think more deeply. He gives a few examples like "'Less is more' and Francis Bacon's saying, 'The most corrected copies are commonly the least correct.' In George Orwell's anti-utopian satire *Animal Farm* (1945), the first commandment of the animals' commune is revised into a witty paradox: 'All animals are equal, but some animals are more equal than others.'" Bothun makes an important point about the function of paradox in poetic language and in societal myths, affirming that in these cases its role is complex. He states, "Modern critics view it as a device, integral to poetic language, encompassing the tensions of error and truth simultaneously, not necessarily by startling juxtapositions but by subtle and continuous qualifications of the ordinary meaning of words" (Bothun 2002: personal communication). Paradoxes hold tension within language. When revealed at their fundamental level of meaning they may provide us with patterns of how to create and maintain *both-and* relationships.

Wild Paradox

In the debate about wild and domestic spaces some of the same questions and arguments surface concerning the *both-and* relationship. Perhaps we encompass both the wild and the domestic in our being human. Perhaps, as E.O. Wilson stated earlier, this constant struggle is that of the human condition. Wendell Berry describes these states of being as necessary also to our wholeness as humans, requiring a fidelity to both. He believes that culturally we must express a "double faith...[that] must somehow involve within itself a ceremonious generosity toward the wilderness of natural force and instinct" (Berry 2002: 125). Without a personal commitment to our own wild natures, we can have no eminent understanding of the other in lives other than our own.

In *The Idea of Wilderness* Max Oelschlaeger describes the importance of being faithful to both the real and the ideal, and practicing participation in regards to both. In his words, "Fidelity to a tradition and a sense of connectedness to a real outside world are related, for both rest on a conviction of order and participation" (Oelschlaeger 1991: 23). Convinced that order will arise when we participate in the creation of a living system, it does arise, because based on our observations we co-create the system. Without our participation the living system would unfold very differently, and without our fidelity to our own inner wild order the system we co-create will also look very different.

H.D. Thoreau explored the inner wild of humans as well, in several of his writings. During his year at Walden Pond he thought deeply about a self-imposed wilderness, living on the edge of a town, plumbing the depths of an inner wild, and whether a cultivated wild was possible. In the chapter "Where I lived and what I lived for" he describes a certain point in the mind's decision-making process where we move from the scale of the known towards the unknown, effectively working to co-create our world along with the magic of the unknown world (Thoreau 1991: 65). What he identifies as a sort of creative enlightenment he locates on the boundary of the civilized and the wild.

In T. S. Eliot's essay, *Tradition and the Individual Talent*, Eliot considers the importance of the natural environment to the development and growth of the self, conceiving of the self as "artist." He writes that we must cultivate an awareness of the past in relation to the present moment, always working to release the past as we create anew the creative self in the work of the present. In this way, "What happens is a continual surrender of himself as he is at the moment to something which is more valuable. The progress of an artist is a continual self-sacrifice, a continual extinction of personality" (Eliot 1997: 43). This practice of consciousness lends itself to a method or pattern of self-organization towards an evolving self with other, or co-creating self with the more-than-human-world. Something "more valuable" unfolds with this practice.

The value of surrender Eliot describes, along with the fidelity to the unknown that Berry, Oelschlaeger and Thoreau identify as necessary to our survival, center around the tension set out by opposites. Like the dualisms we have considered throughout this paper—wild/domestic, either/or, subject/object, and competition/cooperation—because of our conditioning as humans we will forever feel the confusion of how to reconcile opposites. As we delve deeper into the tension we feel in the face of what seems irresolvable, our stories at times become more imprinted, stronger, nearly unbearable. Logically it is impossible to resolve some of these tensions, and where action is necessary, we must employ complexity as a means of working through these issues in order to come to some decision.

In his work *Small is Beautiful*, E.F. Schumacher delves deeply into the question of opposites, which he believes we are faced with all our lives. He mentions a space of what he calls transcendence that teachers and mothers employ during education and in the home, a space created by the power of love. He writes, "Divergent problems, as it were, force us to strain ourselves to a level above ourselves; they demand, and thus provoke the supply of, forces from a higher level, thus bringing love, beauty, goodness and truth into our lives. It is only with the help of these higher forces that the opposites can be reconciled in the living situation"

(Schumacher 1973: 97). The living situation refers in our case to the living system, the transcendence is actually not transcendence at all, but the negotiation of love embodied inside us.

As profound truths, the divergent problems Schumacher refers to are also paradoxical by nature. Holding the tension of the paradox causes us to suffer deeply, but our suffering increases the amount of love we are able to feel. As we embrace the suffering, the tension, and the potential for love, we begin to grow, and our growth manifests as self-transcendence in the theory of the living system we explored earlier. When we accept our suffering and hold the tension in our embodied being, the system manifests creative change and new paradigms emerge spontaneously.

In his text on teaching, Parker Palmer suggests that, "Without this acceptance, the pain of suffering will always lead us to resolve the tension prematurely, because we have no reason to stand the gaff....We cannot teach our students at the deepest levels when we are unable to bear the suffering that opens into those levels....How to do this is not a question that can be answered, for it is done in the teacher's heart: holding the tension of opposites is about being, not doing" (Palmer 1998: 85). Palmer is describing a way of being, how to hold space in relation with the unknown so that it becomes part of the embodied self while maintaining the strength of its otherness. In this case we are not interested in negating or deconstructing the mysterious, we want only to embody our sense of it.

As we have seen, the species human, as well as more-than-human-life live subjective and context-dependent embodied realities. The stark objectivism of the scientific method provides us a lesson in futility concerning linear solutions to non-linear problems. Actually, when looked at from the perspective of a living organism, "The futile quest for an external, objective tool is a dysfunctional heritage of the old paradigm.... The quest for an objective, external fix is a way of escaping the necessary pain of working internally....For it is the spirit, self-insight, and compassion of the individual that will facilitate the necessary individual and [community] learning that will lead to individual fulfillment and [community] productivity" (Noer 1996: 15). When we allow growth from

the space of the unknown, and accept that we won't be able to control every minute of that growth, solutions to complex growth "equations" will work themselves out. This requires a commitment to alternatives that we may not even have considered when the initial pain of the paradox came upon us. We cannot transcend the process of growth, and in non-logical situations the more we try to escape the more painful it often is.

Considering many alternatives to complex and confusing moral environmental decisions can be helpful to us. Knowing that there are multitudes of choices may relieve anxiety that we are caught in a dualism and neither path seems positive. In her book, *Making Better Environmental Decisions*, Mary O'Brien states, "Alternatives assessment means looking at the pros and cons of a broad range of options. My sister, a psychiatric social worker, has told me that one of the signs that a client might be suicidal is when the person is convinced there are only one or two options for her or his life, and both options are terrible" (O'Brien 2000: 129). Alternatives are where we begin the process of thinking outside the box. Using an increased awareness in every situation can help us to maneuver through life, because awareness itself allows us to recognize alternatives that we might otherwise miss altogether. Without awareness we revert to the old paradigm of dualistic thinking.

In his research on dualism perceived in nature compared with culture, Robert Melnick discusses the interplay between the two, and how the species human might approach multiple positive relationships along a "nature/culture" spectrum. While humans are always in relationship with both, how we locate ourselves along this idea spectrum creates the formal and informal spaces in which we live and work. Melnick writes, "While we have a long familiarity with a dualistic model, we are less comfortable in the middle, with what might be termed the *semantic ecotone*. Much like its counterpart in ecological systems, the semantic ecotone represents a fruitful opportunity for diverse and rich consideration of a variety of landscapes. It provides a model for recognizing that thought, ideas, and actions, much like landscapes, are complex constructions of overlapping layers" (Melnick 2000: 24). Like the ecological ecotone, the semantic ecotone is "characterized by vague borders and boundaries and by the potential for both

mutual dependence and competition.... [Semantic ecotones] can either be a point of contention or an opportunity for collaboration and cooperation" (Melnick 2000: 25). While the semantic ecotone provides a challenging habitat for a species more comfortable with singularities, monotheistic dogma, and control, realistically we live an embodied existence, which is always a complex and non-linear ecotone of relationing.

One suggestion for avoiding dogmatic ways of being includes Hannah Arendt's belief in reasoning and the use of the imagination. When we use reasoning, it acts as, "a solvent which dissolves automatic belief, not by logical refutation, but by creating the possibility of alternative ways of looking at the world. Imagination—belief in the possibility of the possible—and not just necessary, free us from dogma. Thus we should reconsider anything which has the appearance for us of the necessity of belief, reminding ourselves that necessity is a matter of appearance, a descriptive quality assigned by humans to empirical phenomena which do not themselves speak" (qtd. in Passerin d'Entrèves 1994: 109). Imagination comes close to the space of creative transcendence we looked at in our discussion of systems theory. When we make our bodies open to the possibility of healthier ways of organizing ourselves, healthier patterns often emerge. We must ask the question with our whole embodied being, and we must ask the right questions.

Interrogation as Invocation, Body as Intuitive Prayer

In the opening chapter of his final work, *The Visible and the Invisible*, Maurice Merleau-Ponty lays out a cloud of thoughts into which we walk. Droplets of the ideas, as though like moisture, collect on our faces and bodies, and when the cloud passes we know we've walked through it because our skins are still damp. He places great emphasis on vision in how humans take in information from the world, but also challenges the idea that there is a world, a priori, existing "outside" of us that we see as it exists. Instead of the Cartesian split between mind and body, and therefore between world and mind, instead of a synthesis of our seeing the world that creates it, Merleau-Ponty suggests a metamorphosis in which we participate in creating the world with our bodily senses like

vision. He points out how *between* seers there is world, co-created by both those seers and by the world's life. We live within the world like two hands grasping each other, both feeling and being felt, and constantly in the process of this gesture.

Where science and philosophy have taken to explaining the world as if by laying a veil or a blanket over all its diverse ways of knowing and being itself, Merleau-Ponty reminds us that the language of those disciplines merely creates this separation, offering it as an answer but forgetting that they are dependent on it at their initial and formative stages. Without the world, as he calls it, and without the memory that we start from our embodied experience situated within this world, we are merely making a tangential trip to object-land instead of recognizing a co-relating of our bodies with any thing. There is nothing, he states, that is not situated, and even scientific experiments that are supposedly conducted in a vacuum are never pure, for "pure" itself is a situated world/word. He reminds readers over and over that the process of relationship of the beings' betweens is what constitutes realities that science, philosophy, and their languages do not recognize. Because of this he would agree with our reflections earlier, that we need "a revision of our ontology" (Merleau-Ponty 1968: 23).

Merleau-Ponty challenges our idea of "reflection" of the world around us, stating that in order for reflection we must provide for an artificial platform of "knowing" by fabricating one and then calling it an objective reflective technique. He reminds us that we carry with us already a body of interaction that allows for our primary knowing of the world, and that carries meaning in it by its very senses. Were we not embodied his comments would be ungrounded, but because we are in bodies, "we participate in the world from within" (Merleau-Ponty 1968: 32). With "perceptual faith" we co-create the world we both see and live within, and while we need not replace our reflection with this recognized faith we need it in order to "take into account the total situation, which involves reference from one to the other" (Merleau-Ponty 1968: 35). He states again and again that it is our bodies themselves, with all of their participating senses, which provide us our ticket to, and our passage into our fundamental premising space in creation and relation with the world. Our bodies offer possibilities and provide all beginnings to "answers" of the question of the world.

Merleau-Ponty does not provide readers with direct, compact, easy answers to our philosophical (in the pattern and language of philosophy that we have learned) desires to "know." He states that his project will unfold itself along the way, through the style of his language, its musicality, and his choice of metaphors. Perhaps his work finally and fundamentally challenges us to *live the answers* in order to understand them, and to fully and endlessly create them. He delves deeply into what elsewhere authors have considered the void created by our fears of death and into the heart of paradox left by reflective, positivist, and existentialist philosophies. As M.C. Escher is able to draw optical illusions, allowing onlookers to actually *see* how the illusion is physically represented, so with words Merleau-Ponty attempts to do a similar form of illustration.

He describes the process of getting out of our thoughts and into an openness wherein ec-stasy of interaction of the actual world with our personal being may occur. He suggests a philosophy of *negintuition*, which allows the reader a view into what he calls a "rigorous, absolute" negativism, which may become for us then a positivism. Without both together the one is left without something to contrast it, and abstracted from its context it is nearly meaningless. The two ways work together to allow a being to locate a self in either one or the other, potentially he says, in a dialectical fashion. Merleau-Ponty discusses how either location allows connections to be drawn to the other: in locating your self as nothing, you create an infrastructure of nothing, which is a being described as "nothing"; in locating your self as being, you are hard-pressed to actually pinpoint your pure being, because this being is made of constantly shifting images and appearances. *Ambivalence* is the result of this exercise.

Ambivalence oscillates around the cohesion of these two states, neither opposite nor the same, and even with what Merleau-Ponty calls "high-altitude thinking" we cannot actually wrap our minds around this *Hyper-being*. We play the chicken-egg game of which comes first until we ground ourselves in the actuality of *vision* in order to both border and illuminate the brute world. Our vision is not Emerson's god's eye view, or the view of a hawk or an eagle, but a context dependent, limited and particular view. Merleau-Ponty distinguishes this sort of vision from the disembodied seer who with pure

vision in the ideal is able to see all, but in reality can encounter none other than his own vision, for it to remain pure. If we come down from the eagle's perch (which we are nearly blind in anyway), and interact with the world without our idea of vision, we may be better suited in actuality of our connection with others, a co-involvement of the viewed world. We involve ourselves mutually in the flesh of the world, and this mutuality precedes both our being and our lack of being, or nothingness. We participate in the world flesh.

Then, because much of this vision is self-created, self-disclosed, self-manifested, Merleau-Ponty reminds us at length that we must not fall into the traps of denying our role, or making it an inverse of itself. The trap in dialectic (like in dogmatic thinking) is that we might make it a motto and hide behind our motto instead of practicing it. We must make our philosophy an active and involving one, as well as an evolving one, for if we calcify it we weaken it by making it a structure easily dismantled or pushed over. Language as a structure is also a world we must not allow to become calcification. Language does not speak in a vacuum but in context, and we help shape both the living language and the context that this language is based within and upon.

What Merleau-Ponty calls our "central void" is borne by our involvement with the situation around us, by the world, and by the focus of events through our body. This finishes Descartes' glorification of thought over vision and focuses us instead on what vision illuminates in the world around us. The appearance of our thoughts, Merleau-Ponty states, is not more solid than our seeing and being involved in seeing. Our perceptual faith does not anticipate a "solution," for it expects no answers. Instead perceptual faith suggests a possible process for interrogating the world around our bodies, within which they exist in an ongoing anticipation and in a continuing question.

The process of embodied interrogation is, as Merleau-Ponty believes, philosophy's role. Philosophy's role is not to answer, not to find answers, nor to provide answers; instead philosophy must be remembered as the tool of questioning the world and for Being. Philosophy's role is to request through questioning an opening onto the Being that we

interface. The situation of this interface creates vulnerability, in which both we and the other participate. Co-participation creates a *both-and* relationship that we described earlier.

Instead of a positivist stance towards either the ideal or the existent, instead of the either negation or identification, Merleau-Ponty reminds us that the world expresses Being as *both-and* in between resting in time. He suggests that in this process time stretches out to include longer than the abbreviated particle, longer than the cut-short encounter, longer still than the mechanized moment. He illustrates how, "Under the solidity of the essence and of the idea there is the fabric of experience, this flesh of time, and this is why I am not sure of having penetrated into the hard core of Being" (Merleau-Ponty 1968: 112), suggesting that penetration may not be the most helpful way into relation with Being. We must neither soar above or become sediment at bottom of our experiencing the world; we must mediate our understanding through our bodily experience so that we do not deprive ourselves of "that very cohesion in depth or the world and of Being without which the essence is subjective folly and arrogance... there is no positive vision that would definitely give me the essentiality of the essence" (Merleau-Ponty 1968: 112). Our entry way exists within awareness and participation, by understanding a style of significations based on dimensions not bounded by locality or temporality.

Were we to relocate our bodies into this non-local dimension we would perhaps be able to gain access to essence because we would find our center at the heart of the *enroulement*, within the experience coiling and folding again onto its experiencing self. The non-local visible exists neither within nor without time and space, and neither does it compete. Visible interacts and does not exist alone; neither does it engage everything at once. Instead, the visible bounds our experience and sets both time and space around itself, and around its experience. Visible reminds us of the joints of experience by existing secretly within them.

Merleau-Ponty certainly shows us how we may engage the visible with interrogation by challenging us again and again to remember that the questions are what resets our bodies into process, into the motion of experiencing, and into the vulnerability

we must allow in order to be experienced by the world in exchange. Time is cohesive, not split by a mechanized clock or by abstract meaning. In order that we may reengage our experiencing in time we must attend to its *dehiscence* so that both we and our experiences open. In the opening, language remembers its strength by relegating meaning to the same process of forming and reforming. Language as symbol strengthens the nervure of essence by distracting fixed meaning with hunger for fluid naming of experience. Words act no longer as conduits of information, or confrontational tokens. Instead they shape a vortex of possibility and connect the question of our embodiment with the world's flesh.

We participate intuitively when we respond to "coincidence and fusion; everything one gives to Being is taken from experience, everything one gives to experience is taken from Being" (Merleau-Ponty 1968: 122). In this process the flesh of the world receives all visions and is pregnant with them. Intuition acts as a processing organ, and as we exist within that process and we also exist as an ontological organ. In this understanding there is both overlapping and encroachment, and along with that the release of reflection as the primary tool of noticing differences. Differences that make a difference are instead shaped and noticed by our embodied process of questioning.

By allowing our bodies to be ontological organs (Merleau-Ponty 1968: 121) we connect to that which holds the potential of the secret knowledge: wild Being. Allowing our language to flow from our connective experience, we create at best a kinship of opening. Within this opening we invoke wild Being with the "truth" of our bodies, making our bodies themselves into questions put to Being. When words come out of our embodied invocation, language becomes itself a living system. Merleau-Ponty states, "Language is a life, is our life and the life of things" (Merleau-Ponty 1968: 125), suggesting that we must recognize that language itself increases our awareness of the folding over on the visible and lived experience.

Merleau-Ponty suggests language from body carries both this weight of interrogative potential and the quest to act responsibly within action. Recognizing invocation as intuitive cohesion we put into motion signifier and signified and allow an ongoing restatement of signs as potentials and as processes. Our embodied participation

acts as a cohesion of questing ions (quest-ions), as an invocation to wild Being itself, and with response-able use of language, we recreate the Life in living systems. In order to manifest creation we must relinquish our linear knowledge for complex potential.

Ontology of the Bodymind

My body is ethic. My body is my mind. The ethic of bodymind allows certain choices and disallows others. I participate in the conscious arrangement of this embodied ethic based on the activities I practice daily, hourly, every second. In breathing I practice breath connected with the air of my immediate environment, which in turn connects itself with trees that take it in and exchange it in their cells. In the neighborhood I live within this same tree-air that is also in exchange with automobiles driven by other human breathers, who take in its output of carbon monoxide and dioxide and assimilate these chemicals into their bloodstream. I ride my bicycle on the same street with tree-air, car-air, and other-breathers-air, our air is re-membered by our intake and exhale of its own embodied being. This shared-air is the members of our culture, in the same way as the soil from which our eaten food grows and the red paints of our art canvasses are collected from the iron oxides of the soils as well. All our culture is embodied, a shared and participatory medium.

Once we realize the extent to which we participate in allowing the culture around us to be regulated by unconscious technologies and the contaminants to living systems that come off these technologies, we have the world of change in our mind's eye. Within those who have begun to understand the implications of their actions arises the responsibility to change our embodied ethic of disassociation, and stifled desire for Earth's natural abundance. Every action we engage is an engaged creation of the world, and draws upon Earth's energies in a unique way depending on our action. When we have begun to see the depths within which our actions are implicated in this co-creative process with every energetic being in the universe, we begin to desire a shift towards response-able behavior. This behavior includes maintaining the integrity of our own ability to respond to our surroundings, which means maintaining

the co-creative integrity of our surroundings as well. For instance, if more-than-human creatures in our surroundings no longer exist, they will not be able to respond.

When we are not certain about how to maintain the integrity of the other, we must remember to re-member the other in our own choices. For multiple reasons people seem challenged with regard to taking responsibility for their own actions. Emerson took notice of this trend socially over a hundred years ago, and commented on it, "Men do not imagine that they are anything more than fringes and tassels to the institutions into which they are born. They take the law from things; they serve their property; their trade or profession; books; other men; some religious dogma; some political party or school of opinion that has been palmed upon them; and bow the neck and the knee and the soul to their own creation. I need not specify with accusing finger the unsound parts of our social life. A universal principle of compromise has crept into use. A Routine which no man made and for whose abuses no man holds himself accountable tyrannizes over the spontaneous will and character of all the individuals" (Emerson 1964: 168). At this time in the U.S. the country went through enormous growing pains around the industrial revolution, the Mexican War, slavery and civil liberties. What Emerson and other intellectuals of his time noticed affected the middle man with a battering that challenged his choices for survival of himself and his offspring. The engagement of "civilized living" with industry, beyond mercantilism, began being the available way to create a life and sustain oneself, with this change came a loss of a certain type of community. Emerson and Thoreau both noticed the effects of this time socially, and Thoreau, of course, noticed the effects of this loss of deep community with members of the more-than-human world as well.

Thoreau's beliefs about the roles of social and biological communities significantly challenged the mainstream, and his works of writing as well as his actions of civil disobedience have affected thousands of people from all walks of life. Thoreau warned readers about the evils of large-scale society, and honored what today would be called localization, living, being, and acting locally. When societies get too big they lose their social and moral cohesiveness, rendering the common man powerless in regards to

creative survival and lifestyle choices. In the essay "Resistance to Civil Government" he writes: "Can there be a government in which majorities do not virtually decide right and wrong, but conscience?—in which majorities decide only those questions to which the rule of expediency is applicable? Must the citizen ever for a moment, or in the least degree, resign his conscience to the legislator? Why has every man a conscience, then? I think that we should be men first, and subjects afterward. It is not desirable to cultivate a respect for the law, so much as for the right. The only obligation which I have a right to assume, is to do at any time what I think right. It is truly enough said, that a corporation has no conscience; but a corporation of conscientious men is a corporation with a conscience. ... Know all men by these presents, that I, Henry Thoreau, do not wish to be regarded as a member of any incorporated society which I have not joined" (Thoreau 1992: 227). The body is the root of the corporation, and it is noteworthy that Thoreau connects body with conscience and conscience with industry.

Engaging the human scale, the embodied scale, Thoreau praised the deeply moral and creatively engaged individual and radically disagreed with the unexamined civic life. In this case a creatively engaged individual meant something much more complex than the enlightened individual transcending the constraints of the modern world. Thoreau scholar Manfred Steger describes the way the author engages intuition to moderate the individual. "'Intuition' for Thoreau is the recognition of the complex web of organic life in which each individual life-form depends on the other, yet at the same time emerges as a unique representation of the whole" (Steger 1993: 201). In this way individuals become such only as they continue to exist deeply within community, and community within environment. His anarchistic principles led many people to disagree with the realistic nature of Thoreau's propositions for society, but his call for embodied inner moral strength isn't historically unique.

John Muir also proposed embodiment as a scale for weighing and webbing humans within the Earth. Every step of discovery along his path to the love of wilderness may be seen as, "a series of gradual, relational, creative, and bodily grounded transformations of his visions of and emotions toward various emotionally and

symbolically charged environments. In this process of repeated self-transformation, Muir was by no means solitary and independent, but rather was crucially supported by a wide range of cultural and social patterns of nineteenth-century America, including family and friends, Christian imagery and Christian love, sexual patterns and erotic possibilities, male identity and privilege, social structures such as apprenticeship and higher education, scientific institutions such as the network of amateur botany, and much more" (Holmes 1999: 244). What Muir called for was actually as radical as Marx's desire for healing of the "metabolic rift," but Muir proposed a different way of going about the re-connection. He pictured natural Earth as his home, and wove relationships with both people and places together to mend the environmental rift that was growing. Not only have the environmental thinkers in the U.S. been aware of the challenge of community in relation with the modern "I," for many years women have struggled to define a compatible place for their own way of perceiving self in relation to a male-dominated public.

Jill Ker Conway, scholar and first woman president of Smith College, studies the way people create and tell stories of themselves by looking at autobiography as one way people describe their embodied lives by writing their personal stories. She finds that our inner conversations, generated by the cultural languages we learn, conditioned by the historical time we live in, and continually crafted over time are at heart philosophical and theological. We think deeply about ourselves and how we connect with the world around us, and we manifest our self-knowledge through our decisions about how to survive and live. We make conscious choices only some of the time. Conway reminds us of the importance of consciousness in making responsible decisions for oneself and community. Noting the romantic tendency to give up our power to "fate" or to a higher power, we invoke the dangerous territory where morals become negotiable.

Conway explores this lack of agency concerning self-generation, self-organization: "It's hard for someone who doesn't acknowledge agency, even to herself, to reason very cogently about the morality of her actions. Once we've acquiesced in concealing our agency from ourselves and others, we've lost our moral moorings. ...We can spot moments when we are slipping into this mode of thinking, whenever our life

plots find expression in the passive voice, or whenever chance or destiny is in charge of the action, because that grammatical mode or that notion of causation means we've so constructed our lives that we can't subject our actions to moral scrutiny. ...we should be wary of seeing our stories as romances because using that form will encourage us to confuse the nature of causation in our lives" (Conway 1999: 179). Romantic heroines and heroes just follow the direction of their inner strength and aren't responsible for their actions because their actions are dictated by a higher power.

Romantic attitudes historically include describing choice-actions in the passive voice, and chalking up good outcomes to fortune, destiny, god's will, or lady luck for example. While this preserves the individual's power in relation to the community (no one wants to be cast out because of arrogance, a lack of generosity, or jealousy from others), this way of describing has also led to humans conquering landscapes and using other forms of life disrespectfully for our own good. How we tell the stories of our actions shapes the responsibility we claim for our actions, and this invariably affects our choices within our community and the larger environment.

Wendell Berry has noticed the moral latitude that humans have taken within their cultures as well, and challenges our moral laziness over the course of his prolific writing career. Berry understands and practices an embodied connection to the life-systems of earth, writing about the place of agriculture as means for metaphorically collecting food from woven webs. He is insistent on the importance of recognizing both our human and our wild natures within our communal web, weaving the energies of both together with the Earth in order to provide for a sustainable reproduction of ourselves as cultural community and as species human. Without this entwined connection of our human body with our wild spirit we alienate ourselves from the dance of the system of evolution.

The fear that we feel in watching this dance with our broader (but still limited) consciousness arises because of the fragility we notice in this physical dance. In essence we may at any time watch ourselves be broken off from the web of life's evolving, and this is of course a scary thing. Berry reminds us of the non-negotiable connection between existence and essence when he states, "By dividing body and soul, we divide

both from all else. We thus condemn ourselves to a loneliness for which the only compensation is violence—against other creatures, against the earth, against ourselves. For no matter the distinctions we draw between body and soul, body and earth, ourselves and others—the connections, the dependencies, the identities remain. …It is not necessary to have recourse to statistics to see that the human estate is declining with the estate of nature, and that the corruption of the body is the corruption of the soul" (Berry 2002: 102). Nature embodies the species human, and we embody nature's state.

In order to challenge what he calls our decline within nature, Berry declares the importance of maintaining the diversity of being that the more-than-human-lives offer. For diversity to flourish in the U.S., "the sciences and the humanities are going to have to come together again in the presence of the practical problems of individual places, and of local knowledge and local love in individual people—people able to see, know, think, feel, and act coherently and well without the modern instinct of deference to the 'outside expert'" (Berry 2002: 544). Deferring to the outside expert sounds remarkably similar to turning one's will over to a "higher power" and evading the personal responsibility that comes with making choices that affect both your body and the communal body.

Laura Sewall, author of *Sight and Sensibility*, notes the importance of the notion of interdependence in contrast with dependence or independence. She illustrates the model for larger-than-human choices, "Our worldview is shifting from independence to interdependence, from modern and mechanistic to postmodern and relational….shifting toward a larger perception of the wholeness and health of an interdependent self….The perception of healthy embeddedness, at the core, is a recognition of reciprocity, of receiving and giving back seamlessly….This means looking outside ourselves, not for authority, but for the experience that binds our senses together, that communicated our capacity for a depth of experience, and that waves us into the more-than-human field of relations (Sewall 1999: 255). Reminding us again of the life that exists that is not human life, Sewall and others continually return to the importance of recognizing responsible agency in choosing how we relate to the Earth.

Use informs the governance of a place, Berry states, and "right action" in relation to an area involves "right use" of that place. How we create our "use-relationship" is based within long-term incremental changes. Problems are not solved with the making of more problems, but with the making of solutions on multi-levels. "Such work requires not only correct principles, skill, and industry, but a knowledge of local particulars, and many years; it involves slow, small adjustments in response to questions asked by a particular place. And this is true in general of the patterns and structures of a proper human use of a beloved country...they were made by use as much as by skill" (Berry 2002: 548). Choices about the use of our bodyminds are the original choice, and when we make healthy choices on a multi-leveled platform of action, our choices affect our larger social network and further, our collective embodiment and our environment.

In his book *Summer Meditations*, former Czechoslovakian president Vaclav Havel discusses the relation of our personal choices on larger institutions such as the state. While he believes that the polis can and should be based within the ideal, he agrees with Berry about the importance of personal participation in the creation of the state. Civilians participate in creating the state with their actions, and as they participate, they are created by the state in a reciprocal relationship. He writes, "A state based on ideas should be no more and no less than a guarantee of freedom and security for people who know that the state and its institutions can stand behind them only if they themselves take responsibility for the state—that is, if they see it as their own project and their own home, as something they need and not fear, as something they can—without shame—love, because they have built it for themselves" (Havel 1993: 128). We build the spaces in which we exist, but we do it both consciously and unconsciously, and in the unconscious spaces we can become lost in laws laid down by communities we have little in common with. Our challenge as embodied humans comes when we bring awareness to the spaces that we have not created, and to the spaces we would like to see actively changed.

Formal Spaces, Unspoken Laws

As groupings of cells just after conception, we begin our process of embodied life in the womb of our mothers. Genetically unique in our coding, our lives unfold according to how we learn from our environment, through living in our particular bodies. Our interactions and enteractions (between actions) from both within and outside of our immediate environment involve us in a bodily practice, and initiate us in a *how* about which we are constantly negotiating. No one can predict whether we will grow up "successful" according to our cultural and historical definitions, but what we learn along the paths of our lives impacts both our own development as well as the social, political, and environmental development of our communities and Earth.

Through our embodied practice we are constantly met with the opportunity to be more or less conscious about the choices we make. These choices involve the realms of the physical, the mental, the emotional, and the deep inner realm of what some have named the spiritual. We become patterned by what we learn in each of these realms and spend much of our lives reliving earlier patterns. Each choice though is potentially a moment where we could make a change, becoming more conscious about our habits and choosing environmentally healthier actions within those realms. How do we learn to choose our actions and ways of being so that we support embodied diversity? How may our learning empower us as individuals and in communities?

Within any particular community we learn a variety of languages that support our development as individuals and ideally empower us to return support to the community. While achieving fluency in the dominant languages of our cultural communities, we also learn informal languages in our communities, which assist us in being socially accepted. These patterns may be unhealthy or immoral to the living systems of Earth, but in human cultures these patterns are recognizable and socially supported. Over time, our definition of success encompasses the ability to learn necessary skills for empowerment in a variety of spaces: formal and informal, cultural and natural, intellect and body. How we locate ourselves in the spaces of our lives depends on how we are taught to learn, how we are taught to feel about ourselves and the world.

In U.S. culture the fundamental gestalt is consumerism. We sell our selves to time and exchange our lives for money. Then, in the abstract reality of the economic structure we buy back the life we've sold. Unfortunately healthy existence often gets lost in these transactions. "A consumer is in a morally weak position in the same way that anyone is relatively helpless in the exercise of daily decisions. Daily decisions are preformed by fundamental decisions. The fundamental and material decisions that have shaped the technological society leave little leeway to the daily decisions of the consumer" (Borgmann 1992: 115). Our choices are conditioned each moment by the invisible hand of the marketplace, which actually exists because multitudes of individuals and communities participate in the creating it.

We forget that we are actively responsible for the material pattern through which our energy flows. Unconsciously we continue to support modern life because we neglect to act against it with the full force of our lives. "The failure of people and parties to take clear and vigorous responsibility for the order of things indicates the absence of any profound disagreement with the tangible character of contemporary life" (Borgmann 1992: 115). While we may not wholeheartedly agree with the course of modern life, because we do not directly act out against it we are certainly implicated in its development and growth. Our actions speak louder than our ideals. We are social economy, and we create the world as we learn it and as we wish it to become. As we learn how to define success we also learn the languages of our cultural communities.

As social economy we develop ourselves and our communities, a living nexus, and a node of embodiment in which our choices become our actions, and our actions become the earth. Aldo Leopold's call for a land ethic has been recognized for years as a turning point in the U.S. as we created our relationship to what we call our "natural resources." In comparison with today's talk of sustainable agriculture, or permaculture, John Foster analyzes Leopold's ethic in his text *Ecology Against Capitalism*. He writes, "In contrast to the dominant forms of Western moral philosophy with their possessive-individualist foundations, Leopold argued that moral sentiments were principally a product of the definition of moral communities—the result of historical and evolutionary

development" (Foster 2002: 86). He suggests that our moral communities, which history effects, shape our ethical sentiments on many levels. Socially, our moral stability comes from identifying with certain ways of knowing. A diversity of spaces and cultural communities helps to create breadth in the ways we identify ourselves, and have the power to bring out, accentuate, and recreate hierarchies and spaces of empowerment.

We use the formal and informal spaces of our bodyminds as we develop functional literacy in our daily lives. Formal spaces of learning have typically been considered more valid than informal spaces in our country. These spaces include schools, churches, government, and courts of law while less formal spaces include homes, community centers, streets, and natural areas. Civilized landscapes like urban centers are often considered more formal than rural lands and rural landscapes more formal than wilderness lands. The latter, while they have been formalized by the debate about their reason for being (questioned both economically and intrinsically), are essentially considered informal spaces of human existence.

Like the metabolic rift between humans and the landscape that we've seen, a similar disconnect occurs between formal and informal ways of being in society. This disconnect often gets described in dualisms, perpetuated in part by our belief that they reflect an impasse. Formal and informal cultural communities certainly suffer from this tension, and holding the tension between community groups happens all too often for sometimes lengthy periods. Richard Ford suggests that "The solution to this paradox lies in understanding culture as a context, a continuity of meaning rather than as a static entity or identity. A cultural community exists in a symbiotic relationship *both* with its members *and* with 'outsiders'. ... Although there are certainly distinct cultural communities, the boundaries between them are often a good deal more permeable than most discussions of cultural pluralism and cultural membership would suggest" (Ford 2001: 101). The cultural community, with its permeable boundaries, acts as a living organism as it maintains itself and grows. It can neither totally shape its members nor completely exclude outsiders. Where crossover occurs, the potential for learning is at its greatest.

Some forms of knowing require individuals to use their entire physical being in order to succeed: their eyes, ears, muscle memory, and a variety of learned languages. This multiplicity of knowing, or physical crossover in the ways we know, becomes imperative as the population of humanity grows and cultural communities overlap more regularly. Our ways of knowing set us within the formal space of the body and its senses. Walter Ong analyzes the physical nature of fluency of a variety of discourses in his book, *Orality & Literacy: The Technologizing of the Word*. He writes, "Knowledge is ultimately not a fractioning but a unifying phenomenon, a striving for harmony" (Ong 1982: 72). Once the chosen knowledge is incorporated (in-corps, in-bodied) it becomes embodies and begins to inform the actions of the knower in the chosen discourse.

The semantic ecotone may help us to develop ecotones of cultural discourses. In his study of how humans interact with the landscapes around them, Melnick states, "...we must learn to 'read' them and to consider the forces that caused them to develop. This process is much like learning to read a language. We recognize patterns, details ('words'), parts that go together, and pieces that 'sound' strange next to each other. We must learn the 'grammar' of the landscape and allow the landscape to be a teacher" (Melnick 2000: 35). We relate to cultural landscapes and discourse fluencies in much the same way. As we work in formal and informal spaces in our lives, we constantly make choices about how to manifest the diverse worlds around us. If we learn to recognize similarities as well as differences, we will add to the cultural ecotones that empower diversity in all aspects of our lives.

Cultural ecotones act as formal metaphorical spaces in which diversity may flourish. When communities become more accepting of cultural diversity, individuals will become more openly fluent in a variety of languages, making our communities stronger and more able to adapt to changes in life. Knowledge of languages includes the ways and actions of communication by the more-than-human life; it includes listening to the knowledge of life that does not speak with the cultural language of humans. We must listen to it in order to leave space for it to manifest itself. Living systems self-organize, and if we can leave space for other life we will be rewarded with our own lives.

"Everywhere the answer—it is being discovered by innumerable ecological activists—is to be found in the defense of diversity, both ecological and cultural, and in the promotion of an ecology of social justice" (Foster 2002: 89). Metaphorically and realistically, this signifies social justice for lives of diversity within the web we weave together, not individually as a single human or as a single species. *The species human is not wise enough to create Earth alone.*

Chiasm, Being Time

What if we were to approach our souls as processes? What if these processes consisted in learning to re-join our minds with our bodies, post-Descartes, and reconnecting this bodymind with the flow of a deeper awareness of living? When we consider Glen A. Mazis' book entitled *Earthbodies: Rediscovering Our Planetary Senses*, we consider this active potential for both being *and* becoming in the lives we bring into the world. His work coalesces into a functioning whole what Merleau-Ponty began in his thinking fifty years ago. Mazis suggests that by inhabiting the world as an "earthbody," we may more consciously act to bring the Western paradigm out of the spell of insanity it functions under. Within the paradigm of earthbodying, we come to recognize different boundaries made of different processes than logic, sentimentality, common sense, and knowledge.

An "earthbody" exists as a vortex in which we sense multiple ways of ourselves being put forth towards the world, and pulled in from the world around us. We no longer depend on the world for food, shelter, clothing, money, mates; instead we co-create the world actively and peacefully, taking shelter in our creativity as we consistently pulse towards being fed by feeding, towards being touched by touching. When we participate ourselves in creation we take responsibility for both our I and our Thou, as Buber would describe them. When we ourselves participate in creation we recognize the value of commitment first, commitment to the creative process, commitment not to uncertainty but to the certainty that we will continue to participate in our co-creation.

This participation means making a commitment to embodied interrogation, as Merleau-Ponty described. It is a commitment to the unknown, and "an ongoing task, a process, and something we have to keep doing at every moment.... Souls are not things, but a certain kind of rhythm with others, the world, and oneself, a certain kind of becoming attuned or being sensitive.... To become soulful, we need to get outside of human boundaries" (Mazis 2002: 198). As Mazis states, "Commitment is about being responsible, in both the traditional sense of being morally accountable, and in the modern sense of "being able to respond to" someone or something" (Mazis 2002: 179). If commitment calls for a response to someone or something, this means that it is also a response *from* somewhere. From where do we respond? Remembering that postmodernism has deconstructed Cartesian mapping—we no longer force apart the mind from the body—our response as humans stems from our bodies, complete with connected mind. Mazis believes that, "Our bodies commit us to an indissoluble relationship with other beings on this planet" and he reminds us again that the recognition of this leads us into a respectful, willing, listening and learning relationship with the more-than-human world. For example this means that when we neglect noticing the rocks we forget our understanding of stillness, when we neglect noticing the growing plants we forget the brevity and tenacity of life, when we neglect noticing other animals we begin to believe that we are the only animal with talents to offer the world, and when we neglect all these different rhythms in collectivity we forget that the world needs a multiplicity of talents to keep its creative balance.

As the Balinese calendar keeps track of multiple cycles of Earth's natural forces, our work as the species human is to keep in mind the complex overlapping rhythms of living beings. The world's creation works in ways mysterious to us—mysterious because our creation stems not only from the thin sliver of our individual consciousness but also from the wide slice of our unconscious that participates in our choices and actions. Treating our bodies first as creative organs of response shifts the way we will approach everything we do. If we *process as product* instead of processing *towards a product* our choices become significantly different.

Historically, choices have allowed many humans to distinguish themselves from others. What if our choices no longer gave us that feeling? What if choices merely connected us further into relationships of cooperation and collaboration? What if choices actually implicated us in deeper and broader commitments to the community we live within? When we hold ourselves to our commitments through time something significant happens: we change in response to our commitments, we lose our original sense of self in relation to the world around us, and our bodies may even change to reflect the choices we've made to support our commitments.

Change and uncertainty cause humans to feel fear, because we have no control over whether we will live or die, and whether we'll experience pain or pleasure. Western models of consciousness call for a defined and maintained sense of self, and when we face change that boundary of "self" may become significantly altered. We fear the loss of our boundaries as distinctive, defined human individuals because after change we may not be our "self" and to maintain that "self" has been the primary goal of Western society since at least the Greeks.

Logic, common sense, and rationality appear in connection with bolstering ourselves in society. Quantitative or objective knowing has been valued over qualitative or subjective knowing and disembodied knowing goes along with all of these societal ideals of knowing. Plato long ago conceived of reality as being "rational and numerical," and since then Descartes and science have helped to carve out this "ideal real." We conceive of the world as a collection of atomic things instead of a connection of magic beings that each and all move with their own rhythms and speak their own dialects. If we listen, we may begin to reconnect with our own deeper and magical life.

We begin the process of reconnection to a relational reality by recognizing that our bodies are *connectors to* and *co-creators of* reality. We re-member ourselves by identifying and strengthening our connections with animals, with plants, and in dreams. Merleau-Ponty suggests that animals are basically "creatures of dream" and that we, like animals, need to reclaim our dream state in order to fill out the world once again. In cultures besides the West, like the aboriginal peoples of Australia, dreaming actually creates and organizes the world. Without lived dreams these cultures wouldn't be able to survive.

These dreams are not success-oriented; they dream the world into being. In these dreams we commit our vitality and soul-force to the soul of the earth so that it will stay in balance and alive. This dreaming is out of time as we know it. It exists in a complex vortex of timings, a shared rhythm of multiple connections within which we conceive of a dream that goes through and within boundaries both known and unknown. As Gaston Bachelard put it, "I dream the world, therefore, the world exists as I dream it" (Bachelard 1969: 158). When we recognize ourselves in our dreams and our dreams in the world, we allow the power of our dreaming to create a virtuous earthbodied existence.

As we create, it is imperative that we create virtuously, as Berry described earlier. Our virtue must come from fidelity to complex relationships, not to objective ideals. We must "demonstrate gracefulness in contributing to the health of the planet its beauty, and its sense of vitality" (Mazis 2002: 191). Virtue consists in being creative in the moment, responsive to surroundings, reciprocal to the situation. One of the ways we remain creative in the present comes from one of our greatest evolutionary strengths as a species, our sense of play.

Our playful spirit Mazis believes "is at the heart of being able to maintain relationships of any sort" (Mazis 2002: 196). Evolutionists often have suggested that interactive play has allowed us to co-create our environment. Our survival as a species in this case depends on our ability to lose our boundaries of individual self creatively and responsively. In responsive play we create new boundaries, we shape-shift, we try out multitudes of possibility in relation with the world and with each other. Play creates cooperation and mutuality; play recognizes subjective context and specifity. Play allows us to step out of mechanized time and the Cartesian duality of mind and body, self and other. Play reconnects ambiguous moments through the energy of exchange, play engages vitality, and provides us the potential to play ourselves back into a respectful, reciprocal relationship with the earth.

Play organizes and reflects complexity back into the world, because it is inherently a self-organizing system that recognizes and respects complex responses to the whole. Play in a sense is the opposite of addiction, which causes one to see

the world as hostile and attach oneself to a "safe haven" in an overwhelming and complex environment. In Western society today we see an epidemic of addictions: to food, to materialism, to chemical changing substances, to cyberspace, to each other, to ourselves, to religion, to television, to exercise. At the heart of these is an addiction to control.

Control is the opposite of play; play is the practice of releasing control. As earthbodies, we are vortices of complex responses creatively playing within the ambiguous and clarified world. Earth's systems constantly call to us that we are their flesh. When we play we learn to listen respectfully, with humility, with patience. We learn that we will be received back into a pattern that we exist within. The pattern includes the dimension of depth, outside of our sense of controlled time.

Rhythms and patterns engage our bodyminds and connect us with others. These connections will at times bring with them pain, and at other times give pleasure. Allowing these connections and allowing the varying rhythms to pull through us will ultimately teach us the feeling of joy. Humans are in a reciprocal relationship with earth whether we recognize it or not, and while en-joy-ing our environment as earthbodies is much more difficult than controlling our environment as humans, our control is false, it doesn't exist. In reciprocal relationships commitment and responsibility are required for the interaction to continue. Therefore, Mazis suggests, "responsive commitment" (Mazis 2002: 248) not only reengages us with our environment, it also re-involves us in non-linear time. Through our complex creative responses, we re-volve, and we also continue to evolve.

When we relinquish our sense of inner time to the paradigm of objectivity, we forget to practice that time is shifting, unique, a mutually aware moment for me with my surroundings. Next's and previously's are set back from the moment and instead we are both, we are non-linear time. As we allow ourselves back into the present, back into the complex dimensions of re-evolving time, what combinations of letters and words will we read and write within our new paradigm? This is what

the language and style of Merleau-Ponty's phenomenology practices. This practice re-members our bodies within the Earth, re- teaching us to be time. Humans are not elevated above the context of the world; we are within the fabric of the world. We are not set against the passage of time; we are time embodied.

In the end,
We will conserve only what we love,
We will love only what we understand,
We will understand only what we are taught.
— Baba Dioum
Senegalise Environmental Philosopher

Experiencing Living

The day is hot and long. I drag myself onto my bicycle and nearly lose consciousness over the course of the three mile ride across town. Once in the empty auditorium I lie down on the floor of the room, my bones on the wooden slatted bones of the flooring, and I am absorbed by their coolness. My heat transfers to the length and coolness of their varnished cells. I know that when the drums begin, when the class begins, I will move from this silent place of low stillness inside myself to an inner space of intense high energy. I wait, barely breathing and groaning inside. The first drummer of the class arrives, and as she warms up I am bounced backwards by the vibrations out from the body of her drum. The teacher comes into the room and immediately my awareness changes, focusing on him, and my attention connects to his readiness to begin the class. Other dancers arrive and I feel the human energy in the room shift as the time to begin moving unfolds.

The system of this experience is the whole of it—wooden floor, mybody, drummers, drums, dancers, teacher, dance. My exhaustion is not lifted from me but is actually transmuted within my own physical system because I allow it to change. Were I to remain attached to my exhaustion, I would perpetuate its slowness in the appearance and reality of my movements. I engage in the movements set out by the teacher, the subtleties of the three dimensional space, the flow through time and music of the fourth

dimension, the smell and feel of unnamed senses and unmeasured dimensions. As I move across the floor with the body of the class, towards the drummers, towards the intensity of their rhythm, a phrase comes into my mind: "Get out of the way. Get out of the way of the dance." I practice what this phrase means to me, the practice of non-attachment.

The practice of non-attachment, made more difficult by the tiredness of my muscles, shows me myself within every facet of this moment. Amplified by consciousness, my awareness moves through my limbs, traveling down my arms and out my fingertips, circling within my pelvis, down my calves and out through the arches of my feet into the floor. The air around my body *becomes* the floor as I begin to connect the movements of the dance more fundamentally with the vibrational dance laid out by the drums. Together we create a flow that circulates so completely that my body is the movement, the drums, the dance, the floor. I am no longer doing the thing, hearing the thing; it does me, hears me. When we are embodied we live both within and without the vibrations around us, we are solely concentrations of vibrations, we are no longer our own thing but a pocket of vibrational being amongst other frequencies of being.

As a frequency, you embody a pattern manifested physically. As a living system, you are self-organizing and self-maintaining, a constant and constantly materially reconstituted. Both particle and wave, in certain environments you energetically act as a standing wave. Explaining this in *The Architecture of Matter*, Toulmin and Goodfield write: "Suppose you have a resonant chamber full of air, which can be insulated from the surroundings... it will continue to resonate indefinitely, the original supply of energy being trapped within the container in the form of a standing sound-wave. Any particular container of this kind will have only certain frequencies at which it will naturally resonate, corresponding to the 'fundamental' and 'harmonics'... At any one of those natural frequencies, the wave-pattern builds up progressively and the incoming energy is stored away in standing-waves; at other ('un-natural') frequencies, the waves already in the system cancel out instead of reinforcing the incoming waves, and no standing-wave storage can take place. This is the general characteristic of all wave systems... In every case there are certain frequencies at which the resonant system will readily take up

energy from its surroundings, while at other frequencies no energy is exchanged at all" (Toulmin and Goodfield 1982: 287). Our task as aware and embodied sapiens becomes choosing environments that allow us to resonate indefinitely within Earth's systems. Living the metaphors speaking the languages that do not sustain our bodies will, in evolutionary time, be useless to our survival as a species within the whole—and we do live within the whole. There is no other reality.

Conclusions: Participatory Webbing

Be patient toward all that is unsolved in your heart and try to love the questions themselves.... Do not now seek the answers, which cannot be given you because you would not be able to live them. And the point is, to love everything.
Live the questions now. Perhaps you will then gradually, without noticing it,
live along some distant day into the answer.

— Rainer Maria Rilke, *Letters to a Young Poet*

We are looking for a self, looking to pinpoint a center that we know moves. The center is not fixed, like electrons around an atom or like water molecules in the body of the encompassing ocean. A pinpoint cannot describe a person, who, like an electron is in constant motion within the medium of the skin as well as without. The self has no fixed nucleus, and were we to locate an essential self, in a millisecond that self would have moved. As we move beyond the historical fixity of the Newtonian and Einsteinian relativity, this work explores how we begin to describe the embodied process as a location of participation. We are wondering if a nexus of complex relationships can illustrate a comforting way of being in the world. Instead of fixed reality or disconcerting relativism we are waking up to a consistently shifting soil in which we are deeply embedded, from which we draw all our energy, stimulation, and peace.

Once we see that "self" is not a question that may be answered, we will begin the process of unlearning our idea of learning. The key lies in the absence of "thought" and "reasoning" and nameable reality. In our complex and shape-shifting self, relationship is everything. Without relationship to multiple living systems that are more-than-human, we are left alone and dissatisfied with the echo of ourselves. Robert Frost describes the desire for this relationship in his poem "The Gift Outright": He thought he kept the universe alone; For all the voice in answer he could wake/ Was but the mocking echo of

his own/ From some tree-hidden cliff across the lake./ Some morning from the boulder-broken beach/ He would cry out on life, that what it wants/ Is not its own love back in copy speech,/ But counter-love, original response./ And nothing ever came from what he cried/ Unless it was the embodiment that crashed/ In the cliff's talus on the other side,/...Instead of proving human when it neared/ And someone else additional to him,/ As a great buck it powerfully appeared" (Frost 1949: 467). The buck brings with it a new force of being, something other than human, yet alive with the same resonance of a living system. The embodiment of our engagement with the earth around us has coevolved with other living things until recently. We've made time shallow, capturing the living breath of the earth in fixed forms, and defined it in technological forms, captured and defined forms of living energy.

When we explain our communal actions, and fix our societal choices we bury ourselves alive in definitions, buried alive. When we call Earth a "resource" we lose the energetic strength of our own wild and fundamental "source" that breathes us as we breathe it. Our cities, our cultures, our minds are slowly experiencing this fixation—like pavement spreading to encapsulate and cover over us—paralyzing breath, the movement of air and life. We scramble on the surface, feeling encroached upon, not sure why. We try to "get away" from the stillness and lifelessness of the city, traveling to places we have paved less. We move faster and more loudly than before and we hear only echoes off the cement walls, and see reflected bodies in mirrored ceilings and think they are real.

Excess energy reflected off non-living surroundings turns sour and is channeled into obsessive and neurotic behaviors. Signs of our frustration with this mirrored living appear in social commentary—in plays, movies, poems, music, books, humor—and signs appear in the way we care for our bodies and minds—habits of smoking, eating, exercising, thinking, even loving. We miss the Other and its presence within ourselves, we miss its creativity and reassuring presence. We even miss feeling truly afraid, truly engaged with the choices presented by the Other, unconditioned by our own minds.

While we neglect the life that makes us whole, we continue to diminish ourselves and our living system of relationships. These relationships are both known and unknown,

but, like the legal warning "ignorance is no excuse for breaking a law," when we break the lives of these systems, we break down our own lives as well. The ecosystems and social systems, the places we live within, are complex regions of togetherness. We exist where the dynamics of the whole cross through one another. We live as loci of events, we exist as nodes of being.

Embodied, we bring our complex living systems of involvement to where the realm less known to us reaches out to us, gesturing with its own languages. When we claim connection with the "other" we embody it, enlarging our nodal being to be received into something we do not know the outcome of. All paths lead through us, and when we open onto them we leave linear time and encompass being with presence that lives in time's circular unfolding. As Mark Lakeman has noted, our earth revolves, re-evolving is the pattern we participate in, and evolution is how we participate.

Evolution is the living system's way of getting us out of the known realm into a non-time zone of deep creativity. Self-transcending, we re-emerge as the species human, beyond time and within place, embodied sapiens, no longer thinking we are wise, merely playing at being in our embodied places. We evolve in regions where time and space have become one along with the contexts of our selves. We re-pattern evolution in moments where time and place is not for sale. Embodied, we are social economy, and our awareness alone allows us to make choices that manifest patterns of wholeness and health within Earth's living systems.

As I write, I replace the immediate version of my own reality with an historical version, a line of ink on a page in text, a heartbeat in fixed formation. I wonder how it is that I have ever been without this linear representation of my illusory self, and my evolving self wonders how it will continue to evolve with this peacock's tail of historical evidence dragging behind. Unfolded and written out like this I am rendered beautiful, but I am also fixed in color and linear form, embodied in a flat medium of limited dimensions. In writing, I grow and change from the outside only. In writing, I give myself over to the page and allow time and other people to represent myself to their ideas of self. In writing, my body becomes line and my electricity dulled in the face of

language and meaning. Language renders images of what once partially existed, for it exists only as we carry it on our backs, only as we represent it to ourselves.

In writing I notice I am liberated from having to be, I can face myself only in my fingertips, and I can ignore the mirror that I carry in my pocket. In essence, I can ignore the mirror indefinitely, in the face of posterity potentially throwing out the mirror entirely. Or so it seems as the lines of text unfold under my control. The problem I begin to face though, over time, believing that I will continue to exist in time, is that I have changed and yet this historical text says the same words. I change and written language changes only slightly in relation to my shifts. My question to the reader then, is can we change the text as we change in time? Can we re-embody text as we relearn to be time?

Can we reshape our understanding and our language as history fades and evolves into the past so that we may remain within evolution in the future? If we are not able to trim or re-pattern what has essentially become our peacock's tail, evolution may cut off our evolving, and our mind's eye (our mind's "I") may actually drive us to extinction. The Earth continues to evolve, but we have somehow stepped off the platform in order to catch the train. In this style of charting our own existence we are forgetting to exist. In fact, in this style of charting the present as we know it, we have learned that we cannot predict the future, nor can we retell the past. Both continue to evolve outward from the ever present moment of actually being.

Embodiment means that we each start over daily, the process of experiential layering going on breath by breath and like silt layers floating gently to the bottom of a pond. We are built up and filled in over time by these layers of our life. Experiences settle like pollen on our bodyminds, giving us depth from which we might later draw core samples of daily memories to sift through. Likewise, these layerings are a process of abstracting— concentrating life into pods of itself. Without repeated plunges into our own depths we'd not have a sense of self much deeper than our momentary consciousness, like the pollen dusted only onto the surface of the pond, our skin. Once the molecules of experience touch the surfaces of our being, they disappear, absorbed into the vastness of our bodyminds, stored somewhere in our silted memories.

Like spiders from their spinnerettes, we write earth's webbed world from our hearts, from our guts. We are re-aligning our bodies within the landscape of reality. Our re-embodiment will not be mental but structural, building the wholeness of our structures back into communities of humans and with more-than-human lives. In order to be re-embodied we release our attempts at controlling nature on the largest scale while keeping this large scale in perspective. It is our "attempt to control nature that separates us from it, that constitutes the core of our alienation from life, and that becomes the foundation for social development that includes patriarchy, class domination, statism, and militarism" (Johns 1998: 260). He continues, "Disembodied, our cortex is a shadow of life, ever busy trying to rationalize the irrational…Biocentrism offers us back our body by recognizing that the Earth is our real community…. A life-centered of planet-centered value system requires that we move toward transcending the split with nature both within our own psyches and in our material relationships: how we consume and alter the biosphere" (Johns 1998: 262). By re-placing our bodies with awareness in the physical world, we will make decisions that better reflect healthiness of whole choices we make.

David Orr comments on our disembodied and distracted way of being on Earth as well, even when we believe we are working for environmental healing. In an article for the April 2003 journal *Conservation Biology*, he says, "We are endlessly busy trading email, doing research, writing papers, and attending conferences in exotic places, but we go into the wild less and less often. We are cut off from the source" (Orr 2003: 349). All our mental gymnastics will not recreate a healthier relationing with Earth's patterns, only actually *being* a healthier pattern will see wholeness woven again. Being this pattern exhibits the embodied gestalt of the complexity of living systems, and our stories must describe this gestalt.

We are looking for a story that will reconnect us, a common story enfolding us within common flesh. We could state this as such: *We wholeness being, healthy fleshing connected, in our embodied languaging*. Our language reforms within new patterns of describing our living inner wilds, therefore we must *both* live *and* describe our embodied stories. Understanding our inner wildness depends on the practice of recognizing

unknown ways of feeling and being in our bodies "more than on abstract generalization. We need molecular biology too, for, among other things, it tests the contingent relations described in wild nature. We trace it in the fossil record, speculating about cause and effect, but our understanding is always in the form of a story, a narrative" (Henberg 1998: 506). Let us tell bold and simple stories that describe complex and connective living narratives.

Like the webbed world of spiders our actions describe collective actions, our awareness creates collective consciousness, the paradigms we live are shared paradigms. "You could say paradigms are harder to change than anything else about a system....But there's nothing physical or expensive or even slow about a paradigm change. In a single individual it can happen in a millisecond" (Meadows 1997: 15). Donella Meadows calls for change at the paradigmatic level, but how do we create this? Fundamentally, we model the change we wish to see in the world. As Mahatma Gandhi suggested, "You must be the change you wish to see in the world" (qtd. in Steger 1993: 214). At all levels, you hold yourself to the task of weaving the patterns of wholeness and health in the social and ecological webs you weave. You stay flexible, you stay non-judgmental, and you continue to choose the actions that reflect healthy living systems and weave wholeness within the world's webs.

The story you are reading connects ideas that seem far from connected, recognizes patterns in diverse spaces and maps uncertain pathways gently. It uses language boldly so that when you finish reading you will feel differently than when you began. The narrative is woven into a web that catches your imagination and re-members you to your wild body, deeply rooted within the complexity of your community. This story rewrites the world, creating one that consists of multitudes of webs woven by our actions and thoughts, co-created within communities that are both human and more-than-human. Ultimately, *both* our individual *and* collective choices will continue to position our species human in community with all of the other species and natural forces within which we are integrated. *Embodied, we have been given the opportunity to participate. Participating, we embody the Earth. Our process is the product, Earth we embodying.*

Epilogue

From a North American Indigenous story:

The eagle was not always the eagle, it was called yukatangee
Yukatangee talked and talked to keep the wolf away but it talked so much that it heard only itself. Not the river. Not the wind. Not even the wolf. But the raven came and said the wolf is hungry if you stop talking you'll hear him the wind too. And when you hear the wind you'll fly…

The eagle in its flight said all it needed to say.

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