THE VARIETY OF INTEGRAL ECOLOGIES

SUNY series in Integral Theory

Sean Esbjörn-Hargens, editor

THE VARIETY OF INTEGRAL ECOLOGIES

Nature, Culture, and Knowledge in the Planetary Era

Edited by
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and Adam Robbert

Foreword by Mary Evelyn Tucker

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FOREWORD

Mary Evelyn Tucker

THIS BOOK IS A REMARKABLE COLLECTION of provocative essays that reflect the spectrum of new and emerging integral ecologies. While the term "integral ecology" arose some 20 years ago in various contexts, with the papal encyclical, *Laudato Si'*, it is receiving fresh attention referring to the conjunction of ecological and social issues. Thus, the timeliness of this book is noteworthy.

But what makes it not only timely but also valuable?

I would suggest several things: the critical state of the planet, the need for interconnected and interdisciplinary responses, the acknowledgment of different ways of knowing, and the effort to respect but also overcome differences in searching for solutions.

We need not recite the litany of problems undermining both Earth's ecosystems and human social systems. This book begins with an understanding of the interconnected nature of these problems. No longer can we think of environmental issues and social challenges as separate. That is the contribution of exploring the variety of integral ecologies in these essays—to see what we have been missing.

It is clear that the environmental problems in which we are immersed are overwhelmingly complex—climate change, biodiversity loss, pollution. Indeed, some people are calling them "wicked" problems that will require radical and fresh solutions. Others are wondering whether we have already reached a tipping point beyond which there is no return. They are asking: Has the Earth become so saturated with pollution, so burdened with loss of species, and so altered by climate disruption, that mitigation is no longer possible? Are we able to "manage" our planet and its dynamic ecosystems, or are the problems so intractable and interconnected that genuine solutions elude us?

What this book does is take a step back to gain some larger perspectives on how to move forward effectively. It explores new attitudes to provoke sustained action and broader worldviews to promote fresh engagement beyond apathy or disempowerment. The authors explore ways to break through despair that seeps into human consciousness and threatens to undermine the basis for positive and lasting change. Larger integrating and empowering perspectives are essential.

Many disciplines are working to solve these wicked problems, including the best of modern science, policy, law, economics, and technology. These are all necessary but not sufficient; we also need integrative frameworks that bring these environmental disciplines together with the humanistic disciplines of philosophy, religion, history, literature, art, and music. Environmental sciences, social sciences, and humanities can form the basis for a variety of integral ecologies. Thus, interdisciplinary perspectives are fundamental to this book and to the ways forward. These perspectives are still on the horizon of possibility, ready to be brought into reality by the work of many scholars and activists, such as the engaged visionaries collected in this book.

This process will demand of us an openness to multiple ways of knowing. Science is not the only way to understand the universe or Earth, although sustainability science and Earth systems science are opening up more interdisciplinary paths. Science is indispensable, but so are the voices represented in poetry and the arts, in multicultural histories and stories, in the sound of wind and wave, and in the migrations of animals, birds, and fish. We are part of a living planet, and we are only beginning to hear once again the voices of the many beings—human and more than human. This is postmodern listening, drawing on science and humanities, as well as traditional environmental knowledge of indigenous peoples from around the globe.

Our certainty regarding ways of knowing is breaking down into an openness to plurality, a tolerance of difference, a seeking in silence for a deeper truth of being. Determining how to more fully include different approaches is still ahead, but it is encouraged by some key documents in our modern postwar history. These include "The Universal Declaration of Human Rights" (1948), the "Earth Charter" (2000), the "Universal Declaration of the Rights of Mother Earth" (2010), and the papal encyclical, *Laudato Si'* (2015). These represent a movement over some 65 years toward creating a multiform planetary community based on cosmopolitics and biodemocracy. Is creating this community possible, or is it an ideal still out of reach? What makes it desirable and even viable?

Clearly these documents are laying the groundwork for such cosmopolitics and integrated ecologies to be articulated in words and realized in practice.

From "The Universal Declaration of Human Rights" to the "Earth Charter" we see a movement of the human community from highlighting our independence toward recognizing our interdependence. And from "The Universal Declaration of Human Rights" to the "Universal Declaration of the Rights of Mother Earth," we are moving from a focus on individual rights and freedoms to a focus on the rights of the larger community of life. To move from privileging human rights to honoring nature's rights represents a major arc of change. And finally, the "Earth Charter" gives us the aspiration for an integral ecology based on (1) ecological integrity, (2) social and economic justice, and (3) democracy, nonviolence, and peace.

These are remarkable documents that reflect the move from valuing isolated individuals to celebrating our embeddedness in the Earth community. The papal encyclical brings us to that larger sense of human-Earth relations by suggesting we are incomplete apart from the whole. Our kinship with Brother Sun, Sister Moon, and all creatures is celebrated in the encyclical in the spirit of Francis of Assisi.

Moreover, an integral ecology sees the unity of people and planet in a way that respects our common evolutionary past and our shared ecological future. This movement, then, into a broader sense of community out of the hyperindividuality of modernity, is one of the hopeful signs that we can indeed create the foundations for the Ecozoic era out of the current end of the Cenozoic era.

The need for this new conjunction implies that people and planet are linked as never before in an evolving evolutionary and ecological framework. We have emerged out of a 14-billion-year journey and we are at a moment of great transition. As we recognize our evolutionary nature we are also witnessing the destruction of this unfolding process. As we see that we are cosmic persons, birthed out of stardust and the elements of supernova explosions, we also observe that we are disrupting the continuity of being. Just as we acknowledge ourselves as geo- and biohistorical Earthlings, we recognize that we are destroying the processes that have given rise to our species.

So where do we find ourselves at this moment of great transition? Perhaps in the midst of these massive disruptions we are causing in the evolutionary process, we can also discern a moment of grace, as Thomas Berry names it. This is clearly a time of break down, but also break through—a period of both chaos and creativity.

The question is how we situate ourselves and move forward in constructive ways. This book offers us the possibility of seeing ourselves situated in integral ecologies in an unfolding universe, part of the whole. That is what will give rise to the wisdom and compassion to inhabit our cosmic and planetary nature

rather than simply our individual human nature. This is what Albert Einstein signaled when he wrote:

> A human being is a part of a whole, called by us *universe*, a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest . . . a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.[1]

This book moves us forward into that integrated consciousness and compassionate conscience, which is indispensable for the evolution of human-Earth relations. May it open new pathways and inspire transformative action for the flourishing of the Earth community.

NOTES

1. This passage comes from Einstein's letter of 1950, as quoted in *The New York Times*, March 29, 1972.

1

INTRODUCTION

The History and Future of Integral Ecologies

Sam Mickey, Sean Kelly, and Adam Robbert

ECOLOGY IS TYPICALLY DEFINED as the study of relationships between organisms and their environments. Although this definition is correct, it does not tell the whole story. More specifically, it does not account for what can be described as *integral ecologies*—a variety of emerging approaches to ecology that cross disciplinary boundaries in efforts to deeply understand and creatively respond to the complex matters, meanings, and mysteries of relationships that constitute the whole of the Earth community. The aim of this book is not to present a comprehensive account of ecology (much of which has already been written[1]), but to introduce and explore the diversity of integral ecologies, showing how integral ecologies support efforts to articulate more meaningful accounts of the world and to create a better tomorrow for all members of the Earth community. On one hand, the book functions as an introductory overview of integral ecologies, situating integral ecologies in their historical contexts and presenting the main components of these ecologies—their methods, frameworks, narratives, and practices. On the other hand, the book functions as an advanced exploration of integral ecologies, particularly insofar as the contributors address contested topics and debates familiar to scholars working with ecology, environmental issues, and transdisciplinary or integral philosophies.

Why, then, learn about integral ecologies?

Learning about integral ecologies cultivates a comprehensive understanding of ecology, which facilitates collaboration and communication amid a full

spectrum of ecologies. Just as it would impede one's journey into a forest to keep only one eye open, it impedes a thorough understanding of ecological fields of study to restrict oneself to only one or a few ecologies. However, learning about integral ecologies is important not solely because it is required for a comprehensive understanding of ecological fields of study. It is also important because of the commitment of integral ecologies to respond to the critical urgency and gravity of current ecological, or more generally, planetary, problems. Humans and the entire Earth community are facing an unprecedented situation that involves many interconnected crises affecting the natural environment, social institutions, and human consciousness, crises such as freshwater scarcity, the mass extinction of species, global climate change, ocean acidification, economic instability, poverty, sexism, racism, alienation, despair, and fragmented knowledge.

The essays in this book show how integral ecologies both facilitate a more comprehensive understanding of ecology and suggest potentially more effective responses to the interconnected crises currently facing humans and the whole Earth community. To orient the reader to the vast horizons and crucial topics that are the subjects of integral ecologies, this introductory essay provides an overview of the history of integral ecologies in two sections, "Ecologies" and "Integral," followed by a brief summary of the chapters.

ECOLOGIES

The standard definition of *ecology* does not adequately account for the abundance and diversity of ecologies, which is to say, it does not adequately represent the full spectrum of ecological approaches and the concepts, practices, and methods these approaches use to study relationships in the natural world. There is not one approach to ecology, but many approaches, many ecologies. These ecologies include approaches from the biophysical sciences typically associated with ecology (e.g., environmental sciences, biology, genetics, etc.). Indeed, in 1866, when the German biologist Ernst Haeckel coined the word *oecologie* (from the Greek *oikos*, meaning "household" or "dwelling"), he defined the field precisely as a scientific inquiry into the household of nature, an inquiry that would further the development of the evolutionary theory articulated by Charles Darwin in his 1859 work *The Origin of Species*.

Defining ecology as the study of the relations between organisms and their organic and inorganic environments, Haeckel draws explicitly on Darwin, saying that "ecology is the study of all those complex interrelations referred to by Darwin

as the conditions of the struggle for existence" (as cited in Merchant, 2007, p. 178). In light of Darwin's influence on the development of ecology, the environmental historian Donald Worster (1994) claims that he is the "single most important figure in the history of ecology over the past two or three centuries" (p. 114). With roots in Darwin's evolutionary theory, ecology began as an extension of the field of biological science. As the environmental philosopher Carolyn Merchant (2007) notes, Haeckel envisioned ecology as "a more comprehensive approach" to biology and other scientific studies of organisms (p. 178). By focusing on complex interrelations, Haeckel's ecology developed better explanations of the conditions of existence for living beings. However, while Haeckel's ecology enlarged the scope of biology, it was only able to account for ecological phenomena mechanistically (i.e., as "the necessary results of mechanical causes"), excluding as "unscientific" any accounts of a divine plan or transcendent agency in the natural world (p. 179). This is not to say that Haeckel did not offer some account of the place of divinity and soul in the natural world. Haeckel was actively involved in promoting a religious naturalism in his writing and in his religious and political group, the Monist League.

As the name of his group suggests, Haeckel promoted monism, holding that matter and spirit are not parts of a dualistic opposition, but are ultimately one substance—a substance that, for Haeckel, is identifiable only through the mechanistic explanations provided by scientific rationality (Herrick, 2003, p. 162). Spirit, soul, and consciousness are equated with the natural world as conceived by science. Haeckel's monism is a panvitalism or pantheism, for which a creative principle of dynamic vitality or divinity is identified with a mechanistically explained material universe. Furthermore, in the tradition of Auguste Comte, the father of positivism and sociology, Haeckel claims that there are scientifically discernible stages in the evolution of human consciousness just as there are stages of natural evolution. In short, from his perspective, varieties of moral and religious consciousness can, like all phenomena in the natural world, be explained as the necessary results of mechanical causes.

Although Haeckel includes inquiries into divinity and consciousness in his ecology, he includes them in a way that fails to honor the depth and mystery of such topics. He does not discuss divinity and consciousness on their own terms, but in terms of a scientific rationality that discloses a mechanistic universe. His pantheism is a mechanistic materialism. Moreover, Haeckel's reduction of religious and moral problems to a mechanistic evolutionary process is not a merely theoretical limitation. It has serious practical implications. For instance, by proposing mechanistically conceived evolutionary processes as the sole determinants

of religion and morality, Haeckel is contributing to social Darwinism, which uses evolutionary theory as a means for controlling social progress and justifying the domination and oppression of marginalized social groups (e.g., the poor, women, people of color, the mentally ill, immigrants, etc.).

Haeckel expressed racist and other social Darwinist sentiments in arguing for the selective breeding of humans (i.e., eugenics), which has led some people to speculate about Haeckel's influence on Nazi ideology.[2] This does not mean that Haeckel is the sole source or a main cause of Nazi ideology or of other 20th-century phenomena of racism and fascism, for Haeckel was expressing ideas that were common during that period of European history. In any case, Haeckel's ecology indicates how a reduction of consciousness and society to mechanistic causes can support oppressive ideologies, in which a particular representation of nature is used to justify domination and violence against any beings that are outside of or marginal to that representation.

Haeckel's approach to ecology is an instructive example not only because the field explicitly began with his works, but because his approach points to the prominence of biophysical sciences and the dominant form of evolutionary theory at the origins of ecology, while also indicating the dangers of reducing questions of human cultures and fields of knowledge to biological representations of nature. Since Haeckel articulated his ecology, the field has been growing into numerous ecologies, most of which follow Haeckel's approach by using biophysical sciences and evolutionary theory to understand interrelations between organisms and environments. In the first half of the twentieth century, some ecologists—specifically economics—extended Haeckel's approach to include social sciences in articulating ecological phenomena. The possibility of this extension is implicit in his definition of ecology as the study of the "economy of all nature" and in the shared prefix of the words *eco*logy and *eco*nomy (Merchant, 2007, p. 178).

The twentieth century saw the emergence of a *new ecology* that included biophysical and socioeconomic sciences to provide "an energy-economic model of the environment"; ecologists such as Charles Elton and Arthur Tansley used thermodynamics and economic models of production, consumption, and efficiency to describe the flow of energy through an ecological "community" (Elton) or "ecosystem" (Tansley) (Worster, 1994, p. 311). This approach to ecology was further refined with the inclusion of chaos theory in ecology during the 1970s and 1980s. Applied to ecology, chaos theory showed the important role of disorder and natural disturbances in ecological relationships, such that the energy flows of ecosystems need to be understood not as "homogeneous stable systems"

but as "fine-textured patches" that are changing, unpredictable, and complex (Merchant, 2007, pp. 189–190). Although the energy-economic model of the so-called new ecology brings together biophysical and social sciences while also embracing unpredictability and indeterminacy, it still reduces phenomena to a mechanistic cause, specifically through the materialistic calculation of energy flows.

Following the emergence of the new ecology in the first half of the twentieth century, Eugene Odum invoked another new ecology in the 1970s. In an article first published in *Science* in 1977, Odum (2000) proposed a "new ecology" that would be an "integrative discipline" committed to holism and opposed to materialistic reductionism (p. 198). As an integrative discipline, "the new ecology links the natural and the social sciences" (p. 199). Furthermore, this new ecology also links theory and practice by seeking "to raise thinking and action" to a holistic encounter with ecosystems (p. 199). Odum follows the energy-economic model of ecology in working toward the "integration of economic and environmental values," but he also goes further, including not only economics but also politics and legal issues within the holistic discipline of integrative ecology (p. 201). He provides a short summary of his approach to integrative ecology:

> In summary, going beyond reductionism to holism is now mandated if science and society are to mesh for mutual benefit. To achieve a truly holistic or ecosystematic approach, not only ecology, but other disciplines in the natural, social, and political sciences as well must emerge to new hitherto unrecognized and unresearched levels of thinking and action. (p. 203)

Odum's integrative approach to ecology supports efforts to overcome reductionism and work toward the mutual benefit of science and society. However, his ecology still contains aspects of the reductionism it claims to avoid. He does not address the spiritual or religious dimensions of ecology at all, nor does he include the humanities within his holistic thinking. Furthermore, even though he explicitly aims to avoid reductionism, his work tends to resemble the energy-economic model of ecology, which reduces the phenomena of ecology to a materialistic calculation of energy flows, a calculation that does not adequately account for the complexity, depth, and mystery of those phenomena. Simply put, one could describe Odum's "holistic" ecology as "crypto-reductionistic" or as a "reductionistic holism" (Bergandi, 2000, p. 216).

Odum's integrative ecology would have been more holistic if it included perspectives from the humanities, including disciplines such as cultural

anthropology, religious studies, philosophy, literary theory, and poetics, the latter two fields bringing together the humanities with the fine arts. Articulating the vast array of human values, experiences, ideas, symbols, artistic expressions, and ways of being in the world, ecologically oriented inquiry in the humanities can facilitate a deeper understanding of how consciousness and culture shape and are shaped by human relations with the natural world. The humanities can also nurture an understanding of how knowledge and cultures could be present not only in humans, but in other animals, plants, ecosystems, etc., such as in questions about the emotional and moral lives of animals.[3]

In the 1970s, during the decade that Odum was calling for an integrative ecology, a variety of scholars began developing ecological approaches that drew extensively from the humanities. Consider, for example, the emergence of two such approaches: deep ecology and environmental ethics. In 1972, the Norwegian philosopher Arne Naess (1973) coined the term *deep ecology* (first published in 1973) to refer to an approach to ecology that was deeper than that offered by the sciences and by many environmentalists. Deep ecology claims that nonhuman organisms and environments have intrinsic value, and not merely value as objects for humans to use, study, and appreciate. For deep ecology, the environmental crisis is ultimately a spiritual problem that calls for humans to overcome their limited human-centered perspective (anthropocentrism) and recognize the intrinsic value of all life (biocentrism). To address the spiritual roots of environmental problems, Naess and subsequent deep ecologists draw from many different philosophical and religious traditions.

In 1973, the environmental philosopher Richard Routley coined the phrase *environmental ethics* in his frequently anthologized essay, "Is There a Need for a New, an Environmental, Ethic?" Similar to deep ecology, environmental ethics draws on philosophical and religious perspectives to develop a deeper understanding of the roots of ecological problems in human values, attitudes, beliefs, perceptions, and behaviors. Many environmental ethicists work toward the development of nonanthropocentric values, including biocentric values, which center on individual organisms, and ecocentric values, which center on whole ecosystems. However, there is some ambivalence about anthropocentrism, some environmental ethicists claiming that anthropocentric values are sufficient for promoting actions that benefit the natural environment.[4] Others, such as environmental pragmatists, claim that anthropocentric and nonanthropocentric values converge in many practical situations, as when two groups agree to stop polluting a river, with one group wanting to stop pollution because it is unhealthy for wildlife and for the ecosystem, and another group wanting to stop it because

the pollution is a danger for human health. Moreover, it should be noted that there were many precursors to the explicit articulation of environmental ethics. In the United States, such precursors include the *preservation and conservation movements* that emerged in the first half of the twentieth century in the works of John Muir, Gifford Pinchot, and Aldo Leopold, and the *environmental activism* of the 1960s, often associated with Rachel Carson's (1962) account of the harmful effects of the pesticide DDT in *Silent Spring*.

Along with deep ecology and environmental ethics, many more schools of thought have emerged that bring the humanities to bear on ecological issues. Another example is *ecofeminism*, first developed by the French feminist theorist and civil rights activist Françoise d'Eaubonne (1974). Ecofeminism draws on sciences and the humanities (including philosophical critique, literary analysis, and personal narrative) to address connections between the anthropocentric domination of nature and the androcentric (i.e., man-centered) domination of women. Among the other ecological schools of thought emerging in the humanities in recent decades are additional philosophical approaches, such as *environmental aesthetics* and *ecophenomenology*, which analyze questions of the beauty of the environment and questions of what is given in experiential engagements with the natural world, respectively. Similar to environmental aesthetics, fields of poetics and literary criticism have also begun working with the ecological implications of beauty and art, thus inaugurating fields of *ecopoetics* and *ecocriticism*. The latter fields also reflect approaches to ecological issues coming from the artists themselves, including poets, painters, sculptors, and musicians who bring environmental issues and the natural world into their work.

These different approaches and schools of thought engage the ecological implications of experiences, values, ideas, and symbols with methods that are appropriate to what they study, methods that do not reduce ecological phenomena to mere biophysical objects or socioeconomic systems. However, these approaches are susceptible to the problem of throwing out the baby with the bathwater, that is, the problem of neglecting the insights of biophysical and social sciences as they reject the reductionistic tendencies in those sciences. Ecological approaches are needed that would affirm the complex interconnectedness of natures, cultures, and knowledges, overcoming reductionism while integrating the insights of ecologically oriented disciplines in biophysical sciences, social sciences, and the humanities. Integral ecologies are emerging specifically in response to that need. Just as the standard definition of ecology does not adequately account for the multiplicity of ecologies, it fails to account for the ways in which many of these ecologies are becoming transdisciplinary—in short, becoming integral.

INTEGRAL

It has been about 150 years since Ernst Haeckel coined the word *oecologie* and the field of ecology began. In that time, this field of study has grown into numerous disciplines, including ecologies situated in biophysical sciences, social sciences, and the humanities. Along with this proliferation of ecological disciplines, integral ecologies have emerged that cross disciplinary boundaries in efforts to understand and respond to the immense complexity, depth, and mystery of ecological issues.

The term *integral ecology* first appeared in print in a marine ecology textbook by Hilary Moore in 1958. Moore (1958) proposes that ecologies that focus on ecosystems (synecology) and on their component organisms (autecology) should be supplemented by a third kind of ecology, an integral ecology that would reconnect the ecosystem and its components into a whole (p. 7). Moore's integral ecology gestures toward a common feature of integral approaches: research that crosses boundaries between divergent fields of study. However, Moore's approach does not include the humanities or social sciences.

In the opposite vein, the Jungian psychoanalyst and poet Clarissa Pinkola Estés used the term *integral ecology* in a 1992 work on psychological and mythological connections between wildness and women. In that book, Estés proposes that one's efforts to find wholeness—the archetypal journey home—are acts of "integral ecology" (p. 321). Although she does not explicate her notion of integral ecology, her use of the phrase indicates the possibility of approaching interior or subjective dimensions of ecology and interpreting integration through the methods of the humanities and social sciences. The humanities and social sciences were included with the biophysical sciences in the three self-designated integral approaches to ecology that emerged in 1995, those of Leonardo Boff, Thomas Berry, and Ken Wilber.[5]

In an introduction to an issue of the theology journal *Concilium*, the liberation theologian Leonardo Boff (with coauthor Virgil Elizondo) invokes an integral ecology. "The quest today is increasingly for an *integral ecology*" that can bring together multiple ecologies to facilitate

> a new alliance between societies and nature, which will result in the conservation of the patrimony of the earth, socio-cosmic wellbeing, and the maintenance of conditions that will allow evolution to continue on the course it has now been following for some fifteen thousand million years. (Boff & Elizondo, 1995, p. ix)

For Boff, an integral approach implies that ecology is also a matter of human society and culture and not only a matter of the natural environment. Ecological complexity is not a merely biological or physical complexity, for "society and culture also belong to the ecological complex. Ecology is, then, the relationship that all bodies, animate and inanimate, natural and cultural, establish and maintain among themselves and with their surroundings" (Boff & Elizondo, 1995, pp. ix–x.). This integral ecology is a "holistic perspective" that gives "ecological consideration" to questions of nature, culture, and consciousness, with specific attention to a "basic question": "to what extent do this or that science, technology, institutional or personal activity, ideology or religion help either to support or to fracture the dynamic equilibrium that exists in the overall ecosystem?" (p. x).

Boff is continuing to promote this integral approach to ecology. His website has sections on four different approaches to ecology: environmental, social, mental, and integral.[6] The environmental approach engages ecological issues through biophysical sciences and the development of technologies. The social approach includes humans and society within ecological issues, addressing problems of social justice and cultivating sustainable social institutions (education, healthcare, economic development, etc.). Situated in the context of the natural world, social well-being is not only human,

> it must also be socio-cosmic. It must attend to the needs of the other beings in nature, the plants, the animals, the microorganisms, because all together they constitute the planetary community, in which we are inserted and without whom we ourselves could not exist. (para. 5)

The mental approach focuses on consciousness, showing how ecological problems call not only for a healthier and more sustainable society and environment, but also for a healthier human consciousness, a consciousness that revitalizes its connection to the natural world by transforming its relationship to religious worldviews, gender roles, and the desires and archetypes of the unconscious.

Those first three approaches (environmental, social, and mental) represent the multiple ecologies that have emerged since the field began, drawing from the biophysical sciences, social sciences, and humanities. The integral approach brings together those multiple ecologies to present a new vision of the Earth, a vision in which humans and Earth are situated in the processes of the evolutionary becoming of the universe, which is to say, processes of cosmogenesis, which include three aspects: (1) complexity and differentiation, which structure the objective or exterior facets of things; (2) self-organization and consciousness,

which structure the subjective depth or interior facets of things; and (3) reconnection and relation, which structure the ways things come together not merely as a collection of different objects but as communing agents, communicating subjects. Boff's three aspects of cosmogenesis are parallel to his three ecologies—environmental (differentiation), mental (consciousness), and social (relation). This threefold vision draws on the vision of integral ecology developed by the cultural historian Thomas Berry, who articulated a *cosmogenetic principle* with the cosmologist Brian Swimme in their 1992 work *The Universe Story*.[7] The cosmogenetic principle holds that all evolutionary processes are characterized by differentiation, subjectivity (or autopoiesis, i.e., self-organization), and communion (Swimme & Berry, 1992, pp. 66–78).

The view of evolutionary processes proposed by Boff (1997) and Berry (1999) has roots in the evolutionary philosophies of 18th- and 19th-century Romanticism. For instance, in the Romanticism of German *Naturphilosophie* (philosophy of nature), Johann Wolfgang von Goethe and Friedrich Wilhelm Joseph Schelling proposed evolutionary theories in which the material world and its ideal structures (archetypes) were not separate realities, but were manifestations of a unified and dynamic evolutionary process, "*dynamische Evolution*" (a term developed by Schelling and adopted by Goethe) (Richards, 2002, p. 10). Not unlike Berry and Boff, Goethe and Schelling viewed natural phenomena in terms of an organic process of development that cannot be captured by mechanistic explanations (p. 9). Although this original, spiritually inflected view of evolution was a significant element in the traditions informing the development of Darwin's and Haeckel's thinking, the deeper Romantic and idealist spirit was purged in favor of the rising mechanistic worldview, eventually reemerging in the 20th century in the works of philosophers such as Sri Aurobindo and Jean Gebser, with whom articulations of integral philosophies began.[8]

Boff also presents his vision of integral ecology in a work coauthored by Mark Hathaway (2009), *The Tao of Liberation: Exploring the Ecology of Transformation*. Boff and Hathaway draw extensively on Swimme and Berry to present their approach to ecology. They also claim that a paradigmatic example of integral ecology is found in the "Earth Charter," an international document released in June 2000 that presents a shared vision of values and principles for a peaceful, just, and sustainable global society.[9] Written through a participatory process involving many scholars, scientists, political leaders, religious leaders, and others (including Leonardo Boff), the "Earth Charter" has been endorsed by numerous individuals and over 4,500 organizations, including groups from faith communities, universities, city and national governments, nongovernmental organizations,

and many more. The "Earth Charter" calls for the emergence of a global society grounded in a shared vision and principles that embrace democratic political participation, human rights, social and economic equity, nonviolence, ecological integrity, and respect for life. "The Earth Charter springs forth from a holistic, integral vision" that presents "an affirmation of hope," proposing "inclusive, integrated solutions" to the interconnected crises of consciousness, society, and the environment (Hathaway & Boff, 2009, p. 300).

Hathaway and Boff (2009) occasionally draw on the works of numerous theorists to describe their transformative vision of ecology, including those of the integral theorist Ken Wilber.[10] Although they do not say so explicitly, it is Wilber's work that is most commonly associated with the term *integral*, specifically in light of Wilber's integral theory. In *Sex, Ecology, Spirituality*—first published in 1995, the same year Boff coined the term *integral ecology*—Wilber (2000) presents his integral theory through the articulation of the AQAL model (pronounced *ah-qwul*), an "all-quadrant, all-level" map that accounts for physical, mental, and spiritual *levels* of reality, each of which occurs in all of the four *quadrants*: subjective ("I"), intersubjective ("We"), objective ("It"), and interobjective ("Its") (pp. 127–135). According to this model, any phenomenon can be understood in terms of objectivity (whether as a collective system of "Its" or as the behavior of an individual "It") or in terms of individual ("I") and collective ("We") subjectivity (e.g., an individual intention or a collective culture or worldview). Each quadrant can be described in terms of multiple levels, such that an individual subjective experience can be physical (e.g., sensations, perceptions), mental (e.g., concepts, ideas), and spiritual (e.g., meditation, love of God). To put it briefly, working with an all-quadrant and all-level map is a way to avoid reductionism and honor the multidimensionality, complexity, and mystery of phenomena. As the title of *Sex, Ecology, Spirituality* suggests, Wilber applied his framework to ecological issues, including a proposal for integral environmental ethics.

A more comprehensive and robust application of Wilber's framework to ecology comes from the leading integral theorist Sean Esbjörn-Hargens and the environmental philosopher Michael Zimmerman in their groundbreaking 2009 work, *Integral Ecology: Uniting Multiple Perspectives on the Natural World*.[11] Esbjörn-Hargens and Zimmerman use Wilber's integral framework to propose an "ecology of ecologies" that honors and includes the multiple (and even contradictory) perspectives with which beings relate to the natural world (p. 486). Consider, for example, how a tree appears differently from different perspectives, such that "there is simply no such thing as 'one tree'! Rather, there are different layers of trees enacted by each perceiver," whether the perceiver is an

environmentalist, ecologist, economist, bear, woodpecker, or beetle (p. 180). Sustainable and effective solutions to environmental problems can be reached by coordinating these and many other perspectives on the natural world.

Including perspectives from the biophysical sciences, social sciences, and the humanities, the Wilber-inspired integral ecology overcomes dualisms of objectivity/subjectivity and matter/spirit. In the context of ecology, this integral framework helps to "avoid a nature-versus-culture stance" (Esbjörn-Hargens & Zimmerman, 2009, p. 276). This framework also suggests that "Integral Ecology transcends the anthropocentrism versus anti-anthropocentrism duality" that poses human-centered values in opposition to values centered on living organisms (biocentrism) or on whole ecosystems (ecocentrism) (Esbjörn-Hargens & Zimmerman, 2009, p. 11). Nature and culture are mutually constitutive, not mutually exclusive. Anthropocentric, biocentric, and ecocentric values are all included in the Wilberian integral framework. By disclosing the interpenetration and coconstitution of all the quadrants and levels of ecological phenomena, Wilber's integral ecology avoids the false dichotomy between social construction (for which nature is a product of social discourse and practice) and naïve realism (for which nature is given independent of a subjective observer or worldspace). The events of the natural world are real and have value, and the ways they are given are always already conditioned by some interiority, that is, by a semiotic capacity for making meaning, a "capacity for opening a perspective or clearing" (Esbjörn-Hargens & Zimmerman, 2009, p. 41). In other words, there is a real world, and it is also semiotic. Wilber's integral ecology here embraces a form of "pansemiotics," for which the natural world is pervaded by meaning and communication (Esbjörn-Hargens & Zimmerman, 2009, pp. 40–41).[12]

For Wilber's integral ecology, the world is saturated with perspectives, and no single perspective is absolutely right. Rather, all perspectives are partially right, and sustainable solutions require the cooperation of as many perspectives as possible. For instance, it does not force people to accept the modern rationality of ecological science, nor does it force people to adopt traditional religious worldviews or to accept postmodern critiques of scientific rationality. Wilber's integral ecology opens opportunities for inclusive dialogue and cooperation among traditional, modern, and postmodern perspectives. No single perspective holds the solution to environmental problems. Indeed, "there is no single solution" to ecological issues, in the same way that there is no single tree but multiple layers of trees disclosed to different perspectives (Esbjörn-Hargens & Zimmerman, 2009, p. 339).

Each environmental problem or crisis calls for many integral solutions, which would adapt to the specific perspectives at work in various contexts, even those

perspectives for which *there is no crisis* and everything appears to be getting better (e.g., better technologies, more international cooperation, and better understanding of the complexity of human-Earth relations). Furthermore, the Wilberian integral approach also claims to integrate mystical or spiritual perspectives for which everything is always already perfect, such as a Christian mystical perspective for which all is one with God, or a Tibetan Buddhist perspective for which everything displays Great Perfection (*Dzogchen*). Embracing these multiple (and apparently contradictory) perspectives, Wilber's integral ecology proposes the following slogan: "things are getting worse, are getting better, and are perfect" (Esbjörn-Hargens & Zimmerman, 2009, p. 307).

Crossing the divides that separate different perspectives, Wilber's integral ecology is relevant to every discipline and method (folk and formal) related to ecological and environmental issues. It is such an ambitious project that Wilber's integral ecology is only beginning. Although their book is over 800 pages, Esbjörn-Hargens and Zimmerman (2009) state that it is "only the briefest sketch" of an Integral approach to ecology (p. 16). Accordingly, "much work remains to be done," including collaborations and critiques to help Wilber's integral ecology become more comprehensive in its engagement with the myriad perspectives on the natural world (pp. 487, 552). Furthermore, expressing commitment to integral ecological diversity, Esbjörn-Hargens and Zimmerman are excited that "a variety of integral ecologies" is emerging (p. 667). Indeed, an integral approach "need not be contained within any single framework" (p. 540).

Esbjörn-Hargens and Zimmerman (2009) draw on Boff's approach to integral ecology and, like Boff, also refer to the important influence of Thomas Berry's cosmological vision on integral approaches to ecology. They mention that, in around 1995, when Wilber first applied integral theory to ecology and Boff first published the term "integral ecology"—Berry himself spoke of his work as "integral cosmology or integral ecology" (p. 539). Like Boff's integral ecology, the approach based on Wilber's framework resonates with Berry's cosmogenetic principle. The quadrants of the AQAL framework are sometimes simplified into the "Big Three," which includes the "I" and "We" of individual and collective subjectivity while grouping individual and collective objectivity into one category: "It/s" (Wilber, 2000, pp. 149–153). The differentiation, subjectivity, and communion of the cosmogenetic principle are roughly parallel with the "It/s," "I," and "We," respectively, of the Big Three. Furthermore, Berry (1999) also accounts for the different levels of ecological phenomena in "an integral Earth study," which accounts for relations between levels of matter (atmosphere, hydrosphere, lithosphere), life (biosphere), and consciousness (noosphere) (p. 90).

In short, 1995 marks the beginning of explicitly integral ecologies, with Boff, Wilber, and Berry all initiating integral approaches to ecology. There are many differences between their respective approaches, but there are also important convergences, including the call to integrate three aspects of ecological phenomena, differentiation ("It/s"), subjectivity ("I"), and communion ("We"). More generally, the integral approaches to ecology articulated by Boff, Wilber, and Berry indicate two important characteristics of integral ecologies: (1) opposition to any oversimplification of ecological phenomena, and (2) a transdisciplinary engagement with the sciences, technologies, philosophies, institutions, religions, and personal activities that are woven into the irreducible complexity and multidimensionality of relationships in the natural world.

It is important to note that there are other examples of integral ecologies that do not use the term "integral," including ecologies that existed before the phrase "integral ecology" was coined. For instance, integral approaches to ecology can be seen emerging in the works of two French theorists who did not use the term "integral ecology": Félix Guattari (1930–1992) and Edgar Morin (b. 1921), both of whom are mentioned by Esbjörn-Hargens and Zimmerman (2009) as precursors to Wilber's integral ecology.[13]

Esbjörn-Hargens (2005) observes the similarity between Wilber's Big Three and the "three ecologies" proposed by Guattari: environmental, social, and mental (p. 17). These ecologies also resonate with the environmental, social, and mental ecologies of Hathaway and Boff (2009). In *The Three Ecologies* (initially published in French in 1989, *Trois Écologies*), Guattari (2000)—a psychotherapist, activist, and philosopher—proposes a "generalized ecology" or *ecosophy* that seeks to reinvent human practices in their relationship to the natural environment ("It/s"), social relationships ("We"), and subjectivity ("I") (pp. 28–37, 52). Guattari (1995) also develops his concept of ecosophy in his final book, *Chaosmosis*, which poses a fundamental question to guide ecosophy:

> [H]ow do we change mentalities, how do we reinvent social practices that would give back to humanity—if it ever had it—a sense of responsibility for its own survival, but equally for the future of all life on the planet, for animal and vegetable species, likewise for incorporeal species such as music, the arts, cinema, the relation with time, love and compassion for others, the feeling of fusion at the heart of the cosmos? (pp. 119–120)

Guattari's (2000) "mental ecology" not only includes ideas and cognition, but the full spectrum of processes whereby subjectivity articulates itself and participates

in embodied engagements with the world and with "the 'mysteries' of life and death" (p. 35). Guattari proposes that mental ecology focus on "the promotion of innovatory practices" and "alternative experiences," which respect the unique singularity of subjects and create appropriate relations between subjects and society (p. 59). "Social ecology" addresses the collective processes of subjectivity, what Guattari calls processes of "singularization" and "subjectification" (p. 45). Addressing events such as "sudden mass consciousness-raising," transformative social struggles, technology, media, and labor, social ecology promotes creative subjectivity that overcomes exploitative and oppressive powers (p. 62). Between mental and social ecology the question of ecosophy becomes one of "the whole future of fundamental research and artistic production," a question of "how to encourage the organization of individual and collective ventures" that care for the singularity of subjectivity (p. 65).

Guattari's (2000) "environmental ecology" attends to the complexities and uncertainties of environmental processes, affirming that "anything is possible—the worst disasters or the most flexible evolutions" (p. 66). Drawing on complexity and systems sciences, for which phenomena are understood as self-producing systems or machines, Guattari mentions that it is possible to "rename environmental ecology *machinic ecology*" (p. 66). By attending to the complexity and openness of autopoietic systems, machinic ecology stands in contrast to the reductionism of mechanistic ecology. Machines are not objects of a mechanistic materialism but are machines in the more general sense of affective assemblages, which have interrelated parts and enable different ways of acting and being acted on. Furthermore, this sense of machine is common in research in complexity theory (including the work of Edgar Morin, who is discussed below). The scope of environmental ecology includes the complex relations between all assemblages, including all "Cosmic and human praxis," such that environmental ecology supports the creation of new possibilities for ethical and political practices (pp. 66–67). Integrating "the tangled paths of the tri-ecological vision," Guattari's ecosophy aims for creative transformations in both the collective unity and singular differences between individuals (including human and nonhuman individuals), such that ecosophy aims for all individuals to "become both more united and increasingly different" (pp. 67–69).

Along with Guattari, Esbjörn-Hargens and Zimmerman (2009) refer to Edgar Morin as a precursor to Wilber's integral ecology (p. 542). Morin proposed a "*general ecology*" in 1980 with the publication of *La Vie de la Vie* [The Life of Life], the second volume of his six-volume work, *La Méthode* [Method].[14] General ecology engages the relations that intimately intertwine humans and the natural world, and it concerns itself with the future of the

human species as well as the future of all life on Earth. Ecosystems are mutually enfolded with human and social systems, such that "general ecology," as Morin describes in *La Vie de la Vie*, "must encompass the anthropo-social dimension, just as anthropo-sociology must encompass the ecological dimension."[15]

Morin's general ecology is grounded in the transdisciplinary method that he describes in terms of "complex thinking," which crosses boundaries between biophysical sciences, social theory, politics, psychology, and more. This kind of thinking connotes a "warning to the intellect, to beware of clarification, simplification, hasty reduction" (as cited in Anselmo, 2005, p. 474). For Morin (1999), complex thinking "endeavors to connect that which was separate while preserving distinctiveness and differences" (p. 114). It is an "ecologized thinking," which conceives of the world's circuitous and recursive relations of interactions and retroactions, while also considering the "hologrammatic character" of these relations, according to which the whole (e.g., the planet) and the parts (e.g., humans) are internally interconnected, each being implicated within the constitution of the other (p. 130).

Furthermore, Morin (1999) proposes a complex understanding of religion in his notion of the "gospel of doom," which promises neither other-worldly salvation (e.g., most forms of Christianity) nor this-worldly salvation (e.g., Marxism, free-market capitalism), but "an earthly religion of the third type"—a planetary religion that holds people together in the doom of their terrestrial finitude (p. 141). This is a religion for which salvation—if there is salvation—lies in the efforts of "consciousness, love, and fellowship," particularly insofar as these efforts do not mean "to escape doom," but "to dodge the worst, to find out what is best" (p. 142).

Morin's (1999) approach to ecology includes an account of the history of modernization as "an evolution toward a planetary consciousness" (p. 6), an evolution of "the Planetary Era" (p. 24). The awareness that humans are intertwined with one another and with the Earth began emerging in the last five centuries through processes of imperialism, colonization, militarism, and economic globalization. These processes of modernization have been sites for the emergence of global social and ecological crises, but they have also been sites for the emergence of what Morin calls *planetary solidarity*, according to which globalization becomes contextualized within the horizon of the planet (pp. 106, 116, 130). Morin notes that the "planetary union" that he invokes is a "possible impossible"—a planetary utopia, an impossible realism, which accounts for probabilities and improbabilities while it "*grounds itself in the uncertainty of the real*" (pp. 106–108). Accordingly, the "human fellowship" (p. 133) that constitutes

our awareness of participating in "the complex web of the Planetary Era" does not presuppose any mastery or control over nature or over ourselves; on the contrary, this fellowship is based on a realization that "[w]e are lost"—a realization that humans are "gypsies of the cosmos, vagabonds of the unknown adventure" (pp. 144–146).

Along with the ecologies articulated by Guattari (2000) and Morin (1999), many other approaches to ecology are becoming integral without necessarily using the word *integral*. For example, Zimmerman (2009) finds the land ethic of Aldo Leopold to be a forerunner of integral ecologies, due to Leopold's recognition of interiority in nonhumans and his conception of moral development. Zimmerman also considers the groundbreaking philosophy of Holmes Rolston III as an integral approach to ecology.[16] Karen Litfin (2014) takes a different perspective, drawing on her work with ecovillages around the world. Litfin indicates how integral ecologies are present at the community level in the development of ecovillages.[17]

Another example comes from the field of science and technology studies (STS), which engages many of the concepts developed by scholars such as Guattari (2000) and Morin (1999), including concepts of the complex systems entangling the matters and meanings of humans, society, and the natural environment. STS theorists such as Bruno Latour (2004), Isabelle Stengers (2010, 2011), and Donna Haraway (2009) promote practices of ecological research that involve mapping ecological objects of study, objects that are not opposed to subjectivity, but are themselves *actors*. Such mapping is accomplished by following actors (e.g., species, organisms, rivers, governments, technology, ideas, etc.) and tracing the mutually constitutive networks of humans and nonhumans that situate the actors. Some theorists (particularly in reference to Latour) refer to this approach as actor-network theory (ANT). The philosophical implications of this orientation toward actors are taken up by theorists of object-oriented ontology, such as Graham Harman, Levi Bryant, and Timothy Morton.[18] Object-oriented ontology is committed to metaphysics of pluralism and realism, according to which reality is composed of a multiplicity of objects, and all of these objects have agency, whether human or nonhuman, individual or collective, natural or artificial.

In addition to his contributions to ANT and STS, Latour (2004) contributes to engagements with the political dimensions of integral ecologies. By following the mutually constitutive networks of human and nonhuman actors, Latour's work affirms a pluralistic "collective" (analogous to the "pluriverse" of William James), which overcomes the "two-house" system of political engagement, wherein a house of "reality" includes an incontestable nature and facts that

scientists must learn to speak for, and a house of "social construction" includes the political representations of human values, multiculturalism, and contested opinions (pp. 52–54). Latour's solution to this two-house dualism is what Isabelle Stengers (2010, 2011) calls *cosmopolitics*, which negotiates the ongoing composition of a collective of humans and nonhumans, a collective composed through a democratic process that aims to represent all actors.[19] To compose the best of worlds, one must persistently take into account and coordinate as many actors as possible, resisting any recourse to a pre-given unity that would short-circuit the democratic processes of representation, such as the pre-given nature of nature/culture dualisms, which is often accompanied by the unified *Science* that fails to include *the sciences* in the democratic work of composing the collective (Latour, 2004, p. 10).

Integral approaches to ecology are also emerging in fields of religious studies, specifically in the field of *religion and ecology*. This is a multidisciplinary and potentially transdisciplinary field that integrates the efforts of scholars, activists, religious leaders and communities, policymakers, governmental organizations, and other individuals and groups who recognize the importance of integrating ethical and religious perspectives on ecology together with approaches to ecology from the biophysical and social sciences (Grim & Tucker, 2014; Gottlieb, 2006). The Forum on Religion and Ecology has been foundational for this field of study. It is an international and interfaith project that includes conferences, publications, a website, and a newsletter, all of which are dedicated to exploring religious values, discourses, and practices to further understanding of the immense complexity of current environmental concerns and to develop comprehensive and effective solutions to environmental problems.[20] Furthermore, the Forum situates religious perspectives on ecology in transformative dialogue with other disciplines, including sciences, ethics, economics, education, public policy, and gender studies.

STS, cosmopolitics, and the field of religion and ecology are but three of many examples of emerging integral approaches to ecology, approaches that facilitate collaboration and communication between ecologists and the other humans and nonhumans with which ecologists interact. Another important example of integral ecologies comes from the graduate program in Philosophy, Cosmology, and Consciousness (PCC) at the California Institute of Integral Studies in San Francisco. PCC is transdisciplinary program that includes an integral ecology track of study, wherein students engage multiple contributions to integral ecologies,

including those mentioned above (Boff and Hathaway, Wilber, Esbjörn-Hargens and Zimmerman, Berry and Swimme, Guattari, Morin, STS, and religion and ecology) along with contributions from many other thinkers, methods, and disciplines. Swimme is a professor in PCC, and Esbjörn-Hargens is a graduate of the program. Esbjörn-Hargens's work helped clear the path for the development of the PCC track in integral ecology, and much of the material from his book *Integral Ecology* was originally written for his doctoral dissertation.

A variety of integral ecologies continue to emerge. Pope Francis proposes an integral approach to ecology in his encyclical, *Laudato Si': On Care for Our Common Home*, released publically on June 18, 2015. The title of the encyclical indicates its ecological emphasis. "Laudato si'" ("Praise be to you") is the beginning of a line from "The Canticle of the Sun" (also known as "Canticle of the Creatures" and "Praises of the Creatures"), written by the Pope's namesake, St. Francis of Assisi, who sings praises to God's creatures as his sisters and brothers. Pope Francis (2015) believes that "Saint Francis is the example par excellence of care for the vulnerable and of an integral ecology lived out joyfully and authentically" (p. 9).

The Pope's (2015) encyclical devotes one of its six chapters to integral ecology, calling for the integration of cultural and religious perspectives on ecology with economic, social, and scientific perspectives. Furthermore, integral ecology also includes practices of everyday life. "An integral ecology is also made up of simple daily gestures which break with the logic of violence, exploitation and selfishness" (p. 166). Integral ecology attends to the cries of those in need, including "*both the cry of the earth and the cry of the poor*" (p. 35). The Pope is alluding there to Boff's (1997) liberation theology, specifically his work, *Cry of the Earth, Cry of the Poor*, which brings liberation theology into an ecological context by engaging the insights of Berry, Swimme, Morin, Guattari, and Wilber, among others. The Pope's (2015) integral approach is also influenced by a concept in Catholic social teaching, integral human development, which holds that human development must be thought of not only in economic or political terms but in terms of all dimensions of human existence, including moral, spiritual, and cultural. There are over one billion Catholics and over two billion Christians on Earth, but the Pope is not just addressing Catholics in particular or even all Christians. He is addressing "every person living on this planet" (p. 4). The Pope's encyclical is indicative of the increasing relevance and the planetary scope of integral ecologies.

CHAPTER SUMMARIES

Drawing from various affiliations, traditions, and frameworks, all of the essays in this volume make important contributions to integral ecologies, crossing disciplinary boundaries to understand and respond to the complexities and mysteries of ecological relationships at our critical moment in history. The contributions in this volume take up the task of nurturing a better tomorrow, cultivating a planetary community in which consciousness, societies, and environments are intimately intertwined in peaceful, just, and sustainable relationships. No one approach to integral ecology is sufficient for this task. A diversity of integral ecologies is called for. The contributions to this volume are committed to the development of such integral ecological diversity.

The volume is divided into four sections. The first section, "Foundational Thought," focuses on the work of key thinkers who contributed to the development of integral ecologies. In the chapter "For an Emerging Earth Community: Thomas Berry and a Shared Dream," Sam Mickey presents the integral vision of the cultural historian and Earth scholar Thomas Berry, who situates integral ecology within the story of cosmic, Earth, and human evolution. Mickey describes the significance of Berry's contributions and their influence on cosmology, theology, law, poetry, and the field of religion and ecology. Next, Sean Esbjörn-Hargens and Michael Zimmerman present "An Overview of Integral Ecology: A Comprehensive Approach to Today's Complex Planetary Issues." Along with a cogent overview of their integral approach, which coordinates multiple ecological perspectives in terms of Wilber's AQAL model, Esbjörn-Hargens and Zimmerman also apply their framework in an interpretation of biodiversity. In the subsequent chapter, "Integral Ecology and Edgar Morin's Paradigm of Complexity," Sean Kelly introduces Morin's general ecology, which is part of Morin's method of complex thought. Morin's highly influential thought provides an integrative vision of the planetary and evolutionary contexts of ecological concerns. In "Integral Ecology's Debt to Holmes Rolston III," Zimmerman puts integral ecology into dialogue with Rolston's environmental philosophy; he discusses Rolston's contributions to integral ecology, such as his evolutionary approach to environmental ethics and his critique of environmentalist dismissals of anthropocentrism. Zimmerman also reflects on some ways that an integral approach can deepen and complexify Rolston's thought.

In the second section of the book, "Worldviews and Perspectives," the focus is on the ways that different principles, ideas, and knowledges can facilitate integrative understandings of ecological phenomena. In "Cultivating Wisdom: Toward

an Ecology of Transformation," Mark Hathaway carries forward the message from his work with Leonardo Boff (2009) in *The Tao of Liberation*. Hathaway elucidates the importance of worldviews and cosmological perspectives for empowering the individual and collective transformations required to cultivate ecological wisdom and respond to the challenges of our complex, planetary crisis. Highlighting the profound significance of relationality for integral ecologies, Elizabeth Allison proposes a dynamic framework for ecological theory and practice in "The Relational Spiral of Integral Ecology." Allison's relational spiral integrates ontology, epistemology, ethics, and politics in an ongoing cycle of deepening dialogue that seeks an equitable, just, and diverse world capable of providing for the flourishing of all beings. In the following chapter, "Five Principles of Integral Ecology," Sean Kelly compares and contrasts multiple integrative visions as he proposes five shared principles of integral ecologies. For Kelly, an ecological approach is integral if (1) it is situated in an evolutionary context, (2) it is planetary in scope, (3) it reaches beyond disciplinary boundaries, (4) it affirms a sacred or enchanted universe, and (5) it is committed to practical engagements.

The third section, "Emerging Theories," explores recent developments in ecological theory that are relevant to the complex and cross-disciplinary orientation of integral ecologies. In "Cosmopolitics," Adam Robbert and Sam Mickey discuss the works of Isabelle Stengers, Bruno Latour, and Donna Haraway, who are associated with the field of science and technology studies as well as the philosophical movement of speculative realism. Robbert and Mickey introduce cosmopolitics as an integral approach that traces the inextricable intertwining of humans and nonhumans, thus overcoming the opposition that separates the natural world (cosmos) from the realm of humans (politics). Adrian Ivakhiv also elaborates on the ecological implications of the work of Latour and others associated with speculative realism in his chapter, "On a Few Matters of Concern: Toward an Ecology of Integrity." Focusing on the dynamic texture of experience, Ivakhiv defends a process-relational ontology against the speculative realist movement of object-oriented ontology. Concluding this section, Sean Esbjörn-Hargens articulates theoretical contributions to understanding the interior experiences of animals. In his chapter, "Animal Worlds: The Importance of Biosemiotics for Integral Ecology," Esbjörn-Hargens situates the study of animal experiences in terms of the AQAL model, which embraces ongoing developments in biosemiotics (the scientific study of signs, meaning, and communication in organisms), including Umwelt theory, which suggests that every living being has its own experiential "world" (*Umwelt*).

The fourth and final section, "Practical Applications," looks toward applications of integral ecologies in practices and concrete situations. Annick de Witt and Nicholas Hedlund consider practical strategies for communicating across cultural and psychological differences in their chapter, "Toward an Integral Ecology of Worldviews: Reflexive Communicative Action for Climate Solutions." De Witt and Hedlund introduce a framework for discerning different worldviews (traditional, modern, postmodern, and integrative) and facilitating communicative action that addresses multiple worldviews while maintaining self-reflexive awareness regarding one's own worldview. In the final chapter, "Ecovillages: Bridges to Integral Community?" Karen Litfin extends the practical application of integral ecologies into questions regarding ecovillages, that is, intentional communities oriented toward sustainability. In her research, Litfin has found that ecovillages are most successful when they integrate multiple dimensions of sustainability, including four dimensions that she refers to as E2C2 (ecology, economy, community, and consciousness). The discussions of intentional community in the chapter by Litfin and reflexive communication in the chapter by De Witt and Hedlund indicate multiple possibilities for further explorations of the practical applications of integral ecologies. They invite us to consider possibilities for changing our thinking, feeling, and acting so as to become more comprehensive and more effective in our responses to the proliferating ecological challenges of our planetary era.

NOTES

1. The environmental historian Donald Worster (1994) and the ecologist Robert McIntosh (1985) have each written comprehensive accounts of the history of ecology.

2. As Mario Di Gregorio (2005) points out in his account of Haeckel's life and thought, "some of Haeckel's proposals on eugenics were indeed applied by the Nazis" (p. 571).

3. For an accessible scholarly introduction to cognitive ethology (the study of emotions, morals, and intelligences of animals), see Marc Bekoff (2002), and see Bekoff's work with the bioethicist Jessica Pierce (Bekoff & Pierce, 2009).

4. In their introduction to environmental ethics, Christine Gudorf and James Huchingson (2010) discuss this ambivalence of anthropocentrism (pp. 7–11). They also provide summaries of deep ecology, ecofeminism, and

other positions in environmental ethics (e.g., biocentrism, ecocentrism, environmental pragmatism, etc.) (pp. 11–21).

5. A brief overview of the history of the term "integral ecology" (including "four independent usages" in Hilary Moore, Leonardo Boff, Thomas Berry, and Ken Wilber) can be found in Sean Esbjörn-Hargens (2011, pp. 95–99).

6. The following quotations come from the four parts of the "ecology" section of Boff's (n.d.) website, which is accessible in English, Spanish, and Portuguese.

7. Esbjörn-Hargens (2011) reports that, according to Drew Dellinger (a poet, activist, and student of Berry), 1995 is the year when Berry began referring to his cosmological work informally as "integral cosmology or integral ecology" (p. 93). For more on Berry's integral approach to ecology, see Sam Mickey's chapter in this volume, "For an Emerging Earth Community."

8. Although Berry and Boff only implicitly draw on Romantic philosophy, other contemporary thinkers are drawing on that tradition explicitly. Consider the examples of Iain Hamilton Grant, Timothy Morton, and Sean Kelly. Grant (2006) draws on *Naturphilosophie* in his efforts to develop a speculative philosophy that reverses the human exceptionalism infecting most philosophical inquiry. Morton (2007) provides a comprehensive engagement with the contributions and limitations of the Romantic period for facilitating ecological thinking. Kelly (2010) draws on Romanticism and *Naturphilosophie* in his development of an evolutionary philosophy that addresses the complex and planetary challenges of the current historical moment. Furthermore, Kelly also shows how Romanticism and *Naturphilosophie* opened the way for evolutionary thinkers such as Sri Aurobindo, Jean Gebser, and Pierre Teilhard de Chardin, who all contributed to the development of integral visions of evolution. Indeed, it was Aurobindo and Gebser who first started using the term "integral" to describe their evolutionary philosophies. For more on the role of Aurobindo and Gebser in integral studies, see Kelly's chapter in this volume, "Five Principles of Integral Ecology."

9. For more on the "Earth Charter," see the website for the Earth Charter Initiative (2000).

10. For more on the approach to integral ecology that Hathaway developed in collaboration with Boff, see Hathaway's chapter in this volume, "Cultivating Wisdom."

11. For an overview of the model articulated by Esbjörn-Hargens and Zimmerman, see their chapter in this volume, "An Overview of Integral Ecology."

12. For more on the role of semiotics in integral ecologies, see the chapter by Esbjörn-Hargens in this volume, "Animal Worlds: The Importance of Biosemiotics for Integral Ecology."

13. For an overview of different contributions to ecology from contemporary French philosophers (e.g., Félix Guattari, Edgar Morin, Gilles Deleuze, Bruno Latour, Michel Serres, and others), see Whiteside (2002). For more on the contributions to integral ecology in Guattari's work and in the work of Deleuze (a philosopher and coauthor of multiple books with Guattari), see Mickey (2014).

14. See Sean Kelly's chapter in this volume, "Integral Ecology and the Paradigm of Complexity."

15. This passage is translated by Kelly and cited in his chapter, "Integral Ecology and the Paradigm of Complexity."

16. See Zimmerman's chapter in this volume, "Integral Ecology's Debt to Holmes Rolston III."

17. See Litfin's chapter in this volume, "Ecovillages: Bridges to Integral Community?"

18. Adrian Ivakhiv responds to object-oriented ontology and Latour in his chapter in this volume, "On a Few Matters of Concern."

19. On the contributions of cosmopolitics to integral ecologies, see the chapter by Adam Robbert and Sam Mickey in this volume. This work also resonates with the ecology of worldviews presented in the chapter by Annick de Witt and Nicholas Hedlund, "Toward an Integral Ecology of Worldviews."

20. For more information on the Forum on Religion and Ecology (n.d.), visit their website.

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PART I

FOUNDATIONAL THOUGHT

2

FOR AN EMERGING EARTH COMMUNITY

Thomas Berry and a Shared Dream

Sam Mickey

> We are enveloped in something like a dream. And today we are beginning to imagine that we might have a particular role to play in this dream. With each passing decade, the life process is increasingly affected by the influence of human consciousness. . . Could it be that our deeper destiny is to bring forth a new coherence within the planet as a whole, as the human community learns to align itself with the underlying dynamics of Earth's life?
>
> —Brian Swimme and Mary Evelyn Tucker (2011), *Journey of the Universe* (p. 66)

> You may say I'm a dreamer, but I'm not the only one.
> I hope someday you'll join us. And the world will live as one.
>
> —John Lennon (1971), "Imagine"

"I HAVE A DREAM TODAY." When Martin Luther King, Jr., spoke those words on April 28, 1963, he was articulating a driving force of the civil rights movement: a vision of a better world, a more peaceful and just world. In his knowledge and personal experience, he was aware of the nightmare of racism, discrimination, and injustice, but he did not dwell in negativity, nor did he rest with mere critique. "Let us not wallow in the valley of despair. . . so even though we face the difficulties of today and tomorrow, I still have a dream" (King, 2001, p. 85).

Environmentalists and ecologists have a lot to learn from King. Bearing in mind that much has changed since 1963, King's "leap from the nightmare to the dream can be a parable for the future" (Nordhaus & Shellenberger, 2007, p. 4). Critiques, warnings, and realistic reflections on ecological crises are important, but they are not sufficient for facilitating a transformation of human-Earth relations. What we need now is a shared dream, a shared vision of values for an Earth community that is more peaceful, just, sustainable, and resilient. Such a shared dream is one of the common threads among integral approaches to ecology. Integral ecologies share a vision of a common world in which all members have opportunities to participate—a planetary civilization grounded in values that affirm the complex relations of humans to the community of life and the evolutionary processes of the cosmos. This dream is not Pollyannaish optimism. Integral ecologies address the pressing challenges that ecological problems pose for today and tomorrow, and they do so with a dream. The crucial importance of that dream is conveyed in the works of the Earth scholar Thomas Berry (1914–2009), whose exemplary vision of integral ecology provides the focus for this chapter.

Berry's (1989, 1996) initial contributions to scholarly research were done as a cultural historian and a historian of world religions, including notable works entitled *Buddhism* and *The Religions of India*, first released in 1968 and 1972, respectively. His work later matured and became more encompassing. As Mary Evelyn Tucker (n.d.) notes in her "Biography of Thomas Berry," he expanded his perspective as a cultural historian "to become a historian of the Earth. Berry sees himself, then, not as a theologian but as a geologian" (para. 3).[1] As a geologian, Berry crosses disciplinary boundaries and brings together multiple perspectives and worldviews with the aim of cultivating connections between humans and the natural world, creative connections that overcome the destructive practices and ideas through which humans objectify and dominate the Earth community. Berry thus articulates responses to the planetary challenges of our current era in an effort to cultivate mutually enhancing relationships with all members of the Earth community.

Berry is a highly influential figure, whose life and works have had and are continuing to influence how people think, feel, and act as participants in the unfolding story of the universe. Accordingly, his relevance to integral approaches to ecology is indicated not only by his own teachings and writings, but by his influence on the works of others who are trying to further the development of ecological theories and practices, including efforts in such diverse areas as religion, cosmology, law, and social justice. Before elaborating on Berry's significance in such efforts, I outline some of the prominent themes of his work. Overall, my

aim is threefold: to present Berry's vision of integral ecology; to show how others are drawing on Berry's integral vision to develop their own approaches to ecology; and to inspire new and creative ways for humans to share in the dream of cultivating a vibrant Earth community amid the unfolding wonders of the cosmos.

OUR GREAT WORK

Berry frequently uses the words *integral* and *ecology* in his writings. It has been reported by Drew Dellinger (a poet and teacher of justice and ecology) that, at least as early as 1995, Berry described his work in terms of a vision of "integral cosmology or integral ecology" (Esbjörn-Hargens, 2011, p. 93). For the most part, Berry's explicit use of the term *integral ecology* seems to have occurred in lectures and conversations, not published texts. One exception to this is his 1996 essay, "An Ecologically Sensitive Spirituality," which was published with other essays of his 2009 work *The Sacred Universe* (see pp. 129–138). In that essay, Berry proposes that the "integral ecologist" is a "spiritual guide," "a normative guide for our times" (pp. 135–136). To understand Berry's integral ecology, however, one need not focus only on his explicit use of the term *integral ecology*. Rather, all of his writings on the new story of the evolving universe present an integral vision of the natural world and the place of humans therein. Indeed, Berry's entire body of work can be described as an "integral corpus" (Esbjörn-Hargens, 2011, p. 94).

For Berry (2009), "Earth constitutes a single integral community. It lives or dies, is honored or degraded, as a single interrelated reality" (p. 96). Humans are part of this community, but it is important to remind ourselves that our participation cannot be taken for granted. Rather, our part in the Earth community is shaped by our multiple and conflicting interpretations of the world, and those interpretations can be criticized and replaced. Indeed, they must be criticized if our civilization is to abjure violent and unjust ways of being in the world. This is not to say that Berry's work is simply critical. Berry joyously affirms that humans are immersed in intimate connections with the Earth community, and he also remains critical of our worldviews and their impact on the way those intimate connections are forged or broken. In other words, being "integral with the process" of the evolving universe means experiencing "the universe with the delight of postcritical naiveté" (p. 116).

With postcritical naiveté, the "Great Work" of humans today, says Berry (1999), is to transform our relationships with the Earth community, reorienting humans toward a mutually beneficial, instead of a destructive, presence on

the planet (p. 3). The planetary destruction currently taking place is the effect of forms of human existence that dissociate humans from the world and thus fail to develop ways of being that participate in "a single integral community of the Earth" (p. 4). To develop new expressions of human nature is "to reinvent the human," creating new modes of consciousness and conscience that respond to the intimate interconnectedness of humans with all of the inhabitants and habitats of our planetary home (p. 159). "We are here to become integral with the larger Earth Community" (p. 48). The Great Work of our historical moment is becoming integral. Moreover, the point is not simply to become integral for oneself, but to pass on an integral Earth community to future generations. "The issue is how to give the child an integral world" (Berry, 2009, p. 71).

Becoming integral with the Earth community entails a comprehensive transformation. It is not about changing a few attitudes, policies, and light bulbs. Although those are all important endeavors, they do not address the understanding of human nature as dissociated from the rest of the cosmos. To become integral with the Earth community requires a creative reorientation of human nature in relationship to nature. In short, it requires a reinvention of the human "at the species level" (Berry, 1999, p. 159). Along with taking place at the species level, such reinvention must take place "*with critical reflection*," since nothing is ever simply given but is interpreted and constructed differently in the dynamics of different contexts (Berry, 1999, p. 161). For Berry, critical reflection includes scientific and technical knowledge while integrating those ways of knowing with other modes of inquiry, introspection, and analysis.

Critical reflection involves renewed engagement with many sources of wisdom, including contemporary sciences, the world's religious and philosophical traditions, and indigenous communities, and with a view to feminist epistemologies. Those four traditions comprise "a fourfold wisdom," which can "guide us into the future" as we reinvent ourselves and deepen our experience of the complexities, immensities, and mysteries of the universe (Berry, 1999, p. 176). This fourfold wisdom can be understood as part of an "integral interpretation of experience," bearing in mind that such an interpretation does not rely only on different traditions of knowledge but includes an experiential dimension as well, such that an integral wisdom emerges from a "primordial experience" of intimacy with the "surrounding natural community" (Berry, 2009, p. 147).

With an integral wisdom, humans can reinvent themselves at the species level. To transform humans at the species level requires that humans situate themselves ecologically, which is to say, situate themselves "*within the community of life systems*" (Berry, 1999, 161). This means that we need to understand how

our lives are entangled with the abundance and diversity of organisms and ecosystems on Earth, such that there is no separation between the future of human flourishing and the flourishing of the entire Earth community. This relates to Berry's proposal for "an integral Earth study," which attends to the intertwinement of all spheres of planetary existence, including the air (atmosphere), water (hydrosphere), and rock (lithosphere) as well as all forms of life (biosphere) and human consciousness (noosphere) (Berry, 1999, p. 90). The spheres of Earth have so entangled themselves throughout their development that "we must somehow think of these as all present to one another and interacting from the beginning" (Berry, 1999, p. 28). To participate in the community of life systems is to share in the complexity of Earth as a whole—our planetary home (*oikos*).

Along with the work of situating humans ecologically, the reinvention Berry (1999) calls for also situates humans in the "*time-developmental context*" of the evolving universe (p. 162). Situated in the dynamics of the unfolding cosmos, the human species emerges out of the dynamics of the natural world, thus avoiding any pretense of speciesism, which gives humans sovereignty above and beyond the rest of the natural world. Reinvented amid cosmic becomings, humans can recognize that their meaning, value, and agency are not exceptions in a universe of meaningless objects devoid of subjectivity. Rather, "we must say of the universe that it is a communion of subjects, not a collection of objects" (p. 82). Of course, the universe does have different objects in it, but these beings are not passive, inert, and devoid of agency, as modern mechanistic philosophies understand objects. Rather, every being has an exterior and interior. In other words, every object is also a subject, harboring various degrees of activity, feeling, and agency.

Berry (1999) articulates this entanglement of subjectivity and objectivity with "three basic principles: differentiation, subjectivity, and communion" (p. 162). Together, these three principles are referred to as the "cosmogenetic principle" (Swimme & Berry, 1992, pp. 66–78). In terms of the cosmogenetic principle, all evolutionary processes in the universe involve objective exteriors that differentiate things from one another, subjective depths or activities of self-organization that articulate the interiority or agency of things, and relational interactions whereby all subjects in the universe exist in communion. Differentiation can be seen in the diversity of life and the uniqueness of every single being and every event. The subjective dimension of things can be understood in terms of scientific conceptions of self-organization (autopoiesis) and of religious traditions that articulate "the ensouled element of things" or the sacred or "numinous quality of reality" (Tucker, 2006, p. 645). An experience of this numinous quality is crucial for Berry's (2009) integral vision. "What is important is the attainment

of a conscious realization of the spiritual nature of human development. Only then can a truly integral human experience be achieved" (p. 15). Bear in mind that, in this context, religion and spirituality are not otherworldly endeavors. "Religion takes its origin here in the deep mystery of what we see, hear, touch, taste, and savor" (p. 147). In this sense of religion, human expressions of liturgy are grounded in the numinous quality of the universe, such that the universe is itself a "vibrant cosmic liturgy" (Berry, 2011, p. 116).

The fulfillment or realization of interiority requires participation in the cosmic liturgy of our natural surroundings.

> Through what is seen in these surroundings we come to the knowledge of the unseen world of beauty beyond imagination, of intimacy with the numinous presence enfolding the entire universe. In the outer world of the universe we discover our complete self, our Great Self. (Berry, 2009, p. 159)

As humans and all other beings, each with its own interiority, draw into intimate relations with one another, we discover a communion of subjects and thereby discover ourselves. Communion is "that which draws things together, like gravitation in the physical sphere or love in the human sphere. . . Communion is the expression of a deeply felt relationality" (Tucker, 2006, p. 645). All beings are woven together in the same interconnected tapestry, such that communing with subjects means participating in the universe as "a single, if multiform, energy event" (Berry, 1990, p. 45). "Activating communion and subjectivity," as Tucker (2006) observes, calls for humans "to live within the vastness of the cosmos in the context of local life—to dwell in intimate immensities" (p. 646). Berry's call for a reinvention of the human can be understood, in short, as a call for humans to participate in the communion of subjects.

BY MEANS OF STORY AND DREAM

While the reinvention of the human integrates many ways of knowing with the aim of situating humans amid intimate immensities, more than knowledge is required for the reinvention to actually happen. Integral wisdom and experience alone are not sufficient to drive the changes that would transform human nature and renew its intimacy with the Earth community. The reinvention of the human is activated "by means of story and shared dream experience" (Berry, 1999, p. 159).

For Berry (1999), "the *story* of the universe" plays a "directing and energizing role" for humanity (p. 163). The 13.7-billion-year story gives humans a sense of who we are by giving us a sense of where we come from—the ancestral lineage connecting humans with one another, with the evolution of life on Earth, with the birth and death of stars, and with the great birth conventionally referred to as the Big Bang. By articulating a meaningful context for human existence, the story of the universe "fulfills in our times the role of the mythic accounts of the universe that existed in earlier times" (p. 163). There is a key difference, though, between the traditional myths and the new story: the former tell stories of the place of humans in an ordered or centered world, while the main referent of the latter is the complex and creative process of evolution. "We have moved from cosmos to cosmogenesis, from the mandala journey toward the center of an abiding world to the irreversible journey of the universe itself, as the primary sacred journey" (pp. 163–164). In the new story, Earth and the universe itself are ongoing stories, not a stable background about which humans tell stories. As Holmes Rolston (2012) puts it, "Earth is not simply the stage, but the story" (p. 220). As human history is intertwined with the story of Earth, humans and the whole Earth community are participants in one great story, the universe. "There is eventually only one story, the story of the universe. Every form of being is integral with this comprehensive story" (Swimme & Berry, 1992, p. 268).

The problem with contemporary civilization is not that we lack the knowledge to address the ecological and social crises afflicting the Earth community.

> We are in trouble just now because we do not have a good story. We are in between stories. The Old Story—the account of how the world came to be and how we fit into it—is not functioning properly, and we have not learned the New Story. (Berry, 1978, p. 1)

The problem today is that we have not quite learned how all of our knowledge coheres into a comprehensive story, a narrative that, by giving us a sense of where we come from, gives us a sense of our place in the world, a sense of direction to orient our traditions, institutions, and practices of everyday life. Giving us a sense of direction, the new story can be described as an integral compass. Whereas a map is something distinctly separate from the territory it maps and from whoever is using the map, a compass has a more participatory relationship to the territory and to whoever uses the compass. A compass is composed of materials that participate in the magnetic field of the planet, just as the new story participates in the story that is the journey of the universe itself. Furthermore, a compass

needle moves according to the specific place of the person using it, just as the new story is told differently depending on the context of whoever is telling it.

With compass in hand, what drives our movement? What motivates our action? "The dream drives the action" (Berry, 1999, p. 201). Having a dream is a creative act that can empower the reorientation of the human to the natural world. A dream can transform human relations to nature not simply because a dream allows humans to imagine the world differently. More than just a psychological faculty, the creative act of dreaming is a way for humans to participate in the creativity manifest throughout the unfolding cosmos. Berry (1999) observes that, in human and cosmological creative processes, something is given "in a dim and uncertain manner, something radiant with meaning that draws us on to a further clarification of our understanding and our activity" (p. 164). Such creativity "can be described in many ways, as a groping or as a feeling or imaginative process" or "dream realization" (pp. 164–165).

The dream realization that takes place when two people get engaged and then married activates the same creativity as the dream realization that takes place when a predator finally catches its prey, when a mushroom begins to sprout out of its mycelium, when a newborn calf starts to walk, and in every moment that the sun continues to transform its millions of tons of mass into light. What, then, is the dream that will drive our action? What is the dream that will facilitate the reinvention of the human? The answer can be formulated succinctly. Indeed, the answer can be given with the title of one of Berry's (1990) books: *The Dream of the Earth*.

To participate in a planetary dream is not only to dream about Earth. Consider the ambiguous grammar in the phrase: the genitive ("of") in "dream *of* the Earth" can mean two things, (1) dreaming *about* Earth (objective genitive) and (2) dreaming that comes *from* Earth (subjective genitive). Dreaming *about* Earth draws together images whereby humans can envision the Earth community. Dreaming that emerges *from* Earth refers to forces composing the myriad forms and patterns of the habitats and inhabitants of Earth. This means that the imaginative process of dreaming is active not only in human beings, but also in the elemental forces of nature, which are "forces of primitive imagination" (Berry, 1990, p. 202). To participate in a planetary dream entails that one imagine the whole Earth community; one does so by drawing images not only from oneself but from the elemental creativity of the Earth itself. By dreaming about and from the Earth community, one is never alone as a dreamer. The dream of the

Earth is a "*shared dream experience*" (Berry, 1999, p. 164). It is a dream of, by, and for the Earth community.

Berry (1999) conjectures that humans "probably have not had such participation in the dream of the Earth since earlier shamanic times," since we have fallen gradually into an "exaggerated and destructive" dream of human superiority and an "entrancement with industrial civilization" (p. 165). A profound healing is required to put humans back in their place, replacing the current destructive dream through renewed participation in the numinous and entrancing creativity of the Earth community. With such healing, we can become sensitive to our planetary home and thus become open to "a new revelatory experience," that is, "an experience wherein human consciousness awakens to the grandeur and sacred quality of the Earth process" (p. 165). To drive the action of our Great Work, we need to facilitate participation in the dream of a single integral community undertaking a cosmic journey, that is, the dream of planetary communion. It is the task of the integral ecologist to facilitate participation in such communion.

The integral ecologist guides our awakening to the profound complexity and numinous mystery of the Earth community. Along these lines, Berry (2009) proposes "an ecological spirituality with an integral ecologist as spiritual guide" (p. 135).

> The integral ecologist can now be considered a normative guide for our times. The integral ecologist would understand the numinous aspect of a universe emergent from the beginning. . . The integral ecologist is the spokesperson for the planet in both its numinous and its physical meaning, just as the prophet was the spokesperson for the deity, the yogi for the interior spirit, and saint for the Christian faith. In the integral ecologist, our scientific understanding of the universe becomes a wisdom tradition. (p. 136)

Bringing together wisdom, experience, and know-how, the integral ecologist is a storyteller and a dreamer who seeks to share that story and dream so that we might "accept that we exist as an integral member of this larger community of existence" and begin acting accordingly (p. 138). Berry's vision for the Earth community is shared by many others, including the Brazilian liberation theologian Leonardo Boff, who was among the first to use the phrase "integral ecology" in a published work. In 1995, at the same time that Berry was developing his integral ecology, Boff began describing his own integral ecology.

LIBERATION

Boff's first use of the term *integral ecology* occurs in an introduction to an issue of the theology journal *Concilium* dedicated to the intersecting issues of ecology and poverty. With coauthor Virgil Elizondo, Boff (1995) calls for an integral ecology that unites the approaches to ecology expressed in the sciences, humanities, and environmentalist movements. "The quest today is increasingly for an *integral ecology*," which would bring together those approaches in efforts to cultivate

> a new alliance between societies and nature, which will result in the conservation of the patrimony of the earth, socio-cosmic wellbeing, and the maintenance of conditions that will allow evolution to continue on the course it has now been following for some fifteen thousand million years
>
> For an integral ecology, society and culture also belong to the ecological complex. Ecology is, then, the relationship that all bodies, animate and inanimate, natural and cultural, establish and maintain among themselves and with their surroundings. In this holistic perspective, economic, political, social, military, educational, urban, agricultural and other questions are all subject to ecological consideration. The basic question in ecology is this: to what extent do this or that science, technology, institutional or personal activity, ideology or religion help either to support or to fracture the dynamic equilibrium that exists in the overall system? (pp. ix–x)

Boff has continued to develop his idea of integral ecology since this 1995 proposal. For instance, the "ecology" section of his website has sections on four different approaches to ecology: environmental, social, mental, and integral (see Boff, n.d.).

Environmental ecology addresses ecological phenomena through biophysical sciences and technological development. *Social* ecology engages issues of social justice and the sustainability of institutions such as education, economics, and healthcare. Also, it is important to note that, for Boff (n.d.), social well-being is not exclusively focused on humans. Rather, social well-being

> must also be socio-cosmic. It must attend to the needs of the other beings in nature, the plants, the animals, the microorganisms, because

> all together they constitute the planetary community, in which we are inserted and without whom we ourselves could not exist. (para. 5)

Mental ecology focuses on the place of consciousness and subjectivity in ecological problems, particularly with the aim of rejuvenating fulfilling engagements with the natural world through renewed engagements with gender roles, religious and cultural worldviews, and the archetypes and desires of the unconscious.

The environmental, social, and mental approaches to ecology cover the various fields of ecology that have been developed in the biophysical sciences, social sciences, and humanities. *Integral* ecology unites those three ecologies and expresses *a new vision of the Earth*, for which humans and Earth are understood in relation to the evolutionary becoming of the cosmos. In other words, similar to Berry's vision, Boff's integral ecology situates humans and Earth in the processes of cosmogenesis.

Boff describes three aspects of cosmogenesis, which parallel the three aspects of Berry's cosmogenetic principle: (1) complexity and differentiation, which constitute the objective or exterior dimensions of beings, (2) self-organization and consciousness, which constitute the subjectivity or interior depths of beings, and (3) reconnection and relation, which constitute the ways that beings come together not as a collection of different objects but as communing subjects, communicating agents. Addressing these three aspects of cosmogenesis, integral ecology unites the other three ecologies Boff enumerates: environmental (differentiation), mental (consciousness), and social (relation).

Boff does not cite Berry, but draws on Berry's work quite extensively to formulate his ideas of cosmogenesis and integral ecology.[2] Boff does, however, cite another scholar who also influenced his vision of environmental, mental, and social ecologies: the French psychotherapist and philosopher Félix Guattari, specifically Guattari's (2000) *The Three Ecologies*. Boff (1997) says that the violent actions of humans toward the natural world indicate "a failure to integrate the three main directions of ecology as formulated by F. Guattari: environmental ecology, social ecology, and mental ecology" (p. 216). Integrating the three ecologies requires what Guattari (2000) calls "transversal tools"—experimental practices whereby individuals and communities can cross boundaries to achieve communication between multiple levels or registers of meaning (p. 69). For Boff (1997), transversality is the "feature of ecological knowledge" that moves across multiple domains of knowledge at the same time, relating "laterally (ecological community), frontward (future), backward (past), and inwardly (complexity) all experiences and all forms of comprehension" (p. 4). In other words, Boff's

integral ecology calls for an "understanding of the transversality (interconnected or cross-disciplinary nature) of knowledge" (Hathaway & Boff, 2009, p. 337). Furthermore, such understanding is not achieved to satisfy a theoretical curiosity. It is done in the service of liberation.

As a liberation theologian, Boff's works avoid a simple otherworldly conception of spirituality and engage the dimension of spirituality that supports liberation in this world. This means that the work of liberation is not just another way to describe the work of attaining personal salvation. Rather, it is about personal salvation as well as social justice, including problems of racism, poverty, and sexism. Furthermore, Boff also supports an ecological liberation, which attends to the nonhuman members of the Earth community. Liberation is thus a point of convergence for theology and ecology, both of which "seek liberation" in response to cries marked by "bleeding wounds"—the wounds of social oppression ("the cry of the poor") and of environmental degradation ("the cry of the Earth"), respectively (Boff, 1997, p. 104).

Integrating the work of personal salvation with the work of social and ecological liberation, Boff's work thus articulates the question of "integral liberation" (Hathaway & Boff, 2009, p. 3). "How can we move forward toward an integral liberation for humanity and the Earth itself?" (Hathaway & Boff, 2009, p. 61). Whereas liberation is typically defined "in the personal sense of spiritual realization or in the collective sense of" social justice, integral liberation includes both and situates them "in a wider, ecological—and even cosmological—context (Hathaway & Boff, 2009, p. xxv).[3] In its cosmological context, integral liberation can be understood as the "conscious participation of humanity" in the processes of cosmogenesis (Hathaway & Boff, 2009, p. 292).

EARTH CHARTER, EARTH JURISPRUDENCE

Boff elaborates on the ecology implicit in his notion of integral liberation in *The Tao of Liberation: Exploring the Ecology of Transformation*, a comprehensive book (cowritten in 2009 with Mark Hathaway) that draws extensively on the cosmological visions of Berry and Swimme.[4] *The Tao of Liberation* enumerates the same four ecologies listed on Boff's website, including environmental, social, and mental (or "deep") ecology along with integral ecology (Hathaway & Boff, 2009, p. 300). One of the things that is particularly striking about the account of integral ecology in *The Tao of Liberation* is that it is described in light of a paradigmatic example: the "Earth Charter"—an international

document presenting a vision of shared values and principles for a peaceful, just, and sustainable global civilization.

Assembled by scientists, scholars, political and religious leaders, and others (including key contributors to integral ecologies, such as Leonardo Boff and Mary Evelyn Tucker), the "Earth Charter" was issued in June 2000 and has since been endorsed by numerous individuals and more than 4,500 organizations, including governments, religious communities, universities, and nongovernmental organizations. The document articulates a shared vision of a global civilization grounded in principles affirming democratic political participation, human rights, social and economic equity, nonviolence, ecological integrity, and respect for life. It has far-reaching implications for ethics, governance, international law, and social movements (Westra & Vilela, 2014). Consider the "Preamble":

> As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. . . Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations. (Earth Charter Associates, 2012, para. 1)

For Boff and Hathaway (2009), this is an exemplary framework of integral ecology. "The Earth Charter springs forth from a holistic, integral vision," and this vision presents "an affirmation of hope" and a call for "inclusive, integrated solutions" in response to the mental, social, and environmental dimensions of the ecological crisis (p. 300).

The "Earth Charter" indicates how integral ecologies can engage in liberation not only in relation to personal practice, activism, and advocacy, but also in relation to policy and law. To put that another way, integral ecologies can support the development of a revised jurisprudence not centered on humans but oriented toward the Earth community and the rights of organisms, ecosystems, and all beings (Berry, 2003; 2006, p. 149).

> Our planet Earth in its present mode of florescence is being devastated. This devastation is being fostered and protected by legal, political and economic establishments that exalt the human community while offering no protection to the non-human modes of being. There is an

> urgent need for a Jurisprudence (system of governance) which recognizes that the well-being of the integral world community is primary, and that human well-being is derivative—an Earth Jurisprudence. (Berry, as cited in the Gaia Foundation, 2015, para. 5)

Along these lines, Cormac Cullinan (2011) engages Berry's work extensively in a groundbreaking work on this topic, *Wild Law: A Manifesto for Earth Justice*. Cullinan notes that much of Berry's work addresses the ongoing need to provide ground for "laws and political institutions that strengthen mutually beneficial relations between humans and the rest of the biosphere" (p. 11). The term *wild law* refers to an "approach to human governance" that "recognises and embodies the qualities of the Earth system within which it exists" (p. 30). Such an approach generates laws that "regulate humans in a manner that creates the freedom for all the members of the Earth Community to play a role in the continuing co-evolution of the planet" (p. 31). Opening up possibilities for recognizing that nonhuman nature is not merely a collection of property or resources, wild law can help secure the rights of animals, plants, and ecosystems, thereby securing justice for all members of the Earth community. The legal philosophies and policies developed through wild law comprise Earth jurisprudence, but that is not where wild law stops. Wild law embeds Earth jurisprudence within the encompassing cosmological context of Earth. Cullinan refers to this cosmic context of wild law as the "Great Jurisprudence" (p. 78).

"Earth jurisprudence is to the Great Jurisprudence what human nature is to nature" (Cullinan, 2011, p. 79). Cullinan (2011) defines the Great Jurisprudence in terms of the cosmogenetic principle expressed by Swimme and Berry, which means that wild law grounds Earth jurisprudence in the evolutionary processes of differentiation, subjectivity, and communion. Wild law is thus an approach to human governance for which "the primary lawgiver" is the unfolding cosmos (Berry, 1999, p. 81). To ground laws and policies in cosmogenesis is not to base jurisprudence on a stable foundation or unquestionable authority. The evolving universe is a lawgiver that changes with the times, or perhaps more appropriately, such a lawgiver *is* the changing times. Grounded in cosmogenesis, the Great Jurisprudence resembles a democracy. Along these lines, wild law facilitates something like what Alfred North Whitehead (1978) calls "a democracy of fellow creatures" (p. 50). It could be described as biodemocracy or ecological democracy, wherein all beings can participate in the ongoing composition of a communion of subjects.

With an understanding that laws, rights, and justice are grounded in an evolving universe, integral ecologies can provide a much more dynamic and

comprehensive context for governance and collective decision-making than humans have heretofore known. Furthermore, as indicated by Boff's theological commitment to liberation and by Berry's definition of the integral ecologist as a spiritual guide, integral ecologies provide not only a new context for the development of laws and ethics, but a new context for religions.

RELIGION AND ECOLOGY

When Berry (2009) defines the integral ecologist as a spiritual guide for our times, he says that the "great spiritual mission of the present is to renew all the traditional religious-spiritual traditions in the context of the integral functioning of the biosystems of the planet" (p. 136). Berry then goes on to say that an example of the realization of this mission can be seen in a project that began in the 1990s at the Center for the Study of World Religions (CSWR) at Harvard and that led to the formation of the Forum on Religion and Ecology (FORE), which is currently stationed at Yale.

The Forum is comprised of a diverse network of scholars, researchers, activists, advocates, and religious practitioners. Since its beginnings, the Forum's work has engaged the multiple religious traditions of the world, an engagement that is represented in the book series, Religion of the World and Ecology, which is based on a series of conferences held between 1996 and 1998 and published through the CSWR at Harvard. The series explored the ecological implications of Christianity, Judaism, Islam, Hinduism, Buddhism, Jainism, Confucianism, Daoism, Shinto, and indigenous traditions. With that comprehensive effort, the series contributed to the development of "a new field of study in religion and ecology" (Tucker, 2007, p. 407). Moreover, Berry attended many of those conferences, including the conference on animals, which led to the publication of the groundbreaking interdisciplinary anthology, *A Communion of Subjects: Animals in Religion, Science, and Ethics* (Waldau & Patton, 2006). The Forum website developed around the conference and book series "to assist in fostering research, education, and outreach in the area of religion and ecology" (Tucker, 2007, p. 410). Furthermore, since its inception, the Forum has been supportive of the "Earth Charter." Indeed, the "Charter" "in its draft form" was part of the Forum's initial conference series (Grim & Tucker 2011, p. 85).

Committed to crossing disciplinary boundaries, the Forum includes an array of ecologically oriented academic fields related not only to religious studies and the humanities but to social and natural sciences. As the Forum website (n.d.) puts it:

> The Forum on Religion and Ecology is the largest international multireligious project of its kind. With its conferences, publications, and website it is engaged in exploring religious worldviews, texts, and ethics in order to broaden understanding of the complex nature of current environmental concerns. The Forum recognizes that religions need to be in dialogue with other disciplines (e.g., science, ethics, economics, education, public policy, gender) in seeking comprehensive solutions to both global and local environmental problems. (para. 1)

The founders and coordinators of the Forum are Mary Evelyn Tucker and John Grim. In their account of the conceptual and organizational beginnings of the Forum and of the field of religion and ecology, Berry's life and work play a crucial role.

Tucker and Grim both studied with Berry while he was directing the Fordham University graduate program (MA and PhD) in History of Religions and "the Riverdale Center of Religious Research along the Hudson River just north of New York City," where they would all meet "for meals and conversation" (Grim & Tucker, 2011, p. 82). Berry oriented his students, Tucker and Grim among them, to the work of "exploring the cosmology of religions, namely the ways in which the power and beauty of the surrounding universe evoked in peoples a response in story, symbol, and ritual" (Grim & Tucker, 2011, p. 82). Furthermore, the integrative perspective on cosmology and religion that Berry conveyed to Tucker and Grim is something that Berry appreciated in the work of Pierre Teilhard de Chardin (1881–1955), a French Jesuit paleontologist whose theology made groundbreaking contributions to the integration of the Christian faith tradition with scientific understandings of evolution. Berry's engagement with Teilhard extended to his work with the American Teilhard Association, of which he was president, eventually being succeeded by Grim, with Tucker serving as vice president since 1979 along with Swimme since 2005 (American Teilhard Association, 2013).

"For Teilhard the universe is the 'divine milieu' at one with the evolutionary process" (Grim & Tucker, 2011, p. 83). It is important to note here that the universe is not equated entirely with divinity. That would be pantheism. Teilhard and Berry share a pan*en*theistic vision, for which divinity is intimately intertwined with the unfolding universe and its multiple forms of matter, life, and consciousness. In contrast to pantheism, in which divinity is simply identified with all that exists, panentheism suggests a more complex relationship between the divine and the cosmos, such that the divine is not simply equated

with everything; rather, the divine is *in* all things and all things are *in* the divine. Mutually enfolded, divinity and nature are not collapsed into one another. This means further that religious and ecological perspectives are not collapsed into one another. Instead, religion and ecology have a relationship of continuity *and* difference, hence the need for a conjunction ("and") to name the field of religion and ecology instead of a name like "religious ecology" or "ecological religion." In short, the integral impulse at work in Forum on Religion and Ecology has intellectual roots in Berry's work and, more generally, in panentheistic integrations of religion and evolutionary sciences.

The influence of Teilhard's panentheistic integration of science and spirituality continues to grow in the twenty-first century (Fabel & St. John, 2005). Along with Berry, "Boff and other contemporary Catholic thinkers" also advocate "a panentheistic appreciation of and engagement with the universe and rights for all members of the biotic community" (Hart, 2007, p. 81). Teilhard's views also gained the favor of Pope Benedict XVI, who celebrates Teilhard's vision of the cosmos as a divine milieu—"a living host"—and prays that such a vision can facilitate a "transformation of the world" (Allen, 2009, paras. 6–7). Furthermore, Teilhard's vision has contributed to the development of the "Earth Charter" (Rockefeller, 2006). It is also worth noting that the encyclical by Pope Francis (2015, pp. 61, 152), *Laudato Si'*, refers appreciatively to Teilhard as well as the "Earth Charter" while also calling for an integral ecology.

Embracing panentheism, integral ecologies cultivate an appreciation for the sacred power and beauty of the cosmos. In doing so, integral ecologies join in a "celebration of worldly wonder," affirming what is recognized throughout many religious traditions: "we are contained in the center of vast mysteries," and "we dwell amidst intimate immensities" (Tucker, 2003, pp. 11, 108). The celebration of worldly wonder is not just an idea or slogan. Nor is such wonder "just another emotion; it is rather an opening into the heart of the universe. Wonder is the pathway into what it means to be human" (Swimme & Tucker, 2011, p. 114). Worldly wonder is a way of life, wherein humans come to experience themselves as participants in a communion of subjects, an integral Earth community.

Examples of individuals practicing worldly wonder abound, but the point is not simply to motivate individuals, but to motivate collective transformation. One example of the daily practice of worldly wonder in a community influenced directly by Berry's integral vision can be found at Genesis Farm. Founded by Sister Miriam Therese MacGillis in 1980, Genesis Farm is located in Blairstown, New Jersey, on the property belonging to her religious order (MacGillis, 2013; Ruether, 2005, p. 177). MacGillis has written appreciatively on the work of Berry

and Swimme, and she has spoken widely across the United States as well as in Ireland to bring Catholic nuns into a deep appreciation of Berry's work and the universe story, supporting the development of growing numbers of ecoliteracy centers and retreats (Taylor, 2007).

Genesis Farm brings the universe story into educational workshops and programs and into the religious and mundane tasks of daily life on the land. The work of the integral ecologist is to facilitate the development of community grounded in worldly wonderment, and this means facilitating the emergence of more places like Genesis Farm, more organizations and institutions wherein people enact a shared vision of humans oriented to their place in the unfolding journey of the universe. Consider one example of how this vision is enacted at Genesis Farm. MacGillis developed a walking exercise to provide people with a sense of the immensity of time in the universe story. Stephanie Kaza (2008) describes this exercise:

> For this "cosmic walk" the path is set up in a spiral, with points along the way to mark key events in the creation of the universe. Each point is marked by a burning candle and a small card. As people walk the spiral, they pause at each candle to read the next event in the story, beginning with the first flaring forth of the Big Bang. The walk is held in silence to allow each person to find his or her own experience of what Father Thomas Berry calls "the universe story." . . . This ritual walk calls up the experience of systems over time, the larger temporal contexts we are part of. . . I could feel in my mind and body a sense of immensity, that these gifts of time—our sun, the planets and stars, our home earth—were the results of systems within systems operating across many timescales. . . And it is within these specific systems we are able to act. As participating agents in political, economic, family, and environmental systems, we *can* make a difference. (pp. 48–49)

THE UNFOLDING JOURNEY

Paraphrasing the second epigraph to this chapter, you may say that Berry is a dreamer, but he is clearly not the only one. In other words, Berry's integral vision is not simply Berry's. His dream is a shared dream, a dream in which many others are participating, a dream that is already inspiring and motivating people,

transforming everything from science to religion, from local practices to international law, from individual hearts and minds to communities, organizations, and institutions. It is the shared dream of integral ecology: to guide humans toward intimate participation in the immensities of the unfolding cosmos and, thereby, to facilitate participation in the flourishing of an integral Earth community.

This dream has yet to be realized. As the future of the Earth community remains uncertain, the dream is an open question, an invitation calling for a response. This invitation is posed well by Swimme and Tucker (2011), as they open the beginning of their telling of the cosmic story in *Journey of the Universe*:

> Imagine experiencing Earth's beauty for the first time—its birds, fish, mountains, and waterfalls. Imagine, too, the vastness of Earth's home, the universe, with its numerous galaxies, stars, and planets. Surrounded by such magnificence, we can ask ourselves a simple question: Can we find a way to sink deeply into these immensities? And if we can, will this enable humans to participate in the flourishing of life? (p. 1)

Those questions express the same invitation conveyed in Berry's vision of integral ecology. It is "an invitation to a journey into grandeur" the likes of which "no previous generation could have fully imagined" (p. 1). Furthermore, *Journey of the Universe* is particularly well suited to disseminate this invitation, as it is a multimedia project that includes not only a book but an Emmy Award–winning film, a website, and an educational series of videos, details for each of which are available on the website (Journey of the Universe, 2015). In short, the *Journey of the Universe* project is a hopeful sign that there are increasing opportunities for sharing in the dream of an integral Earth community.

While everyone can share equally in the dream, everyone shares in it differently according to their unique context. Accordingly, Berry's integral vision is not exclusive but celebrates the diversity of storytelling and the innumerable ways to dream of an integral Earth community. Berry's vision is thus compatible with a diversity of integral ecologies, as is evident in Boff's (1995) adaptation of Berry's work in his call for an integral ecology. Although Sean Esbjörn-Hargens and Michael Zimmerman (2011) "do not draw on Berry" to present their Integral Ecology, which is based on Ken Wilber's integral theory, Esbjörn-Hargens recognizes that Berry's work is not simply opposed to their approach but provides sources for "an alternative and complementary vision of integral ecology" (p. 94). Indeed, the concluding remarks that Esbjörn-Hargens offers on the

Berry's "integral ecology legacy" resound with the invitation to share in Berry's dream. "May we continue to be inspired by Berry's own deep intimacy with the cosmos" and "continue to engage his cosmological sensitivities to foster a sacred Earth community" (p. 104). Esbjörn-Hargens then leaves the last words to a poet—one of Berry's students, Drew Dellinger (2015), whose poem, "Carolina Prophet: Poem for Thomas Berry," recalls Berry "reminding us / we are constantly bathed in shimmering memories / of originating radiance" (para. 13).

Dellinger's (2015) poem for Berry provides a fitting end to this chapter as well, particularly insofar as the present chapter began with an invocation of Martin Luther King's compelling dream. In Dellinger's poetry, teaching, and activism, King's dream and Berry's dream converge, conveying an invitation to build a more just and peaceful planetary civilization. Dellinger (2011) recognizes that, to facilitate the kind of transformation needed to reinvent the human, "we need a team to confront a regime like King" (p. 54). As King's dream drove the action of civil rights, the shared dream of integral ecology is driving the action to facilitate the participation of humans in the unfolding universe and cultivate a flourishing Earth community. With worldly wonder, share in the dream of the "Carolina Prophet":

> we were dreamed
> in the cores
> of the stars.
> like the stars,
> we were meant to unfold
> [. . .]
> when a vision of the universe takes hold
> in your mind, your soul becomes vast as the cosmos
> when the mind is silent,
> everything is sacred.
> like the spiral
> like the lotus
> like the waves
> like the trees
> like the stars,
> we were meant to unfold.

NOTES

1. For more information on Berry's biography as well as his books, essays, and film projects, visit the Thomas Berry Foundation (n.d.) website. For multiple overviews and appreciative extrapolations of Berry's work, see the anthology edited by Heather Eaton (2014), *The Intellectual Journey of Thomas Berry: Imagining the Earth Community*.

2. Boff does not always use thorough citations. For instance, in *Cry of the Earth, Cry of the Poor*, Boff (1997) refers to a star named "Tiamat," which became a supernova around five billion years ago and thereby generated materials that compose our solar system (p. 47). Boff makes it sound like Tiamat is simply the technical or commonly used name for that phenomenon, but that name for an ancestral supernova is specific to the telling of *The Universe Story* by Swimme and Berry (1992, p. 8). However, numerous citations for Berry and Swimme can be found throughout *The Tao of Liberation*, which Boff wrote with Mark Hathaway in 2009.

3. Boff was developing this concept of integral liberation more than a decade before he began developing his integral ecology. Boff (1983) used the phrase "integral liberation" in the 1980s to describe the Christian understanding of the religious and political relationship between God, Earth, and humanity, an understanding that is expressed in a prominent Christian prayer (the Lord's Prayer), which Boff calls a "prayer of integral liberation" (p. 4). This is similar to the approach to liberation articulated by Ivone Gebara (1999), except that she is more explicit about the need to include feminist perspectives. "An awareness of the need to develop a feminism that is within the Latin American liberation tradition and to relate it to the ecological perspective in the hope of building interdependent, noncompetitive relationships seems to be slowly growing" (p. 14).

4. See Hathaway's chapter in the present volume for a further development of the ecology of transformation expressed by him and Boff in *The Tao of Liberation*.

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3

AN OVERVIEW OF INTEGRAL ECOLOGY

A Comprehensive Approach to Today's Complex Planetary Issues

Sean Esbjörn-Hargens and Michael E. Zimmerman

> Gaia's main problems are not industrialization, ozone depletion, overpopulation, or resource depletion. Gaia's main problem is *the lack of mutual understanding and mutual agreement* . . . about how to proceed with those problems. We cannot reign in industry if we cannot reach mutual understanding and mutual agreement based on a worldcentric moral perspective concerning the global commons. And we reach that worldcentric moral perspective through a difficult and laborious process of interior growth and transcendence.
>
> —Ken Wilber

SINCE ITS INCEPTION IN 1866, with Ernst Haeckel's publication of *General Morphology of Organisms,* the field of ecology has multiplied, divided, and morphed into numerous schools and subschools. Each such school is an attempt to capture something not included by other approaches. Every knowledge niche seems to have a corresponding school of ecology connecting its insights to the understanding of ecological processes and environmental dynamics. With the emergence of new schools of ecology, as with most disciplines, there is a tendency for the nascent approach—the "new kid on the block"—to define itself against existing approaches in order to justify its particular position. All too often, fences are built between approaches where bridges are needed, and some approaches

pair up with each other to discredit other seemingly misguided approaches. The net result is a fragmented field of various approaches either pitted against each other or in alliance through protective politics.

So what is someone concerned about the environment to do when confronted with the magnitude of variety that currently exists within the field of ecology and environmental studies? How is an activist, scientist, or philosopher expected to be effective in the face of such multiplicity? No wonder the world of ecology is in such disarray—it has grown so big that it no longer knows itself. For instance, all too often practitioners of *landscape ecology* have never heard of *environmental aesthetics*; *environmental philosophers* might not know the difference between *population ecology* and *community ecology*; individuals working in the field of *acoustic ecology* do not generally know about *linguistic ecology*.

Today there is a bewildering diversity of views on ecology and the environment. With more than 200 distinct and valuable perspectives on the natural world—and with researchers, economists, ethicists, psychologists, and others often taking completely different stances on the issues—how can we come to agreement to solve the toughest environmental problems of the 21st century?[1] We need a framework to help sort through these many approaches and connect them in a pragmatic way that honors their unique insights on their own terms. Integral ecology provides this framework: a way of integrating multiple approaches to ecology and environmental studies into a complex, multidimensional, metadisciplinary approach to the natural world and our embeddedness within it.[2] Integral ecology unites valuable insights from multiple perspectives into a comprehensive theoretical framework, one that is already being put to use around the globe. This framework is the result of over a decade of research exploring the many perspectives on ecology available to us today and their respective methodologies. In short, this framework provides a way to understand the relationship between *who* is perceiving nature, *how* the perceiver uses different methods, techniques, and practices to disclose nature, and *what* is perceived as nature.

Integral ecology is a comprehensive framework for characterizing ecological dynamics and resolving environmental problems. It is comprehensive in that it both draws on and provides a theoretical scheme for showing the relations among a variety of different methods, including those at work in the natural and social sciences and in the arts and humanities. Integral ecology unites, coordinates, and mutually enriches knowledge generated from different major disciplines and approaches. Integral ecology can be (1) applied within a discipline (e.g., by integrating various schools of ecology), (2) applied as a *multi*disciplinary approach (e.g., by investigating ecological problems from several disciplines), (3) applied

as an *inter*disciplinary approach (e.g., by using social-science methods to shed light on economic or political aspects of environmental values), and (d) applied as a *trans*disciplinary approach (e.g., by helping numerous approaches and their methodologies interface through a well-grounded metaframework).

The integral ecology framework has promising applications in many areas: outdoor schools, urban planning, wilderness trips, policy development, restoration projects, environmental impact assessments, community development, and green business, to name a few. In fact, a wide variety of ecologists, environmentalists, urban planners, wilderness guides, and activists recognize the theoretical comprehensiveness and practical efficacy of integral ecology and have been using its principles and distinctions successfully in a variety of contexts: community development in El Salvador, marine fisheries in Hawaii, eco-activism in British Columbia, climate-change initiatives in Norway, permaculture in Australia, environmental policy in Tasmania, sustainable consumption and waste reduction in Calgary, and urban design in Manitoba.[3]

THE FOUR QUADRANTS

The integral ecology framework draws on integral theory as developed by American philosopher Ken Wilber.[4] Integral theory provides a content-neutral framework—the AQAL model—that has been developed over 30 years and is being used in over 35 professional disciplines (e.g., economics, law, medicine, art, religious studies, psychology, and education). According to integral theory, there are at least four irreducible perspectives (objective, interobjective, subjective, and intersubjective) that must be consulted when attempting to understand and remedy environmental problems. These perspectives are represented by four quadrants: the interior and exterior of individual and collective realities. These four quadrants represent the intentional ("I"), cultural ("we"), behavioral ("it"), and social ("its") aspects of ecological issues (see Figure 3.1).

Put briefly, the *objective* perspective examines the composition (e.g., physiological and chemical) and exterior behavior of individuals such as humans, bears, salmon, redwoods, or beetles. The *interobjective* perspective examines the systemic structures and exterior behaviors of collectives, ranging from human socioeconomic systems to ecosystems. Data generated by methods belonging to objective and interobjective perspectives are valuable, but they neither provide an exhaustive understanding of the problem at hand nor do they necessarily provide motivation for action. Technical information alone cannot persuade

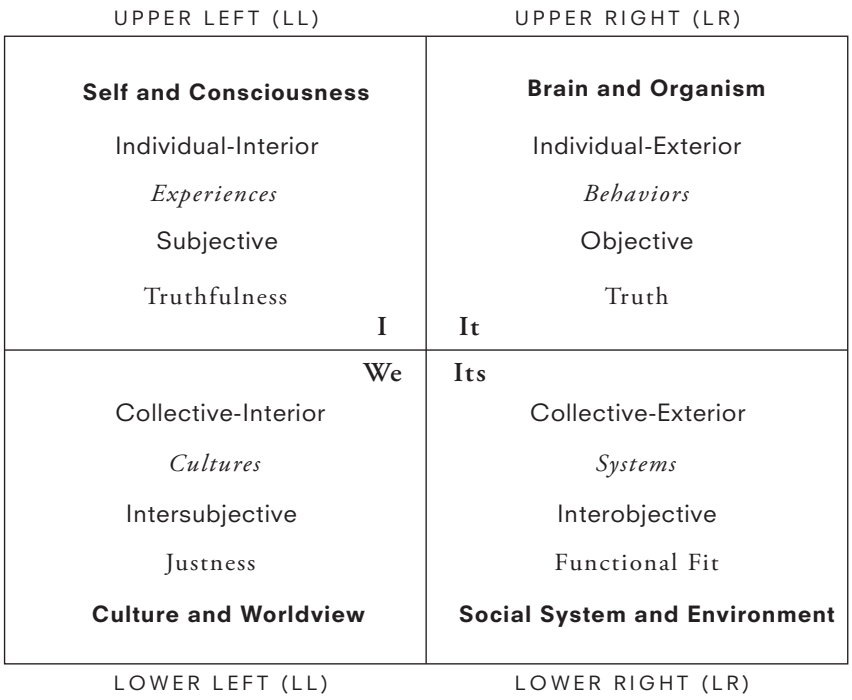

Figure 3.1. The four quadrants.

people to act. Motivation arises when we experience a given environmental problem through two additional perspectives—*subjective* and *intersubjective*. Academic and public environmental efforts only infrequently approach problems with awareness or appreciation of the role played by these interior perspectives, including aesthetic experience, psychological dynamics, religious meaning, ethical issues, and cultural values.

Integral ecology labels these four irreducible perspectives as follows: *terrain of experience* (first-person subjectivity), *terrain of culture* (second-person intersubjectivity), *terrain of behavior* (third-person objectivity), and *terrain of systems* (third-person interobjectivity). In other words, integral ecology recognizes and draws on first-, second-, and third-person perspectives. The perspectives are irreducible because, for example, a first-person perspective contains important aspects of a situation that are not captured or represented by a third-person perspective. When I say, "I feel devastated as I look at this polluted stream," I am speaking from a first-person perspective. The perspective informing my assertion cannot

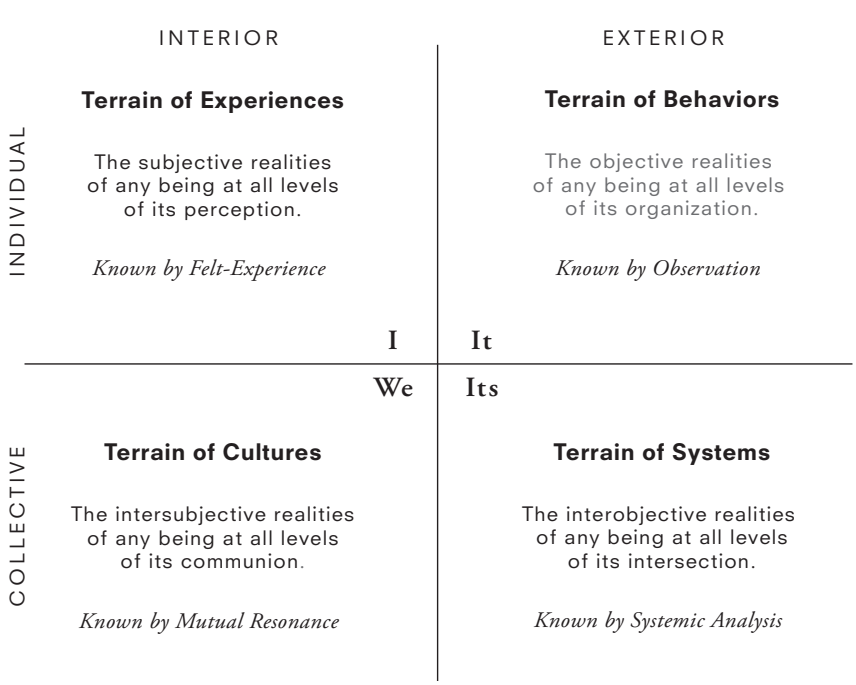

Figure 3.2. The four terrains.

simply be replaced by a third-person perspective, which would issue a statement such as: "That person sees the polluted stream." There is quite a difference between simply "seeing" the polluted stream and "feeling devastated" by it. Likewise, the second-person significance of a multi-stakeholder gathering, which brings together culturally divergent and even contentious worldviews, cannot be equated with the third-person function that the meeting may have in socioeconomic terms. Each of these terrains highlights a different and essential aspect of reality and is known through different types of methodologies and practices (see Figure 3.2).

These four perspectives are often used to *look at* an environmental problem or ecological reality, either informally or through formal disciplinary traditions. The following is a simple example of an integral understanding of the problem of toxic emissions. Each section briefly examines toxic emissions from a different terrain, highlighting the kinds of perspectives that would be included in looking at and addressing this issue.

THE INTEGRAL ECOLOGY OF TOXIC EMISSIONS

Terrain of Behavior

Toxic chemicals can cause (or trigger) various deleterious effects in the behavior and structure of individual cells, organs, and organisms. We must study, measure, and describe these so that more comprehensive grounded recommendations can be made about limiting their release into the environment. In other words, it is important both to understand how individual behavior, structures, and health are affected by toxins at all levels of ecological organization (from cells to organs to organisms), and to look closely at how human behaviors in our daily activities contribute to and sustain environmental toxicity.

Terrain of Systems

Systems may be defined as enduring patterns of relationships that help theorists to explain how individuals or groups relate to one another. Organisms are members of, and are sustained in part by, their ecosystems, defined as interrelated and interdependent organic communities and their physical environments. If toxins poison insects that constitute part of the food chain on which frogs depend, frogs will become sick or die. In turn, frogs form part of the food chain of larger animals, including birds, which will be harmed by ingesting poisoned frogs. In addition to studying ecosystemic consequences of toxic emissions, integral ecologists must also examine the various social, economic, and political structures involved in the production and release of toxic emissions. Social theorists define such structures as relatively stable patterns, rules, and institutions that shape the interactions among social agents, and often regard social structures as more fundamental than the individuals that are shaped and even made possible by such structures. Although resisting such reductionism, integral ecologists recognize the importance of understanding the scope of, interactions among, and limitations of pertinent social structures. In fact, such understandings are crucial for suggesting alterations of and alternatives to existing social structures.

Terrain of Culture

In addition, integral ecologists must examine cultural factors, namely, how ideologies, worldviews, religious systems, and values encourage, discourage, or are neutral with regard to toxic emissions. Various worldviews (e.g., conservative

Christian, scientific-rational, or postmodern) will be motivated to take corrective action for very different reasons. Hence, integral ecology encourages us to understand the various worldviews involved with the issue. Developing mutual understanding between individuals and their worldviews is critical to resolving the problem. However, achieving such understanding is by no means easy and is one reason why this dimension is typically neglected in current ecological efforts.

Terrain of Experience

Our direct experience of ourselves, other people, and the natural world plays an important role in how we approach the environment. Integral ecology recognizes that psychological capacities, states of consciousness, beliefs, and mental conditioning all shape our individual attitudes about issues such as toxic emissions. We must understand these different psychological dimensions and their role in creating motivations and beliefs about toxins and the environment. Integral ecology holds that transformative practices such as therapy, contemplation, meditation,

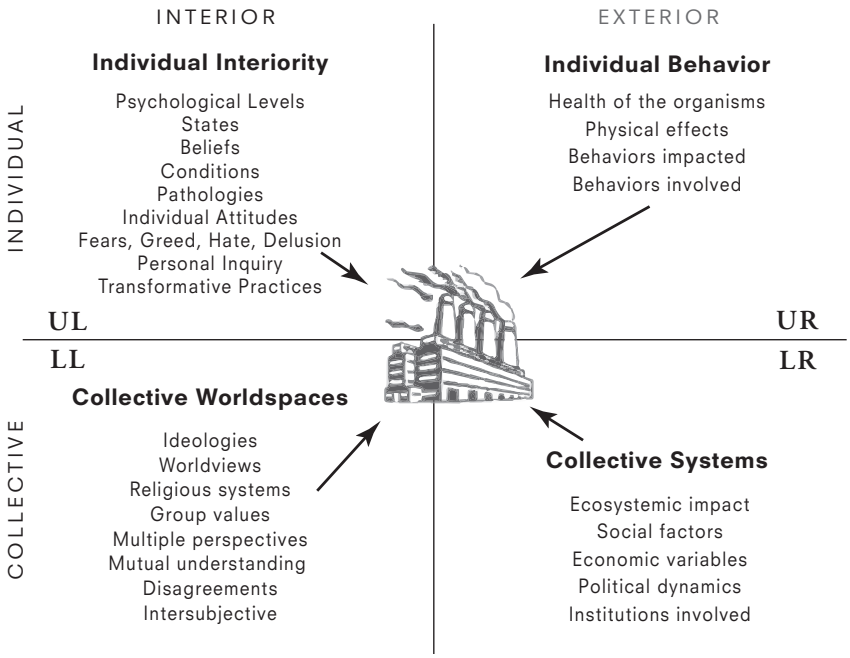

Figure 3.3. Four views on toxic emissions.

and community service help individuals discover the roots of their attitudes, beliefs, and emotions that give rise to care for or the neglect of the environment. Transformative practices can support individual development, which in turn can affect collective attitudes and practices, leading to new institutions, which further support interior development. Until we can create healthy expressions of our divergent worldviews and until we have more leaders who embody an ethic that embraces all people and the planet we live on, we will continue to misuse nature.

These four terrains provide a way to explore the many conditions that give rise to environmental issues. Each terrain represents a unique dimension of ecology that we must consider if we want a comprehensive understanding and comprehensive solutions. Each terrain is obviously more complex than what is described in this simple example. We hope, however, that you the reader can *feel* and *see* the value of including all four terrains (and their respective disciplines) in addressing ecological realities and environmental issues.

ANIMAL PERSPECTIVES

In addition to highlighting the four perspectives that humans can take when approaching environmental issues, integral ecology asserts that all organisms—by virtue of their sentience—can also take these perspectives. In other words, the capacity to take first-, second-, and third-person perspectives is not limited to human beings. Thus, in addition to being able to take third-person perspectives through their sense organs (e.g., eyes, ears, nose), animals have perspectives that make possible experiences of their own in ways analogous to human first- and second-person perspectives and experiences. Individual animals can be and often are understood merely from one perspective as *parts* of an ecosystem, but such an understanding is incomplete. Because animals are also *members*, and thus not only *parts* of ecosystems, they have experiences and cultures of their own that should be taken into account when describing them in their habitat. Ecologists and environmentalists would benefit by becoming aware of the substantial body of research supporting this understanding of organisms. (See, for example, the work of ecologist Marc Bekoff, 2002, 2006, 2007; ornithologist Irene Maxine Pepperberg, 1999; and primatologist Frans de Waal, 1996, to name just a few of the researchers focusing on animal interiors.) Integral ecology owes a particular debt of gratitude to the German biologist Jacob von Uexküll (1982, 1992), whose pioneering work in animal subjectivity is at the foundation of biosemiotics.

The four terrains, then, may be understood in two related ways. First, the four terrains refer to the four perspectives that an integral ecologist can take to characterize and to ameliorate an environmental problem, such as toxic emissions that are harming organisms and the environment. Second, the four terrains refer to the perspectives that any organism can take and in fact does take with regard to itself, other organisms, and its ecosystemic context. For a more detailed exploration of this aspect of integral ecology see "Animal Worlds" (this volume).

200+ PERSPECTIVES

As noted above, integral ecology acknowledges the importance of and defines the relationships among the many standard schools of ecology (e.g., behavioral ecology and population ecology). In addition, however, integral ecology also includes schools of ecology that study individual and collective interiority (e.g., psychoanalytic ecology and ethno-ecology). This expanded definition of ecology has allowed us to identify over 200 different varieties of ecological thought (including 80 schools of ecology) ranging from acoustic ecology to zoosemiotics. Each of these schools emphasizes various positions within the four major terrains.[5] Figure 3.4 provides a sampling of forty of these schools and their potential placement within the four terrains. While some schools emphasize two or three terrains depending on the context or the expertise of a particular author, our point is simply that we need to include as many of these valid perspectives on nature as possible, especially when dealing with our more complex ecological problems.

In affirming the differences among, as well as the importance of, each of these major perspectives, integral ecology avoids various kinds of reductionism. For example, it avoids reducing psychological and cultural dimensions to simply objective behaviors or to complex interwoven systems. Subjective and intersubjective perspectives—including beliefs, psychological dynamics, values, cultural norms, religious traditions, and ethnic self-identification—must be included in characterizing environmental problems. Coordinating and assessing pertinent perspectives requires the use of multiple first-, second-, and third-person methods in an interrelated fashion. Integral ecology accomplishes this through *integral methodological pluralism*, which is to be contrasted with using one or a few methods of knowing reality or doing research according to one's own preferred view (e.g., drawing primarily on a particular school of ecology such as community ecology and its third-person techniques). With integral methodological pluralism, other perspectives that might be brought to bear on the problem at hand

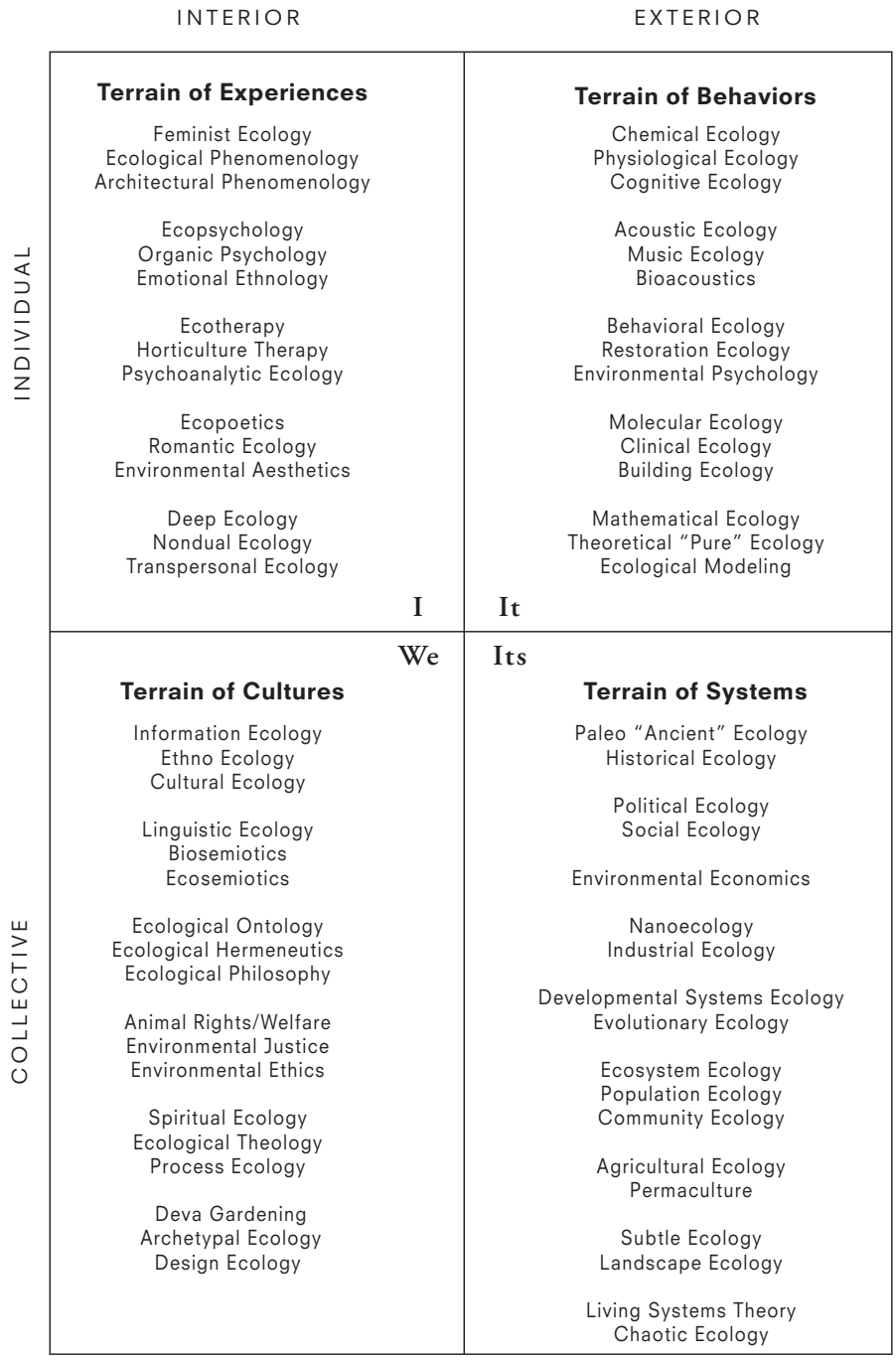

Figure 3.4. Some schools of ecology organized by the four terrains.

are also embraced (e.g., insights from ecophenomenology with its first-person practices and environmental justice with its second-person processes).

Each of the perspectives associated with the four terrains can be studied through two major methodological families, from the inside or the outside. This results in eight major methodological families (e.g., phenomenology) or zones associated with integral methodological pluralism (Figure 3.5). Integral methodological pluralism consists of three principles: *inclusion* (consult multiple perspectives and methods impartially), *enfoldment* (prioritize the importance of findings generated from these perspectives and their methods), and *enactment* (recognize that reality is revealed to individuals through their activity of knowing it). As a result of these three commitments, integral ecology emphasizes the dynamic quality of ecological realities as being enacted by an observer

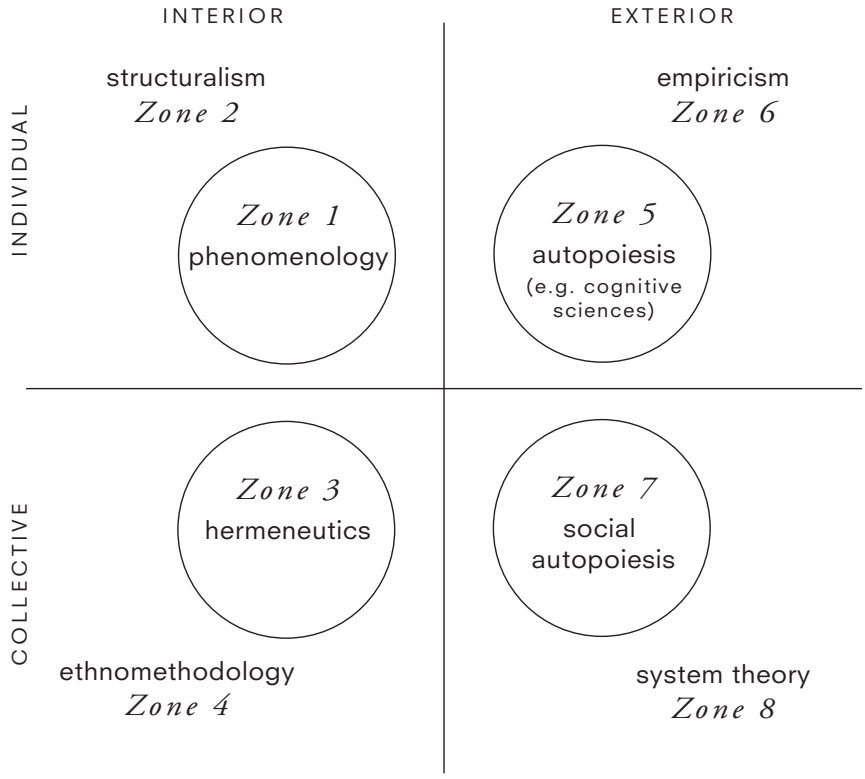

Figure 3.5. Eight methodological zones.

using a particular way of observing to observe a specific part of nature. In other words, ecological realities are understood as a dynamic interaction between the *who*, *how*, and *what*. These three principles are what allow integral ecology to recognize and interrelate 200 distinct perspectives on nature.

Among the 200 perspectives on ecology and the natural world that we have identified, there are many approaches that specialize in using the methods, practices, and techniques associated with each of the eight zones. Consequently, an integral approach to ecology must include all eight zones or it inadvertently leaves out important aspects of reality that have a bearing on achieving effective ecological solutions to our planetary problems. In other words, the more of reality we acknowledge and include, the more sustainable our solutions will become, precisely because the project will respond to the complexity of that reality. We cannot exclude major dimensions of reality and expect comprehensive, sustainable results. Eventually those realities that have been excluded will demand recognition and incorporation as the design falters and is abandoned for more nuanced and comprehensive strategies. Hence the need for an integral approach.

After using integral methodological pluralism to develop a solution to a particular environmental problem, integral ecology practitioners must communicate that solution in ways consistent with the worldviews and values of a given audience. For example, extensive psychocultural research indicates that about 30 to 40 percent of the adult population of the United States hold traditional values (e.g., conservative Christian), 30 to 50 percent hold modern values (e.g., people committed to democratic individualism and science-oriented rationality), and 10 to 30 percent hold postmodern values (e.g., environmentalists concerned with ending sociocultural hierarchy and the domination of nature) (see the research by Willett Kempton and colleagues, 1996, as well as the work of Paul Ray and Sherry Ruth Anderson, 2001). In fact, cross-cultural research indicates that these three kinds of values are found in many countries across the globe. Integral ecology sees how each of these different worldviews contributes toward environmental solutions, and representatives from all these perspectives need to be included in our efforts.

Now that we have provided a high-level overview of integral ecology we want to turn our attention to the issue of biodiversity as an illustrative example of how integral ecologists might approach such a complex issue.

AN INTEGRAL LOOK AT THE CONCEPT OF BIODIVERSITY

Coined by Raymond Dasmann in the 1970s, the word *biodiversity* may be defined as "the variety of life and its processes [including] the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur" (The Keystone Center, 1991). The term became widely used in the 1980s by scientists alarmed by the rate at which species were disappearing due to human destruction of natural habitat. Affirming the inherent value of species, some scientists became politically engaged, openly advocating for conservation policies to preserve habitat and protect species. The movement known as *conservation biology* arose together with the term *biodiversity*.

The concept of biodiversity, then, is not a neutral scientific term describing the fact that the world contains a vast multitude of interdependent species. Instead, biodiversity is an evaluative concept, one which affirms that species—the more the merrier—are valuable not merely as instruments for human ends, but are valuable in and for themselves. The concept of biodiversity also reveals its evaluative dimension when it contrasts a healthy biosystem with one that is degraded, often as the result of human activities. A desert may have many fewer species than a tropical rainforest, but a healthy desert will have more species—greater biodiversity—than one that is degraded. The primary meaning of *degrade* is to reduce a thing's dignity, esteem, or honor, although secondarily the term can also mean to wear away by erosion or to impair a thing's structure or function. Conservation biologists elide these two meanings when they promote the goal of preserving biodiversity, a goal that Aldo Leopold had in mind when he called for preserving the "beauty, stability, and integrity" of the land. In this section we focus on five major considerations that inform an integral view of biodiversity.

Avoiding Stealth Advocacy

We integral ecologists are also concerned about loss of biodiversity, but we also examine it critically. First, integral theory maintains that discourses about facts need to be distinguished from discourses about value. Hence, when a scientist is testifying at a hearing about how some human action may be dramatically affecting a habitat, that individual must differentiate between her role as scientist (providing an account of the facts and potential future facts) and her role as political advocate (recommending this or that course of action). Otherwise, she may be tempted to engage in what Roger Pielke, Jr. (2007), has called *stealth advocacy*,

that is, promoting as "scientifically necessary" a particular policy that coincides with her own value preferences. Acting as citizens, scientists should take stands on issues they believe in, but as scientists they should present the facts of the matter in ways that expand—rather than contract—the policy options open to decision makers. Stealth advocacy, or even the perception of stealth advocacy, can often backfire, as in the case of those climate scientists who were accused (wrongly, it turns out) of repressing or distorting dissenting findings and thus positioning "science" to dictate a specific course of political action that coincided with the policy preferences of those scientists. Because of controversies such as those precipitated by so-called climategate, the reputation of environmental science in general has been badly damaged. Unfortunately, many people now regard environmental science as just another political interest group that uses scare tactics to lobby for more research money.

The Value of Species

Second, what is it that makes a species good in itself or inherently good? This question continues to vex the best thinkers in environmental philosophy. Given that about 99 percent of all species that ever existed are now extinct (see below), we may conclude that nature is indifferent to the fate of any particular species, and is probably indifferent to life as such. Keep in mind that there is widespread scientific debate and disagreement as to what a species is or even if it is a useful construct. Depending on which source you cite, there are anywhere between five and 26 viable and established species concepts. Clearly the ontological status of species is an extremely difficult and important issue for any understanding of biodiversity. Is *species* a term of classification? Is it a reference to a population of similar organism that endures over time? Is it a higher-order, more fundamental, and even more valuable aspect of reality than the individuals that instantiate them? In their "Extinction" essay, Purvis, Jones, and Mace (2000) document over 20 common species concepts in use by scientists.[6] We feel that these and other difficult issues need to be more fully engaged by conservation biologists.

Western moral concern about species, even among atheists, is attributable in part to the enduring influence of the monotheistic doctrine of Creation, after each stage of which God saw that what He had made was "good." Although supporters of biodiversity often criticize anthropocentrism, the fact is that *humans* alone make the assessment that all species are inherently valuable. Not everyone agrees with the idea of inherent value, however. Many people are as indifferent to the fate of species as nature is. A tropical forest loaded with species may elicit

admiration from some people, but may terrify others, and may show up as an unfortunate impediment to agriculture to others.

Cultural and historical factors always influence aesthetic and ethical estimations of "nature." Consider, for example, that European Romanticism led many early 19th-century people to regard the Alps as beautiful and even sublime, whereas people had earlier conceived of them as misshapen and fearsome. The Romantic wilderness aesthetic regards natural beauty in a way quite different than the garden aesthetic that has given us what many people regard as the beauty of the French countryside. The wilderness aesthetic celebrates "virgin" nature, untouched by human hands, land that has not been cultivated and otherwise trammeled by people. In recent decades, however, ecological scientists have concluded that there is little if any "virgin" land. Humans have been altering Earth's landscape for many thousands of years. Moreover, chaos theory indicates that describing ecosystems in such evaluative terms as stable, harmonious, and balanced overlooks the extent to which ecosystems are both changed and renewed by natural perturbations, both violent and subtle, that can lead to dramatic swings in species population and even to extinctions. Even though the concept of biodiversity implies that species are in some sense inherently good, it also implies that species are instrumentally good as functional placeholders in the web of life, as when, for example, ecosystems are characterized by the energy flows that require near-universal predation.

The Role of Extinctions

Third, consider that much of the rhetoric around what appears to be a mass, human-driven extinction of species—the sixth mass extinction in terrestrial history—may be ideologically driven. In the last 600 million years there have been five mass extinctions. There is currently an estimated 1.7 million documented species alive today—most of which are insects with the majority being beetles (~350,000 beetles have been described in contrast to ~250,000 plants and ~4,000 mammals). Various biologists estimate the total number of species to be anywhere between 8 and 100 million (with 30–50 million being the most commonly cited estimate). Keep in mind that these estimates do not include the variety of bacteria now being cataloged, which could double the above figures. It is often suggested that the total number of species on the planet only represents 1 percent of all species that have ever lived. However, Tudge (2002) feels this 1 percent is actually an underrepresentative figure. He calculates that in contrast to the nearly 2 million species today there have been around 4 trillion species in

total (pp. 6–9). Similarly, Newman and Palmer (2003) in *Modeling Extinction* suggest that for every species alive today there are around 1,000 that are extinct (Raup, 1992, also makes this claim in *Extinction*, pp. 3–6, as does Ellis, 2004, in *No Turning Back,* p. 20). Consequently, it would appear that extinction is more common than often recognized, has occurred for many nonanthropogenic reasons, and has probably served an important evolutionary function. That being said, these important points should not detract from the fact that humans are probably primarily responsible for the current mass extinction event. Nor should we let the appeal to mere numbers minimize the qualitative dimensions that are specific to our collective moment in the evolution of the Kosmos—namely, life as our species has always known it (and which eventually made possible the emergence of integral ecology) is in the process of unraveling.

In fact, Newman and Palmer (2003) go on to argue that most species have become extinct within 10 million years of their first appearance and it is this admittedly high rate of extinction that has contributed to the current level of biodiversity on this planet. The reason for this is that when ecological niches are repopulated after extinctions, a wider range of adaption strategies are developed by organisms than through the gradual process of phyletic transformation. They point out that if the previous trends are any indication, then most of the current species alive on the planet will all be extinct within the next 10 million years—though notably this amount of time is five times longer than the existence of the genus *Homo*, and 20 times longer than the entire history of *Homo sapiens*. Thus, such time frames might not be appropriate to our planet, which is now essentially colonized by humans such that typical evolution dynamics have been altered.

Thus, with regard to the mass extinction of species occurring around the globe, one can point out that this could actually be in service of biodiversity, given the research finding that after each of the five previous mass extinctions, there has been a large increase in biodiversity—often an exponential leap. It is not unreasonable—though it surely might be undesirable—to imagine a proliferation of biodiversity on this planet as the result of another mass extinction. Of course, humans don't typically plan in terms of millions of years. We feel, however, that it is important to consider such large time-scales when discussing mass extinctions. Should current trends continue, the Earth might be left in a state conducive to a rebound in biodiversity, but it is equally possible that the Earth will be propelled toward a premature arrest of its capacity to (re)generate biodiversity. Furthermore, we know that the Earth will be incinerated in less than five billion years, when our sun dies; while this too is part of the "natural" cycle of suns and planets, it points to determinate constraints within which biological

evolution can unfold. The kind of extinction event now underway could very well be a kind that leaves a kind of scorched Earth behind. In short, we do not want to appeal to statistical averages in extinction rates or the potentially creative role of past extinctions, which seems to trivialize the nature of our collective, planetary moment, but we do want to be constructively provocative in raising the bar on how we understand and discuss species and species loss.

It is commonplace to see estimates claiming that anywhere from 50 to 80 percent of all species will be extinct in the next 20 to 100 years. Such claims seem suspect, however, because—as noted above—scientists lack a clear definition of species; scientists do not agree about the current number of species on the planet; scientists lack reliable models of planetary systems, climate change, extinction, etc.; scientists have notoriously been bad at making similar environmental predictions; and scientists have only in recent decades begun to study and to come to a basic understanding of the factors involved in extinction.

We are not questioning that the planet is currently in the midst of the sixth mass extinction—it is clear that humans are affecting biodiversity in an unprecedented fashion through overharvesting, fishing, and hunting, inadvertently introducing new species into areas, destroying habitat, and changing climate. The scientific community is largely unified in that assessment. What we are questioning is how very few in the general discussion seem to question how many species are going extinct and how fast they are they going extinct. Three recent losses include the Yangtze River Dolphin in 2006, the Miss Waldron's Red Colobus Monkey in 2001, and the Golden Toad in 1989.[7] Clearly, since we are in a major period of extinction, we should become more aware of the examples of species lost that are occurring each year and examine the contributing factors that led toward extinction for each species.

Thus, it can be argued that there is not a lot of documentation for the allegedly rapid rate of current extinction. For instance, in 2006 the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species indicates that only 735 species have been documented as going extinct in the past 500 years.[8] Presumably, a significant percentage of those extinctions have occurred during the past 100 years of rapid industrialization, but even so this rate of extinction is completely out of line with estimates that hundreds of thousands of species will become extinct in the next several decades.[9] So how do we reconcile the fact that less than 800 species have been documented as going extinct in the last 500 years and yet the UN claims that 200 species go extinct every day (i.e., 73,000 a year)? Clearly a different kind of conversation and inquiry

is needed. To better understand the dynamics at play here, we feel an integral approach can help frame and explore the many layers involved.

The standard Green/postmodern view is that extinction, and especially mass extinction, is inherently bad. Only many of thousands of years from now will articulate observers (if there are any) be able to assess the consequence of the coming century of extinctions. In short, we feel the popular discussion of the sixth extinction lacks sufficient detail and examples, which renders fruitful dialogue difficult. We also feel that embedded in the standard postmodern view of the sixth mass extinction are dualisms that separate humans from nature, divide culture from the natural world, and view mass extinctions as inherently bad. We propose that such metaphysical positions need to be examined from an integral perspective. There are some emerging voices (e.g., the recent documentary *Call of Life: Facing the Mass Extinction*) that do a better job of engaging in the critical discussion we are promoting here.

The Interiority of Organisms

Fourth, conceiving of life exclusively in terms of ecological concepts such as biodiversity is limiting. Natural science examines phenomena from the third-person perspective. That is, the phenomena under investigation—whether stars or molecules or fish—are always framed as objects, never as subjects. This situation is not changed by conceiving of life itself in terms of the general systems theory that shaped ecosystem ecology as well as the concept of biodiversity. The "web of life," however attractive it may sound, is primarily a third-person concept of a system of complex energy flows that both make species possible and are maintained by those species. Systems theory is excellent at describing the complex interobjective factors in the web of life, but cannot as ecosystem theory—despite what conservation biologists may say—make judgments about the inherent value of biodiversity.

Value judgments belong to other domains of human cognitive and affective capacity: the subjective (first-person) and the intersubjective (the cultural matrix arising from and co-constituting first- and second-person relations). As discussed above, from the perspective of integral ecology, all organisms are best understood as exhibiting four major aspects, which become distorted if investigated with inappropriate research methods. An organism can be studied as an individual object with specific behaviors and material constituents; likewise, an organism can be studied as a part (and sometimes as a member) of a complex system, as in the case of ecosystem biology or economics. These ways of studying

organisms regard them as "its" or objects, with no reference made to or assumptions made about the "interiority" or "subjectivity" of organisms.

Following recent developments in philosophy of mind and biosemiotics, integral ecology holds that the human capacity for first-person experience (subjectivity) is a highly developed version of the proto-experience, or *prehension* (à la Alfred North Whitehead), that belongs even to atoms. Pierre Teilhard de Chardin referred to this as *the within* of organisms. Seen from the third-person perspective, an amoeba exhibits certain behaviors such as moving toward food and moving away from toxins or excessive heat. According to biosemiotics, however, the amoeba takes those survival-pertinent phenomena into account within its Umwelt (that is, according to its own subjective sphere, or first-person perspective of its environment). If we affirm that more complex life forms involve more complex modes of subjectivity, as well as ever-more-complex intersubjective or cultural domains, then we must rethink the use of biodiversity as a blanket term for our ecological discourse about terrestrial life. Why? Because biodiversity invites us to conceive of organisms primarily as populations, as functional nodes in the tangled ecosystemic bank, rather than as individual beings leading lives of their own. Integral ecology insists that we respect and include the subjective and intersubjective aspects of the organisms that we seek to protect.

Including Multiple Perspectives

Fifth, many environmentalists fail to see that a person must have attained a certain level of development—at least modern but typically Green/postmodern—to appreciate biodiversity in both its factual and evaluative aspects. Long before *biodiversity* was coined, people both admired and feared nonhuman forms of life. For ancient hunter-gatherer, horticultural, and early agricultural cultures, plants and animals often had a numinous quality. The God of Abraham supposedly granted humankind dominion over all terrestrial creatures, but also expected humans to be wise stewards of all life, which God saw as good. Leaving behind such premodern views, anthropocentric moderns often regard "nature" as primarily a stockpile of resources for enhancing human power and security. Nevertheless, even many moderns have become persuaded that a relatively unpolluted and fairly biodiverse natural environment is at least instrumentally good for human flourishing.

According to integral theory's developmental model, Greens represent the worldview that leads beyond modernity. Hence, Greens celebrate ecosystem biodiversity not merely because it is useful to humans, but because it is valuable for

its own sake, however this is to be understood. Given their antagonism toward hierarchy of any kind, however, some Greens endorse *biocentric egalitarianism*, according to which no life form is superior to any other life form (integral theory labels this *ground value*). Of course, this position makes plausible moral judgments impossible. One can readily affirm the basic inherent value of all life forms, without insisting that no additional value is conferred by evolutionary developments such as the mammalian mind-brain capable of representational consciousness.

In addition to ground value, according to integral theory, organisms can be valued for *extrinsic value* (how *fundamental* they are for the various systems they are *part of*) and *intrinsic value* (how *significant* they are for the various systems they are *members of*). The former is often presented in terms of span—how many organisms occupy any given level of complexity. The latter is often presented in terms of depth—how much interiority an organism contains or displays. All three forms of ethical value—ground, extrinsic, and intrinsic—should be used to inform evaluative decisions related to biodiversity. Typically conservation biologists and Greens emphasize ground value and in some cases extrinsic value while leaving out a recognition of interiority and degrees of organismic depth that comes with intrinsic value.

Furthermore, integral ecology, as we understand it, honors the insights contained in each of the developmental perspectives discussed above—premodern, modern, Green/postmodern—no one of which provides the whole truth about terrestrial life, of which biodiversity captures only certain aspects. Integral ecology is also willing to make comparative evaluations such as the following: Green norms are superior in important ways to modern norms, because Green is more inclusive in regard to what it counts as worthy of moral consideration. In some respects, of course, Greens' inclusion of marginalized humans was the fulfillment of promises that had gone unmet by many moderns. Extending the domain of moral consideration to nonhuman beings and even to ecosystems involved stepping beyond the limits of anthropocentric modernity.

Because people operate at different developmental *centers of gravity*, they appreciate the variety of life in different ways. To enlist broad-based public support in favor of biodiversity protection, then, environmentalists must develop a sincere appreciation of non-Green perspectives. In North America at least, many Greens have discovered that ecofriendly political progress cannot be achieved by treating with contempt the views of conservative/traditional Christians and techno-industrial moderns. After all, the latter two groups form a majority of the electorate in the United States and Canada. Greens should develop rhetorical and

participatory strategies that make it possible to represent biodiversity protection as a worthy goal for non-Greens. In other words, there are many worthwhile reasons to protect and promote biodiversity beyond Green's preferred sense of the inherent value of species. Greens need to see the value of protecting biodiversity because it is an expression of God's creation or because it represents a utilitarian resource pool for anthropocentric needs. This ought not to be done cynically, however, as if the point were to trick benighted people into coming around to the Green viewpoint. Such an approach is what gave "rhetoric" a bad name back in the time of Socrates!

Typically, however, Greens find it difficult to take seriously the views of their adversaries, because supposedly only the Green perspective has any validity. In this respect, in believing that all other perspectives are at best false and possibly evil, Greens exhibit the same exclusionary attitudes of people at earlier waves of development. Those Greens who begin to appreciate and to respect non-Green perspectives on biodiversity—as well as on other environmental issues—are on their way to becoming *integral* ecologists. Why? Because they no longer identify exclusively with the Green perspective; indeed, for the first time they begin to recognize that Green is a perspective, rather than "The Way Things Really Are." An indication of an integrative level of development is the capacity to discern that there is some truth-value in every serious point of view. Furthermore, an integral approach includes the commitment to working with those partial truths in an embodied and sincere way to include as many valid perspectives as possible in our solution building efforts to protect and promote biodiversity.

CONCLUSION

In summary, there are numerous approaches to the environment: philosophical, spiritual, religious, social, political, cultural, behavioral, scientific, and psychological. Each highlights an essential component, but too often remains silent concerning other important dimensions. To overcome this fragmentation, integral ecology provides a way to weave all approaches into an environmental tapestry, an ecology of ecologies that honors not just the physical ecology of systems and behaviors, but includes the cultural and intentional aspects as well—at all levels of organization. Thus, integral ecology is the study of the four terrains of the natural world at different levels of complexity. In addition, it takes into account the multiple worldviews within individuals, communities, and cultures, and their accompanying environmental perspectives—each with its specific forms of mutual

understanding. Furthermore, integral ecology highlights that the environment and its various aspects are revealed differently depending on the mode of inquiry or methodology used to investigate them. As a result, integral ecology identifies eight methodological families that need to be utilized, on their own terms, for comprehensive knowledge of any given ecological reality. In short, integral ecology recognizes that different approaches to ecology and the environment are the result of a spectrum of perspectives ("the who") using a variety of methods ("the how") to explore different aspects of the four terrains ("the what").

Only by becoming increasingly aware of the who, how, and what of environmental issues can we truly integrate the multiple voices calling for a more just and ecologically friendly world. Only in such a world is there the capacity to generate sustainable solutions to complex multidimensional problems, and only in such a world are all the notes of nature's song sung. Integral ecology is committed to the complexity and multidimensionality of this world in its entire mysterious splendor. Integral ecology supports us in becoming increasingly reflective of *what* we are looking at, *who* we are as we are doing the looking, and *how* are we looking at it. By becoming deeply reflective individuals, we can hope to reach effectively across the divides that separate us, and foster mutual understanding in service of our blue-green planet.

People who use the integral ecology framework recognize that it is not enough to integrate ecosystems and social systems (e.g., economies, laws, education). Nor is it enough to also include objective realities (e.g., behavioral studies, laboratory testing, empirical analysis). Instead, what is needed is to integrate these interobjective and objective realities with subjective (e.g., psychology, art, phenomenology) and intersubjective (e.g., religion, ethics, philosophy) realities. In effect, integral ecology unites consciousness, culture, and nature in service of sustainability.

Integral ecology allows for a comprehensive understanding of how the many ecological approaches available can be united to inform and complement each other in a coherent way. This integral framework honors the multiplicity of ecological perspectives. It allows individuals to become proficient at identifying how various methods focus on specific ecological concerns, and from which perspective those concerns are being explored. Environmental issues today are so complex that anything less than an integral approach will deliver only temporary solutions at best and ineffective results at worst. What is needed is an ecology of perspectives—one that combines the insights, approaches, concerns, techniques, and methods from the 200 distinct perspectives of the natural world. Such a meta-approach can coordinate and organize the various ecological perspectives in a truthful, sincere, just, and functional way that avoids being just

another perspective. It is our hope that integral ecology supports a new kind of ecology, one that is informed by the strengths of many approaches and methods, while at the same time exposing the limits and blind spots of any single approach. Integral ecology provides one of the most sophisticated applications and extensions of integral theory available today, and as such it serves as a template for any truly integral effort.

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NOTES

1. For a description of all 200 perspectives, see the appendix in our book, *Integral Ecology: Uniting Multiple Perspectives on the Natural World* (2009).

2. For a comprehensive overview of integral ecology see our book *Integral Ecology*.

3. For additional examples, see the seven case studies edited by Sean in a special double issue of *World Futures* and the two-dozen examples presented in chapter 11 of our book, *Integral Ecology: Uniting Multiple Perspectives on the Natural World* (2009).

4. Ken Wilber has published over 20 books since 1977 (nearly 10,000 pages of content). Most of this content is found in Wilber's *Collected Works* (1999–2000). For an overview of Wilber's philosophy, see Frank Visser's (2003) book *Ken Wilber: Thought as Passion*.

5. The causes of both individual species extinctions (*micro extinctions*) and mass extinctions (*macro extinctions*) are varied and can occur intrinsically (evolutionary changes) or extrinsically (environmental changes). For a great review of the various possible causes (e.g., impact by comets, sea-level changes, volcanic activity, climate change, and human activity), see Hallam's (2004) *Catastrophes and Lesser Calamities* and Hallam and Wignall's (2000) *Mass Extinctions and Their Aftermath*. For a concise overview of human-caused extinctions from premodern to contemporary society, with informative charts and tables, see Broswimmer's

(2002) *Ecocide*. See Ellis's (2004) *No Turning Back* for a worthwhile overview of extinction dynamics and considerations.

6. An important practice of grounding the abstract numbers of species loss is to view books that contain drawings and pictures of extinct species. Becoming familiar with the actual visual appearance of hundreds of extinct species can help make tangible the organisms that once roamed the Earth and can bring to our awareness the urgency of the current situation. For a beautifully illustrated presentation of over 100 species from every continent that have gone extinct since the European discovery of North America, see Flannery and Schouten's (2001) *A Gap in Nature*. For a similar text that covers over 300 extinct species and provides a seven-page list of over 600 human-caused extinctions since prehistoric times, see Balouet's (1990) *Extinct Species of the World*. For an impressive presentation of over 500 species of now-extinct prehistoric animals, accompanied by color plates, see Palmer's (1999) *The Marshall Illustrated Encyclopedia of Dinosaurs and Prehistoric Animals.*

7. Wheeler and Meier (2000) explore five of these competing theories in their informative *Species Concepts and Phylogenetic Theory*. For an interesting article on the species issue within the context of biosemiotics, see Schult (1992), "Species, Signs, and Intentionality." For a great introduction to the complex issues of taxonomy and systematic naming as well as an extensive overview of thousands of organisms (mostly alive) at various scales of classification (i.e., kingdom, phylum, class, order, family, genus, and species), see Tudge's *The Variety of Life.* As presented by Tudge, life is believed to have emerged on this planet around 4 billion years ago, about 500 million years after Earth formed.

8. For a list of the most endangered species in the world see the World Wildlife Fund (2006). https://www.worldwildlife.org/species/directory

9. Likewise, the International Union for Conservation of Nature and Natural Resources (IUCN; 2014) lists around 59,000 described species of mammals, birds, reptiles, amphibians, and fishes; less than half of those had been evaluated in 2006 for threatened status. Of those evaluated, 5,624 were identified as threatened, almost 2,000 of them being amphibians. Thus, the total percentage of threatened species in these categories ranges between 10 percent and 23 percent depending on how you look at the data. The IUCN reports that the number of endangered species in the above-mentioned categories more than doubled from 774 in 1996 to 1,776 in 2006. Clearly there is a huge discrepancy between the number of species documented as going extinct and the number often estimated to have become extinct in the last 100 years.

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4

INTEGRAL ECOLOGY AND EDGAR MORIN'S PARADIGM OF COMPLEXITY

Sean Kelly

I AM DELIGHTED to have this opportunity to offer the following reflections on the foundational contributions of Edgar Morin to the notion of integral ecology. Immediately upon my first encounter with his work over 30 years ago now, I knew that I had found one of the greatest thinkers of our time. As I came to know both him and his work better, I realized that his mental genius was matched by his largeness of heart and soul. He has shown me what it might mean to lead an integral life in the service of the entire Earth community, one guided by the triple ideal of the good, the beautiful, and the true (or in Morin's, 1997, preferred formulation: love, poetry, and wisdom). Because only a fraction of Morin's prodigious output has been translated into English (though his work has appeared in Spanish, Italian, German, Portuguese, Greek, Chinese, Japanese, and Arabic), it is my hope that this chapter will help introduce Morin to a wider English-speaking audience, especially those who share his concern, and love, for our world in peril.

The two apocalyptic specters of global climate change and the sixth mass extinction now underway have finally underlined the (literally) vital necessity of an ecological perspective (Species Alliance, 2009). The scale and urgency of our predicament, however, demand a revisioning of all received perspectives—including the ecological—in the interest of making them transparent to any root assumptions that might run counter to the direction in which we want to be heading. Edgar Morin has devoted his life's work to such a revisioning with his

articulation of the paradigm of complexity, which, as we shall see, is particularly relevant to the project of integral ecologies.

The term *integral ecology* recently came to greater prominence in association with the ideas of integral theorist Ken Wilber and his collaborators, especially Sean Esbjörn-Hargens, whose dissertation (2005a), along with the double issue of *World Futures* (2005b) under his guest editorship, established the case for an integral ecology along the lines set out by Wilber (1995) in *Sex, Ecology, Spirituality* and the activities of the Integral Institute (founded in 2000).[1] As Esbjörn-Hargens notes, however, the first appearance of the term *integral ecology* in print seems to have been in an article by the Brazilian theologian Leonardo Boff (who is not only aware of, but apparently significantly influenced by, Morin's work) in a 1995 issue of *Concilium*. After commenting on the evolution of ecological reflection from a limited conservationism to the rise of such subfields as human, social, and deep ecology, Boff states:

> The quest today is increasingly for an *integral ecology* that can articulate all these aspects with a view to founding a new alliance between societies and nature, which will result in the conservation of the patrimony of the earth, socio-cosmic wellbeing, and the maintenance of conditions that will allow evolution to continue on the course it has now been following for some fifteen thousand million years. (p. ix)

I would draw out three implications from this passage that bear on the notion and practice of integral ecology, all of which have been explored and illuminated by Morin. First, there is the call for an inter-, and indeed *trans*disciplinary point of view and *method* with respect to the modern dissociation between the natural and human sciences. Second, there is the correlative insight/conviction that knowledge must be yoked to value, the true to the good—in this case, in the service of an "alliance" between the human and the rest of nature. Finally, there is the recognition of the centrality of an evolutionary dimension to our understanding of the human and of nature, and of the character and fate of our "homeland Earth" (as I have translated Morin's "*Terre-Patrie*").

GENERAL ECO-(BIO-ANTHROPO)-LOGY

Some 15 years before Boff's impassioned plea for an integral ecology, Morin (1980), in *La vie de la vie* [The Life of Life], had already forcefully articulated the need for a "*general* ecology":

> General ecology raises to consciousness the problem of the relation between humanity and nature to its full comprehensiveness and actuality. It raises to consciousness the question of life and death, of the future of our species and that of the biosphere itself. (p. 91)[2]

A general, or integral ecology must include the realization that

> societies, including and especially our own, are geo-eco-bio-anthropological entities, and that eco-systems—including and especially those of our epoch—are equally anthropo-socio-ecosystems. There is no longer any "pure" nature, and there never was a "pure" society. . . Thus, general ecology must encompass the anthropo-social dimension, just as anthropo-sociology must encompass the ecological dimension. (pp. 76–77)

One could say that an integral ecology involves the generalization and, as we shall see, the complexification, of the principle of inclusion at the heart of any ecological perspective. To begin with, there is the recognition that the biosphere includes the anthroposphere—which is the primary sense of our eco-relation, and which manifests as the radical dependence of the human on other life forms, including the life of the planet as whole (species and population diversity, an optimal climate, available water, fertile soil). Less obviously, perhaps, an integral ecology also recognizes that the anthroposphere includes the biosphere, which we see from numerous perspectives: not only, most critically, the deadly impact that our species is having on the planet (from pervasive pollution and habitat destruction to mass extinction and global climate change), but also, in terms of human physiology, such diverse phenomena as morphological recapitulation in embryogenesis, the integration of mitochondria in human cellular organization, and the triune structure of the human brain (reptilian, mammalian, and the specifically human neocortex). In all of these examples, the human (anthropos) is seen to include or contain the evolutionary precedents (bios) on which it nevertheless depends.[3]

An adequate, nonreductive consideration of the relation between these two spheres—bios and anthropos—must enact, as it reveals, the fundamental principles of complexity. The two-way inclusion (bios>anthropos>bios) touched on above is a prime manifestation of the *holographic principle*, which, as Morin (1986) puts it, harbors the insight that "the whole is in the part which is in the whole" (p. 419). The relation between bios and anthropos is not only holographic, however, but also dialogical and recursive. It is *dialogical*—that is, both

complementary and antagonistic (Morin, 1977, p. 80)—insofar as human nature and behavior must, on the one hand, be understood as an organic expression of an evolving Earth community (complementary), while on the other hand, the human has, since the beginning of the modern period, become an increasing threat to the survival of this very community (antagonistic). Finally, the relation between bios and anthropos is *recursive*—which is to say, characterized by a circularly causal feedback loop. A process is recursive, writes Morin (1977), where it "produces the effects necessary for its own generation or existence, . . . whereby the product or ultimate effect becomes a prime element or first cause" (p. 186). While human beings are children of Earth, the product of over four billion years of planetary evolution, no sooner did we appear (in geological terms) than we became the single most influential factor in determining the fate of the biosphere. We depend on Earth, which now depends on us.

The history and philosophy of science and the sociology of knowledge also help us understand another sense in which the biosphere or nature in general is included within the anthroposphere. Because all data are theory-laden, and because all knowledge is situated, there is no nature or life—or at least we can know literally nothing about them—completely outside of the mindsets and worldviews within which nature and life are represented. Nature and life, as we know, are represented quite differently depending on a wide range of variables, from historical epoch, cultural zone, and intellectual subculture to gender and individual psychological profile. This situatedness is at the core of the various constructivist (and deconstructionist) movements that continue to dominate the humanistic and social-scientific side of the academy, but is in turn opposed by the naïve realism of much of the scientific community—an opposition that corresponds to the age-old conflict between idealism and realism and, as Jung (1976) has shown, to a deeply entrenched difference in psychological type (introversion versus extraversion). Morin (1977), for his part, seizes on the tension of this opposition to help generate the "meta-point of view" proper to the paradigm of complexity. The meta-system, he writes:

> can only be a retroactive/recursive loop that does not annul, but rather feeds on those contrary movements without which it would not exist and which it integrates into a productive whole. In this way the antagonistic character of the physical and of the anthropo-social points of entry becomes not only that which impedes, but also that which is necessary to, the constitution of the meta-system. . . It is in and through this loop or circuit that we can establish a twofold

> theoretical rooting in both "nature" and "culture," in the "object" as well as the "subject." (p. 276)

PLANETARY ECOLOGY

We have just seen how an integral ecology, in its recognition of the complex character of the relation between bios and anthropos, cannot be limited to the natural scientific study of nonhuman environments. There is no—or at least, there is no longer—a natural ecology apart from human ecology (and obviously, there has been no human ecology apart from the rest of nature). At the same time, however, an integral ecology does have a home base or native boundary. Its gaze has a natural resting place: this lonely planet in all its complex wholeness—our Homeland Earth ("*Terre-Patrie*"). An integral ecology is therefore necessarily a global, or *planetary* ecology.

"The Earth," writes Morin (1999), "is not the sum of an addition: a physical planet, plus the biosphere, plus humankind."

> The Earth is a physical/biological/anthropological complex totality, in which life emerges from Earth's history and humankind from earthly life's history. Life is a biophysical organizing force at work in the atmosphere it has created, on the ground, underground, and in the seas, where it has expanded and grown. Humanity [itself] is a planetary and biospheric entity. (p. 44)

We could also say, however, that the biosphere is a planetary and (for the time being, at least) an anthropological entity, and also that the planet is an anthropological and biospheric entity. Despite the fact that Morin lists the biosphere as one of three relatively autonomous elements of the complex totality constituted by Earth, it is nevertheless to life (bios) that we must turn for an understanding of the complex organization of the planet as a whole. For it is only with the emergence of life that we begin to see the full deployment of complex organization. It is this organization that—though foreshadowed in physical systems (from simple eddies to stars and galaxies) and, as we will see in the next section, reflected or reproduced in the realms of human culture and consciousness—constitutes the very *life of life*. Because of its paradigmatic role for our understanding of the nature of complexity, one could say that life constitutes the middle term between *cosmos* (*physis* and *bios* proper) and *anthropos*. In the series of Morin's

La méthode, *La vie de la vie* (1980) accordingly serves as the bridge between *La nature de la nature* (1977) and the subsequent volumes devoted to the specifically human realm—to date: *La connaissance de la connaissance* (1986); *Les idées* (1991); *L'humanité de l'humanité* (2001); and *Éthique* (2004b). As the animating principle of the paradigm of complexity, the notion of life is therefore not to be limited to the biological sphere in which it first becomes more or less fully manifested, but instead can be generalized to describe the deeper potentials of all forms of complex organization.

According to Morin (1980), living beings are not merely self- or auto-organizing systems, but at a minimum *auto-eco-re-organizing* systems.[4] While the radical *auto* points to the endogenous character of living organization (in contrast with machines, living organization is self-generated and does not receive its plan of organization from a preexisting system, nor is it constructed from ready-made components), its coupling with *eco* points to the necessity for exchanges of matter, energy, and information with an environment. The radical *re* indicates the ongoing dynamic, processural nature of the organization (notably with metabolism and reproduction). With human beings, though not necessarily limited to human beings, the life of life reveals itself in its full complexity as (minimally) *auto-(geno-pheno-ego)-socio-eco-re-organization*, where *geno* points to the species and the phenomenon of inheritance, *pheno* to the peculiarities of individual constitution, and *ego* to the emergence (however rudimentary) of self-reflexive consciousness. Morin writes that the paradigm of auto-(geno-pheno-ego)-eco-re-organization

> is incompressible, which is to say that none of the terms can be eliminated or reduced to the others. It is non-separable—that is, its terms necessarily call each other into being. It is of the nature of a matrix [*il est matriciel*] in that it constitutes the basis for innumerable developments of life, developments involving its diverse elements, their interrelations and the complex totality of auto-(geno-pheno-ego)-eco-re-organization. (p. 353)

Here the question arises as to whether or not, or in what sense(s), Earth can be said to be alive. Though the vast majority of human cultures and epochs have responded to this question in the affirmative—most typically with various forms of animism and systems of symbolic *correspondences* (between the human body and the body of Earth)—the dominant tendency in the modern West since the mid-19th century has been to limit life to the gossamer-thin layer of the biosphere spread across Earth's otherwise inanimate surface. An integral ecology, by

contrast—informed as it is by the paradigm of complexity, and for which, as we have seen, the category of life is paradigmatic of all forms of complex organization, including Earth—finds itself in continuity with the near-universal consensus of cultural history. This consensus encompasses not only premodern or non-Western traditions, but also early modern and Romantic/Idealist philosophies of nature (Herder, Humboldt, Goethe, Schelling, Hegel, Fechner, Haeckel, and arguably even Darwin—see, in this connection, Robert Richards's *The Romantic Conception of Life*) and contemporary Gaia theory (associated with James Lovelock and Lynn Margulis, and which we will turn to in a moment). Clearly, insofar as both the biosphere and the anthroposphere are emergent properties of Earth, and therefore expressive of its intrinsic potential, we can say that Earth is both alive and has a human face (it has a nonhuman face as well, of course).

In terms of the incompressible paradigm of auto-(geno-pheno-ego)-eco-re-organization, there is general agreement within the relevant sectors of the scientific community that Earth is self- or auto-organizing—that is, its structure and dynamics, including the emergence and evolution of life, take the form of a relatively autonomous system (which, as Morin explores in great detail in the first part of *The Nature of Nature*, is generated out of the complex relation between order, disorder, and interactions). There is also, however, the recognition of Earth's eco-dependence, in that terrestrial organization has been and remains significantly open to, and co-determined by, extra-terran relationships—first and foremost with the sun (primarily gravitational and electromagnetic), but also with its near relatives in the solar system (the finely calibrated gravitational interactions among which give Earth its life-sustaining position), and with the smaller and eccentric remains (comets and meteors, which have probably supplied essential organic chemicals taken up into the emergence of the first organisms) of the rich detritus from the exploded star that preceded our sun. At first glance, and in contrast to the eco-relations of organisms within the biosphere, the only thing Earth seems to give in exchange (along with its gravitational pull) is reflected and radiated electromagnetic energy—some of which could be considered as waste/entropy associated with its biospheric organization. In fact, however, we would have to include the various forms of encoded information that have left the planet since the transmission of the first radio signals to the present, including radio, television, other forms of telecommunication, and intentionally generated gestures of extraterrestrial communication (whether carried on electromagnetic waves or on space probes).

The view that the planet as a whole is self-*re*-organizing, with the effect if not the goal of maintaining optimal conditions for the flourishing of life (this

is the view of Lovelock and his followers), also seems to be gaining wider acceptance.[5] There is more controversy, however, when it comes to the applicability of the radicals *geno* and *ego* (which, as we have seen, further define the nature of living self- or auto-organization) to the planet as a whole. After all, even if we grant that, like other organisms, Earth is an auto-eco-re-organizing system, it was not generated by a similarly constituted individual and does not seem capable of reproduction (the principal manifestation of *geno*). As the author(s) of the *Wikipedia* article on Gaia theory point out, however, one might reasonably take human space exploration and the goal of colonizing and terraforming other planets as evidence of the intention, at least, of Earth to reproduce itself ("Gaia Theory," n.d.). Mainstream science also has no way of conceiving how Earth could have anything like organismic and species-linked memory (another potential of *geno*). But neither is mainstream science able to provide a coherent account of memory in the first place, whether in the individual (phenotype) or the species (genotype), despite the increasingly detailed knowledge of the mechanisms of brain physiology and genetics with which memory is undeniably mysteriously associated. For those of us who are not satisfied with reductive mechanistic accounts, it would seem that a theory along the lines of Sheldrake's (1988) proposal of *morphogenetic fields* and *morphic resonance* opens the way for accepting that Earth might indeed be a fully auto-(*geno*-pheno)-eco-re-organizing being. As Sheldrake remarked a decade before the discovery of a growing number of extra-solar planets:

> A natural extension of the morphic field approach would be to regard living ecosystems as complex organisms with morphic fields that embrace the communities of organisms within them, and indeed to regard entire planets as organisms with characteristic morphic fields. . .
>
> Our own planetary system may not be unique; and if there are others like it, then the field of ours may be influenced be morphic resonance from them and may in turn influence them. The same could be true of the various planets; these too may represent "species" that occur elsewhere, a Mercury species, Venus species, Earth species, and so on. . .
>
> [I]f such planets exist, Earth may be following a developmental pathway that is already established and stabilized by morphic resonance; and perhaps the entire process of biological evolution is organized by a well-worn chreode. (p. 301)

What then of *ego*, the full manifestation of living subjectivity? Morin (1980) devotes a large part of *La vie de la vie* to the notion of the living subject, the emergence of which he traces out of the autopoetic potential of physical self-organization (from atoms and eddies to nonorganic dissipative structures, stars, and galaxies), through single-celled and multicellular organisms, all the way to societies as instances of a third type of living individual. All individuals, all subjects (egos), compute in the first person, which is to say their organizational behaviors both establish and arise from a distinction between self and other. Such computation is presupposed by such processes as metabolism, reproduction, and various kinds of immune response, all of which involve the ability to recognize, represent, and reproduce the individual in question (notice the generative link here between auto/ego and *re*, which in general involves the kinds of complex feedback loops included under the notion of *re*cursion). Though Morin finds evidence for subjectivity for all three types of individual (that is, at the levels of the cell, the multicellular organism, and society), he does not in the case of ecosystems, by which we can infer that he also might not for the biosphere as a whole. "Eco-organization," he writes,

> self-maintains and self-preserves, but is devoid of self-reference and of eco-centrism. There is no genetic identity common to its members [though we have seen how Sheldrake's theory of morphic resonance offers a way around this seeming limitation]. There is no "fraternal" community among its members. There is no implication of individual subjectivity in ecosystems. Animal societies, by contrast, though polycentric and comprised of egocentric individuals, nevertheless constitute a defensive fraternity with respect to the outside world and manifest a socio-centrism. (p. 238)

While it therefore appears that Morin might not attribute ego to Earth considered only as a geological or physical/biological system (this would be the position of so-called Strong Gaia advocates), since his own understanding is that Earth is rather a complex physical/biological/anthropological system, one might expect that it is precisely at the level of the anthroposphere that we should look for the presence of a Gaian ego. Admittedly, such an ego would represent a fairly recent emergence in the evolution of Earth, and a precarious one at that. As we know from developmental psychology, however, the human ego (at least in its stable mental or postformal, let alone its integrated or self-actualized, configuration—more on the notion of the postformal in the next section) comes rather late, if

at all, for the majority of the human population. Thus there are good reasons to consider that, as an auto-(geno-pheno-ego)-eco-re-organizing system, Earth is not only in some nontrivial sense an organism, but is an individual-subject with an (at least fledgling) self-consciousness.

Wishing to respect the limits of knowledge, and cognizant of the possible pitfalls of metaphysical (and specifically religious or spiritual) speculation, Morin does not address the question of whether Earth might not—as Fechner, Schelling, or Jung, and most who espouse the New Paradigm believe—also be ensouled or possess a distinct theosphere. While he is radically open to the great mystery of the cosmos, to ethical and indeed spiritual ultimates, Morin is content to leave talk of the soul to mystics and poets (among the latter, at least, if not also the former, I would count Morin himself) and otherwise to walk a more or less apophatic path. A less circumspect integral approach might, as Wilber (1995) does, openly posit a theosphere as an even subtler dimension of planetary ecology or, with Tarnas (2006), invoke the notion of the *anima mundi* in connection with the remarkable patterns of synchronicity that run through human history and the evolution of consciousness. Space does not allow development of these themes here, though I will take them up again briefly in the final section.

ECOLOGY OF THE NOOSPHERE

While he does not posit a metaphysical theosphere, Morin (1991) does have a profound and well-articulated theory of the noosphere, which, though considered an emergence of the (bio-)anthroposphere, does possess its own relative autonomy. The noosphere is inhabited by two related classes of entities "of strong and durable organization: 1. cosmo-bio-anthropological entities, myths and religions, populated by beings in the form of animals or humans (genies, spirits, gods), and 2. logomorphic beings, doctrines, theories, and philosophies which form systems of ideas" (pp. 116–117). It is primarily with the second class of noological entities that we will concern ourselves in this section, though, as we shall see, there is a certain overlap between the two classes, particularly when systems of ideas take the form of rigidly structured and numinously charged "-isms."

Of the noosphere in general, Morin (1991) has this to say:

> [T]he noosphere is present in everything seen, all conceptions and transactions of human subjects with the outside world, with other human subjects, and with(in) themselves. The noosphere is certainly open to

> the subjective, has an inter-subjective function, and a trans-subjective mission, but it is also an objective constituent of human reality. . .
>
> Just as plants produced the oxygen of the atmosphere, which thereafter became indispensable to terrestrial life, so human cultures have produced symbols, ideas, and myths that have become indispensable to our social lives. Symbols, ideas, and myths have created a universe inhabited by our minds. (p. 114)

An informed familiarity with the workings of the noosphere is essential to an integral ecology for several reasons. First, the noosphere constitutes the most immediate, if subtle and sometimes challenging to discern, layer of the human ecosystem. All of our actions, whether consciously intentional or not, are mediated through the noosphere. Second, there can be no integral ecology without completing the circuit that leads from the life of life to the knowing of knowing. Once again, however, given the paradigmatic status of the notion of life, it is our knowledge of (living) organization that must guide our understanding of the organization of knowledge.

On the analogy of Kant's two first critiques—of theoretical and of practical reason—one can distinguish between two dimensions of the ecology of the noosphere: the ecology of ideas and the ecology of action.[6] The fundamental insight of the ecology of ideas is that noospheric entities—which include not only ideas or concepts proper, but beliefs, symbols, and myths, as well as doctrines and ideologies, theories and paradigms—possess many of the same traits as biological organisms. In their most developed forms, they are fully auto-(geno-pheno)-eco-re-organizing beings, which reproduce, metabolize, have immune responses, and evolve. There are obvious parallels here with Richard Dawkins's (1976/2006) notion of *memes* (see also Blackmore, 1999), but there are significant differences as well, stemming primarily from the fact that Morin's (1991) proposals are grounded in a complex (and integral), rather than a reductive and simplifying, understanding of the life of life. Meme theory, like the biology that it is based on, is mechanistic (and atomistic, like the notion of the selfish gene that preceded it) rather than genuinely organismic and therefore (integrally) ecological. Instead of the root meme-model of molecular replication and the two laws of imitation and natural selection, with Morin we have living, auto-eco-re-organizing beings and the principles of complexity (first and foremost the dialogic, recursivity, and the holographic principle, but also, as we will see in a moment, uncertainty) that they embody and through which their nature is revealed. Finally, while meme theory tends to be hostile toward any position (especially religious or spiritual) that seems to contradict

or challenge its fundamentally mechanistic/materialist and atheist root assumptions, Morin's hermeneutical suspicion is combined with nuanced analysis and empathetic largesse, and therefore tends toward an open-ended agnosticism. Still, a more sustained encounter between meme theory and Morin's noology might prove fruitful.

According to Morin (1991), systems of ideas—and ideas, though they can be considered abstractly in isolation (like genes apart from the cells, bodies, species, and ecosystems in which they are embedded), are always more or less part of a system—are auto-eco-organizing and, like most cells, have nuclei (self-legitimizing axioms, fundamental rules of organization), dependent/interdependent subsystems, and an immune response (p. 130). Systems of ideas "are simultaneously open and closed" (p. 130). They are closed "in that they protect and defend themselves against external aggression and the threat of degradation. They are open in that they feed off of signs of confirmation and verification coming from the outside world" (p. 130). What determines the boundary between inside and outside, the ability to recognize what can be assimilated and what must be rejected, has its deepest roots at the level of the *paradigm*.

The notion of paradigm (*paradeigma*) goes back to Plato, with reference to the realm of Ideas as the truly real or abiding, and before that to the stories of the (controlling) gods and (exemplary) heroes. With profound affinities to Kantian categories and Jungian archetypes, the term took its modern definition from Thomas Kuhn's (1996) *Structure of Scientific Revolutions* (where it was used in both the general sense of worldview and in the more restricted sense of specific *puzzle-solutions* standing as models or exemplars for a particular field of research). Morin understands paradigms in a manner that suggests a kind of genetic program or deep organizational structure of worldviews. A paradigm, Morin (1991) writes, "contains . . . the fundamental concepts and master categories of intelligibility as well as the logical relations of attraction and repulsion (e.g., conjunction, disjunction, implication) between these concepts or categories" (p. 213). This definition is more precise and potentially fruitful than, though in no ways in conflict with, the main Kuhnian variations. The point here is that paradigms not only describe, but actively prescribe, define, and literally shape the world that is viewed. Morin gives the example of two antagonistic views of the human/nature relation that nevertheless privilege the same categories of intelligibility (in this case reduction or disjunction). One (the biological sciences, with the human genome project as emblematic) sees the human as a purely natural phenomenon and ultimately reducible to chemistry, the other (most humanities and social sciences, with deconstructive postmodernism at the extreme) as defined by culture. Each view, however, in attempting to subordinate the other to itself, participates in the same paradigm of simplification.

The self-legitimization of paradigmatic assumptions can, according to Morin (1991), proceed along two antagonistically related paths: doctrines versus theories. Obviously, there is considerable cross-over possible between both paths. At their most sharply defined, Morin contrasts them as follows:

> While theories recognize that their axioms or postulates are non-demonstrable, doctrines hold them as self-evident and eternally true, which guarantees the inalterable virtue of their systems. While theories enact their rationality through an uncertain exchange with the outside world, doctrines reject everything that rebels against their rationalizing logic. . .
>
> Doctrines are in a state of permanent mobilization and continually enflame the enthusiasm of the faithful. Violently offensive, they attack, without letting up, those theories and other doctrines which they anathematize. They are cruel and can exact not only the condemnation, but also the death of their detractors. (p. 133)

Not all doctrines lead to literal murder, of course. And while religious/theological reflection is not incapable of theorizing, so doctrines are not confined to explicitly religious/theological contexts (reductionistic scientism, which is a naïve metaphysics masquerading as science, is a well-known case in point). In fact, some of the most pathological and virulent forms of doctrinal oppression have been perpetrated by secular political regimes (Stalin's U.S.S.R., Pol Pot's Cambodia, to take two glaring examples). One need not go to the extreme of outright dictatorship to witness the doctrinal character of ideologies or politically embedded paradigms. It is enough to note how, in our own times, critical or divergent views are systematically excluded from the major media, or how clearly one-sided, if not blatantly false, ruling-government claims are enshrined as self-evident or quasi-sacred "facts." The voice of doctrine is chillingly clear (to the theoretically minded, at least) in the fateful pronouncement, shortly after the attacks of 9/11, by the president of the self-proclaimed "leader of the free world": "You are either with us or against us in the fight against terror" (as cited in CNN, 2001, para. 1). By July, 2013, the disastrous policy of this Manichaean mindset led to 4,488 American casualties, between 32,000 and 100,000 wounded, and an estimated 1,455,000 Iraqi deaths! (Antiwar.com, 2009).

Even the most well-intentioned and rationally conceived policies or initiatives can have radically unpredictable outcomes. The ecology of ideas, therefore, must go hand in hand with the *ecology of action*. While the fundamental insight of the

ecology of action, as Morin points out (1980, p. 82), is implicitly recognized in the well-known image of the path to Hell being paved with good intentions, the insight has dawned as a specifically ecological principle following such disastrous interventions as indiscriminate pesticide use (which not only renders crops more or less toxic, but kills helpful species along with the pests), the introduction of foreign species—for instance, sheep, rabbits, and foxes to Australia (Diamond, 2005, pp. 378ff)—and more generally with runaway "development," which has led to the widespread and accelerating destruction of habitats, global warming, and the sixth mass extinction (see Morin, 1999).

As a general or integral ecological principle, however, the ecology of action is equally, or perhaps especially, relevant to the sociopolitical domain. Unfortunately, as Morin (1999) laments:

> Politics has not moved beyond solutions of the pesticide type; it tackles isolated factors instead of taking into account looped interactions. Thus, concerning health, demographic, lifestyle, and environmental issues, we hold to separate policies and do not have a politics dealing with interactions between these problems. (p. 118)

In the place of myopic *programs* and policies (which are generally the product of techno-bureaucracies guided by mechanistic paradigmatic assumptions), Morin calls for the articulation of *strategies* (he defines a strategy as "the rational guidance of an action in a situation and context that is ill-defined and perhaps dangerous" [p. 115]) informed by the paradigm of complexity. Such strategies will always seek to consider any given problem relative to the various contexts within which it is embedded, with the intention of minimizing risks while maximizing opportunities (though recognizing too that the levels of risk and opportunity are often coupled). The various contexts (economic, social, political, environmental, etc.) must in turn be grasped within the three times frames (the short term, the middle range, and the long range) and the three zones of space (the micro/interpersonal, the meso/social/local, and the macro/global). Finally, such strategies will be sensitive to the ways in which the various contexts, time frames, and zones are dialogically, recursively, and holographically related. Strategies

> are elaborated according to goals and principles, consider various possible scripts for the unfolding action, and select the one that appears to be dictated by the situation. . . Strategies change the script along the way according to the information, reactions,

> hazards, events, and the unexpected appearance or disappearance of obstacles, growing richer in experience as well as in ability to confront adversity. (p. 115)

I must refer the interested reader to Morin's (1999) *Homeland Earth*; and, for those able to read French, to *Pour entrer dans le XXIe siècle* (2004a) and to *Éthique* (2004b) for more in-depth discussion of this topic.

THE EVOLUTION OF CONSCIOUSNESS

There is a great temptation for policy makers (to appear, at least) to favor the micro and meso zones (lower individual taxes, cheaper gasoline) and to focus on the short term (endangering fragile wildlife preserves to access minimal reserves of oil; risking tens of millennia of radioactive contamination by using depleted uranium for more effective munitions). Obviously, the interests of the micro/meso zones and of the short term need to be honored. From a complex, integral-ecological perspective, however, it becomes clear that policies that ignore the macro/global and the long range run the highest risk of ultimate failure. For the macro/global and the long range represent the (spatial and temporal, respectively) bio-anthropological ecosystem on which the more narrowly focused interests ultimately, if complexly, depend. This has become increasingly apparent as, under mounting demographic pressure (and thus diminishing resources), greater economic interdependence, and faster and more pervasive global telecommunication, we enter this most critical sixth century of the Planetary era.[7] "Not only is it the case," writes Morin (1999),

> that every part of the world is more and more party to the world, but the world as a whole is more and more present in each of the parts. . . Just as each point on a hologram contains information about the whole of which it is a part, so each individual henceforth takes in or assimilates matter and information from everywhere in the world. . .
>
> [F]or better or worse, whether rich or poor, every one of us harbours within him- or herself, for the most part unknowingly, the entire planet. The fact of globalization is at once evident, subconscious, and omnipresent. (pp. 18–19)

The great task we now face is to make this fact, in all its irreducible complexity, conscious on a wide enough scale, and particularly for our policymakers and others in leadership positions. What is required, in effect, is a mutation of consciousness at the level of the noosphere. Such a mutation might seem unlikely, given the entrenchment of the dominant paradigm and the self-reinforcing loop constituted by the "four runaway engines [science, technology, economy, and profit] propelling spaceship Earth toward the abyss" (Morin, 2004a, p. 187). We can perhaps gain some consolation from the realization that all of the major evolutionary emergences—for instance, the emergence of eukaryotes in response to the oxygen crisis, the development of sexual differentiation, the rise of mammals, the birth of *Homo sapiens*—could not have been predicted had there been teams of scientists around to ask their opinions. The same is true, as Morin (2004a) reminds us, for the history of revolutions or the outcomes of major conflicts. The emergence of novelty in the noosphere, as in the biosphere, "is marginal, aleatory, threatened, uncertain, and sometimes clandestine."

> The new idea must be able to implant itself before it encounters the conditions that favor its development and diffusion. At that point there are schismo-morphogeneses where the deviant shoot of an orthodoxy differentiates, breaks free, and organizes itself according to novel nuclear principles. Myths and ideas migrate out of the new home base and become epidemic. Finally, the old orthodoxy splits, disintegrates, and we have a noological revolution. (p. 153)

The kind of noospheric mutation we are envisioning would constitute something analogous to the emergence, in individual development, of the mental ego or a stable self-consciousness out of the prior body ego. For this to take place, however, would actually require that enough (strategically placed) individuals move beyond the competencies associated with the average mental ego and be capable of what developmental psychologists refer to as *postformal cognition*. Michael Lamport Commons and Francis Asbury Richards (n.d.) have identified at least four postformal orders of hierarchical complexity: *systematic*, where the "objects of the systematic actions are formal-operational relationships between variables" ("Systematic order," para.1); *metasystematic*, whose "actions compare, contrast, transform, and synthesize systems" ("Metasystematic order," para. 1); *paradigmatic*, whose actions "form new paradigms from supersystems" ("Paradigmatic order," para. 1); and *cross-paradigmatic,* whose actions "integrate paradigms into a new field or profoundly transform an old one" ("Cross-paradigmatic order," para. 1).

Morin's method of complexity would seem to be an exceptionally developed example of the last two of these postformal orders (the metaparadigmatic and the cross-paradigmatic), both of which correspond to Wilber's (1995) middle or late phases of "vision-logic."

I would not want to give the impression, however, that the ability to understand and enact the paradigm of complexity can be reduced to a matter of cognitive competence. At least as it is embodied in the life and writings of Morin, the paradigm of complexity involves an equal measure of affective and moral or ethical development. If, following Wilber (1995), we consider the cognitive, affective, and moral/ethical as relatively autonomous lines of development (or as distinct or multiple kinds of intelligence, to use Howard Gardner's term), it is an open question as to which line might take the lead in the evolution of consciousness toward the paradigm of complexity. This much is clear: postformal cognition, though possibly necessary, is not sufficient, for the full flowering of the paradigm of complexity, a point underlined by the titles of the two most recent volumes of *La m*éthode—*L'humanité de humanité* and *Éthique*. To such cognitive principles of complexity as the dialogic, recursivity, and holographic inclusion—though presupposing these principles for their effective instantiation or concrete application—correspond such moral/ethical virtues as mutual understanding, compassion, forgiveness, and love. If complex thinking "leads to" and "feeds" an "ethic of solidarity and non-coercion" (Morin, 2004a, p. 68), it does not do so as a matter of course. The light (*éclairage*) of cognitive "intelligence itself needs to be enlightened by morality" (Morin, 2004a, p. 70). The mutations of archaic societies into historical societies, observes Morin (2004a), "are products of unconscious processes."

> No doubt the possible metamorphosis underway will largely be the product of unconscious processes. But it will not be accomplished without the helping hand (*le concours et le secours*) of human consciousness/conscience and ethical regeneration. Thus a spiritual reformation will play a critical role. (p. 206)

According to Morin (1999), such a spiritual reformation, rooted in an ethical awareness of our cosmic and planetary (geo-bio-anthropological) solidarity, could constitute the emergence of a third kind of religion. The first kind, which began to be eroded from the time of the Enlightenment, was a religion of salvation, of an otherworldly God or gods. The second kind of religion, typified in both Marxism and positivism or scientism, did not recognize itself as a

religion, though it still held up the promise of (this-worldly) salvation. The third kind of religion would be a "religion in the minimal sense [suggested in one derivation of the word: from *re-ligare*: to join back together]" (p. 141), and "would involve a rational undertaking: to preserve the planet, to civilize the Earth, to unify humankind while safeguarding its diversity" (p. 141). At the same time, however, it would be

> a depth religion, uniting people in suffering and death. It would not promise any primary or ultimate truth. . . Such a religion would lack any providence, any shining hereafter, but would bind us together as fellows in the unknown adventure.
>
> Such a religion would not have promises but roots: roots in our cultures and civilizations, in planetary and human history; roots in life; roots in the stars that have forged the atoms of which we are made; roots in the cosmos where the particles were born and out of which our atoms were made. . .
>
> Such a religion would involve a belief, like all religions but, unlike other religions that repress doubt through excessive zeal, it would make room for doubt within itself. It would look out onto the abyss. (p. 142)

CONCLUSION

It is no easy thing to look out onto this abyss. There is nowhere for the eyes to rest, and the body flinches or recoils in fear at what the mind cannot grasp. At the same time, to the extent that we can remain open to "the fundamentally irrationalizable," to the "creative and originary (*génésique*) ground" (Bohm, Kelly, & Morin, 1996, p. 236) of the cosmos that has birthed us, we make room for the actualization of our deepest humanity. We make room for the further emergence of those spiritual ultimates—mutual understanding, forgiveness, compassion, and love—which alone might kindle a steady light in the looming darkness, and perhaps spare us the worst in the years ahead. This abyss, Morin has said, "this breach (*brèche*) in the midst of our knowledge is also a mouth (*bouche*) struggling to speak" (Bohm, Kelly, & Morin, 1996, p. 236). It would speak to us of the pregnant silence that supports and surrounds our every utterance, a silence which can both terrify and console. It would also, however, give voice to the billions of poor and oppressed, to the millions of species facing imminent extinction, and to Earth itself in is long travail.

An integral ecology, and the paradigm of complexity of which it can be seen as an expression, can assist us greatly in training our ears to the voice of Earth. And we must speak *for* Earth in gratitude to Edgar Morin, whose life's work will continue to serve our troubled Homeland and inspire those who have ears to hear.

NOTES

1. I have already presented (Kelly, 1999) some reflections on the creative possibilities of a dialogue between Morin and Wilber around the themes of consciousness and complexity. In general, one could say, to borrow a distinction from Hegel studies, that Wilber's integral theory stresses the dimension of *system*, while Morin's paradigm of complexity stresses the dimension of *method*.

2. This passage might well have served as the textual inspiration for the lines by Boff cited above. Boff refers to Morin several times in his *Cry of the Earth, Cry of the Poor* (1997, or 1995 in the original Brazilian edition, and thus the same year as the *Concilium* article) and seems to have taken in much of what Morin has to offer. While he does not use the term *integral ecology* in this book, he does speak of *integral liberation* on several occasions. It is unclear what other influences there might be on his use of the word *integral*.

3. Wilber makes the strongest possible case for the, to many, counterintuitive idea that the anthroposphere (or noosphere) includes the biosphere, but not the reverse. See Wilber (1995) and Kelly (1999). See also the "Transdisciplinary" and "(Re)enchanted" sections in Chapter 8 of this volume ("Five Principles of Integral Ecology").

4. See Wilber's extensive discussion (Wilber, 1995) of "ego" and "eco" and the correlative categories of "agency" and "communion."

5. Martin Ogle (2009) summarizes this view as follows: "Lovelock showed that the Gaian system regulates atmospheric gasses such as oxygen, methane, carbon dioxide, and hydrogen sulfide that react with living beings. The maintenance of oxygen at around 20 percent in the atmosphere for at least 400 million years is an example. Likewise, ocean alkalinity, air temperature, and other environmental factors were shown to be regulated by life. Lovelock and colleagues explored ways in which climate and the global sulfur cycle are moderated by oceanic microorganisms that release gases that influence cloud formation. Even though the sun has increased its radiance (and thereby, its potential to heat the Earth) by almost a third during the time span of life on this planet, the Gaian system has maintained temperatures within a fairly narrow range suitable for its

own existence. Myriad processes, including feeding, excretion, breathing, reproduction, lightning, water condensation, and untold others dance together in the Gaian system" (p. 101).

6. While Morin originally conceived of treating the ecology of ideas as Part Two of *La connaissance de la connaissance* (1986) (*La méthode* III/1) under the heading of "sociology of knowledge" (see the *Post-Pré-Scriptum* to that volume), it eventually became Part One of Volume IV, *Les idées* (1991), though further consideration of the ecology of action occurs in a section of Volume VI, *Éthique* (2004). In *La vie de la vie* (1980) (*La méthode, II*), both the ecology of ideas and the ecology of action receive preliminary treatment in the subsection, "Ecologized Thinking," itself a subsection of Part One, "Generalized Ecology."

7. The notion of the Planetary era is developed by Morin (1999) In *Homeland Earth* and refers to the period beginning with the great voyages of discovery/conquest in the 15th century that initiated an unparalleled increase and stabilization of communication and exchange between inhabitants of all of the world's continents. At the same time, thanks to Copernicus and his followers, European intellectuals started to accept the idea that the Earth is a planet. The intercontinental exchange was material (gold, silver), biological (plants, animals, viruses), technological, and more broadly cultural. Though obviously one-sided—an inevitable corollary of colonial domination—this communication and exchange has led to increasing economic and more generalized interdependence, to a growing sense of the complex human fabric which, however thin and prone to tearing, continues to weave itself around the planet. For a reading of the meaning of the Planetary era in the context of the evolution of consciousness, see Kelly, 2010.

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5

INTEGRAL ECOLOGY'S DEBT TO HOLMES ROLSTON III

Michael E. Zimmerman

A CRUCIAL STEP TOWARD an integral philosophy occurred in 1988 when Holmes Rolston III published *Environmental Ethics* (EE), which established his reputation as one of the most important American environmental philosophers. Rolston's book appeared seven years before Ken Wilber's (1995/2000) *Sex, Ecology, Spirituality* (SES), the bibliography of which refers to EE. As we will see, Wilber learned something from Rolston. Rolston, on the other hand, was probably unaware of Wilber's work when writing EE. My goal in this essay is to show that a deep affinity exists between the views of these two important thinkers. This affinity indicates that an integral zeitgeist has been emerging for some decades.

In writing EE, Rolston (1988) had two audiences in mind. The first was composed of environmentalists adhering to what has variously been called *anti-anthropocentrism, reductive biocentrism*, and *biocentric egalitarianism*. In the mid 1980s, such views had been embraced not only by deep ecologists and other radical environmentalists, but also by some mainstream environmental ethicists. Environmentalists had long been critical of an arrogant anthropocentrism. What I call *Green* environmentalists, however, devised their anti-anthropocentrism in the context of the countercultural revolution and postmodern theory. While Rolston is aware of the latter, he does not take them into account in the way Wilber (1995/2000) does in SES, which was written at the height of the culture wars in the mid 1990s.

Swimming against the anti-anthropocentric stream dominating much of environmentalist discourse in the 1980s, Rolston (1988) proposed to integrate findings from ecology, evolutionary biology, cosmology, philosophy, ethical theory, economics, and a number of other fields, in order to demonstrate that human beings are not only the products of billions of years of terrestrial evolution, but also the most valuable outcome of that staggering process. Our capacity to "stand out from" or to "transcend" nature allows us to experience both ourselves and other beings in ways not possible for other terrestrial organisms. This capacity, however, brings with it the responsibility to bear witness to and to respect other life forms, rather than to treat them solely as raw material for human purposes. EE regards as misguided and inadequate those forms of environmentalism that fail to see that only the singular human capacity for rational, moral, and aesthetic experience allows for something like an environmental ethics.

Rolston's (1988) second audience was composed of professional ethicists, most of whom in the mid-1980s were still modernist and hence anthropocentrists, apart from some—such as Peter Singer and Tom Reagan—who sought to expand the circle of moral considerability to include animals. For the most part, Rolston's academic colleagues regarded humankind as the only (known) locus of value in the universe. Modern ethical theorists typically accorded value to nonhuman beings only if they could serve some useful purpose for human beings. If human beings were to vanish, in a universe that originated without a Creator, so would such instrumental value. Following Darwin's evolutionary theory, moderns acknowledged that human beings result not from the act of a Creator, but rather from the blind interplay of chance and necessity. Such a universe is devoid of inherent value, that is, value that obtains independent of its usefulness for humans and independent of the existence of the human evaluator. Despite affirming that the universe lacks any inherent value or purpose, most moderns—including many ethical theorists—have been loath to conclude that humans lack intrinsic value. Instead, moderns affirm that humankind possesses something like inherent value because humans possess rationality, which had once been a feature of the soul that they now discredited. Rolston agreed that humans are inherently valuable, but wanted to persuade his anthropocentric colleagues that other beings are also inherently valuable, not merely instrumentally valuable. Indeed, so he argued, human value is dependent on the value previously achieved in the terrestrial evolutionary process.

Engaging in a delicate balancing act, Rolston (1988) included the best of both the environmental and the modern perspective, while perhaps transcending them both. Writing from what integral thinkers would later describe as a second-tier perspective, Rolston reveals the importance of both Green and

modern viewpoints regarding humanity, nature, and value, but he no longer identifies exclusively with either one. His far-reaching articulation of a scientifically informed, *nature-respecting anthropocentrism*—something of an oxymoron at the time—staked out and defended the territory that integral ecology would subsequently explore. Rolston took a lot of heat from environmentalists, who regarded his book as a subtle apology for the same old anthropocentrism. Yet the book also won admiration even among those who disagreed with him. Rolston opened up a path that could be followed by those who were not happy about pursuing either of the two main alternatives: biocentrism, which lacked an adequate moral hierarchy and which ran the risk of falling into misanthropy, and anthropocentrism, which could not appreciate what Aldo Leopold meant by protecting the "integrity, stability, and beauty of the biotic community."

In the first part of this essay, I explain that anti-anthropocentric, biocentric egalitarianism is not only a conceptual misunderstanding, but also invites problematic political consequences. Next, I portray Rolston's (1988) critique of such egalitarianism and his thoughtful alternative to it. He respects modernity's concern about human specialness, but explores the possibility that such specialness obliges us both to bear witness to and to tell the (evolutionary) story of the cosmos that gave rise to us. Then, I show that Rolston's conception of human existence is drawn in part from the work of Martin Heidegger, who—like Rolston—claims that we should bear witness to things and "let them be." Among the important differences between Rolston and Heidegger is that Rolston attempts to situate human existence within the trajectory of cosmic and terrestrial evolution, whereas Heidegger—highly suspicious of evolutionary theory—claims that between the human and the animal there opens an unbridgeable abyss. Rolston's view is much more consistent with integral ecology's pan-experientialism, according to which virtually all beings (all the way down) possess some capacity (however meager) to take into account the beings and processes with which they stand in relation. Despite important similarities between Rolston's work and integral theory, the latter goes beyond the Rolston of EE in giving a much more substantial account of the evolution of human interiority, both individual and cultural. Elsewhere in his voluminous writings, Rolston has addressed such issues, but my examination of Rolston's environmental philosophy limits itself to EE.

ORIGINS AND LIMITATIONS OF ANTI-ANTHROPOCENTRIC, BIOCENTRIC EGALITARIANISM

Anti-anthropocentrism in environmental theory and practice paralleled the anti-humanism that became a hallmark of postmodern theory, especially as influenced

by so-called French poststructuralism. According to the latter theory, Western modernity is Euro-logo-phallo-theo-centric. That is, Western modernity has affirmed the centrality of European values and race, has insisted on the superiority of (its version of) rationality, is masculinist, and remains influenced by a certain understanding of God (or another such metaphysical foundation) as pure and unchanging presence. Although promoting human liberation, modernity has often enforced oppression by failing to be inclusive regarding who counts as being worthy of liberation. New social movements arose in the 1960s and 1970s, including civil rights, feminism, gay and lesbian rights, and anticolonialism. Animal rights activists and some environmental philosophers soon added *anthropo*-centrism to the list of offenses attributed to an insufficiently inclusive modernity.[1]

At an earlier phase in my own thinking, I agreed not only with the above-mentioned criticisms of modernity, but with others as well. My near-totalizing critical attitude toward modernity too often ignored its achievements, which ought to be included along with any considerations of its failings, such as techno-industrial practices that have caused extensive damage to the natural environment. Thirty years ago, upon reading Ken Wilber's (1981) book, *Up from Eden: A Transpersonal View of Human Evolution,* I discovered an integrative understanding of modernity, an understanding that simultaneously criticizes modernity and acknowledges its important achievements.

According to its own self-understanding, modernity promotes the actualization of human potential and employs science, technology, and industry to provide material support for such actualization. Modern goals were shaped not only by the drive to gain individual liberty by overthrowing oppressive political regimes, but by the demand to overcome material scarcity and relative human impotence in the face of the power of nature. In its healthy expression, *postmodern* consciousness—the cultural and institutional expressions of which are still under development—may be regarded as an effort to expand freedom to all Others that had been neglected by Enlightenment modernity, to affirm a communitarian as opposed to an atomistic view of human social relationships, and to criticize organizations and policies that supposedly embodied universal values but failed to take difference into account. As in previous shifts from one stage of development to another, postmodern consciousness often went astray by *dissociating* itself—rather than differentiating itself—from the previous stage of development, that is, modernity. Such dissociation led many postmoderns—and many Green postmoderns as well—to regard modernity as inherently flawed. Because most Greens had not experienced the scarcity or threat of scarcity that characterized the life-conditions in which modernity arose, Greens often regarded

techno-industrial practices gratuitously as a violation of innocent nature, a violation that revealed the egotistical and greedy character of modern people.

Let me pause to distinguish between environmentalism, on the one hand, and Green/postmodern environmentalism, on the other. The former, arising in United States in the late 19th century, had two different goals: (1) conserving nature wisely for use by future human generations, as urged by Gifford Pinchot, first head of the National Forest Service; and (2) preserving wild nature from human economic development, as urged by John Muir, founder of the Sierra Club. Politically popular efforts in the 1950s, 1960s, and 1970s to curtail industrial pollution and to limit some destructive practices on federal lands could be understood as instances of conservation-oriented environmentalism. Already in the 1960s and 1970s, however, a few environmentalists began criticizing conservationist environmentalism as futile efforts to reform modernity's suicidal anthropocentric industrial-economic system. Just as animal rights activists criticized modern anthropocentrism for justifying brutal treatment of sentient nonhuman life, so preservationist environmentalists criticized such anthropocentrism for legitimating the destruction of living nature, that is, the biosphere. Preservationists, who often described themselves as radical environmentalists, soon found some common ground with countercultural and later postmodern radicals of the 1960s and 1970s. Green environmentalists joined postmodernists in an often-totalizing critique of modernity for its "humanism," which justified not only the exploitation of nonhuman nature but also of people other than white males of European descent. What initially seemed to be a promising alliance was soon strained by the fact that some postmodern thinkers showed that the very idea of "wild" nature, which many radical environmentalists wanted to preserve, was based on exclusionary modernist attitudes. William Cronon's influential and controversial 1995 anthology, *Uncommon Ground: Rethinking the Human Place in Nature*, demonstrated that an inclusive postmodernism challenges basic assumptions of preservationist environmentalism.

Around the same time, Ken Wilber (1995/2000) began arguing that postmodernism is both a component of preservationist environmentalism, and a thorn in its side. Writing a decade earlier, however, Rolston (1988) was unaware of some of these issues. For the purposes of this essay, then, I will use the terms *Greens* and *environmentalists* interchangeably to refer to preservationist environmentalists who regard anthropocentric modernity with grave suspicion.

As environmental philosophy emerged as a new subdiscipline within academic philosophy in the 1980s, even a well-established ethical theorist such as Paul Taylor joined the anti-anthropocentric crusade. He depicted the modern

human effect on the biosphere as having such exclusively negative consequences that he imagined nonhuman life would say "Good riddance!" if our species were to become extinct.[2] A number of environmental philosophers, the present author included, once regarded environmental damage as sufficient evidence to condemn the modernity responsible for it. The nuclear arms race was widely viewed as an extension of modernity's drive to gain total control over the forces of nature, even though nuclear war would destroy humankind and deeply damage the biosphere (see Zimmerman, 1983a, 1985, and 1988). Green anti-anthropocentrism sometimes moved toward outright misanthropy, as evidenced by Christopher Manes's (1991) book *Green Rage* and other pronouncements made Manes and some other EarthFirst!ers.[3]

According to Green environmentalists, who developed the idea of biocentric egalitarianism, human beings do not stand above nature, but rather are part of it. Humans are indeed clever animals, but this fact does not grant them greater importance or moral standing than other life forms. By depicting humans as merely one species among others, however, environmentalists provided no plausible basis for adjudicating conflicts between one sort of organism and another. Attempts to justify practices that would harm habitat or kill animals could readily be dismissed as biased by human self-interest. If the biosphere is more valuable than any particular individual or species, then if some individual or species poses a threat to the biosphere or one of its manifestations, efforts should be made to obviate such a threat. Radical environmentalists have long identified human population growth as one such threat. In Paul Ehrlich's (1969) *The Population Bomb* and in many similar books, radical environmentalists proposed that draconian steps had to be taken to limit human population to forestall ecocatastrophe. Humankind was depicted as a cancerous plague threatening the living Earth, or as a species about to "overshoot" its resource base or otherwise destroy the conditions needed for survival. Some environmentalists developed a callous attitude toward humans. As Stewart Brand (2010) observed recently in *Whole Earth Discipline*, "The environmental movement, with its customary indifference to starvation, adopted the position that the green revolution [in agriculture] was somehow a mistake" (p. 189).

Curiously, one of the most important developments and tools of anthropocentric modernity is natural science, which undermined the theological basis for human exceptionalism by arguing that humankind is not a special creature of God, but instead merely one of millions of interrelated species that have evolved in terrestrial history. While attacking modern science, technology, and economics for causing widespread environmental damage, Greens simultaneously call

on scientific findings to justify their claims that humans are just one life form among many others. In EE, Holmes Rolston (1988) develops an environmental ethics that takes into account natural science's deflationary depiction of humanity's place in nature, but simultaneously incorporates theological and philosophical views about the specialness of the human. While affirming humanity's kinship with and debt to other valuable life forms, and indeed to the history of the evolving universe, he also insists that human specialness is precisely what enables and even demands of humankind a respectful attitude toward the nonhuman world. In effect, he proposes an environmental ethics that at first glance may seem to be an oxymoron: *biocentric anthropocentrism.*

KEY FEATURES OF ROLSTON'S EVOLUTIONARY APPROACH TO ENVIRONMENTAL ETHICS

As a nod to the modern worldview, Rolston (1988) begins his book by acknowledging the many ways in which natural beings and processes are useful resources for human beings. A subset of environmental ethics must address moral issues and conflicts that arise in regard to interhuman and intergenerational use of such resources. Rolston then goes on to state, however, that "[T]he deepest task of environmental ethics" is to appreciate nature as a *source*, not merely as a *resource.*

> Before parents and the sacred, one is not so much looking to *resources* as *sources*, seeking relationships in an elemental stream of being with transcending integrities. . . [T]here comes a point when humans want to know how we belong in this world, not how it belongs to us. (p. 31)

In a rebuke to modernists who focus only on human affairs, Rolston (1988) ventures to say that people lacking an appropriate "attunement" to nature and its processes are deficient in moral virtue and lack propriety. "Nature gives no ethical guidance in our interhuman affairs, but human conduct must also take an appropriate form toward our environment, toward what the world offers us" (p. 42). What the world offers in part is a stupendous display of cosmic creativity, one that eventually made possible the emergence of humankind. Moreover, ecological science teaches us that organisms are reciprocally/dialectically related to their environments and niches. Moderns have gone astray by asserting a human autonomy that somehow separates us from our embedment in and dependence on the world that gave rise to us. We are to admire the human virtues involved

in using nature to establish a more-than-natural historical world, but "Humans are realizing in the strong and good life something of the strength and goodness that nature has disciplined into its creatures and is bequeathing to us" (p. 43). Modern science has made possible for the first time an ecological perspective that sometimes has "a religious dimension in trying to help us see the beauty, integrity, and stability of nature within and behind its seeming indifference, ferocity, and evil" (p. 43). In emphasizing that natural science, especially but not only ecology, can significantly improve human self-understanding, Rolston goes up against long-standing humanistic attitudes, according to which insight into the defining aspects of humankind can be won only by humanistic inquiry, not scientific inquiry into nature.

Not surprisingly, much of Rolston's (1988) book is taken up with defending the controversial view that natural phenomena possess intrinsic or objective value. Although vigorously argued, Rolston's defense of the intrinsic value of human and nonhuman beings remains controversial. A number of ethicists, in fact, have concluded that identifying intrinsic value—whether in humans or nonhumans—is not possible.[4] In effect, Rolston takes on perhaps the major problem of late modern ethics, namely, what is the status and foundation of value after the death of God, that is, after the loss of credibility of an otherworldly Deity that at one time was the source and guarantor of value throughout Creation? For Friedrich Nietzsche, value represented the perspective that a people establish to gain and preserve power. More generally, 20th-century thinkers regarded values as conventional (arbitrary) standards useful for social cohesion and group survival. The notion that features of terrestrial nature—such as organisms, forests, biomes, etc.—possessed "value" independently of a human evaluator was conceptually beyond the pale. Following the lead of writers like Aldo Leopold, Rolston tries to make such a notion palatable. Like Ken Wilber after him, however, Rolston goes further by suggesting that the cosmic evolution described by modern science is also inflected by divine spirit.

Rolston (1988) begins by establishing the inherent value of animals, which are closest to us in the domain of life, by emphasizing that animals have goods and interests. They do not, however, have "rights," which are an invention that pertains to humans within culture. Instead of saying that an animal or plant has a right not to be harmed, then, Rolston claims that it is right for human beings to treat nonhuman organisms—which have goods of their own—with appropriate respect. He also asserts that there is a graded hierarchy of such goods and interests. If a bear were to attack a child, we would try to save the child, but we would not interfere if the bear were trying to turn a fawn into a meal. We are

under no moral obligation to eliminate predation in the wild, nor are we obliged to eliminate suffering on the part of wild organisms, in whose evolutionary history suffering—and the impulse to avoid it—have played key roles in refining the capacities of species, both predator and prey. As for domesticated animals, which have been captured and long bred by and for humans, the strong ethical rule is not to cause inordinate suffering beyond the kind of suffering that such animals would experience in the wild.

Although insisting that it is possible to discern a moral hierarchy in nature, Rolston also affirms that not only animals, but also all organisms—and even all aspects of nature—count morally, although he affirms that there is a moral hierarchy. In opposition to utilitarian thinkers such as Singer, Rolston (1988) maintains that sentience is not needed for organisms to carry value. Although amoral, all organisms are normative genetic sets, which he calls *spontaneous cybernetic systems*. As vital centers with goods of their own, organisms lay claim on other things. Trees, for example, "care" about themselves, as shown by the fact that they "stand up" for themselves (p. 106, p. 117). Objective life remains valuable "below the threshold of subjectivity" (p. 109). If environmental ethics defends an objective morality, such an ethics must focus not merely on psychology (sentience), but on biology, that is, on the ancient and vast host of presubjective life that provides one of the foundations (*archetypes*) for the planet.

In asserting that there are objective values carried by all organisms, even nonsentient ones, and that value remains present in organisms even if rights are not applicable, Rolston (1988) takes on one of the main contentions of modern anthropocentric value theory—that an object has value only where a valuing subject (that is, a human being) takes an interest in that object, that is, appreciates it in one way or another. Acceding to this view, without the presence of the human evaluator and appreciator, the universe would be stripped of meaning. Rolston quotes William James: "Whatever of value, interest, or meaning our respective worlds may appear endued with are thus *pure gift of the spectators' mind*" (p. 111) Rolston then writes:

> In contrast, we here claim that in an objective gestalt some value is already present in nonsentient organisms, normative evaluative systems, prior to the emergence of further dimensions of value with sentience. Biology has steadily demonstrated how subjective life is a consequence of objective life, the one always the necessary sponsor of the other (so far as we know it on Earth). Objective life, when reaching sufficient levels of neural complexity, is often sufficient for subjective life.

> Why not value the whole process with all its product organisms, rather than restrict valuing to the subjective aspect of the process? When we exclaim, "Let flowers, birch trees, crabs, ants, live!" there is excitement in the beholder; but what is valued is what is beheld. Insentient organisms are the *holders* of values although not the *beholders* of value. With such a prolife injunction in environmental ethics, humans are not so much lighting up value in a merely potentially valuable world as they are psychologically joining an ongoing defense of biological value. (pp. 111–112)

In one of the best-known parts of EE, Rolston (1988) contrasts his objective concept of value with the *projective* concept of value put forth by J. Baird Callicott, another major American environmental ethicist. According to Callicott, all intrinsic value is located in human feeling, but "is 'projected' onto the natural object that 'excites' the value"; according to Callicott, who draws on the work of David Hume and Aldo Leopold, "Intrinsic value ultimately depends on human valuers" (as cited in Rolson, 1988, p. 305). Callicott seeks a way both to recognize the value of nonhuman beings ("nature") and to stay within the bounds of modern moral theory, according to which value depends on the human valuer. Rolston appreciates Callicott's effort, but finds it wanting. In the end, for Callicott, nonhuman things have no value in themselves, but rather have value only insofar as they are the loci of our value projections.

Rolston (1988) also contests Callicott's claim that he is endorsing a projective theory of value. Nothing, in fact, is "projected" by the valuer onto the natural thing. Rolston explains his point by referring to the *translation* process involved in the human experience of color. A tree's green color results when the tree sends or reflects light waves onto the human retina, which in turn transmits them to the brain. The result: the experience of greenness on the part of the human subject, with the tree appearing to be green. In the case of color, it would be better to speak of translation than projection. There is no green in the tree, but instead "My coloring of the tree is mapping what is really there, though my mind is translating as it maps. My finding of intrinsic value is to be modeled after my finding green" (p. 114).

Rolston (1988) reads Callicott as saying the following. Saying that something is valuable means saying that it is able to be valued if and when a human evaluator shows up. Things have the potential of being assessed as intrinsically valuable, instead of as merely instrumentally valuable, once a human valuer comes on the scene. "By this account," Rolston argues,

> there is no actual value ownership autonomous to the valued and valuable flower; there is a *value ignition* when humans come. Intrinsic value in the realized sense is subjectively generated. . . The object plays its necessary part, though this is not sufficient without the subject. (p. 114)

The attributes of a thing regarded as intrinsically valuable are already present objectively prior to the arrival of human beings, but "the attribution of value is subjective" (p. 115). Rolston cannot accept the view, shared even by a major environmental ethicists such as Callicott, that

> among all the phenomena in the universe, only one sort of thing, psychological interest, produces actual value intrinsically. . . Actual value was not lost when the various species of trilobites went extinct, nor is value lost now when unknown species in tropic forests go extinct, bulldozed away unbeknown to humans." (115)

Warning against "the fallacy of the misplaced location of values," Rolston insists that "A thoroughgoing value theory in environmental ethics . . . fully values the objective roots of value with or without their fruits in subjectivity" (p. 116). In contrast to Callicott's *anthropogenic intrinsic value*, then, Rolston affirms his own version of *autonomous intrinsic value*.

Having risked criticism from mainstream ethicists by defending the intrinsic value of all organisms, Rolston (1988) takes two further steps out on the plank by defending the intrinsic value of species and of ecosystems as well. His arguments are complex, so I will merely sketch them. Like many ecologists and environmental philosophers, Rolston tends to emphasize that species (types) are more important and thus more valuable than the individual organisms that are instantiations (tokens) of species (p. 143). For Rolston, a species may be considered as valuable as a human person, which in his view contains the highest per capita amount of value among living things. Organisms are the way in which a species reproduces itself.

> Because a species lacks moral agency, reflective self-awareness, sentience or organic individuality, we may be tempted to say that specific-level processes cannot count morally. But each ongoing species defends a form of life—on the whole, good things; prolife impulses that have achieved all the planetary richness of life. All ethicists say that in *Homo sapiens* one species has appeared that not only exists but ought to

> exist. But why say this exclusively of a latecoming, highly developed form? Why not extend this duty more broadly to the other species (though not with equal intensity over them all, *in view of varied levels of development*)? . . . Only the human species contains moral agents, but perhaps conscience *ought not* be sued to exempt every other for of life from consideration, with the resulting paradox that the sole moral species acts only in its collective self-interest toward all the rest. (pp. 144–145, my emphasis)

According to Rolston (1988), killing a species amounts to a kind of *superkilling*, because doing so shuts down an entire stream of life. "What humans are bound to respect in natural history is not one another's scientific, recreational, or reading material, not rivets in their Earthship, but the living drama, continuing with all its actors" (p. 145). Although a species lacks a self, it has a temporal-terrestrial identity that it preserves (p. 150). Indeed, "The species line is the more fundamental living system, the whole of which individual organisms are the essential parts" (p. 151). Rolston urges us to consider the following:

> What is valuable about species is not merely to be located in them for what they are in themselves; rather, the dynamic account evaluates species set as process, product, and instrumental in the larger drama, toward which humans have duties instanced in duties to species. (p. 157)

Finally, Rolston (1988) considers the intrinsic value of ecosystems, which some ecologists regard as real natural units constituting "a level of organization above [their] individual member organisms" (p. 161). In this section, Rolston anticipates Wilber's noteworthy distinction between individual and social holons in SES. Ecosystems are intrinsically valuable and worthy of respect because they are in effect the "womb" of life on Earth. "We want to value the lush life that ecosystems maintain—their diversity, unity, dynamic stability, spontaneity; the dialectic of environmental resistance and conductance; the generating life forces" (p. 163). Within ecosystems, species coevolve, with the predator becoming the critic of its prey (p. 165). Species become what they are because of where they are. Animals can wander in and out of ecosystems, as when an elephant leaves the plain for the forest to obtain better forage. Hence, unlike organs contained inside an organism as parts, animals are only loosely coupled to ecosystems. In this sense, animals are not merely parts of an ecosystem, but rather members of ecosystems that provide satisfactory communities (p. 167). Organisms as

integrated cybernetic entities may seem more worthy of holding intrinsic value than do ecosystems, which are stochastic processes, patchy mosaics with fuzzy edges (pp. 168–169). But complex terrestrial organisms have arisen only within (or co-evolved with) open yet complex ecosystems. Individual organisms and ecosystems are profoundly interrelated (p. 170). It would be a category mistake to evaluate ecosystems in terms suitable only for individual organisms. While many of the above-mentioned themes are echoed in SES, Wilber (1995/2000) especially warns against the reduction of organisms to the status of mere parts, given that such an approach extended to human politics could be used to justify ecofascism (see also Zimmerman, 1995, 2004, 2006).

On Rolston's (1988) view, just as in cultures and economies, in ecosystems "order arises spontaneously when many self-concerned units jostle and seek their own programs, each doing its own thing and forced into informed interaction with other units" (p. 173). According to Rolston,

> An ecosystem systematically generates spontaneous order that exceeds in richness, beauty, integrity, and dynamic stability the order of any of its component parts, an order that feeds (and is fed by) the richness, beauty, and integrity of these component parts. (p. 173)

(Perhaps Rolston would have done better to speak here of "members" rather than "parts," to reaffirm the difference between organs as parts of organisms and organisms as members of an ecosystemic community.) The seeming lack of order and cohesiveness in an ecosystem belies the fact that such a system is enormously generative, indeed the site for "the wonderland of natural history, the miracle of life" (p. 174). An ecosystem

> is a game with loaded dice, but the loading is a prolife tendency, not merely stochastic process. . . An ecosystem has no head, but it has a "heading" for species diversification, support, and richness. Though not a superorganism, it is a kind of vital field. (p. 175, my emphasis)

In SES, Wilber's (1995/2000) discussion of social holons is reminiscent of Rolston's account of ecosystems as having a heading without having a head. A social holon is an organized whole that—unlike animals—lacks a nervous system and a coherent experiential center, but is nevertheless capable of bringing into productive relationships the members that belong to the social holon. Such a decentralized organization may have weak laws but nevertheless generates and

sustains life. Ecosystems and organisms, instances of social and individual holons, are reciprocally related historically. An ecosystem, Rolston (1988) maintains, is not merely an "ontological fiction," the incidental byproduct of individual organisms interacting with one another (p. 180). Returning to his theme that nature is hierarchically ordered, another theme that is central to SES, Rolston writes:

> Any level is real if there is significant downward causation. Thus the atom is real because that pattern shapes the behavior of electrons; the cell because that pattern shapes the behavior of amino acids [and so on]. . . Being real at the level of community [Wilber's social holon] does not require sharp edges or complex centeredness, much less permanence; it requires only organization that shapes, perhaps freely so, the behavior of member/parts. (p. 180)

Ecosystems allow for the developmental trend in evolution. It is astonishing enough that life on Earth emerged at all, but perhaps equally amazing is that it went on to ramify into tens of millions of species over the eons. This process "can hardly have been an accident of lifeless physicochemical forces" (p. 186). Yes, there is dice-throwing in all of this, but "the dice are loaded" (p. 186) as indicated by evolution's steady heading, namely, "escalation of individuals in kind and complexity, in quantity and quality" (p. 207). Although lacking in sharp boundaries and centered interiority, ecosystems may be said to carry intrinsic value insofar as they are the "womb of life" (p. 187). Whereas individual organisms defend themselves and species increase their kinds, however, ecosystems do neither. They do, however, "*increase kinds*," and to this extent "*are selective systems, as surely as organisms are selective systems*" (p. 187). Ecosystems are in some sense instrumentally valuable, but such an evaluation does not capture their creativity and profound significance in the life process.

To call ecosystems inherently valuable may be a stretch, because unlike organisms ecosystems are not forms of life defending and propagating themselves. To characterize the profound contribution made by ecosystems to the emergence, maintenance, diversification, and development of terrestrial life, Rolston (1988) proposes a new value term: *systemic* value. Ecosystems are valuable because of the crucial *projective* role they play in life's history, present, and future (p. 188). We have moral duties toward "the system that projects and protects, regenerates and reforms all these member components in biotic community" (p. 188). Our duties to individual organisms and species are duties to what ecosystems have generated. As Rolston puts it eloquently:

> Duties [to organisms and to species] arise in encounter with the system that projects and protects, regenerates and reforms, all these member components in biotic community. These duties to individuals and species, so far from being in conflict with duties to ecosystems, are duties toward its products and headings. The levels differ, but, seen at depth, they integrate. (p. 188)

Rolston affirms that "the highest value attained in the system is lofty individuality with its subjectivity" (p. 191). Even though the most "significant of evolutionary of arrows tends" toward such subjectivity, however, sentient/subjective organisms are not the only location of value (p. 191). With a nod to Aldo Leopold, Rolston writes, "Ethics is not complete until extended to the land" (p. 188). Humans that have arisen within a system have the "right to flourish within the system," but no right to "degrade or shut [it] down" (p. 191).

In his magisterial chapter 6, "The Concept of Natural Value: A Theory for Environmental Ethics," Rolston (1988) expands his conception of system to include the entire cosmos, which in the course of 13 billion years has generated life from stardust. In this chapter, Rolston hints at his theological commitments, although he does not explicitly mention God, Spirit, or any other religious term for the transcendent source of things. Consider passages such as this, however: "The exclusive, humanistic view of value . . . rationalizes superiority into self-importance; it commits the sin of pride" (p. 336). Earlier in EE, Rolston calls on us to appreciate "the parental environment, which is projecting all this display of value" (p. 198). On the same page, he affirms that: "The *inventiveness* [or creativity] of systemic nature is the root of all value, and all nature's created products have value so far as they are inventive achievements" (p. 198).

Although Rolston (1988) declines to do so, we can rephrase the inventiveness of systemic nature in terms drawn from Genesis. At the close of each day of Creation God saw they what He had made was "good." Like Wilber after him, Rolston also draws on Plato and Whitehead in describing cosmic creativity as "a lure that elaborates higher value" (p. 221). Projective nature, then, does not push from behind, but rather acts as an *attractor* that draws forth ever more elaborate and value-laden phenomena. In effect, for both Rolston and Wilber, Spirit gives rise to and is continually active within Creation as the lure toward the attainment of ever-more-complex form and ever-greater value.

Hierarchically ordered, projective nature establishes matter-energy as the foundation on which all subsequently evolving phenomena depend. Individual and system, for example, star and galaxy, organism and ecosystem, are correlated

within one another and thus coevolve throughout cosmic history. Anticipating SES, Rolston makes clear that value becomes ever more *significant* and concentrated with the emergence first of life, then sentient life, and then with self-conscious intelligent life, the conditions needed for such life are *foundational.* Such conditions simultaneously contain intrinsic value or ground value and are of instrumental value to what is built on them. Rolston offers a diagram (Figure 6.6, p. 216) showing how entropic, tectonic, and geologic nature (objectively valuable) provides the foundation for organic and animate nature (subjectively valuable), which in turn provides the foundation for human nature and human culture (humanly subjectively valuable). Complex relationships go both upward and downward in this hierarchy. The enormous concentration of subjective value contained in human beings rests on, arises from, and nevertheless transcends the value contained in objective and nonhuman subjective phenomena.

HUMAN SUPERIORITY

In asserting the superiority of humankind and especially human individuals, even while maintaining that human value is grounded upon the foundational and inherent value present in nature's hierarchy, Rolston (1988) risks the ire of environmentalists of many different stripes, along with animal rights proponents. Rolston discusses human value superiority in his early chapter on higher animals, but I have postponed a more detailed account of such superiority until now. With anthropocentric moderns in mind, Rolston avers that superior human capacities confer on humankind significant moral responsibilities to other life forms and even to ecosystems. With naturalistic moderns in mind, he cautions against "unwise reductionism," according to which humans are "nothing but" naked apes (p. 66). Speaking to Greens who oppose hierarchical categories, he writes that "A discriminating ethicist will insist on preserving the differing richness of valuational complexity, wherever found" (p. 66). Animals have intrinsic worth and possess goods of their own, but humans contain significantly greater value than do animals. Every organism is good in its place, its ecological niche, but this fact "does not imply equal value or goodness in the differing lives-in-context" (p. 68). The vast majority of humans have crossed the threshold of rationality unattainable by animals. Reflecting in part his theological background, Rolston goes on to state:

> Each natural kind has place, integrity, even perfections, but none of the others reaches the eminence of personality. Without faulting the

> animals for their lack of civility, an animal capable of [human-level] culture (represented by Einstein) realizes a greater range of values in its life than does an animal incapable of [human-level] culture (a kangaroo rat). (p. 68)

Although we should acknowledge and celebrate the many things that humans share with animals, we should also acknowledge that emergences are real. Humans have entered a domain that is closed to nonhumans. Unlike other animals, humans are in the world ethically, cognitively, and critically. Whereas animals are

> wholly absorbed into those niches in which they have such satisfactory fitness, . . . humans can stand apart from the world and consider themselves in relation to it. Humans are, in this sense, eccentric to the world—in it but standouts. (p. 71)

Within its own niche, an animal enjoys a sphere of openness within which phenomena pertinent to the animal's survival can show up. Otherwise, however, "an animal is *closed* to [its] surroundings" (p. 71). In contrast, humans are open to their surroundings in a vast number of ways. "The animal has only its own horizon; the human can have multiple horizons, even a global horizon," although not an infinite and all-encompassing horizon (p. 72). Despite being finite, humans have the capacity to transcend their own circumstances and to look over all other life forms. This capacity, however, imposes responsibilities.

> [T]he human capacity for a transcending overview of the whole makes us superior and imposes strange duties, those of transcending human interests and linking them up with those of the whole natural Earth. . . [O]ne human role is to admire and respect the ecosystems they culminate, as environmental ethics urges, and not merely to admire and respect themselves, as traditional ethics does. The human role is ethical, metaphysical, scientific, religious, and in this sense humans are unique and superior, but their superiority is linked in a feedback loop within the whole. (p. 72)

In his concluding chapter, "Persons in Natural History," Rolston (1988) elaborates on the ideal role for humans in nature. In the process of having "risen up from the earth and look[ing] over their world," humans spent millennia "waking up [and learning to respect] human dignity" (p. 338). At this point in human evolution, however, it is time to awaken "to the greater story of which humans are

a consummate part" (p. 338). Describing humans as endowed with "supersight," "spectacular oversight" (p. 339), and even as "spirit incarnate" (p. 341), Rolston calls on each of us to bear witness to the amazing odyssey of cosmic evolution by giving it voice as a saga. Just telling the evolutionary universe story, contextualized environmentally as a "storied residence," might justify human existence (p. 345). Contrast this striking claim with ethicist Paul Taylor's (2004) dispiriting claim that humankind has nothing to offer Earth, on the one hand, and Friedrich Nietzsche's assertion that life is "justified" only as an aesthetic phenomenon,[5] on the other. For Nietzsche, the aesthetic phenomenon is produced not by nature, but rather by human artists as a healing balm needed after we occasionally take a glance at the dark abyss.

In speaking of humankind as open to things, capable of transcendence in the sense of ex-isting or standing-outside of things, and encountering things within a vast horizon of a kind not available to animals limited to their niche-restricted horizon, Rolston (1988) is drawing on the work of German philosopher, Martin Heidegger, whose work also influenced Wilber's understanding of consciousness. Years ago I made a first attempt at formulating a Heideggerian environmental ethics (see Zimmerman 1983b, 1986). I was attracted not only to his conception of human existence as the "clearing" in which beings could manifest themselves and in this sense be, but also to his relentless criticism of modernity for—among other things—disclosing nature as nothing more than raw material for satisfying the human (and later, the techno-industrial system's) drive for ever more power. Heidegger's critique of modernity has certain things in common with the Green critique.

According to Heidegger, to be human means not to be merely a body or a mind, but rather to be the self-concealing "absence" or "no-thingness" or "openness" within which bodies, minds, trees, emotions, animals, mathematical formulae, and everything else can manifest themselves. From Kant, Heidegger adopted the term "horizon" to refer to the temporal constitution of human existence. Constituted by three-dimensional temporality, humankind is said to "ek-sist," that is, to stand out from itself by opening up the temporal horizons within which things can show up. There are different modes of human openness, and these change historically. Influenced by the once-prevailing view that what came earlier was superior to what came later, Heidegger maintained that the clearing at work in early Greek existence let things reveal themselves in more ways than they manifested themselves in later stages of Western culture, in particular techno-industrial modernity. In opposition to the developmental-evolutionary views of human history as promulgated by such key modern thinkers as Condorcet,

Hegel, and Marx, Heidegger insisted that Western history has involved a decline and fall from its original greatness.[6] Heidegger developed his own sophisticated view of a concern shared by many early 20th-century thinkers and by the general public, namely, the degeneration of European civilization.[7] Revelations about the extent of Heidegger's entanglement with National Socialism, however, eventually led me to question the wisdom of conceiving of him as a suitable guide for environmental philosophy.[8]

In *A Brief History of Everything*, Ken Wilber (1996/2001) adopted certain aspects of this view when he spoke of *industrial ontology* as a powerful but reductionist and thus limited way in which things appear to people in advanced modern societies. Rolston (1988) implicitly indicates that modernity's approach to nature overestimates the importance of humankind and underestimates the importance of all that came before we showed up on the scene. For Rolston, then, as the human horizon is currently constituted, the depth and richness and value of nonhuman beings cannot easily come into view. Everything shows up as *resource* (what Heidegger called "standing reserve" or *Bestand*) rather than as *source*.

The crucial difference between Heidegger, on the one hand, and Rolston and Wilber, on the other, is that the former believed that natural science could shed no light on either human origins or human significance, whereas the latter insist that natural science sheds important light on human origins and on the potential significance of everything, including humankind. For Heidegger, an "abyss" (*Abgrund*) gapes open between the animal and the human, whereas for Rolston and Wilber there are many commonalities between the animal and the human. True, the human ultimately goes beyond what nonhuman animals are capable of, but this fact in no ways denies human kinship not only with animals but with other terrestrial life forms. Natural science not only reveals the basis for such kinship, but also discloses the incredible complexity that has arisen over billions of years of cosmic evolution. For both Rolston and Wilber, the gradual emergence of ever-greater instances of complexity constitutes an increase in *value* in the universe. Beauty, truth, and goodness do not appear suddenly with emergence of self-conscious humans, but instead are pervasive (transcendental?) features of the cosmos.

Rolston (1988) is no antimodernist. He frankly acknowledges that humans have captured and thus domesticated animals, which humans may utilize as they see fit as long as such animals do not experience inordinately greater suffering than they would in the wild. He recognizes that a growing human population will need to extract more resources from the planet, thereby generating serious environmental problems. Unlike Greens, who have often been "indifferent" to

human suffering, Rolston emphasizes the importance of taking care of human beings. Yet he wants to remind us of another major obligation, which is to bear witness to and to protect nature as the source that gave rise to and sustains us.

WHAT INTEGRAL ECOLOGY MAY CONTRIBUTE TO ROLSTON'S THOUGHT

In an essay of this scope, I have been able to mention only some of the many ways in which Holmes Rolston III has contributed to environmental philosophy in general and to integral ecology in particular. One of his most important contributions is also his most controversial, namely, that nonhuman nature carries value, that is, has intrinsic or objective value independent of human evaluators. Value did not suddenly pop into existence along with humankind, although human beings do bear greater concentration of intrinsic value than do other (known) beings. Integral ecology agrees with much of what Rolston has to say about value, nonhuman and human.

One area that integral ecology investigates in more detail than Rolston does concerns the developmental phases of human history, particularly the complex (and ongoing) moves from premodernity to modernity to postmodernity. Certain aspects of these distinctions might be teased out of Rolston's EE, but they do not figure prominently in the text. Rolston's major concern is to defend the presence in nature of objective value even prior to the emergence of human beings, which occurred very late in the evolutionary process that has thus far played itself out. Wilber's (1995/2000) insightful and influential discourse about the clash between modern and Green worldviews, and about why both such worldviews are so valuable despite inevitable limitations, provides the basis for an integral ecology. Wilber maintains that so long as one identifies exclusively with either modern or Green views (or for that matter, traditional views), one tends to dismiss views other than one's own, or even worse, to vilify those competing views. Just as moderns showed contempt for traditional religious views, for example, so many Greens have showed contempt for modernity, a fact that has made the current debate about the causes of climate change so fierce (see Zimmerman, 2012).

In their own ways, Rolston and Wilber have developed an attempt to re-inscribe the human in nature without at the same time undermining the distinctiveness of the human mode of being. Such a re-inscription presupposes hierarchical thinking that is anathema to many Greens, but that is nevertheless frequently employed by natural scientists. Molecules, for example, include

within them atoms, but molecules are in turn included within cells. A difference between Rolston and Wilber on one hand, and much of modern science on the other, is that the former discern a kind of teleology at work in cosmic evolutionary history, a teleology that draws forth into the open future, less than a first cause that pushes things from the past.[9] In effect, Rolston and Wilber address the problem of nihilism unleashed by modern science's disclosure that human beings—and terrestrial life in general—are accidental and ultimately insignificant episodes in a universe that is itself without significance. Rolston and Wilber have used ideas drawn from natural science, including Big Bang cosmology, to devise a cosmic narrative that restores the prospect of significance to human existence and to the existence of all life. In other words, it is arguably of cosmic significance not only that self-conscious humans can contemplate our place in the history of the universe, but also that in the process of such contemplation humans can discover their responsibility for protecting themselves and the rest of the living Earth so far as humans are able.[10] According to Rolston (1988), humans enrich the environment by appreciating it (p. 341). Perhaps the most important mode of appreciation, however, is narrative, examples of which range from ancient creation myths to today's scientifically informed new universe story. Indeed, life "is stories being told" (p. 343).

Rolston (1988) recommends that we supplement sagas of cosmic development with stories about our individual ways of residing in particular places and regions. Doing so lets us weave ourselves into the lives of plants and animals, and into the value-building creativity of the ecosystems that sustain us. The multiplicity of individual human perspectives gives rise to many different "storied residences," but these can be "integrated into a global overseeing of natural history, surpassing anything reached by any one human, although each contributes his or her share." Giving voice to our storied residences on Earth "might justify human existence" (p. 345). Here Rolston implicitly recalls Nietzsche's claim in *The Birth of Tragedy* that life is justified only as an aesthetic phenomenon.[11] In the face of modern astronomy and evolutionary theory, Nietzsche argued, human life has not only been toppled from its former place of superiority, but has also been made meaningless as a mere cosmic accident. For Nietzsche, art is more important than truth, because truth can become a debunking exercise that deprives life of meaning, whereas art restores to life a significance without which humankind cannot prosper. The modernist narrative asserts that only humans have inherent value, with everything else being merely a resource for our purposes. Moderns, however, cannot explain why humans possess such value, given the beliefs (1) that

there is no God, (2) that evolution lacks any heading, and (3) that the cosmos is devoid of meaning.

Global and local narratives constitute works of art needed to allow humans to thrive while simultaneously appreciating the inherent value at work in Earth's enormously complex system. Integral ecology encourages the development of such narratives, which—although informed by multiple perspectives—make no pretense to being final. Rolston (1988) concludes his book with this eloquent passage:

> Our role is to live out a spacetime, placetime ethics, interpreting our landscapes and choosing our loves within those landscapes. We endorse the world with our signatures. In this sense we want an emotive ethic but not, as that term usually conveys, an ethic that is nothing but emotion. Emotive environmental ethics lives in caring response to the surrounding natural places and times, an appropriate fit of the tripartite mind—reason, emotion, will—creatively corresponding to the nature in which *mind is incarnate*. In this ethic, knowledge is power, as also is love, with faithfulness. There is a penultimate place for superior human standing, and the ultimate lesson is that the meek inherit the Earth. The fittest survive in an optimally satisfactory environment. But this is no submission that is unnatural or inhuman; it is in truth an adventure in love and freedom—the love of one's world and freedom in it. This is, ultimately, what [the] evolutionary epic has been about, now consummated in environmental ethics: an adventure in the love of life and in increasing freedom in one's environment, entwined in biotic community. Such a world might even be the best of possible worlds. (p. 354, emphasis mine)

NOTES

1. For a survey of these issues, see Michael E. Zimmerman (1994), *Contesting Earth's Future: Radical Ecology and Postmodernity*.

2. See Paul Taylor's (2004) essay "The Ethics of Respect for Nature." Here is the passage in its entirety: "If, then, the total, final, absolute extermination of our species (by our own hands?) should take place and if we should not carry all the others with us into oblivion, not only would the Earth's community of life continue to exist, but in all probability its well-being would be enhanced. Our presence, in short, is not needed. If we were to take the standpoint of the

community and give voice to its true interests, the ending of our six-inch epoch would most likely be greeted with a hearty 'Good riddance!'" (pp. 76–77).

3. Writing under the pseudonym "Miss Anne Thropy," Manes at one time asserted that only a massive human die-off, caused by AIDS or some other infectious disease, could save the biosphere from destruction at human hands (Miss Anne Thropy, 2005).

4. The philosophical literature on this topic is vast, as demonstrated by a Google Scholar search under the query "Does intrinsic value exist?"

5. See Friedrich Nietzsche (2000), *The Birth of Tragedy Out of the Spirit of Music*, section five, in *Basic Writings of Nietzsche*.

6. Although Heidegger was a member of the Nazi party, he refused to go along with its major presupposition, namely, that humans are merely clever animals divided into racial groups that contest one another for superiority and even for survival. He eventually criticized Nietzsche for having embraced a sophisticated version of this biological, neo-Darwinian understanding of humankind as motivated primarily by the Will to Power. As an alternative to conceiving of humankind as a clever animal seeking total control of the planet, Heidegger spoke of releasement (*Gelassenheit*), a way of disclosing that would "let things be." Letting things be would allow them to manifest themselves from their own side, as it were, so that attributes and features could appear that would otherwise be concealed in the constricted mode of openness of the modern techno-industrial mode of disclosure. On these issues, see Zimmerman (1990), *Heidegger's Confrontation with Modernity: Technology, Politics, Art*.

7. This idea was expressed in Oswald Spengler's best-selling two-volume work, *The Decline of the West* (*Der Untergang des Abendlandes*), originally published immediately after World War I. For a recent reprinting, see *The Decline of the West* (Spengler, 2011). For a useful study of Western pessimism, see Arthur Herman (1997), *The Idea of Decline in Western History*.

8. For my changing views on Heidegger's pertinence for environmentalism in theory and practice, see "Rethinking the Heidegger–Deep Ecology Relationship" (Zimmerman, 1993).

9. For an account of how hierarchical and teleological themes may clash with one another in cosmologies that otherwise have much in common, here I have in mind the work of Ken Wilber and Stanley Salthe; see my essay "The Final Cause of Cosmic Development: Divine Spirit, or the Second Law of Thermodynamics?" (Zimmerman, 2010).

10. In 1952 Hans Jonas anticipated the possibility that there is a "third road open to us" beyond the Scylla of existential alienation from nature and the

Charybdis of "a monistic naturalism which . . . would abolish also the idea of man as man." "Gnosticism and Modern Nihilism" (p. 452). Jonas (1979/1984) attempted to develop such a third road in his influential book, *The Imperative of Responsibility*.

11. Despite the pertinence of Nietzsche's thought in this context, elsewhere I have argued that he cannot be unambiguously read as a proto-environmentalist. See "Nietzsche and Ecology: A Skeptical Look" (Zimmerman, 2007).

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PART II

WORLDVIEWS AND PERSPECTIVES

6

CULTIVATING WISDOM

Toward an Ecology of Transformation

Mark D. Hathaway

> We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. . . The choice is ours: form a global partnership to care for Earth and one another or risk the destruction of ourselves and the diversity of life.
>
> —"The Earth Charter," 2000, para. 1

AS YOU READ THESE WORDS, an area of tropical forest roughly the size of a football field has been lost. Imagine this in your mind as clearly as you may. You are in the midst of a dense, humid forest filled with life. The sounds of insects and birds are all around you. The smell of plants and soil permeates all. Sunlight filters through the thick, green foliage above. Then—it is gone: burned, cut down, or bulldozed to the ground. Of course, in reality, this lost forest—as you reach this point in the paragraph, nearly five football fields in area—is spread across our immense planet. It is difficult to perceive the destruction directly, even if we try to be attentive to it. Nonetheless, it continues, night and day. Yet it is not just tropical forests being lost; there are the great, boreal forests of the north and the temperate rainforests of Chile, the Pacific Northwest of North America, and parts of Europe, Asia, and Australia.[1] Meanwhile, as you finish reading this paragraph, a quarter of a square kilometer of once-fertile land has become desert. By the time you finish reading this entire chapter, another species may have become extinct—a unique fruit of billions of years of evolution, gone forever.

Though at times it may be difficult for us to perceive it, in part because it is so painful to maintain full awareness of the reality, there can be little doubt that humanity is facing the greatest ecological crisis in its history. More commonly, perhaps, we understand phenomena such as global climate change, the acidification of oceans, pollution, the depletion of aquifers, and the mass extinction of species as an *environmental* crisis. Yet, as Wendell Berry (1993) has observed, "The world that environs us, that is around us, is also within us. We are made of it; we eat, drink, and breathe it; it is bone of our bone and flesh of our flesh" (p. 34). This is true not only in a physical sense, but also from a psychospiritual perspective. Thomas Berry notes that humans came "into being at the most advanced stage of the Cenozoic Era because we couldn't exist in a less beautiful world. To bear the burden of intelligence and responsibility that we have, we need the solace of the natural world" (as cited in Reason, 2001, p. 14). We are sustained, not only by our physical environment, but by the aesthetic, even spiritual, qualities of the world that environs us. In destroying the creative, life-nurturing matrix that has midwifed our consciousness into being, we also undermine our psychic sustenance. The destruction of the Earth's life-sustaining systems, then, has repercussions for human consciousness. At the same time, both our mode of cognition and our way of perceiving the world contribute to the perpetuation of the crisis. The external world and our internal worlds—intricately interwoven—mutually interact and shape each other.

Ecology can be understood as the study of relationships. Our current crisis is ecological in the sense that it is fundamentally a crisis of relationships: the relationship between humans and the greater community of life on our planet (and the wider cosmos itself); the relationship of humans with each other; and the way our worldviews and modes of consciousness affect these relationships in all their aspects (and how, in turn, these affect consciousness). As Arne Naess and David Rothenberg (1989) observe, ecology includes "both internal and external relations" (p. 36). Leonardo Boff and Virgilio Elizondo (1995) similarly affirm that an integral, holistic understanding of ecology explores the relationships between environmental, social, mental, and cultural phenomena: "For an integral ecology, society and culture also belong to the ecological complex. Ecology is, then, the relationship that all bodies, animate and inanimate, natural and cultural, establish and maintain among themselves and with their surroundings" (p. x). In a complementary fashion, Esbjörn-Hargens and Zimmerman's (2009) integral ecology uses Ken Wilber's four-quadrant AQAL (all quadrants, all levels) analysis to characterize the "anthropogenic ecological crisis" as the result of a complex interaction of the four terrains (or quadrants) of experiential, cultural, behavioral,

and systemic phenomena "and their various levels of complexities," including "fractured consciousness, unsustainable behaviours, dysfunctional cultures, and broken systems. To identify only one or a couple of these contributing factors and hold them up as the main culprit will not help anyone to effectively address these crises" (pp. 299–300).

In *The Tao of Liberation: Exploring the Ecology of Transformation*, Leonardo Boff and I (2009) analyze these complex interactions in depth. We observe that the interwoven economic, political, and cultural systems of domination and exploitation that impoverish the Earth and destroy its diverse ecosystems simultaneously impoverish the great majority of the planet's human inhabitants. Social and environmental degradation are inextricably linked; indeed, they may be considered as manifestations of a single underlying pathology. Similarly, the systemic pathology—which we characterize as a global dis/order—is also a manifestation of both individual and collective worldviews and modes of consciousness, while these in turn are shaped by the same systems they undergird. Culture, consciousness, systems, and behaviors interact though complex webs of reciprocal causality.

Not only is it important to understand the integral, ecological nature of the crisis, the word *crisis* itself is worthy of deeper consideration. Times of crisis can be moments of immense creativity, times of grace when new opportunities emerge. Crisis has both negative and positive connotations. The Chinese ideogram translated as crisis, *wei-ji*, is composed of the characters for danger and opportunity (Capra, 1982). This echoes the observation of the "Earth Charter" cited initially, that our current crisis (or interconnected crises) is a time of both peril and promise. This is not simply a paradox; the very dangers we face may stimulate us to look deeper, seek out the roots of the pathologies at work, and mature as a species—to become wiser members of the Earth community.

The English word *crisis* derives from the Greek *krinein*, meaning to separate. It implies a choice between distinct alternatives. Joanna Macy and Chris Johnson (2012) speak of this choice in terms of three stories that coexist simultaneously in our time. The first story—that of Business as Usual—promises the continuation of an industrial growth society where limitless economic expansion creates a consumer paradise for all. This story is essentially an illusion—a false choice—that masks the second story, that of the Great Unraveling of the ecological and social systems sustaining life and human civilization. If we continue on our current path of unbridled consumption and quantitative growth and fail to rise to the challenges of the moment, the possibilities for the future may be immeasurably diminished. Alternatively, though, we can choose the path of the Great Turning. David Korten (2006) speaks of this choice when he writes:

> By what name will our children and our children's children call our time? Will they speak in anger and frustration of the time of the Great Unraveling . . . or will they look back in joyful celebration on the noble time of the Great Turning, when their forebears turned crisis into opportunity, embraced the higher-order potential of their human nature, learned to live in creative partnership with one another and the living Earth, and brought forth a new era of human possibility? (p. 3)

While bringing about the Great Turning calls for knowledge—including technical know-how and innovative new approaches to problems—it also requires deep transformations in the way we perceive reality and the way we relate to one another and the wider Earth community. Moreover, the Great Turning may call for a transformation in our very mode of consciousness. This may be understood in terms of the need to cultivate an integral, ecological *wisdom*. Over the course of this chapter, I will first explore the relationship between worldviews, cosmologies, and this kind of wisdom. In so doing, both the roots of our current crisis and the essence of this wisdom will become clearer. I will then consider ecological wisdom from the perspective of various integral ecologies to further clarify some of its key characteristics. Finally, I will seek insights from a variety of educational approaches and theories to seek out concrete ways to evoke, educe, and cultivate the kinds of wisdom that can enable humanity to move away from perceptions, ideas, habits, and systems that perpetuate injustice and destroy our planet's capacity to sustain life while at the same time finding new ways of living that enable the physical, emotional, and spiritual needs of all people to be equitably met in harmony with the needs and well-being of the greater Earth community.

WORLDVIEWS, COSMOLOGIES, AND WISDOM

In considering the ecological crisis, we may find hope in observing that the most critical problems we face as a species—not only ecological destruction, but the continued threat of nuclear war as well as deep poverty and social inequality—are essentially of our own making. It is not as though an asteroid were hurtling toward us with no chance of escaping disaster. The very fact that the crises we face are largely human-made implies that it is within our power to address them in a meaningful way, particularly if we act in a wise and timely manner. "We can choose life. Dire predictions notwithstanding, we can still act to ensure a liveable

world. It is crucial that we know this: *we can meet our needs without destroying our life-support system*" (Macy & Brown, 1998, p. 16).

While the path to a sustainable future may at first seem difficult to envision, we do not lack the technologies and expertise needed to address the problems we face. For example, in *Plan B 4.0*, Lester Brown (2009) describes a concrete course of action that would enable humanity to reduce net carbon dioxide emissions 80 percent by 2020, eliminate poverty, restore the Earth's natural systems so that they regain their health, and prevent human population from growing beyond eight billion people. All of this is possible, albeit difficult, to achieve.

It seems unlikely that we will rise to these challenges, however, unless far more people sense the urgency and importance of the great transformations required and that this awakening, in turn, translates into the political will to undertake this great work of our time. For all of this to occur, Brown (2009) notes that we will need a new mindset—a new way of seeing and understanding our world—to truly address our current crisis. David Selby (2002) concurs, noting that meeting our challenges requires that we move beyond the current worldview that "is somehow distorted, deeply destructive in its impact, and quite insufficient either to understand what is happening to the planet or to do anything fundamentally about it" (p. 78)

We all hold basic—though often unconscious—assumptions about the very nature of reality, including the nature of transformation and change. These assumptions may influence our ability to perceive the problems we face and also limit our imaginations, making it more difficult to conceive of a path toward sustainability and well-being. Nonetheless, we seldom question these assumptions, in part because we may not even be aware that we hold them. Each of us, however, has learned to see the world in a particular way—each of us has a worldview.[2]

A worldview may be defined as "a comprehensive model of reality" combining "beliefs, assumptions, attitudes, values, and ideas" (Schlitz, Vieten, & Miller, 2010, p. 19). To illustrate the way a worldview can limit our perceptions and ability to act, Ed Ayres (1999) recounts the story of James Cook's first encounter with Australia's aboriginal people. When the ship *Endeavour* came into Botany Bay on Australia's east coast, it was, in the words of the lay historian Robert Hughes (1988), "an object so huge, complex, and unfamiliar as to defy the natives' understanding" (p. 53). Indeed, it would appear that the local inhabitants simply *could not see* the ship that entered the harbor because they had no way of fitting such an object into their worldview. So they continued to fish as though the ship were invisible—and indeed, in some sense, perhaps, it *was* invisible to them. It was only when members of the *Endeavour*'s crew boarded

smaller landing craft and headed toward shore that most of the local inhabitants fled and hid in the trees while two warriors stood their ground. Only on seeing the canoe-like boats—something within the scope of their own experience—could they react.

We find ourselves in a very similar situation. As Ayres (1999) observes, the Earth's human inhabitants "are being confronted by something so completely outside [their] collective experience that [they] don't really see it, even when the evidence is overwhelming" (p. 6). Yet it is probably equally reasonable to posit that we are unable to conceive of a path toward sustainability because our imaginations have been constrained by a particular understanding of reality—by our cosmovision or worldview. As Albert Einstein notes, "the significant problems we face cannot be solved at the same level of thinking we were at when we created them" (as cited in Barr & Tagg, 1995, p. 12). We need new forms of cognition rooted in a new vision of reality—perhaps even a different mode of consciousness—to address our most urgent crises and create an authentically just and sustainable human society living in harmony with the wider Earth community.

Another way of thinking of worldviews—particularly considering their often unconscious nature—is in terms of something resembling a dream. As the great cultural historian and Earth scholar Thomas Berry (1999a) writes in his foreword to *Transformative Learning*, we can conceive of our collective cosmovision in terms of a dream insofar as it can "be thought of as coming to us from the unconscious depths of the human, from the realm that is revealed to us in our dreams" (p. xii). As O'Sullivan (1999) later notes, Berry is "trying to develop the notion that we are not motivated and energized at the level of ideas but by the deeper recesses of dream structures" (p. 3). On the one hand, a collective dream—a shared worldview or paradigm—can inspire a whole civilization and energize its creative action. Thomas Berry (1999b) often used a phrase borrowed from Carl Jung: *The dream drives the action*. Yet, O'Sullivan (1999) cautions, "we must also recognize that few things are as destructive as a dream or entrancement that has lost the integrity of its meaning and entered into an exaggerated and destructive manifestation" (p. 3). Indeed, O'Sullivan maintains that "no dream or entrancement in the history of the earth . . . has wrought the destruction that is taking place in the entrancement with industrial civilization" and that our current collective dream "must be considered as a profound cultural pathology" that requires a "correspondingly deep cultural therapy" (p. 3).

In a similar vein, cultural historian Theodore Roszak (1992) astutely observes that our current crises must be seen as "more than a random catalogue of mistakes, miscalculations, and false starts that can easily be made good with a bit

more expertise in the right places" (p. 232). The very beliefs, values, and assumptions—or worldviews—underpinning our society are pathological in nature—constituting a collective form of delusion. Therefore, "nothing less than an altered sensibility is needed, a radically new standard of sanity that . . . uproots the fundamental assumptions of industrial life" (p. 232).

While changing both individual consciousness and collective worldviews is essential to effectively address the ecological crisis, this does not negate the need to also transform behaviors and systems. As Esbjörn-Hargens and Zimmerman (2009) note, "transformation of individual consciousness cannot occur without supportive changes in body, culture, and eco-social systems" (p. 7). Similarly, Arne Naess and David Rothenberg (1989) observed that change must occur simultaneously, both "from the inside and from the outside, all in one" (p. 89). In discussing worldviews and ecological wisdom, this complex interplay of systems, behaviors, consciousness, and culture must always be kept in mind. Recognizing this complexity, however, does not lessen the importance of transforming worldviews in processes of systemic change. As Lewis Mumford noted: "Every social transformation . . . has rested on a new metaphysical and ideological base; or rather, upon deeper stirrings and intuitions whose rationalized expression takes the form of a new picture of the cosmos and the nature of [humanity]" (as cited in Goldsmith, 1998, p. 433).

Cosmology is closely related to the idea of worldviews; it can be understood as the exploration of the origin, evolution, destiny, and purpose of the universe. Humans may have begun the cosmological endeavor nearly 300,000 years ago (Swimme, 1996) when our ancient ancestors gathered together under the night sky to ponder the great mysteries of the world, to tell stories, and to celebrate rituals. They may well have contemplated the same deep questions that have been posed through countless millennia: How did the world come to be? What is our place in the cosmos? What is our relationship to the other beings who inhabit the Earth? And how are we to live harmoniously with each other and with the greater community of life of which we are members? All of these are cosmological questions that help situate humans within the cosmos that both birthed us into being and sustains us.

While cosmologies can influence and shape worldviews, a cosmology tends to be more systematic in nature and have at its foundation some kind of scientific, religious, or philosophical framework—in particular, a story of the universe's origins. In many ways, cosmology is the myth underlying the way we live where *myth* is understood as a story giving meaning (which may or may not be literally

true). As such, it profoundly colors our perception of reality, including our assumptions about the relationship of humans to the wider Earth community, our understanding of consciousness (including to what extent consciousness is unique to humans or whether it is an essential dimension of all reality), and the nature of change itself.

Thomas Khun observed that cosmology provides us with a shared worldview that permeates everything, giving meaning to our lives (Heyneman, 1993). Historically, every human culture has had a cosmology that orients it and imbues it with a sense of purpose. Yet, as Louise Steinman points out,

> In the West, there is no longer one Big Story which we all believe in, which tells us how the world was made, how everything got to be the way it is, how we should behave in order to maintain the balance in which we coexist with the rest of the cosmos. (as cited in Heyneman, 1993, p. 1)

Indeed, not only may there be no unifying story, many may simple lack any kind of Big Story at all.

Leonardo Boff and I (2009) explored in depth the process through which the culture of modernity effectively lost a functional cosmology, a process which began about four hundred years ago with the Enlightenment and the scientific revolution initiated by thinkers such as Copernicus, Galileo, Descartes, and Newton. By the end of the 19th century, the scientific orthodoxy of the day viewed the universe as a vast, infinite expanse composed of lifeless matter with no overarching form or beginning, where all phenomena arose from the random interaction of atoms, a universe doomed to a slow death via the inescapable laws of thermodynamics.

Mathematician and philosopher Bertrand Russell, reflecting on what seemed to him to be a random and purposeless universe, concluded,

> That man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and beliefs, are but the outcome of accidental collisions of atoms; that no fire, no heroism, no intensity of thought and feeling can preserve an individual life beyond the grave; that all the labors of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system; and that the whole temple of Man's achievement

> must inevitably be buried beneath the debris of a universe in ruins—all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be built. (as cited in Sheldrake, 1988, pp. 6–7)

More recently, geneticist and Nobel laureate Jacques Monod observed that we are alone in the "universe's unfeeling immensity, out of which [we] emerged by chance. [Our] destiny is nowhere spelled out, nor is [our] duty"; similarly, Nobel-Prize-winning physicist Steven Weinberg—who sees life as the outcome of a mere chain of accidents—concluded that we live in an "overwhelmingly hostile universe" which, to the extent it becomes comprehensible, also seems to become more pointless (Roszak, 1999, pp. 82–83). Over the past 110 years, new scientific insights in quantum physics, evolutionary biology, ecology, systems theory, and cosmic evolution have largely displaced the scientific foundations upon which this dysfunctional cosmology was built. Despite this, it continues to exercise considerable influence in the society of modernity—even among scientists and philosophers—as the views of Russell, Monod, and Weinberg illustrate.

Today, the "normal" experience of many living in modern industrial societies is one of a purposeless world that has become a collection of objects, no longer a community of living beings. In objectifying the world, however, we have also become objects ourselves. As Morris Berman (1981) observes, "The world is not of my own making; the cosmos cares nothing for me, and I do not really feel a sense of belonging to it. What I feel, in fact, is a sickness in the soul" (pp. 16–17). Faced with a world largely emptied of meaning, many in modern affluent societies take refuge in a surrogate cosmology of consumerism (actively encouraged by corporate capitalism) that conceives the purpose of life as a race to buy and consume commodities extracted from a world that is reductionistically understood to be little more than a giant storehouse of raw materials.

Despite these serious problems, not all of the insights, values, and movements that arose with modernity are without value, nor should we conclude that we need to simply revert to an older, once-functional cosmology. Indeed, Ken Wilber (1996) argues that the changes brought about by modernity have made an important contribution to human dignity (what he calls the dignity of modernity) through the differentiation of the "Big Three." The first of these is the differentiation of the individual self or "I" from one's culture or society, which helped give rise to modern democratic institutions including elected governments

and human rights. Second, the differentiation of mind from nature may have contributed to movements for liberation insofar as biological might or brute strength could no longer serve as a justification for domination. Finally, the differentiation of culture from nature was the foundation for empirical science, where truth was no longer subservient to the ideologies of a state or a religion.

In Wilber's (1996) view, the "good news of modernity was that it learned to *differentiate* the Big Three"—i.e., self from culture, mind from nature, and culture from nature; "the bad news was that it had not yet learned how to *integrate* them" (p. 126). Indeed, instead of simply differentiating, we actually came to *dissociate* them. Wilber concludes that our current ecological crisis is to a great extent "the result of the continued dissociation of the Big Three. We cannot align nature and culture and consciousness; we cannot align nature and morals and mind. We are altogether fragmented in this modernity gone slightly mad" (p. 276).

What might be some of the key characteristics of an ecological worldview, one that enables us to align and reintegrate nature, culture, consciousness, and ethics in a new way that simultaneously preserves the dignity of modernity and reconnects humanity to the wider community of life, and indeed the cosmos itself? Emerging insights from science—including systems theory, quantum physics, and the emerging story of the cosmos—as well as a variety of perspectives arising from deep ecology, ecopsychology, and ecofeminism together with other philosophical perspectives provide fertile insights into such a worldview. Based on both previous research (Hathaway & Boff, 2009) and the basic principles of deep ecology as outlined by Naess and Rothenberg (1989), some key facets could include the following seven points.

a. Relationality. In an ecological worldview, all life on Earth is seen as interconnected and interdependent. Indeed, the essence of reality lies not in substances but rather in nested systems (or *holarchies*) and their relationships. The health of all life—including human life—depends on the health of Earth's ecosystems, as well as the global atmospheric, oceanic, and climate systems. Humans, both by evolution (including the evolution of consciousness) and through their constant exchange of water, food, and air with other life forms, are intimately connected to all life and to the Earth itself. This sense of ecological relationality may extend further to encompass the interconnection of all phenomena characteristic of the Buddhist idea of interdependent co-arising as well as

insights from both quantum physics and systems theory. In such a view, causality is understood as complex, allowing for the creative emergence of truly novel phenomena through dynamics of self-organization or autopoiesis.

b. The intrinsic value of life. Whether or not humans are seen as having some kind of special or unique role in the Earth community, an ecological worldview understands that the "flourishing of [both] human and non-human life" has "intrinsic value" and nonhuman life forms have value "independent of the usefulness these may have for narrow human purposes" (Naess & Rothenberg, 1989, p. 29). This sense of intrinsic value may even extend further to include entities not normally understood (in modern scientific terms) to be living, such as rivers, mountains, or even rocks. Indeed, an ecological worldview is often characterized by a larger, more inclusive, sense of life itself and may even consider Earth itself to be in some sense alive or similar to a living organism.

c. The value of diversity. "Humans have no right to reduce" the diversity of life forms "except to satisfy vital human needs" (i.e., those essential to life) and generally speaking, even this exception is understood in a fairly restrictive way. The "richness and diversity of life forms are values in themselves" and are vital to the flourishing of all life on our planet (Naess & Rothenberg, 1989, p. 29).

d. Harmony. Humans, to the greatest extent possible, should endeavor to live in harmony with the Earth's ecosystems, respecting the natural cycles of energy, water, soil, and air flowing through these systems as well as their ecological limits. In particular, humans should seek to minimize negative impacts on the Earth's ecosystems, using no more than the Earth can naturally regenerate and contaminating no more than the Earth can reasonably absorb and recycle. Human technology should therefore seek to mimic the cyclical flow of energy and materials characteristic of natural ecosystems.

e. Justice and equity. The same principle of harmony, applied to the human community, implies that the authentic needs of all persons must be met as fairly as possible. Given the limitation of a finite

Earth, this means ensuring that all humans should enjoy a modest but dignified lifestyle. Equity does not mean that all must have the same level of wealth, but it does mean that differences of wealth should not be so great that they manifest a fundamental lack of fairness that can lead to resentment, outrage, or violence.

f. Sustainability and future generations. The principle of justice combined with the principle of harmony means that meeting the needs of human beings in the present must not compromise the well-being of other species or the needs of future generations (both human and nonhuman).

g. Fulfillment and purpose. A concrete implication of the above points is that, to move toward both justice and sustainability on a planet with a limited carrying capacity, humans will need to find a source of fulfillment that does not depend on ever-increasing consumption. Indeed, while increasing the availability of essentials (healthy food, clean water, adequate shelter, healthcare, etc.) for the world's poorest inhabitants is necessary for well-being, the consumption of the wealthiest 20 percent or so of humanity (who consume roughly 80 percent of its wealth) will necessarily need to be curtailed since our current global levels of consumption already exceed the carrying capacity of the planet by 30 percent. Some of this reduction might be accomplished by improved technology and efficiency, but a good proportion will need to come through a reduction in consumption. Given that ever-increasing consumption is currently the goal of most societies in the global North and that this activity is promoted as essential to human happiness, societies will need to find alternative goals aimed at genuine human fulfillment to replace their current materialistic orientation. In particular, this underlines the importance of a functional cosmology that provides a sense of meaning and purpose to life.

While not everyone need agree with each of the above points, they do provide a rough sketch of some of the key aspects that generally might be included when describing the values and assumptions typical of an ecological worldview. Of course, such a description does not directly describe the experience of reality, the types of perception, or the modes of consciousness that might accompany such

a worldview. The characteristics do, however, provide a starting point to move on to the question of ecological wisdom.

Arne Naess describes his deep ecology as an *ecosophia*, or ecological wisdom. Naess and Rothenberg (1989) liken ecological wisdom to a worldview, but one that is embodied in behaviors and action: "All 'sophical' insight should be directly relevant for action. Through their actions, a person or organisation exemplifies sophia, sagacity, and wisdom—or lack thereof. 'Sophia' intimates acquaintance and understanding rather than impersonal or abstract results" (p. 37). Such an embodied worldview also implies a "conscious change of attitude towards the conditions of life in the ecosphere" (p. 38). Indeed, this could be extended further still to encompass a form of consciousness, informed by a deep, experiential knowledge, that enables one to perceive reality relationally (as interconnected—with humans as members of, not separate from, the greater Earth community and the wider cosmos) and act in accordance with the ecological principles that enable life—including human societies—to consciously participate in evolution toward ever-greater differentiation, communion, and creative self-organization and interiority.

Provisionally, then, the following working definition can serve as a way of understanding ecological wisdom: ecological wisdom is rooted in a conscious experience of the interconnection and intrinsic value of all life. It consists of the diverse modalities of cognition and consciousness—together with the knowledge, skills, and emotional intelligence—that enable humans to discern and embody actions that respect and protect the diversity of life, live in harmony with each other and other species, move toward ever-greater justice and equity, protect the well-being of future generations, participate consciously in evolutionary processes, and find fulfillment and meaning in a functional cosmology.

INTEGRAL ECOLOGIES AND WISDOM

While the previous discussion begins to illuminate the nature of ecological wisdom, wisdom is, in a sense, a rather elusive term that ultimately defies a neat articulation in the form of a definition. Like the old Zen story, we are cautioned not to mistake the finger gesturing toward the moon for the moon itself; words can only point to the reality being described, but ultimately this reality must be touched, tasted, and experienced to be fully understood. One way to begin to move beyond this limitation, however, may be to view and enrich the meanings of wisdom from a variety of integral and ecological perspectives.

One ancient way of understanding an embodied wisdom is captured in the Chinese word *Tao* (or *Dao* in modern transliterations). The ideogram for Tao combines the radical for foot (walking, movement) and that of the head (leadership, guidance), indicating "step by step" movement with "walking feet, possibly in rhythmic movement. The use of the character for the head combined with a foot suggests a 'way,' 'path,' 'road,' or even 'method,' with the head suggesting, perhaps, that it should be a thoughtful way forward" (Fowler, 2005, p. 106). More metaphorically, the Tao could therefore be understood as a walking wisdom that concretely guides action (Dreher, 1991). At the same time, the Tao can be understood as a *way* leading to peace, harmony, and right-relationship, a way that is also manifest in the unfolding process of the cosmos itself (Needleman, 1989). In this manner, the Tao captures the insight that interiority and subjectivity pervade all entities in the cosmos which, to borrow the famous words of Thomas Berry (1999b), is a "communion of subjects, not a collection of objects" (p. 82). Indeed, the wisdom of the Tao is understood to permeate, inform, and sustain all beings. In the words of the *Tao Te Ching*, "it flows through all things, inside and outside" (§25) while "it nourishes all things and brings them to fulfillment" (§41). At the same time, the dynamic nature of a "way" suggests the transformative nature of wisdom, as well as its presence in the evolutionary processes of the cosmos.

A second, complementary perspective for understanding wisdom may be found in the Shambhala prophecy from Tibetan Buddhism as recounted by Joanna Macy and Molly Brown (1998), based on the teachings of Choegyal Rinpoche. This 12-century-old prophecy speaks of a time when "all life on Earth is in danger" and "great barbarian powers have arisen" that spend untold wealth to prepare for the annihilation of one another and whose technologies "lay waste to the world." In this time, "when the future of sentient life hangs by the frailest of threads, the kingdom of Shambhala emerges." Yet, this kingdom is not a place, and its "warriors" carry no weapons in a physical sense. Indeed, the "Shambhala warriors" must always do their work in "the very heart of the barbarian power," going to where the barbarian weapons are fabricated—"the corridors of power where decisions are made"—to dismantle them. "The Shambhala warriors have the courage to do this because they know these weapons are *manomaya*. They are 'mind-made.'" As such, they can also be unmade using two key "weapons": insight and compassion. Both are necessary. Compassion "gives you the juice, the power, the passion to move" without fearing the pain and suffering of the world. Yet without "insight into the radical interdependence of all phenomena," compassion is not enough. Insight enables us to understand that "the line between

good and evil runs through the landscape of every human heart." At the same time, insight enables us to act "with pure intent," knowing that actions may have "repercussions throughout the web of life, beyond what you can measure or discern." Yet, insight alone can be too cool and conceptual; "you need the heat of compassion." Only together can these gifts sustain transformative action for the healing of the world (pp. 60–61).

While this prophecy does not use the word *wisdom* explicitly, it nonetheless provides deep intuitions about its nature. Normally, perhaps the idea of insight itself might be identified with wisdom, yet it may be helpful to think of wisdom as encompassing both compassion—the ability to share the pain and joys of others—*and* insight into the radical interdependence of all phenomena. In this way, wisdom is conceived as having both a mental-perceptual and an emotional component. While the prophecy conceives of this insight and compassion as "weapons," this wisdom could also be understood as a transformative way that aims to heal the world, restore balance, and reestablish right relationships.

A third source of traditional knowledge on wisdom can be found in the medicine wheel teachings of many indigenous cultures in North America (Bopp, Bopp, Brown, & Lane, 1985).[3] In the medicine wheel, four aspects of being and learning are represented by the four cardinal directions (albeit the correspondence varies from culture to culture). Learning—and wisdom—must strive to balance these four aspects, which can be described as mental, physical, emotional, and spiritual.

The mental realm—sometimes corresponding to the North—is the terrain of thinking, analyzing, synthesizing, organizing, memorizing, imagining, discriminating, and criticizing. This is the way of learning and being that science and the culture of modernity have tended to value most highly. It is part of wisdom, but only one dimension of it. As Wilber's (1996) observations about the Big Three and the dignity of modernity suggest, this aspect of wisdom enables us to *differentiate*; but left on its own—or when out of balance with the other dimensions—it can also cause us to *dissociate*, leading to a sense of separation and alienation.

The role of compassion in the Shambhala prophecy can enable us to recognize the importance of the emotional dimensions of wisdom, often corresponding in the medicine wheel with the South. Many ideas that we might associate with ethical and moral values or qualities such as love, courage, loyalty, generosity, and kindness are aspects of this dimension of wisdom, but so are the anger and the passion it may unleash to struggle against injustice. Emotional wisdom also recognizes the role that fear and grief play in our lives and, rather than seeking

to avoid or hide from them, endeavors to understand and move through them to greater compassion.

The physical and spiritual aspects of wisdom may have received even less emphasis in modern industrial Western societies, yet both are of great importance. Most frequently, these aspects correspond to the East and West, or vice versa, depending on the tradition. The physical dimension reminds us that, to be fully integral, wisdom must be embodied; it must be put into practice in behaviors and actions. At the same time, the body in itself can be a source of wisdom, enabling one to open to new sources of perception and connection with the phenomenal world. Practices such as meditation on the breath, yoga, sacred dance and movement, tai chi, and qigong can also serve to overcome the tendency to split mind, spirit, body, and emotions. The words of Piero Ferrucci (1990) on dance capture this insight when he notes that each movement "has a meaning that not only is understood with the mind but is realized with one's whole being—body and soul" (p. 177). Embodiment moves beyond words, speaking to ineffable dimensions of being and "reawakening intuition and . . . opening one's organism to a vaster world, at the moment of heightened receptivity" (p. 177).

Indeed, while in the West body and spirit have often been separated (or dissociated), many spiritual traditions see them as closely linked—with the life-sustaining air we breathe understood as a link between the physical and spiritual. For example, in Hebrew, Aramaic, and Arabic, the word for *spirit* (*ruach*, *ruha*, and *ruh*, respectively) also means wind, air, and breath—and this was originally the case in Greek (*pneuma*) and Latin (*spiritus*) as well. As David Abram (1997) notes, this is also the case for the Dine (Navajo) people, who identify air—and the *awareness* of air—with the spiritual, conceiving the psyche "not [as] an immaterial power that resides inside us," but rather as "the invisible yet thoroughly palpable medium in which we (along with the trees, the squirrels, and the clouds) are immersed" (p. 237). At the same time, this invisible realm is also associated with other, less tangible, phenomena such as dreams, visions, stories, and teachings. Because of this, the capacities associated with spiritual aspects of wisdom include the ability to respond to and accept these realities as an "unknown or unrealized potential to do or be something more or different than we are now" (Bop et al., 1985, p. 30). At the same time, spiritual wisdom entails finding ways to communicate these realities through speech or art and uses them as a guide to "action directed toward making what was only seen as a possibility into a living reality" (Bopp et al., 1985, p. 8). This final point re-roots the spiritual in the physical, the embodiment of vision in concrete action.

While the medicine wheel emphasizes the need for balance in cultivating wisdom, the aspects of wisdom that are nonrational, intuitive, or transrational may be the most challenging for those influenced by the worldview of industrial modernity. Perhaps for this reason, Thomas Berry often emphasizes this spiritual-intuitive aspect when speaking of the need to create a sustainable society based on a reinvention of the human at the species level. Bill Plotkin (2011) observes that Thomas Berry believed that "we must root our efforts not in our rational minds but in revelatory visions that sprout from the depths of the human psyche and from our encounters with the mysteries of the natural world" (p. 42). To do so, humanity needs to return to both the psycho-spiritual and ritual processes that have sustained healthy cultures throughout millennia and recover a shamanic dimension of existence. The word Thomas Berry (1990) uses to describe this process of descent into both the depths of the soul and the heart of the phenomenal world that simultaneously enkindles vision and guides action for transformation is *inscendence*. As mentioned in my earlier discussion of the dream that drives the action, we must be motivated out of the unconscious depths from whence dreams arise so that we may tap into instinctive, pre-rational resources for transformation. Another way Berry speaks of this is in terms of a new cultural coding or a revelatory vision—something that could be understood as a transformed worldview.

Plotkin (2011) notes that inscendence—this source of new cultural codings—is rooted in a conscious connection with those realms of experience most often ignored and marginalized by the mainstream of modern industrialized Western cultures such as vision, instincts, the numinous powers of the phenomenal world, dreams, and the mysteries of the cosmos. From the perspective of ecological wisdom, inscendence is the process through which we develop (or recover) a variety of forms of perception rooted in a transformed consciousness. Such modes of cognition transcend the control of the conscious mind, yet some are what we would normally think of as "inner" (dreams, visions) and others as "outer" (natural world, cosmos) phenomenon. Thomas Berry, however, overcomes the dualistic tendency to divide human experience, considering all these perceptual modes as being focused and rooted in the world (Plotkin, 2011).

For Thomas Berry, humans are both distinctive beings in the cosmos and a mode of being of the cosmos itself. Humans are a "reality in whom the entire Earth comes to a special mode of reflexive consciousness" and in which the "various polarities of the material and the spiritual, the physical and the psychic, the natural and the artistic, the intuitive and the scientific" (T. Berry, 1999b, pp. 174–175) come together as an integral unity. Through inscendence, humans

can apprehend the wisdom of the Earth itself, seeking out its guidance through forms of consciousness rooted in an intimate relationship with the cosmos that transcend rationality alone. Indeed, if humans are to survive and thrive in the future, "it will be because the guidance and the powers of the Earth have been communicated to us, not because we have determined the future of the Earth simply with some rational faculty" (T. Berry, 1999b, pp. 173–174).

A complementary way of understanding this process of apprehending the wisdom of the Earth and allowing it to guide us comes from deep ecology and ecopsychology, which speak in terms of widening our sense of self and—in the case of ecopsychology—reconnecting with the ecological unconscious. From an early age, people in modern societies are taught to repress any kind of cosmic empathy or oceanic consciousness that enables them to access a wider sense of self extending beyond the boundaries of the skin. Once again, if this were only a matter of differentiation, it could be seen as a normal part of psychic development; yet, for many, this differentiation becomes dissociation, a loss of the ability to identify with a wider sense of self. Freud once observed that "our present ego-feeling is only a shrunken residue of a much more inclusive, indeed, all-embracing, feeling which corresponded to a more intimate bond between the ego and the world about it" (as cited in Roszak, 1995, p. 12). Theodore Roszak (1995) sees this observation as a distant precursor to the perspective of ecopsychology, which could "be defined as the refusal to settle for that 'shrunken residue'" (p. 12).

A healthy sense of differentiation—as opposed to dissociation—enables one to understand one's own uniqueness in relationship to others (both human and more-than-human), not in defensive opposition to or separation from others. Instead of seeing the *separative* self that equates healthy development with increasing autonomy as normative, we could seek instead to value and nurture what some feminist psychologists call *the relational self* that "suggests that as we mature, we move toward greater complexity in relationships" (Gomes & Kanner, 1995, p. 117). Similarly, ecophilosophers Naess and Rothenberg (1989) maintain that the process of psychological maturation involves an ongoing broadening of one's identification with others, to allow the self to encompass wider and wider circles of being until it comes to include the greater Earth community itself—a process he conceives as *Self-realization* (or literally, *Self-realizing*)—where *Self* is conceived as a wider, more inclusive self (Naess & Rothenberg, 1989).[4]

This widening of our selves is simultaneously a deepening. Ecopsychologists describe the core of the psyche as the ecological unconscious. In some mysterious way, this form of collective unconscious includes a living record of the entire process of cosmic evolution. At the same time, it is characterized by a deep sense

of our abiding connection with the Earth. This inner wisdom has guided our evolution and permitted our survival. Roszak (1992) calls it the "compacted ecological intelligence of our species, the source from which culture unfolds as the self-conscious reflection of nature's own steadily emerging mindlikeness" (p. 304). The repression of this "ecological unconscious is the deepest root of collusive madness in industrial society," and in contrast, "open access to the ecological unconscious is the path to sanity" (p. 320). To the extent that each of us awakens to our connection to the Earth, to all its living beings, and indeed to the wider cosmos, we also awaken to our own Self.

This process of broadening and deepening the sense of Self taps not only into the spiritual-intuitive dimensions of wisdom, but also the emotional aspects—in particular, the cultivation of empathy and compassion. Albert Einstein refers to this process when he notes that

> [Human beings are] part of a whole, called by us the "Universe," a part limited in time and space. [We] experience [ourselves], [our] thoughts and feelings, as something separated from the rest—a kind of optical delusion of [our] consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circles of compassion to embrace all living creatures and the whole of nature in its beauty. (as cited in Chang, 2006, p. 525)

This broadening of Self to embrace widening circles of compassion also entails the ability to enter into a mode of *participatory consciousness*, "a heightened, world-reshaping awareness of participation with the visible and invisible; embodied and numinous; past, present, and future beings, relationships, and energies among whom we dwell" (Haugen, 2011, p. 33). This form of consciousness is "more porous," involving "a felt-sense of interpenetration and reciprocity; a psychic and somatic openness to the Others and to the mysterious terrain of imagination and dream." At the same time, it may involve "what Joanna Macy calls 'deep time'—or awareness of connection with both ancient and future beings and events" (Haugen, 2011, p. 33).

Morris Berman (1981) observes that this participatory consciousness was typical of medieval alchemy, which instead of analyzing or confronting the phenomenal world, endeavored to *permeate* it. In a similar vein, Jamake Highwater speaks of the ability of many indigenous peoples to "know something by temporarily turning into it" (as cited in Heyneman, 1993, p. 27). Ecological wisdom,

then, calls for a reintegration of participatory modes of consciousness into the human psyche. This, of course, should by no means be understood to imply that we should simply abandon the ability to employ more discursive, analytic modes. The challenge is to find ways of *integrating* both discursive and participatory modes of consciousness in new ways, enabling us to tap into varied modes of cognition and reasoning.

In an evolutionary context, ecological wisdom also entails seeking to consciously participate in the ongoing process of planetary and cosmic evolution in ways that combine insight and compassion. As noted earlier, Thomas Berry understood humans as members of the Earth community who have awoken to self-reflexive consciousness. As such, humans can participate in evolution in a mindful, intentional manner. To do so, however, requires that we transcend the separative self and instead understand ourselves relationally—as ecological beings. While self-aware and self-reflexive, we must also integrate inscendence, compassion, and participatory modes of consciousness so that we are able to seek out guidance from "the powers of the Earth" and the wider cosmos that embraces it.

Drawing on insights from ecology, Arne Naess speaks of this process in terms of Self-realization. From a relational perspective, the potential for Self-realization is increased to the extent that others—both human and more-than-human—are also able to increase their own Self-realization, and this in turn can be furthered by increasing diversity, complexity, and symbiosis (Naess & Rothenberg, 1989). Similarly, Brian Swimme and Thomas Berry (1992)—looking at the process of cosmic evolution—identify what they name *the cosmogenic principle* that states that the universe's evolution "will be characterized by *differentiation*, *autopoiesis*, and *communion* throughout time and space and at every level of reality. These three terms—differentiation, autopoiesis, and communion—refer to the governing themes and basal intentionality of all existence" (p. 71).

These three aspects are revealed in the very structure of the cosmos:

> Were there no differentiation, the universe we see would collapse into a homogeneous smudge; were there no subjectivity [or autopoiesis], the universe would collapse into inert, dead, extension; were there no communion, the universe would collapse into isolated singularities of being. (Swimme & Berry, 1992, p. 73)

Ecologically, the interrelationship of the three principles may be seen in the evolution from a pioneer ecosystem—like weeds growing on recently cleared

land—to a mature community such as a rainforest. Over time, as the system evolves, it simultaneously becomes more differentiated and more integrated as communion and symbiosis among different species grow and biodiversity increases. At the same time, these same processes lead to a greater capacity for creative self-organization, or autopoiesis, which can also be understood at the dimension of interiority.[5] In a similar fashion, an ecological wisdom that seeks to consciously and harmoniously participate in the process of evolution will be characterized by these same three aspects. In this way, we could say that a wise action, or wise behavior, seeks to broaden diversity, deepen communion, and increase interiority, mindfulness, and dynamics of creativity.

CULTIVATING WISDOM: TOWARD AN ECOLOGY OF TRANSFORMATION

While no single description can fully encapsulate its meaning and nature, the previous discussion enables us to more clearly understand the characteristics of ecological wisdom and serves as a foundation for more practical questions: How—both as individuals and collectively as a species—can we concretely begin to embody the kinds of cultural codings or worldviews that will enable us to transition from being an ecologically destructive presence on the planet to one that is benign? How can we broaden our sense of self, become more compassionate beings, gain insight into the radical interdependence of all phenomena, and recover more intuitive forms of cognition that enable us to seek guidance from the greater Earth community and the wider cosmos? Can we learn, in time, to participate consciously, harmoniously, and fruitfully in the Earth's evolutionary processes as they move toward greater differentiation, communion, and creative self-organization? While there can be no simple recipe for cultivating ecological wisdom, a variety of learning frameworks and processes can provide insights that shed light on these questions.

One such framework is that of transformative learning, first proposed by Jack Mezirow in the late 1970s as a theory of perspective transformation. For Mezirow (1997), transformative learning requires a shift in one's "frames of reference," which are "coherent bod[ies] of experience," including "associations, concepts, values, feelings" and "conditioned responses" that define a "life world"; the assumptions these embody "selectively shape and delimit expectations, perceptions, cognition, and feelings" (p. 5). These habits of mind are in many respects analogous to worldviews. In practice, however, Mezirow uses

perspective transformation to describe phenomena that do not necessarily imply a fundamental change in one's orientation to the world, except when he refers to epochal transformations—changes that he considers far less common and far more difficult to effect.

For Mezirow (1978, 2000), the process of transformation begins with a disorienting dilemma that stimulates self-examination—often accompanied by feelings of anger, shame, fear, or guilt. This leads the learner to critically reassess assumptions, which begins the transformative process in earnest. Subsequent research (Taylor, 1997), however, has raised the question of why perspective transformation results from some disorienting dilemmas, but not from others. Taylor's (1997) research suggests that a key factor may lie in moving beyond Mezirow's initial reliance on rational, critical thinking to include the role of emotions, intuition, empathy, and other forms of knowing. This latter point links to our earlier discussion on wisdom as an integral reality that includes the emotional, physical, and spiritual-intuitive realms of experience as well as the mental dimension. At the same time, Thomas Berry's insistence that we need to reconnect to the wider Earth community through visions, dreams, and the phenomenal world reinforces the need to go beyond discursive-analytic modes of cognition.

With regard to the current ecological crisis, unique considerations arise when considering the idea of a disorienting dilemma. Initially, it may seem that the threat posed by global climate change, for example, should serve to spark perspective transformation—presumably, to a more deeply ecological consciousness and wisdom—that in turn would inspire us to take effective action to address the crisis. Yet while this arguably has occurred in many individuals, such a shift is not clearly discernable in the population at large.

Why do we largely seem to suffer a collective paralysis in addressing the ecological crisis? Until the mid twentieth century, every generation of humans lived with the tacit assurance that other generations would follow them. Since the advent of nuclear weapons and the growing power of humans to affect global atmospheric and oceanic systems, however, this is no longer the case. Humans are now destroying entire ecosystems, and even destabilizing the systems essential to the sustenance of life. This realization is so painful that we seek to avoid it; we may retreat into denial, escape into addictions (understood here broadly to include, for example, consumerism), or fall into despair (Walsh, 1984). Moreover, at a systemic level, a whole series of factors reinforce our paralysis in order to maintain the status quo. For example, a half-trillion-dollar-a-year advertising industry actively fuels consumerist addictions, distracting us from the urgency

of the crisis. Mass-media and educational systems may also fragment our view of reality or accentuate the voices of denial.

In facilitating transformative learning seeking to cultivate wisdom and address the ecological crisis, educators therefore need to recognize and work with the fear of pain associated with our dread for the future. As Macy and Brown (1998) observe,

> the very danger signals that should rivet our attention, summon up the blood, and bond us in collective action, tend to have the opposite effect. They make us want to pull down the blinds and busy ourselves with other things. (p. 26)

Recalling Mezirow's (1997) theory, note that disorienting dilemmas are often accompanied by feelings of fear, guilt, and shame. Certainly, confronted with the current ecological crisis, such feelings—and even dread—are both natural and understandable. It would be an error, however, to attempt to *use* fear, guilt, or shame as a motivating force. While accurate information about the crisis is essential, Roszak (1995) notes that actively encouraging guilt—as some in environmental movements have done—will inevitably prove to be counterproductive: "Shame always [has] been among the most unpredictable motivations in politics; it too easily slides into resentment. Call someone's entire way of life into question, and what you are apt to produce is defensive rigidity" (pp. 15–16). Ultimately, shame undermines trust—including our trust in our own selves—as well as the solidarity needed for effective transformative action.

Instead of appealing to guilt and fear, would it not be possible to instead acknowledge our shared pain and use this as a starting point to recognize our fundamental connection with each other and the greater community of life? Macy and Brown's (1998) "Work that Reconnects" provides a particularly insightful way of doing this, working through pain in a way analogous to grief work—with the key difference that here we are not trying to come to terms with a loss that has already occurred, but rather to awaken ourselves to action aimed at preventing future harms.

The Work that Reconnects uses a four-step process that begins, not with guilt, fear, or pain, but rather with gratitude. Gratitude enables learners to first root themselves in their experiences of the goodness and beauty of the world, including their relationships with other people and the greater Earth community. Only then does the process move on to that of honoring our pain for the world; yet, even here, the point is not to motivate through guilt, but rather to

work through the pain to recognize that we suffer because we are interconnected through bonds of compassion and love. From there, the process proceeds to seeing with new eyes, including perspectives that enable learners to connect emotionally to both our ancestors and to future beings to facilitate a shift in worldview. Finally, in "going forth," learners are challenged and empowered to embody their shifts in perception and understanding through concrete actions and an ongoing commitment to the transformative process of cultivating ecological wisdom.

A complementary perspective comes from the transformative learning theories of Edmund O'Sullivan, an adult educator deeply influenced by the work of Thomas Berry. O'Sullivan (2002) affirms that "transformative learning involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and irreversibly alters our way of being in the world" that affects both our relationship with other human beings and the greater Earth community, as well as "our understanding of relations of power in interlocking structures of class, race and gender; our body awarenesses, our visions of alternative approaches to living; and our sense of possibilities for social justice and peace and personal joy" (p. 1). O'Sullivan proposes a threefold process of transformative learning based on the steps of *survive*, *critique*, and *create*. Like Macy and Brown, O'Sullivan's step of "survive" emphasizes the need to overcome despair and denial. "Critique," like seeing with new eyes, focuses on shifting to a new worldview—but also on critiquing structures of power. The "create" step includes seeking out a functional cosmology and reframing the role of the human.

In *The Tao of Liberation*, Leonardo Boff and I (2009) also propose a process for cultivating wisdom—based in part on Matthew Fox's (1983) four paths of creation spirituality that we understand as an *ecology of transformation*. These four paths are not understood as a linear progression, but rather as interrelated processes that constitute a kind of ecology of deep transformative learning. While rational, critical thought plays a role, each path is integral—involving intuitive, emotional, and somatic learning as well as more analytic-discursive processes.

The first path is that of *invocation*, of opening to the wisdom (or Tao) manifest in the cosmos, remembering our communion with other beings and the universe, and finding inspirational energy through beauty and awe. Cultivating mindfulness and cultivating gratitude are the key goals of this process: we begin by attending to that which we love and then extend our awareness into other aspects of our lives. At another level, art, myth, and story can be employed to cultivate our awareness of the emerging story of the universe and foster an apprehension of the interconnection of all beings. These processes serve to broaden

our sense of self, reroot ourselves in both the mythic and the phenomenal world, foster participatory consciousness, and open ourselves to the guidance of the powers of the cosmos.

The second path is that of *letting go*, of embracing the void and clearing away the cobwebs of delusion that ensnare and disempower us. Macy's techniques for honoring our pain for the world—moving from denial and despair, through pain, to connection and empowerment—comprise one aspect of this path. As well, meditation—be it a sitting practice, chanting, or forms of body movement—can facilitate the process of emptying ourselves of preconceptions and predispositions, allowing a radical openness to new perspectives.

The third path, that of *creative empowerment*, focuses on reconnecting with the intrinsic power that enables us to see clearly and act decisively in the right way, at the right place, and at the right time, combining both intuition and compassion. Artistic processes may be used to liberate our imaginations. Processes may also be employed to become more conscious of acausal connections and synchronicities—for example, contemplating dreams or using divination practices such as the *I Ching*, either individually or collectively—to cultivate intuitive discernment and become more aware of the dynamics of nonlinear, complex causality in our work for integral transformation.

The fourth path is that of *incarnating the vision,* where we move from vision to embodiment and action aimed at restoring balance, re-establishing right relationship, and healing the world. Creative visualization and body-based practices can play a role in this path, as can work around vocation and right livelihood. The key to this path is the idea of combining traditional praxis-oriented processes with more intuitive-spiritual approaches in ways that combine imagination, creativity, intuitive insights, analysis, and planning.

The phase of embodiment may take the form of what physicist David Peat (1991) calls *gentle action*. Instead of isolating individual problems, analyzing a specific situation, and then proposing a solution, gentle action attempts to operate throughout a system in a gentle, nonlocal fashion that taps into holistic forms of cognition. Using sensitive observation and intuition, "it arises out of the whole nature and structure of a particular issue" and considers questions of perspective, values, and ethics (p. 220). "Like the ripples around the point, it moves inward to converge on a particular issue. Gentle action works not through force and raw energy but by modifying the very processes that generate and sustain an undesired or harmful effect" (p. 220). Like the Shambhala warrior, we are reminded to act "with pure intent" knowing that actions may have "repercussions throughout the web of life, beyond what" can measured or discerned (Macy & Brown,

1998, p. 61). While this does not mean that we are unconcerned about the effectiveness of our actions, we learn to act with a healthy detachment that enables us to recognize that what at first may appear to be fruitless, in the longer term may actually prove to be richly fertile; while what appears at first to be fruitful, may in fact wither over time.

CONCLUSIONS

Ultimately, cultivating ecological wisdom can never be reduced to a recipe or a neat theory. Many possible approaches, processes, and practices may be employed, some of which may be more appropriate for certain individuals and contexts than others. For example, a cross-cultural experience may cause a person to question his or her dominant worldview, beginning a process that leads to a more radical shift in perspective. A deep encounter with a place—perhaps an experience that inspires awe through overwhelming beauty or an encounter with ecological devastation that leaves one in shock—could serve as an impetus for transformation. For others, it may be a daily spiritual practice, the experience of working with others to address a specific issue of justice or sustainability, participation in a ritual, work in scientific research, or the creation of a work of art. Much of the transformative learning involved may happen outside of any structured event or process.

Because of this, my own research is shifting to look at the experiences of those who are actively seeking to cultivate ecological wisdom in their own lives. It is my hope that this research will enable me to elucidate a clear, phenomenological description that evokes the experience of an ecological worldview—or even of ecological consciousness. At the same time, I hope this inquiry will lead to a clearer understanding of the experiences and practices that frequently seem to effectively facilitate the process of cultivating ecological wisdom. It is my hope that this work will serve to guide and inform the work of both educators and learners who seek to foster ecological wisdom and inspire creative action for right relationship and sustainability.

While cultivating ecological wisdom may at times seem to be an immense challenge, particularly when viewed from the perspective of attempting to transform our collective worldview, hope lies in the fact that this wisdom is never far from any person. It does not need to be conjured out of nothing, or sought on a distant planet; rather, the phenomenal world that surrounds us constantly evokes it, and it may be educed by drawing on the ecological unconscious within us.

For this reason, the transformative power of this wisdom is close at hand. Indeed, as Thomas Berry (1999b) writes, "We are not lacking in the dynamic forces needed to create the future. We live immersed in a sea of energy beyond all comprehension. But this energy, in an ultimate sense, is ours not by domination but by invocation" (p. 175).

NOTES

1. According to the Convention of Biological Diversity (n.d.), each day nearly 110 km^2 of primal forest is lost, an area slightly smaller than that of San Francisco.

2. In this text, *worldview* is used in both an individual and collective sense (the latter often being called a *collective worldview* or *paradigm*). The integral ecology of Esbjörn-Hargens and Zimmerman (2009) understands worldviews as belonging primarily to the cultural or "we" quadrant of the Wilberian AQAL model, but they also manifest in the individual "I" or experiential-phenomenological realm. Cultural worldviews—or paradigms—obviously influence, and to some extent shape, each individual's worldview and consciousness, yet the worldview of each person is also unique.

3. While recognizing that each First Nation has its own unique understanding of the medicine wheel, the discussion here is based on work done by a gathering of elders from a wide variety of native traditions held in Lethbridge, Alberta, nearly thirty years ago. As such, it describes many common—albeit by no means universal—elements of traditions held by different indigenous cultures.

4. Esbjörn-Hargens (2005) notes that this widened sense of Self must include not only the Earth and other forms of life, but also different people and cultures: "Integral Ecology recognizes that for an *eco*centric approach to manifest in ourselves, and our communities, individuals have to work together to stabilize worldcentric patterns of being in relationship. Otherwise, ecologically concerned individuals who are ostensibly one with the earth might propagate dynamics of 'othering' against their neighbors as well as various members of the global village" (p. 6). While this point is well taken, an ecocentric perspective—at least as understood by Arne Naess—actually includes both other species *and* other people (Naess & Rothenberg, 1989).

5. In *The Tao of Liberation*, Boff and I also demonstrate how the same principles flow out of systems theory (Hathaway & Boff, 2009, pp. 202–204).

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7

THE RELATIONAL SPIRAL OF INTEGRAL ECOLOGY

Elizabeth Allison

FOR THE INTEGRAL ECOLOGIST who connects the spiritual dimensions of earthly life with pragmatic and active engagement in the material world, there is no gap between the scientific understanding of the universe and the world's wisdom traditions. The late Thomas Berry (2009), a cultural historian and geologian who chaired the history of religions program at Fordham University for many years, was among the first to describe an "integral ecologist" in his 1996 essay, "An Ecologically Sensitive Spirituality." Berry says that the "great spiritual mission of the present is to renew all the traditional religious-spiritual traditions in the context of the integral functioning of the biosystems of the planet" and that what is needed to achieve this goal is an "ecological spirituality with an integral ecologist as spiritual guide" (pp. 135–136).

Berry (2009) notes that the environmental ills of late modernity stem from a disconnection between religions that place the locus of value in a transcendent realm, on one hand, and the specific, material needs of the Earth and its beings, on the other. Until recently, he says, most religious people were not concerned with understanding the biological order of the Earth. In contrast, "the integral ecologist is the spokesperson for the planet in both its numinous and its physical meaning" (p. 136). In Berry's thought, as in Buddhist thought, the lines between subjective and objective truths or between the physical and the spiritual are not sharp, and the physical and spiritual are very much interpenetrating. Following Berry, numerous scholars and thinkers have described the ecological crisis as a

spiritual crisis, noting that ecological destruction brings with it the loss of values of beauty, place, home, solace, and companionship, among others (Albrecht et al., 2007; Kellert & Farnham, 2002; Kellert & Speth, 2009; Macy, 1991; Macy & Brown, 1998; Speth, 2009).

THE INTEGRAL ECOLOGIST'S HABITS OF MIND

Berry's (2009) description of the integral ecologist is suggestive of the attitudes and dispositions that this new type of ecologist will bring to the crisis of global environmental change. Particular habits of mind that allow the integral ecologist to unite spiritual and material realms will need to be cultivated. How can such mental habits be cultivated? The practices of meditation, contemplation, and nonattachment that Buddhists are advised to cultivate will be helpful here. This pathway seems appropriate because Berry's thought was greatly influenced by his time in China as a young scholar, and by his study of Asian religions. He published books titled *Buddhism* (1996) and *Religions of India: Hinduism, Yoga, Buddhism* (1971), and taught courses in Asian religions for more than 20 years. His writing reflects engagement with three dimensions of Buddhism that support the development of a pragmatic integral ecology: first, an understanding of the immense suffering caused by environmental degradation; second, encouragement to apply restraint to human actions; and third, inspiration to extend compassion to other beings and to the Earth itself (Chapple, 1998).

These three commitments of the integral ecologist share a common foundation in that they all highlight the inextricable interconnections between the humans, to whom Berry is writing, and other beings, both human and nonhuman. Through these commitments, the integral ecologist both recognizes the extent of global suffering, bringing into his or her scope all sentient beings, and recognizes the possibility of taking steps to ameliorate this suffering through applying restraint to human actions. In placing the human within the tapestry of interconnection that is influenced by the integral ecologist's observations, attitudes, and actions, Berry (1999) posits a relational ontology—suggesting that the nature of things is to be conceived as fundamentally connected and related—an ontology that becomes explicit in his frequently cited statement, "we must say of the universe that it is a communion of subjects, not a collection of objects" (p. 82).

This sort of foundational relatedness can also be seen in articulations of Tibetan Buddhism. In speaking to a Western audience, His Holiness the Dalai Lama remarked:

> All of Buddhist thought and practice can be condensed into the following two principles: (1) adopting a world view that perceives the interdependent nature of phenomena, that is, the dependently originated nature of all things and events, and (2) based on that, leading a non-violent and non-harming way of life. (Gyatso & Thupten, 1995, p. 16)

Contained within this summary is the notion of a relational ontology—"the dependently originated nature" or *pratītya-samutpāda* in Sanskrit—which views all of reality as interdependent and mutually constitutive. In this view, the relations are fundamental, and all arising occurs in the interdependent context of interrelations. These interrelations imply both boundless responsibility and infinite compassion.

The importance of context and relationality is evident in critical approaches to history, politics, economics, and theology. Critical approaches challenge habitual patterns of thought, and seek to uncover the roots of historical, material, and philosophical conditions with the understanding that changing contextual conditions may lead to changing social conditions and liberation from oppression. Feminist theologians seek "to develop a view of human relations characterized by equality and mutuality, in which both autonomy and relationality are respected" (Farley, 1994, p. 196). This pattern of relating stands in contrast to the traditional hierarchies of domination and subjugation in which the way of being in the world attributed to elite, propertied, white males is situated as superior. To understand who the human person is who is involved in "equality and mutuality" and "relationality," we must understand that being in context. As ecofeminist Ivone Gebara (1999) explains, "relatedness" is the

> [f]irst and most basic characteristic of the human person. . . Relatedness is the primary and the ultimate ground of all that exists. . . Both the world we see around us and humanity within it are expressions of the relatedness that characterizes all things. (p. 103)

In Gebara's view, relatedness is the grounding of all things, "the constitutive relationship of communion we have with all beings" (p. 83). Therefore, the individual is not a singular, atomic being, but a node in a web of relations with the political systems in which oppression of women and nature takes place (Merchant, 2003; Mies & Shiva, 1993; Ruether, 1996).

At the same time, examination of any phenomenon is at best only partial. Lacking omniscience, humans do not have the ability to perceive phenomena

from every angle, in every condition, throughout the reaches of time. The classic story of the blind men and the elephant illustrates this point. While describing the elephant variously as a rope or tree trunk, depending on the part they touched, the blind men did not begin to consider the elephant's relations with other beings, its food sources or habitats, or its interior emotions and communications, all of which are surely part of what an elephant is. Thus, many observations will offer, at best, a partial perspective on an ecological situation (Haraway, 1988). Bringing many of these partial perspectives together will provide greater purchase on the situation, and will prevent any one perspective from performing the God trick, claiming to see objectively and omnisciently the full scope of the situation (Haraway, 1988).

THE RELATIONAL SPIRAL

The integral ecologist will need a particular method for approaching and analyzing ecological issues. Integral ecology, as described here, can be seen both as a method and as a transdisciplinary study that seeks to encompass the whole while recognizing that the logic of ecology—*oikos* (home) + *logos* (discourse)—is always local, as actions, ideas, and practices converge in a particular place. At multiple scales, from the atomic and microscopic to the galactic, particularities of time and space create a sense of place. On Earth, the conditions of place—topography, terrain, flora, fauna, climate, weather, and the like—affect perceptions, culture, and habit (Tuan, 1977). Connection with place is integral to the development of ecological awareness (Kellert, 1997; Louv, 2005).

How will the integral ecologist, this new spiritual guide, unite the conventionally disparate realms of science and spirit in practical action? What tools can the integral ecologist use to bring wisdom and insight to bear on increasingly complex environmental issues, interwoven with social justice, power relations, and legacies of domination so as to appear tractable? These challenges call for a method for describing, understanding, analyzing, and addressing the ecological crisis in its myriad forms. The question then is how to address environmental issues in ways that restore and regenerate spiritual values, rather than keeping them separate from ostensibly value-free science or economics. This essay offers a method for approaching ecological issues in an integral manner in which values are embedded at every step.

The relational spiral method of integral ecology, proposed here, offers an integrated method for analyzing environmental issues based in a Buddhist-inspired

relational ontology, a postmodern epistemology, and a feminist ethics to enfold a greater attention to universal justice and a flourishing into environmental decision-making. The metaphor of a spiral, rather than the ubiquitous circle or cycle found in much ecological literature, suggests the flux of an ever-changing reality that is discovered anew with each turn. The relational aspect of the spiral suggests that the investigations of this spiral do not occur in a linear, stepwise, or hierarchical fashion, but rather mutually influence one another, always already in relation. Thus, investigations of what nature *is* cannot take place apart from a critical stance toward the *methods of examination* used, containing an awareness that the methods of examination and analysis will also shape and be shaped by the ethical and political *context* in which an issue is studied. This approach allows for multiple epistemologies—not limited to the modern Western scientific epistemology—for understanding ecological issues, insisting only that the epistemological foundations and rules for collecting, interpreting, and identifying knowledge in any study or approach be articulated as clearly as possible. Therefore, explanations of ecological degradation based on ways of knowing outside those that the Western scientific establishment deems acceptable can be accepted as valid within their epistemological context. The explanation, which may include ideas of moral decline, disrupted taboos, or spiritual decay as reasons for environmental calamity, can reveal important insights for restitution of the situation that led to the imbalance in the first place.

The relational spiral of integral ecology critically investigates understandings of nature, knowledge, virtue, and justice to reveal the ways that these categories interpenetrate in defining, analyzing, and addressing environmental issues. The integral ecology method described here draws on the traditional fields of philosophical inquiry to raise critical, interlocking, and integrated questions in the ecological context. By examining the contexts of *ontology, epistemology, ethics,* and *politics* in relation to ecological phenomena, the approach to integral ecology helps uncover just and life-giving options for action.

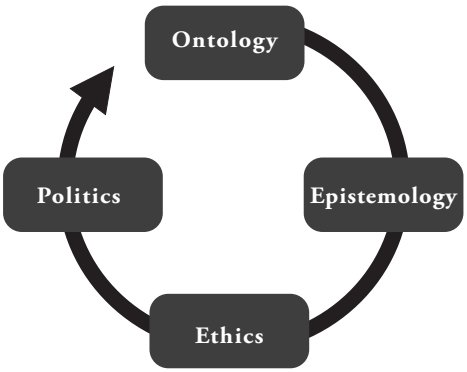

Figure 7.1. The Relational Spiral

The relational spiral of integral ecology carries an explicit normative stance in seeking a world that is more equitable, just, and

generative of the flourishing of all beings, with room for a vast diversity of the variety of form, experience, and expression of beings. This ecological perspective opposes initiatives and actions that concentrate wealth and power in fewer hands, that decrease the diversity of life on Earth, and that contribute to the oppression, marginalization, or commodification of living beings. Because of the central role of values in this form of analysis, integral ecology seeks to make values explicit through asking what visions of virtue and justice are inherent in the site of analysis, or in the integral ecologist. It seeks to bring these ethical intuitions into explicit discourse and to engage others in debate and discussion.

This approach draws on previous efforts to bring greater inclusivity and wider perspectives to ecological research, including ecofeminism, ecotheology, environmental ethics, and political ecology. From all four strands of thought, this version of integral ecology adopts an explicitly normative stance that calls for the valuing of difference, the recognition of injustice and suffering, the overcoming of oppression through critical analysis and pragmatic effort, and the attention to more equitable distribution of benefits and burdens across all strata of the interdependent society of life.

The spiral imagery takes inspiration from the theological spiral method that noted feminist theologian Letty Russell (1993) advances in *Church in the Round*. Russell's process of feminist theological analysis involves an ongoing spiral of critical analysis and engagement, in which neither reflection nor action is prior to the other, and in which civic engagement for social justice is essential to living a meaningful life. Her process begins with a commitment to work together with those "who are struggling for justice and full humanity" (p. 31). To this, the relational spiral of integral ecology would add a commitment to those beings whose inherent and intrinsic value is currently insufficiently recognized in human social structures. Russell's spiral continues with shared experiences of commitment and struggle, which lead to critical analysis of the larger social, political, economic, and discursive context shaping the experiences. Critical analysis of experiences that conflict with the professed values of the Church—in the case of Russell's theological reflection—or with values of resilience, interdependence, and sustainability, in the case of integral ecology, raise questions about tradition and the status quo, and help inspire new insight for transformational possibilities. These new understandings lead to continued action, reflection, and celebration (Russell, 1993, pp. 30–31).

FIRST METHODOLOGICAL PRINCIPLE: INVESTIGATE ONTOLOGY

The first methodological principle of the integral ecologist, then, must be to investigate the ontological status of the ecological phenomena or condition of concern, recognizing that ontological status will be both partial, and overflowing with context. Questions of ontology—or what exists in the universe—may be pursued from many perspectives. While it may seem simple, initially, to identify what is, further examination of this question reveals that it is fraught with power and contingency. Within the scientific framework, ontological questions typically become empirical questions of observation, data collection, and analysis. A theological framework, however, acknowledges the existence of God, an entity not granted ontological reality in the Western scientific paradigm. A theological ontology examines the relationship of humanity with this divine being, and the relationship of the Earth with God or gods. In a Christian framework, these questions may be pursued within the discipline of theological anthropology. With questions of ontology, we need not confine ourselves to the material or empirically observable. Questions of ontology may also address nonphysical beings or experiences or states of being. When less empirically verifiable phenomena are under analysis, questions of ontology become closely tied to questions of *epistemology*: How is this thing known? How can we determine that these ways of knowing are the most relevant, accurate, or insightful methods for gaining knowledge of the phenomena under analysis? What methods exist for verifying our perceptions or analyzing our evidence?

As the integral ecologist is the one who is the "spokesperson for the planet in both its numinous and its physical meaning" (Berry, 2009, p. 136), the integral ecologist must be able to navigate both spiritual and scientific realms, identifying ontological assumptions—rules for understanding what is—in each realm, and translating between these and other realm of knowledge. Questions about ontology invariably involve questions of politics and justice, as each observer speaks from a particular position that assumes certain states of affairs to be positive or beneficial, and other to be less desirable. Thus, in identifying and valuing certain aspects of a situation, the observer is also making a political statement about what is to be promoted or encouraged, and what is to be ignored or discouraged. In the realm of biodiversity conservation, it has been observed: "each and every conservation project tells us much about what participants believe to be good and proper" (Bryant, 2000, p. 677). In recognizing that all observers carry with them an implicit set of values, integral ecology differs from the sciences that seek

a purely objective viewpoint. In this approach to integral ecology, there is no objective view, only varying levels of recognition of the values inherent in various viewpoints. Integral ecology seeks to bring these values into full consciousness and articulation so that they can be discussed and debated in the public sphere.

Translation across and between disciplines becomes especially important in considering phenomena that may have ontological reality within one frame of reference but not in another, as may be the case in considering the causes of ecological degradation, which in some cultures can be seen as resulting from offended deities or disrupted taboos (see, for example, Allison, 2004; Bhagwat & Rutte, 2006; Bryant, 2000; Byers, Cunliffe, & Hudak, 2001; Sakakibara, 2009). An offended deity has no ontological reality within the Western scientific framework for studying ecological degradation, and yet may have very real material consequences for people who understand that their troubles result from an imbalanced relationship with such a deity. Material consequences may include the creation of elaborate rituals, ceremonies, and offerings to restore spiritual and ecological harmony, as well as regular practices of obeisance and veneration that maintain the spiritual relationship and have the material consequence of protecting or preserving nonhuman nature. Moral offense may also be seen as a cause of environmental degradation. For example, a Saudi fisherman remarked that there were no fish in the nearby ocean "because of all the naked sunbathers on the beach" (Ruitenbeek & Cartier, 2001, p. 9). While Western science might point to a proximate material cause, such as overfishing or pollution from new hotels or excessive consumption by elites, the fisherman identified the cause that most upset the harmony of his world and could thus be attributable for the lack of fish in the sea.

While considering the basic question of ontology—what is—it quickly becomes clear that this question is inseparable, and indeed, dependently originates, with the question, how do we know? This second question is the fundamental epistemological question. Together, questions of ontology and epistemology constitute the first two methodological steps of the relational spiral of integral ecology.

THE SECOND METHODOLOGICAL PRINCIPLE: EXPAND EPISTEMOLOGY

Over the past 40 years, the environmental movement has analyzed problems within the existing socio-political-economic context, and has called for solutions to address problems within this context. It has not, however, called for a

fundamental overhaul of the human institutions or the patterns of thinking that shape these institutions and structure our relationships with the natural world (Speth, 2009). With its emphasis on solving problems through science, technology, and policy, the environmental movement to date can be seen as a *transactional* model that focuses on changing the ways we do things with existing political, economic, and technological systems. It focuses on adapting existing systems and institutions to bring about more sustainable ways of life (Rose, 2009). In contrast, integral ecology is a *transformational* approach that points to the necessity of transformed ways of thinking to understand and solve ecological problems that mechanistic ways of thinking have created. While the mainstream environmental movement has generated significant success by working within existing bureaucracies to bring about new laws and policies that regulate pollution and protect ecosystems, the dominant strategies and approaches of the environmental movement have not challenged the human domination of nature that has been an essential part of growth and development in the industrialized West since at least the scientific revolution.

In the mechanistic understandings that followed the scientific revolution, nature that was no longer imbued with or possessed by gods was simply deadened material that could be used for human ends (Merchant, 2005). It was a short step from seeing nature as deadened material to seeing other humans, especially those who are "other," as inert material, since humans and other living beings are composed of the same substances. In this mechanistic worldview, in which parts are assumed to be interchangeable and technology rules, humans become ripe for exploitation. The devaluation of nonhuman nature from respected and often feared co-inhabitant of the land to mere inanimate material—or "resources"—based in part in the Cartesian idea that conscious thought was the foundation of moral value, and that only humans were capable of such thought, created the conditions for rapid and massive exploitation of nonhuman species, along with the land, minerals, and waters of the Earth (Merchant, 2005; Plumwood, 1993; Warren, 1995).

Many of the new ecologies of the late 20th century, such as deep ecology, social ecology, and political ecology, examine the patterns of human relation with nonhuman nature, and offer implicit or explicit critiques of existing patterns of domination of nature by humanity. After examining problems within the existing sociopolitical systems, they call for a reordering of the political structure. However, these approaches tend to limit their analysis to empirically observable social, material, and political factors, directing less attention to the habits of mind

and the transformation of mental models needed to perceive and fully engage with spiritual dimensions inherent in an interdependent cosmos.

Integral ecology rejects the atomistic and mechanistic view that suggests we can understand reality by dividing it into ever-smaller pieces for analysis, and instead suggests that knowledge is to be found in the varied and diverse terrain of integrated wholes, together with an understanding of the particularity and complexity of interdependent parts and the emergent properties to which these parts give rise (Gunderson, 2000; Lansing, 1987; Ruitenbeek & Cartier, 2001). In addition, new paradigms and revised ways of thinking that recognize the deep interdependence of human and nonhuman natures, such as those suggested by ecophilosophers Joanna Macy (1991), Theodore Roszak (Roszak, Gomes, & Kanner, 1995), and others, are necessary for a more complete understanding of the complexity of ecological and cosmological interactions. Therefore, methods of analysis must be similarly inclusive, expansive, and integrated, examining parts and wholes in their interdependent, systemic complexity. Methods of analysis must examine ways of being as well as doing, and perceive the ways in which mental models, patterns of thought, and epistemological assumptions shape human interactions with the surrounding world.

To transform ways of thinking about human-nature interactions requires a more inclusive epistemology that incorporates a broader variety of sources and types of knowledge into ecological discourse. Questions of epistemology address what tools, methods, instruments, and inscriptions are available for collecting information, who has access to these methods, what information is counted as evidence, and whose knowledge is counted as relevant or significant. Scientific and scholarly rules about the appropriate inclusion or exclusion of particular ways of knowing grow out of constellations of power and privilege that provide access to education and scientific networks for some and not others (Kuhn, 1996; Latour, 1987). These networks and educational experiences shape the types of questions that may appropriately be asked, and the places where answers may be sought. Epistemological questions inevitably shape ontological questions, because how we know determines to a large extent what we can know (Kuhn, 1996). Within the Western scientific framework, information collected by nonscientists or lay persons is generally excluded. However, some new approaches lead to a widened epistemological framework that incorporates more diverse voices and multiple ways of knowing. Some of the methods of bringing diverse voices into the examination of ecological issues include efforts to democratize science (Fortmann, 2008) and to incorporate the findings of citizen science (Epstein, 1995; Steingraber, 1998), as well as the incorporation of traditional ecological

knowledge (TEK) with scientific knowledge (Agrawal, 1995). TEK represents the cumulative body of knowledge, practice, and belief related to both cosmological view and geographical place in the world that a traditional or indigenous society has evolved through adaptive processes and handed down via cultural transmission (Berkes, 2008; Berkes, Colding, & Folke, 2000; Berkes, Kislalioglu, Folke, & Gadgil, 1998). TEK grows out of a long history of being embedded in place, and is often quite place-specific. The broader term *cultural knowledge* does not privilege traditional or modern culture, and shows how knowledge is embedded in the cultural structures that produce and sustain it, including art and cultural mores, as well as books and stories (Norgaard, 1994). These terms capture the notion that, shaped both by close experience with the land and by social interactions, ranging from storytelling and interactions with spirit mediums, local knowledge is socially constructed over time. Like citizen science, TEK incorporates values, as it addresses the "right" way for a given society to relate to nonhuman nature. Ecological investigations become more democratic when they are driven by community concerns, and incorporate the findings and observations of citizens as important. This type of science recognizes that values and political interests are at stake.

Expanding the ways of knowing about an issue may also provide additional insight. Different ways of knowing, such as contemplative practices, can be combined with standard epistemological approaches to bring about wider, more encompassing perspectives. Contemplative practices, including mindfulness, meditation, contemplative prayer, and even artistic practices, are those that calm and still the mind, allowing for the development of deep concentration and insight (Center for Contemplative Mind in Society, 2009). These practices shift the way reality is viewed, and can lead to improved mental integration and the broader perception essential to the discovery of creative alternatives (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Contemplation leads to viewing situations holistically by integrating left-brain and right-brain thinking. Mental processes associated with enhanced mental integration tend to lead to increased compassion and insight. By increasing compassion, contemplative practices may also lead us to be more motivated to pursue those solutions.

The practices of contemplation can prepare the mind for a shift in consciousness, or engender that shift (Hanh, 1991; Kabat-Zinn et al., 1991; Kaza & Kraft, 2000; Varela, 1999). As people become more attuned with themselves through meditation practice, they strengthen their attunement to their five senses, as well as their awareness of the interior of the body, their mental activity, and their relational connection to larger wholes. The development of the

prefrontal cortex through meditation can lead to greater empathy and compassion. The greater the attunement with oneself, the more the notion of an individual atomistic delusion of separateness starts to fall away, and the greater the realization of an interconnected whole (Siegel, 2009, 2010). For human beings, social animals who crave connection and dissolution of the isolative boundaries of the self, this perception of wholeness and interconnectedness leads to greater happiness and well-being (Siegel, 2009, p. 259). A consequence of this greater sense of connection is that people also increase their empathy through meditative practice (Siegel, 2010). They begin to create *you maps*, through which they understand others. And, through the greater sensitivity to connection, meditators create *we maps* that incorporate others and reflect participation in the larger family of life. This type of insight, not typically captured in standard accounts of ecological epistemology, can help people become more attuned to the integral and integrated nature of ecology. With the increased generation of compassion through contemplative practices, practitioners may also be inspired to ask for the good of other beings based on their insight, along with more standard empirical knowledge.

THE THIRD METHODOLOGICAL PRINCIPLE: EXPLORE ETHICAL IMPLICATIONS

Questions of epistemology quickly lead to questions about ethics at two levels. First, what characteristics define the ethical pursuit of ecological knowledge? Second, what characteristics shape the ethical use of ecological knowledge? As we have seen in the discussion of epistemology, determinations about what counts as knowledge are deeply implicated with questions of power, privilege, and hierarchy. Power and access to the tools and networks of knowledge creation in turn shape the types of questions investigated and the methods used for investigation. Research methods have ethical implications, particularly for the subjects of the research. The history of medical research is littered with examples of marginalized human communities being used as research subjects without receiving adequate information about the potential risks of participating in such research. The 40-year Tuskegee syphilis study, begun in 1932, that tracked the natural (untreated) progression of syphilis in nearly 400 African American men, even after penicillin became the treatment of choice in the 1940s, left a legacy of distrust of the medical and research establishment in the African American community.

Current debates about stem cell research, cancer research, and research on communicable diseases also hinge on both the ethical means of generating new knowledge, and the appropriate uses of that knowledge. In early 2012, scientists studying the highly communicable bird flu manipulated the virus to make it even more potent. The National Science Advisory Board for Biosecurity requested that scientists refrain from publishing their methods in scientific journals because of fears that the research methods could be used for nefarious purposes to create biological weapons. The request to publish an incomplete account of the research, in journals that ordinarily include methods as well as results, led to an uproar about censorship, scientific freedom, and international safety standards for research. However, in the context of international public health and ethical use of scientific knowledge, the requests to suppress the research methods were well founded. Such ethical considerations do not always make their way into scientific research, especially when that research may have effects on nonhuman species. For example, the track record of ethical analysis of the ecosystem effects of genetically modified organisms (GMOs) has been spotty, despite the fact that some studies show that GMOs can interbreed with wild organisms, changing the ecological characteristics of the wild species. Some GMOs are less preferable than their nonmodified relatives as food for wild species, setting off trophic cascades of die-offs as food sources disappear (Tally, 2002). These examples show the necessity of incorporating ethical analysis into ecological studies and decision-making.

ETHICAL IMPLICATIONS IN EPISTEMOLOGY

Numerous choices about what is worth studying, what grants and projects will be approved, what research agendas are appropriate, what methods are acceptable, and what means of conveying information are legitimate go into the construction of ecological knowledge. The relational spiral of integral ecology suggests that we not accept these choices and decisions as given, context-less, or value-free, but that we investigate the ways that each step of a research or analysis project reveals underlying values that may bear on ecological issues. The privileging of particular epistemological stances—such as the scientific method—has the consequence of disenfranchising and disregarding those who gain knowledge using other methods, such as TEK. Efforts to democratize science, by blending citizen science, which includes place-specific observations and community-based concerns, together with mainstream academic science, have shown how politics and power shape research agendas (Fortmann, 2008; Epstein, 1995; Schiebinger,

2008; Steingraber, 1997). Incorporating local community values into ecological research helps ensure that the research respects local mores. However, researchers must be continually aware of the power differential that exists between local communities—especially ecologically devastated ones that are often poverty-stricken either as a cause or consequence of the loss of their ecological resources—and academic scientists, who generally occupy privileged positions in the context of class, education, and income. These power differentials can lead to the silencing of local people or the misinterpretation of their concerns.

ETHICAL CHOICES IN PRACTICE

What does it mean to live a good life at a time of ecological crisis? How does the virtuous person engage with ecological devastation? These are the question that integral ecology leads us to ask in the context of any ecological phenomenon or issue under analysis. Questions about virtue and the nature of the good life have animated philosophical discussions since Aristotle, and remain essential for creating and living a satisfactory life. Among the first to explicitly articulate an ethic in relation to the other-than-human world was conservationist and wildlife biologist Aldo Leopold (1949/1966), who founded the field of restoration ecology and taught for many years at the University of Wisconsin–Madison. Leopold believed that human-centered ethics could be extended to encompass the natural world. He saw the extension of ethics in Western culture as a process of "ecological evolution" that built from the Mosaic Decalogue to the Golden Rule, and then to the land and the plants and animals living on it (pp. 238–239). In setting out this principle of extension from human ethics embedded in culture and religion, Leopold mapped a path that many future philosophers and environmental ethicists would follow. Philosophers took up the issue of the good life in relation to the environment through the creation of environmental ethics in the 1970s and '80s. At first, some saw environmental ethics as a type of applied ethics, like bioethics or business ethics, which appeared around the same time. The task of the philosopher, then, was to apply his or her standard moral theory—Kantian deontology, Rawlsian justice, or utilitarianism, for example—to the new issues affecting the environment (Callicott, 1989). This type of environmental philosophizing remained strictly anthropocentric, revolving around human welfare in the light of various environmental interventions.

Leopold (1949/1966) also proposed a more revolutionary view of the human in relation to the surrounding natural world. He proposed to change "the role

of *Homo Sapiens* from conqueror of the land to plain member and citizen of it" (p. 240). In "The Land Ethic," he spelled out appropriate relations between humans and their surroundings: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (p. 262). This decentering of the human from the pinnacle of creation and value pointed the way toward biocentric and ecocentric ethics, approaches that shift the locus of intrinsic value from the individual human to collective biological and ecological wholes, and locate intrinsic value in all planetary (or living) beings. Biospheric egalitarianism, the view that all living things are alike in having value in their own right to existence, independent of their usefulness to others, was proposed by Norwegian philosopher Arne Naess (1973/1999) in his articulation of deep ecology. Such approaches create a significant challenge for traditional ethics, a field that has generally placed the rational individual at the center of value-based decision-making. Some have suggested that the environmental crisis should be seen as a repudiation of Western attitudes and values in relation to nature, requiring a sweeping philosophical overhaul (Callicott, 1989; Moncrief, 1970; Rolston, 1989; White, 1967).

These divergent approaches to environmental ethics suggest the importance of creating an ethical framework in which phenomena can be analyzed. Should the highest value be the well-being of an individual rational human? Should we employ a utilitarian approach, seeking the greatest good for the greatest number over the longest time, as sustainable development paradigms would counsel us? Are biotic wholes, such as ecosystems, to take priority over the well-being of individual specimens? These questions lead to contradictory answers, and yet all must be considered within a context of relational integral ecology. The integral ecologist may find it necessary to adopt a situational ethic, applying different methods of ethical reasoning to different cases of ecological concern. It is not the purpose of this essay to suggest one universal ethical framework for ecological issues, but to point to some of the ethical issues that come to light as the integral ecologist traverses the spiritual and material domains of the living planet.

FOURTH METHODOLOGICAL PRINCIPLE: CONTEXTUALIZE IN POLITICS

While investigating the components of a good or virtuous life at a time of ecological catastrophe, the integral ecologist will soon realize that even if he or she lives as virtuously as possible, the structures and institutions of society shape

the opportunities and possibilities available. While the individual has agency to choose and practice a virtuous life, according to his or her own definition, that agency is constrained by the larger structures of society. Corporations, government institutions, international governance bodies, transportation infrastructure, tax codes, laws, and policies all constrain and limit the possibilities the individual may pursue. Thus, the integral ecologist must examine the larger political context in which ecological decisions and practices take place. The political context includes the circulation of power at various levels—from the interpersonal and local to the global—and the related aspects of economics that describe how various forms of goods and services are valued in global and local forms of exchange.

This methodological principle of integral ecology grows from political ecology, an approach to ecological issues pioneered by radical development geographers and cultural ecologists in the 1970s, as these schools of thought responded to neo-Malthusian claims that the growing world population was the critical factor in the environmental crisis (Bryant & Bailey, 1997). To rebut the racist and classist claims that the unchecked population growth of the world's poor, found mainly in the global South, was chiefly responsible for environmental degradation, political ecologists examined the contingent, mutually constitutive actors and conditions that contributed to specific natural resource dilemmas at particular historical moments. They revealed the historical contingency of the political-economic structures and physical contexts in which environmental change occurs (Blaikie 1985; Blaikie & Brookfield, 1987). Political ecology's emphasis on multiscalar examinations that move from local micropolitics and economic structures to the global political economy of natural resources helps show how the options available to local actors can be constrained by national or international dynamics. Similarly, examining the historical trajectories that led to specific conjunctures at certain moments shows how situations are historically contingent. Locating particular situations historically helps denaturalize claims about how things "must" be or have "always" been. The historical lens exposes changes over time, as well as the multitudinous factors that collide to create unique historical situations. For example, this attention to history debunks misleading narratives of either ecological harmony or savagery promulgated by societies that erase the existence and agency of indigenous peoples. Rather than being either ecologically noble innocents, or savage destroyers of ecosystems, indigenous people have been shown to be integral to the production of what we think of as "natural" landscapes for eons (Fairhead & Leach, 1996; Hecht, 1993; Neumann, 2005).

In challenging the equity of existing political and economic structures, political ecology places the study of humans and the natural environment into its larger context. The concern with power relations and distributive justice shown by political ecologists carries an implicit normative moral agenda. Political ecology recognizes the inherent power dynamics in social and environmental change such that some will be winners and some will be losers, often reinforcing or reducing existing social and economic inequalities. In its attention to political inequities, political ecology is explicitly normative, seeking to improve material conditions for the poor and marginalized, calling for attention to justice and human rights, and suggesting that less coercive, less exploitative, and more sustainable ways of doing things exist. Within the foundational assumptions of this approach are the notions that the burdens and benefits of environmental change are unevenly—and thus unjustly—distributed, and that such wrongs should be righted. Political ecology's attention to power flows shows how class, gender, ethnicity, and other categories have been used to marginalize certain groups through social and historical processes established and maintained through power structures. These marginalizing categories are neither natural nor inevitable.

Political ecology's attention to power highlights issues of distributive justice in relation to natural resources (environmental "goods") and degradation (environmental "bads" or harms), bringing attention to the needs of excluded or marginalized groups (Bryant, 1998; Peluso, 1992; Scott, 1976; Thompson, 1971). The burdens of a polluted and degraded environment and biodiversity loss tend to fall most heavily on the urban and rural poor. The specialized study of unequal distributions of environmental burdens and benefits has come to be known as *environmental justice*, a field that has been primarily concerned with North American urban communities, where poor people are more likely to live in environments with polluted air or water or contaminated by industrial effluents (Bhagat, 1994; Bryant, 1995; Bullard, 1996). Low-income communities and communities of color are often found living near toxic waste incinerators or power plants, where air pollutants lead to respiratory and other diseases. These communities bear an unfair share of the burdens with relation to the production of energy and the management of waste in industrial societies. In urban communities, poor people are more likely to live in environments with polluted air or water, or that are contaminated by industrial effluents. The rural poor often lack access to basic social amenities, such as education and healthcare, and may find it difficult to make a living in degraded agroecological land.

Globally, neoliberal capitalism and unequal power relations between rich and poor countries constitute a Third-World environmental crisis, subjecting the

poor to inadequate living conditions, including hazardous air and water, and "natural" disasters (Bryant & Bailey, 1997). In less-developed nations, deforestation, devastated fisheries, polluted drinking water, and climate-change-induced droughts challenge the lives of millions. In contrast, wealthier communities receive a larger share than poorer communities of ecological benefits, such as clean water and air and access to rejuvenating outdoor spaces for recreation and enjoyment. Wealthier countries consume a greater share of the world's resources than would be warranted by their share of the world's population. While wealthier populations can currently buffer themselves from many of the impacts of environmental degradation, the poor lack the economic and health resources to do so, and suffer greater harms because of the ecologically destructive patterns of consumption of the wealthy. In the context of interdependence, the well-being of all cannot be achieved when, as in the United States, the richest 1 percent takes home more than 20 percent of the income (Kristof, 2010). Placing environmental issues in their political context shows that, relative to any environmental phenomenon or issue, some people will be winners and some will be losers, in patterns that are inconsistent with what any party is justly due. Some will gain greater benefits at the expense of the suffering of others.

The lack of justice is even more extreme in relation to nonhuman life. Most of the environmental actions people take on the Earth are aimed at improving living conditions for humans—often at the expense of nonhuman life. Habitat destruction, land conversion, climate change, deforestation, desertification, urbanization, habitat fragmentation, and pollution as a result of human activities lead to depleted space and quality of existence for nonhuman life. Up to half of the species on Earth could disappear by the middle of the 21st century (Sih, Jonsson, & Luikart, 2000) in a slow-moving cataclysm that has been called the sixth mass extinction (Barnosky et al. 2011). While this disappearance of life on Earth will have catastrophic consequences for human well-being, including crashing harvests and crop yields, depletion of raw materials for human industry, increased flooding, and famine, to name only some of the more extreme material consequences, the losses for nonhuman species will be much greater. Populations of wild species will be insufficient to provide appropriate mates for breeding. Individuals and whole populations will perish because they have no appropriate habitat in which to live or because their home ranges have become too warm or too polluted to sustain life. Wild species will see the other species on which they depend for food decline and vanish. Yet these concerns and interests of nonhuman species are very rarely weighed in environmental decision-making.

Human egocentrism has caused nonhuman nature to be viewed as an inert background, against which the drama of human life, with its culture, politics, and commerce, plays out. Philosopher Val Plumwood (1993) called this phenomenon *backgrounding*. She shows how dualistic thinking posits a pair of polar opposites—male/female, mind/body, culture/nature, civilized/savage—in which one pole, associated with spirit or mind, is thought to be superior to the other pole, associated with matter, creating a hierarchy that places greater moral value on the superior pole and uses this superior value as a reason to denigrate the inferior pole. Through this hierarchical dualism, women and nature have often been linked through their physicality, and then defined as the background, nonagent, nonactive condition upon which the (male-identified) events of history and reason are played out. Rather than accepting this deadened view of nonhuman nature as inconsequential background "stuff," ecological justice requires recognizing the agency of nature, as both an active force in human drama, and a shaper of perceptions, imagination, and attitudes (Watts & Peet, 1996). This view does not suggest a return to early-20th-century environmental determinism, in which the "natural" capacities of various peoples were thought to be shaped and limited by their geographical surroundings, but instead takes account of the agency of nature in shaping people's livelihoods and perceptions. Nature is no longer a backdrop or static stage on which the activities of human affairs—history and culture—play out. Instead, the materiality and activity of nature shape the ways that people think about and work in it, just as people shape the ways that nonhuman nature is allowed to continue to exist.

Placing ecological issues in their larger political context reveals the ways in which power relations shape the distribution of the resources needed for life. The disparity in the distribution of these resources suggests a need for an affirmative stance toward justice for those—including nonhuman species—whose well-being is constricted by insufficiency and maldistribution. How can we incline toward justice? Distributive justice explores the acceptability of externalizing current environmental burdens to other human communities (typically the poor and marginalized), to nonhuman communities, or to future generations. In *A Theory of Justice*, political philosopher John Rawls (1971) suggested that principles of justice could be derived by imagining an *Original Position* in which all parties were ignorant of their future status in life—unaware of whether they would be rich or poor, able-bodied or disabled, intelligent or dull, fortunate or not. From this position, he believed that people would choose rules of justice that would create a social contract to benefit all members of society, including the least able or most marginalized, because anyone might well fall into misfortune. In this

political theory, nonhuman species are not considered because, assumed to be lacking rationality, they have no way of participating in the social contract. They owe no duties and obligations to human society—despite the fact that human society depends on nonhuman species for its every need—and humans have no duties or obligations to nonhuman species.

While the idea that such a blind position could lead to greater justice for the poor and marginalized is laudable, the neglect of history and politics in this exercise leads it to be inapplicable to a world populated by living beings in relation to one another and to the Earth. Such relationships are always embedded in a historical context. To neglect the dynamics that bring us to a situation where some have more power than others is to erase the historical context and do violence to the myriad causes and consequences that resulted in one power dynamic and not another. The Rawlsian theory of justice may point to an appropriate form of distributive justice in society—but it neglects the restorative or retributive justice that is needed in the 21st century to rectify the numerous wrongs and thefts perpetuated primarily on the colonized people and lands of the global South, as well as on the ecology of the entire Earth. Distributive justice is no longer sufficient for creating a just society that can contribute to the Good Life for its members.

Restorative justice that recognizes and seeks to repair the harm done to the fabric of community is needed to heal old wounds and harms. A historical view is necessary to analyze the politics and contingencies that brought about the situation of injustice and to analyze the appropriateness of unequal distribution of the goods of life. The historical view may point to the need for reparations to bring parties back into some sort of parity. For example, the more developed countries have contributed most of the CO_2 burden to the atmosphere, leading to global climate change. Data for 1900 to 1999 show that the United States, with about 5 percent of the world's population, was responsible for about 30 percent of carbon dioxide emissions from fossil fuels, the primary source of greenhouse gases. Most of this carbon dioxide is still in the atmosphere, contributing to global warming. By filling up the atmosphere's absorptive capacity with carbon dioxide, the United States has created a situation in which other nations are being asked to limit their emissions of carbon dioxide and other greenhouse gases to prevent or limit catastrophic climate change. And yet, a historical view suggests that the United States made a sort of atmospheric "land grab," made possible through natural resource endowments found in the United States, such as plentiful timber and coal to fuel mechanized industry, as well as natural resources extracted from other countries. A reparative position would point to the obligation of the United States to not only emit fewer greenhouse gases, but to assist

other countries in improving their material living standards without the emission of greenhouse gases, allowing nations around the world to move toward greater parity with regard to material living standards.

Another challenge to the Rawlsian approach to justice is that it ignores the primacy of relationship. No one is born without a context—from the very beginning, humans are surrounded by family, friends, teachers, and acquaintances, as well as landscapes that include plants, insects, birds, microorganisms, pets, livestock, and other mammals. This inescapable context—different for every individual, even those in the same family or household—shapes people as individuals and members of a variety of nested communities. These communities range in size from the household or family unit, to the local geographical area, to the watershed and bioregion, to the state and nation, and also include imagined communities, such as those created by avocation, interest, and religious belief. These relationships with human and nonhuman beings, embedded within nested communities, are the primary constituting force of the individual. The individual does not and cannot exist outside of the myriad relationships and communities that mutually shape and constrain the individual. Thus, in the context of an integral approach to ecology, the human must begin where he or she is—physically, emotionally, socially, geographically—within a deep web of ecological context. Relationships include emotional valence and an aspect of care and concern. Feminist ethics of care prioritize the caring relationship of individuals, including such subjective feelings as compassion, love, and empathy, over more universalistic principles, such as utility or the categorical imperative (Beauchamp & Childress, 2001). One does not have a relationship with someone one does not care about. This care may take the form of disdain or dislike, but it is still there as an emotion in relationship to the other. As many have noted, the opposite of love is not hate, but indifference. Indifference, or unawareness, is where the lack of care may be found. Indifference on the part of the powerful to the needs of other beings has led to great degradation of the planet. A we have seen, Aldo Leopold (1949/1966) advocated expanding the circle of human concern to include care for other living beings—plants, animals, and the land itself: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (p. 262). Leopold's words offer guidance for the integral ecologist, one whose broader perspective seeks to encompass both the numinous and physical meaning of the planet. The integral ecologist is challenged to expand his or her perspective to encompass the larger political and historical landscape through which ecological issues unfold, engaging the larger structures and institutions of society to begin to redress the

inequities that they create. In the realm of politics and action, the integral ecologist investigates how to bring these disparities into greater justice.

CONCLUSION

Having traversed the relational spiral of integral ecology, the integral ecologist will note the influence of politics on ontology, our first category, and on the closely related category of epistemology. Those in power have a large influence in deciding what something is. The role of power in ontological definition can be seen clearly in historical, and ostensibly scientific, definitions of race based on various craniometric measurements and their purported relationship to intelligence and other desirable qualities (Gould, 1996). Definitions of race, with a veneer of scientific objectivity, have been used to exclude and dominate various groups of people, excluding them from access to various benefits of society. The definition of a species is similarly power-laden and subject to political wrangling, used to protect some species at the expense of others (Biber, 2012).

Institutions of power constrain and limit the subjects of inquiry, and the available ways of understanding what is, confining respectable or reasonable investigations to those that harmonize with and reinforce the structures of power. This is not to suggest that only those ways of knowing that reinforce dominant institutions and structures are allowed to exist, but that those that do fit with the dominant paradigm will be privileged and viewed as more reliable. The role of control and maintenance of the dominant paradigm is perhaps one reason that spiritual knowing is often considered suspect. Institutions of power maintain ambivalent positions in relation to spirituality, because it loosens people's connections to the worldly realm, turning their focus to a transcendent realm, and causing them to become potentially less governable. Religion structures, organizes, and even coerces, maintaining people within the circulations of power that Foucault (1997) has shown to be inescapable. While formal religious structures frequently reflect and reinforce the hierarchy and power structures of society, private spiritual practices such as prayer, meditation, and offerings are less under the control of the state. The prophetic tendency of religion—in which an individual's spiritual experience conveys new insight or understanding about the nature of the world—calls the existing order into question.

Spirituality functions as a space of freedom that unmoors believers from the demands of dominant paradigms and institutions. It carries information that exists within specific practices and states of being—irreducible to current

constructions of rationality—that may expand and deepen our comprehension of the cosmos. Through mystical experience, the believer may perceive a oneness of life that is not ordinarily accessible. This perception may impel the mystic to rebind the connections that are seen as broken. Spirituality, through which an expansion of the self is experienced, is often a source of inspiration for social activism and change. As theologian Dorothee Solle (2001) writes:

> Mysticism is the experience of the oneness and wholeness of life. Therefore, mysticism's perceptions of life, its vision, is also the unrelenting perception of how fragmented life is. Suffering on account of that fragmentation and finding it unbearable is part of mysticism. Finding God fragmented into rich and poor, top and bottom, sick and well, weak and mighty: that's the mystic's suffering. The resistance of Saint Francis or Elisabeth of Thuringia or of Martin Luther King grew of out perception of the beauty. And the long lasting and most dangerous resistance is the one that was born from beauty. (p. 302)

Within the Tibetan cultural sphere, a shaman or spiritual leader may use spiritual practices to fuse the mental and physical worlds, inveighing deities, who can be accessed in the spiritual plane, to bring about change in the phenomenal plane. Within the spiritual plane, the medium may discover that it is necessary to provide a deity with reparations, such as offerings. A deity may be requested to stop a landslide, to accepted changes in the environment, or to provide protection. Changing the mental landscape can then change the physical landscape. The integral ecologist is similarly called to bind the spiritual and the material tightly together, birthing a desired future. The methodological principles outlined here can assist the integral ecologist in slipping between realms to bring the numinous and the physical into greater harmony, liveliness, and flourishing.

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8

FIVE PRINCIPLES OF INTEGRAL ECOLOGY

Sean Kelly

A LOOMING MASS EXTINCTION of species the likes of which has not been seen in 65 million years, global climate change, habitat loss, diminishing supplies of fresh water and topsoil, disappearing forests, polluted and overfished oceans, increasing desertification: all are the result of human choices and destructive ways of life. The sciences of ecology, which study the relations of organisms to their environments, clearly have an essential role to play in understanding and attempting to ameliorate the mounting crises we face. The gravity and complexity of these crises, however, call for integral approaches to the theory and practice of ecology. The word *integral* here suggests, to begin with, that ecology is relevant to the full range of human knowledge and action. All human endeavor—from food production and resource use to economics, politics, and education—needs to be ecologized, in the sense that implications for the fate of the entire Earth community need to be considered. Conversely, ecology needs to draw from the whole spectrum of human inquiry, not only from the natural sciences, but from the human and social sciences, from the world's spiritual traditions (Eastern, Western, and indigenous), and from collective wisdom and individual insights.

While the sciences of ecology have already contributed to a more holistic, and in this sense, more integral understanding of the natural world and of the relation of organisms (including human beings) to their environments, the general trend has been toward ever-increasing specialization, disciplinary fragmentation, and an exclusive focus on material interactions and external relations. Outside scientific ecology proper, this trend has been somewhat compensated for with

the emergence of a growing number of hybrid approaches, including political ecology, social (and socialist) ecology, deep ecology, feminist ecology, spiritual ecology, and most recently Sean Esbjörn-Hargens and Michael Zimmerman's (2009) impressive proposal for an "AQAL" ("all quadrants, all levels") system of integral ecology, based on the work of integral theorist Ken Wilber. This Wilberian system (a detailed presentation of which appears in the third chapter of this book) involves a conceptual mandala that superimposes four quadrants (interior/exterior and individual/collective) on the traditional three levels of body, mind, and spirit. Its notable virtues include an easily mastered map of the multiple terrains of ecological theory and practice; an explicit recognition of the importance of interiority (for all organisms, not just human beings); a coherent articulation of ecological or environmental ethics; and a robust view of the nature of evolution and human development, including its spiritual dimensions.

Alongside these and doubtless other virtues, however, certain aspects of the AQAL system could meet resistance among those otherwise sympathetic to the idea of an integral ecology. Some representatives from the various schools of ecology might not recognize themselves as they are characterized, and categorized, within the system, mostly confined as they are to a single quadrant (and sometimes to a subquadrant) and level. A danger here, for both categorizer and categorized—and this despite the real care taken by Esbjörn-Hargens and Zimmerman (2009) to honor the perspectives they attempt to integrate—lies in mistaking the map for the territory, a danger amplified when the map purports to cover everything conceivable and in sight, including the ground one is standing on. Personally, I have found the AQAL map fascinating to contemplate and useful as an orienting device. I would not, however, wish to see the project of integral ecology (or more generally integral theory) collapsed into the AQAL, or any other, system (again, it is a credit to Esbjörn-Hargens that, despite his obvious commitment to the AQAL approach, he is a major advocate for healthy and vigorous dialogue among all varieties of integrality). After all, we know the importance of biodiversity for the overall health of ecosystems. The same should hold true for the field of integral ecology, or better, as we have indicated with the title of this volume, integral ecologie*s*.

Instead of another system, therefore, I want to propose a set of five principles that together can allow for a kind of thinking that will be sufficiently vital and supple to match the complexity of the terrains being explored. In this case, the terrains include not only the relations of humans and other organisms to their environments, but the theories used to understand these relations. While

these principles apply to integral theory in general, they are especially relevant to any approach to ecology that would consider itself integral.

Before turning to the principles, however, a few brief comments about the history of integral thought might be helpful. The first explicit and fully developed use of the term *integral* for our purposes is to be found in the voluminous writings of the 20th-century Indian sage and spiritual teacher, Sri Aurobindo (see especially Aurobindo, 2010). His philosophy and yoga of integral nondualism constitute a monumental synthesis of Hindu and Western traditions (though the latter are rarely explicitly acknowledged). The nondualism in question refers to the true nature of things, where matter and spirit, the individual and the universal, the finite and the infinite, time and eternity, and a whole series of other pairs of terms are seen to be manifestations of the more inclusive reality of the Whole or Absolute. This Absolute, however—and this in contrast to monistic nondualism (whether of the idealist or the materialist type)—maintains the reality of the differentiated pairs. Though clearly influenced by the Hegelian concept of the Absolute and its associated dialectical logic, Aurobindo puts a greater stress on the idea of evolution, explicitly recognizes the existence of subtle worlds, and sets a higher value on trans-rational, or *supramental* modes of knowing.

From Aurobindo, the word *integral* was taken up by Jean Gebser (1985), whose dense but highly original and visionary book, *The Ever-Present Origin*, presents a view of different fundamental structures of consciousness (archaic, magical, mythic, mental, and integral) and evidence for the transition underway from the mental and perspectival to the integral-aperspectival. By *perspectival* Gebser refers to a late phase of the mental structure and its associated worldview, which, signaled by the invention of linear perspective during the Renaissance, made possible the emergence of modern science, politics, and industry. The power of perspectival thinking is that it allows for a detailed mapping of systems, especially with respect to the prediction and control of certain (ideally quantifiable) properties of the systems in question. As the Romantics, Idealist philosophers (such as Schelling and Hegel), and many others since have argued, however, this kind of thinking, if not checked, is antithetical to the character of living beings, whose nature is irreducibly qualitative and withers when confined to the perspectival space of Cartesian grids. The integral character of nature and life, and therefore the possibility of an integral ecology, calls for the critical integration of perspectival thinking into a way of knowing and being that is more true to what is (or becomes), is better for realizing what ought to be, and is more beautiful to behold.

Hegel, Aurobindo, and Gebser each contributed central elements to Wilber's version of integral theory, though many other—and in principle all other—figures

and theories find a place in the AQAL map. Based as it is on this map, Esbjörn-Hargens and Zimmerman's (2009) proposal for an integral ecology succeeds in integrating hundreds of distinct schools of ecology. To my mind, however, because the quadrants in particular can lend themselves to a kind of residual perspectivalism (where there is a place for everything—and everything, though not always happily so, is in its place), it is, as already noted, important to cultivate alternative approaches to integral ecology. My own approach, while both friendly to, and in dialogue with, that of Esbjörn-Hargens and Zimmerman, lays a greater emphasis on principles than on a system or map. In what follows, I consider five such principles in the form of five adjectives: *evolutionary*, *planetary*, *transdisciplinary*, *(re)enchanted*, and *engaged*. Others doubtless could be proposed, but these five seem to me necessary for any approach to ecology, including one based on the AQAL map, that would consider itself integral. As we shall see, each of these principles in one way or another implies the others, and it is only after all five have been considered that a more adequate (though still provisional) understanding of each of them can be achieved.

EVOLUTIONARY

The first principle invites us to enact ecological inquiry within a more integral understanding of time. To begin with, and in contrast to the ordinary, purely quantitative conception of time, such an understanding involves the recognition that we now stand at a singular and in many ways unparalleled moment. This moment can be characterized by two Greek words—*eschaton* (literally, the last or end time) and *kairos* (the right or opportune moment).

We are currently in the early though quickly accelerating phase of the sixth mass extinction of species, and in the process bringing to an end the 65-million-year geological period called the Cenozoic.[1] The Cenozoic began with the last mass extinction event, which claimed about 75 percent of the world's species, including the nonavian dinosaurs, and which was probably caused by a massive meteorite impact on the Yucatan peninsula. The new geological period that followed saw the rise of birds and mammals, including the relatively recent appearance of our first hominid ancestors perhaps some six or seven million years ago. The current mass extinction could be happening at a much faster rate than the previous one, and this time it is not a giant meteorite, but our own species that is bringing it about. Some might take comfort in the idea that the last mass extinction seems to have made way for the greatest spurt of biodiversity the

planet has seen and for the eventual emergence of our own species. However, apart from the fact that we have no reason to believe in the possible repetition, from our point of view, of such a positive outcome, the grim reality is that life as we have always known it is on the brink of collapse. This is the most momentous eschaton, the end of the longest arc at whose uncertain threshold we now stand.

We stand at another end, that of the Holocene, the last subphase of the Cenozoic, which began with the lifting of the most recent glacial period about 12,000 years ago. The Holocene has been marked by a relatively stable climate within ranges that favored the rise of human civilization. As we know, this stability is now threatened by global climate change, itself the newest critical factor (alongside habitat loss, attrition or decimation of populations, and environmental pollution) contributing to the current mass extinction. There are other ends as well, including that of the historical period as a whole (around 5,000 years), the modern period (500 years), and that of cheap oil (100 years), each of which might be seen as increasingly focused perspectives on the complex processes that are bringing about the end of the Holocene and the Cenozoic.

If we are living in an end time, however, it is also a time of *kairos*, "the right moment" as Jung (2006) put it, "for 'a metamorphosis of the gods,' of the fundamental principles and symbols" (p. 110) that have brought us to this end. We are at a critical point of transition between the still dominant secular-scientific worldview and a more integral worldview struggling to take hold. Though, in its origins, the modern worldview was inspired by Hermetic philosophy, alchemy, and other mystically oriented religious and theological impulses (see Kelly, 2010, 49ff.), since the nineteenth century it has devolved into the spiritually deadening, mechanistic and materialistic view of reality that much of contemporary culture now takes for granted. From the perspective of mainstream science, the cosmos is seen as composed of essentially lifeless particles, which, without inherent meaning or purpose, have more or less accidentally given rise to life and to self-conscious beings such as ourselves.

There have been exceptions to the mainstream, of course, including the great Romantic and Idealist philosophers (especially Schelling and Hegel) and lone visionaries such as Aurobindo, Rudolph Steiner, Jung, Teilhard de Chardin, and Ken Wilber in our own times. A notable contemporary exception to the mainstream is represented by the work of evolutionary cosmologist Brian Swimme. Along with his mentor and colleague, Thomas Berry—both of whom were inspired by the work of Teilhard de Chardin—Swimme has devoted his life to articulating the New Story or Journey of the Universe (see especially Swimme, 1992, 1999, and Swimme and Tucker, 2011). In contrast to the dominant evolutionary

narrative, Swimme sees the cosmos as engaged in the process of actualizing its intrinsically spiritual potentials. From the numinous Big Bang or *primal flaring forth*, as he prefers to call it, to the eventual appearance of self-conscious life, finally able to recount the grand epic of its own emergence, Swimme challenges belief in the despotic reign of mere chance and necessity, the jealous twin gods of mainstream science and standard evolutionary cosmology. While honoring and joyfully celebrating the continuing revelations of the modern scientific project, he recasts them in a more integral context. His telling of the New Story liberates the cosmological imagination from the mechanistic straitjacket to which it has been confined. Swimme invites us to experience our participation in an evolutionary dance that manifests such cosmological powers as *seamlessness*, *allurement*, *transmutation*, *transformation*, *interrelatedness*, and *radiance*.

"This is the greatest discovery of the scientific enterprise," Swimme (2006) has said: "You take hydrogen gas, and you leave it alone, and it turns into rosebushes, giraffes, and humans" (para. 14). Along with transmutation (the power to change the self) and transformation (the power to change the whole), the evolution of the cosmos from hydrogen gas to humans involves the power of *emergence* (creativity and self-transcendence). Unlike most of Swimme's other powers of the universe, the idea and problem of emergence has come to the forefront of more mainstream considerations of evolution. It is a problem because, from within the dominant mechanistic paradigm, all properties of a given system must be explained in terms of—which is to say, reduced to—the properties of its simpler constituent elements. This is problematic since, as Swimme's words above imply, there are at least two miraculous leaps from hydrogen gas to humans: the first from matter to life, and the second from life to mind (or self-conscious life). Of course the problem disappears if one is content to regard life as "nothing but" a manifestation of specialized chemical interactions, and mind or self-consciousness as a mere byproduct of organic chemistry. The technical philosophical term for this way of thinking is *epiphenomenalism*, the essence of which was nicely summed up more than two centuries ago by the French Enlightenment philosopher Cabanis, who pronounced: "The brain secretes thoughts as the liver secretes bile."

For those not satisfied with the dogma of epiphenomenalism, it sooner or later becomes necessary to conceive that, in ways we will probably never fully understand, what emerges is somehow already present as an initially hidden potential. Life and consciousness themselves, in other words, are powers of the universe. The very word *emergence* suggests as much, as does Cabanis's "secrete," for only that which is already present, though invisible, can come out (emerge)

or be pushed out (secrete). This is the view taken by Aurobindo (2009) (and by the esotericists in general), for whom evolutionary emergence is unintelligible without a metaphysically prior *in*volution. Here the simplest forms, such as hydrogen gas or elementary particles, are seen as among the last of a series of successive self-limitations on the part of the Absolute or the Whole.

The metaphysical notion of involution presents its own challenges, however. Apart from turning the dominant habit of reductionistic thinking on its head, there is the necessity of conceiving of processes or stages outside of time as we know it (since the time of science is the time of the evolving universe) and of granting the existence of other, subtle realms beside the one of physical matter/energy, the only one that science has so far chosen to recognize. I will not pursue these challenges here. Instead, I want to conclude this section on the evolutionary principle with a brief consideration of a third Greek word: *telos*, which, like eschaton, also means "end" in the sense of "goal" or "purpose" (*eschaton*, by contrast, suggests "end" as "edge" or "limit").

In dialogue with me a few years back, as a kind of gloss on the miraculous potentials of hydrogen gas, Swimme remarked:

> I would say that the most significant discovery in the last 30 years of science is the telos of the universe. And this is something that we worked hard, very hard to convince ourselves did not exist in science. . . That is why it is so incredible that we are coming to this: the realization that the universe has been *rushing to life*. Before, it was that life *happens*, and it was either accidental or beside the point. Now the idea is that the universe has been rushing to life. It is a very, very different conception (Kelly & Swimme, 2006).

It is of the very nature of matter, in other words, to manifest as life. No sooner had the young Earth, in all appearances a mere ball of molten rock, cooled just enough to allow for the formation of liquid water, than the first living beings emerged. If the telos of our rock-planet was life, however, the story would have stopped with single-celled organisms. It is true that, after the initial emergence of life on Earth, it took more than three billion years for complex organisms to emerge, but when the conditions were right, emerge they did. In the only instance of life with which we have any direct acquaintance, moreover, it is also the case that life has evolved to mind, which seems to be its telos.[2]

I had a visceral experience of the emergence of life from matter and mind from life as I walked with Stephan Harding and our students one summer in

England along the Devon coast. In 4.6 kilometers, or 4,600 meters—which is about twice as many steps—we retraced the 4.6 billion years of Earth's history, from the ball of molten rock to our own end times. With each step, we traveled half a million years. For the better part of an hour, or around 700 million years, nothing but slowly cooling molten rock. Then suddenly, matter unfolds into life with the first cells. It was as if, until this moment, Earth had been in a state of deep, trance-like sleep, and with the first life, it began to dream.

We walked this early dreaming for another hour and a half, around six thousand paces, equal to three billion years, before the first multicellular organisms appeared. Another billion years pass and, finally, the pace of life accelerates dramatically with the Cambrian explosion of new, more complex life forms. Eight hundred paces, or 400,000 years further along, the first rodentlike mammals walk alongside the dinosaurs. Two hundred or so paces later, we pause to mark the asteroid impact that triggered the last mass extinction 65 million years ago.

Another hundred or so paces and we are approaching the city of Dartmouth, the end of our Gaia walk. Miraculously, after the last mass extinction, we enter the age of mammals, of birds and butterflies and grasses and finally, less than 10 paces from the end of our journey, our first hominid ancestors. Before we take the last couple of steps, Stephan takes out his measuring tape for the final half-meter, or five hundred thousand years, during which our own species, *Homo sapiens sapiens*, makes its very late appearance We all crouch beside him, with a sense that the long dream of Earth has passed into a kind of fitful waking. Focusing our gaze on the yellow measuring tape at our feet, we try to take in the idea that the whole of human history is contained within the last five millimeters, or about one quarter of an inch. We would need a magnifying glass to see the last half of a millimeter that saw the birth of the modern period and with it, the Planetary era (of which I shall have more to say in the next section), let alone the merest fraction of this last half-millimeter, the last 50 or so years, which have brought us to the threshold of this eschaton.

An experience that some people have at this point is that of the apparent insignificance of the human, whose historical presence barely registers as the tip of a toe-print on the last of almost ten thousand paces. Surely, however, this is an illusion of perspective. More particularly, it is an illusion of hyper-perspectival, or what Gebser (1985) also calls *deficient-mental*, consciousness. This kind of consciousness arose after the modern scientific revolution and is typical of the dominant mechanistic paradigm. Its sense of time is strictly linear and quantitative. From within this paradigm, as we have seen, the cosmos is seen as essentially without purpose, its evolution a mere catalog of material events,

"a tale told by an idiot, . . . signifying nothing" (*Macbeth*, V). Imagine for a moment, however, that some alien civilization millions of light years away had sent a signal our way. Would the day it was received be any the less significant for the silent stellar distances the signal had traveled? In this case, the sender is Earth itself, and we, the receivers, are also Earth.

The merely quantitative judgment of insignificance is also belied by the qualitative fact of our moment as eschaton and kairos. If it is a time of epochal endings, it is also the time in which we can finally tell the story of our own emergence, a story in which life reveals itself as the telos of matter, butterflies and giraffes and humans as the secret longing of molten rock. It is also the time in which we humans are called to a second, more lucid awakening to and as the voice of the wider Earth community.

As for the telos of mind, at least in its human form, the world's great religious traditions each have their proposals, which we recognize in such words as *enlightenment*, *beatitude*, *satori*, *ananda*, *the Kingdom of Heaven*, *nirvana*. For Hegel the ultimate telos is Absolute Spirit (or the Whole knowing itself as the Whole); for Aurobindo, the realization of infinite being-consciousness-bliss (*sat-chit-ananda*); for Teilhard de Chardin, the Omega Point of the Cosmic Christ. Though parallels, overlaps, and convergences arguably exist among the various proposals, there is (happily, to my mind) no universal consensus. One might say that the telos of life is Spirit, as long as we recognize, as Jorge Ferrer (2002) puts it, that the ocean of Spirit has many shores (p. 147).

We need not venture so metaphysically far afield, however, to recognize a more proximate telos for the human presence on Earth. To do so, however, we must continue with a consideration of the other four principles of an integral ecology.

PLANETARY

If the evolutionary principle is primarily concerned with the temporal context of an integral ecology, the planetary principle focuses more on the spatial (recognizing, of course, that the reality under consideration is always in fact a space-time continuum). The importance of the spatial intuition for standard ecology is evident in its stress on the notion of *environment* (literally, the surroundings). The unifying term that describes the relationship(s) of organisms to their environment is *ecosystem*. As is the case with systems thinking in general, the boundaries that define an ecosystem depend on the system being considered. The core insight of ecology, however, is that no system, including individual

ecosystems (such as the Marin County watershed in northern California or the Amazonian rainforest), can be isolated from the (eco)systems in which it is embedded. Thus, while there is obviously a need for more narrowly focused ecological studies, an integral ecology will naturally concern itself with the most inclusive of ecosystems. From one perspective, this would be the cosmos as a whole. And indeed, there can be no integral ecology that does not address matters of cosmology (especially, as we saw in the previous section, an integrally inflected evolutionary cosmology). For pragmatic purposes, however, the natural focus of an integral ecological gaze can be said to rest on the planet as a whole, on Gaia, our *homeland Earth* (see Morin and Kern, 1999).

For such a gaze to be possible, it was first necessary for a sufficient number of humans to have an actual experience, or at least enough evidence in their day-to-day experience, of actually living on a planet. Though humans had spread from Africa to all of the world's continents before the end of the last interglacial period (reaching Australia about 40,000 years ago and the Americas about 15,000 years ago), until fairly recently, the human population lived in mutually isolated communities, each with its own language and origin myths, and in general in complete ignorance of the existence of any but their immediate neighbors, let alone the planet as a whole. This began to change about 500 years ago, however, with the European voyages of discovery and conquest. From this point onward, and at first at a gradually accelerating pace, humans established ongoing communication and exchange between all of the continents and so initiated the Planetary era (see Kelly, 2010, and Morin and Kern, 1999).

The birth of the Planetary era coincides with the beginning of the modern period, dominated by the rise of the West, during which modern science, technology, and industry eventually transformed the face of the planet and led it to the current eschaton. A complex amalgam of utopian idealism and the forces of empire have driven the growth of planetary awareness and our rush to this eschaton. The establishment of the World Expositions (the first in 1851) and the first Parliament of the World's Religions (1893), though both dominated by the colonial powers, capture something of the idealism. The world wars of the twentieth century, themselves not lacking in a certain form of idealism, made explicit how deep are the shadows of our planetary awakening.

Two years mark particularly significant shifts in this awakening. The first is 1945, which, through the atomic bombs dropped on Japan, simultaneously signaled the end of World War II and began the era of the superpowers and the nuclear arms race. The year 1945 also saw the birth of the United Nations, the first international organization devoted to fostering global peace and (what would

later be called *sustainable*) development. The second year is 1970. Midway through the Cold War and nearing the end of the glory days of the space program, the first images of Earth from space were widely diffused and so entered the collective consciousness of humanity. The famous "Earthrise," the "photo that changed the world," was taken in 1968, the same year as the first Earth Day celebration.

It was also in 1969–1970 that James Lovelock, while working as a consultant for NASA, proposed his first version of the Gaia hypothesis (now referred to as Gaia theory). A few years earlier, he had suggested several tests for determining the existence of life on Mars. "One of these," Lovelock (1990) recounts,

> was a top down view of the whole planet instead of a local search at the site of landing. The test was simply to analyse the chemical composition of the planet's atmosphere. If the planet were lifeless then it would be expected to have an atmosphere determined by physics and chemistry alone and be close to the chemical equilibrium state. But if the planet bore life, organisms at the surface would be obliged to use the atmosphere as a source of raw materials and as a depository for wastes. Such a use of the atmosphere would change its chemical composition. It would depart from equilibrium in a way that would show the presence of life. (p. 100)

Later comparing infrared data from Mars with what was known about the chemical composition of Earth's atmosphere, it was possible to determine that Mars does not currently support life. Dominated by carbon dioxide, its atmosphere is in a state of chemical equilibrium. On Earth, by contrast, carbon dioxide is a mere trace element and, Lovelock continues, the "coexistence of abundant oxygen with methane and other reactive gases, are conditions that would be impossible on a lifeless planet. Even the abundant nitrogen and water are difficult to explain by geochemistry" (p. 100). It was these observations that led Lovelock to the central insight of Gaia theory—namely, that Earth is a self-regulating system far from equilibrium, one that has evolved in such a way as to maintain climatic and chemical parameters favorable for life (see also Lovelock, 2007).

This insight clearly accords a central, guiding role to life in the Earth system. From the point of view of mainstream science, the notion of life is limited to the totality of organisms, which together constitute the planet's biosphere. Even if we define the biosphere as including all organisms and their habitable environments, it is dwarfed by both weight and volume by the rest of the Earth system (only 0.00008 percent of the total mass, and 0.0007 percent of the volume).[3]

As quantitatively negligible as this may seem, however, the biosphere has determined the specific chemical profile of the atmosphere (the predominance of nitrogen and oxygen, minimization of carbon dioxide), has preserved the hydrosphere (through biotic fixation of hydrogen), and has shaped the upper reaches of the lithosphere (including not only its chemistry, through bio-assisted rock weathering, but plate tectonics as well) (see Volk, 2003 and Harding, 2006). If we combine these facts with the qualitative appearance of Earth as seen from space—its blue oceans and white clouds and green forests—one might justifiably consider the planet as a whole as alive, as a single *superorganism*.[4]

Despite initial resistance on the part of the mainstream scientific community—a resistance triggered not only by the word *Gaia*, the name of a Greek goddess, but by the specter of teleology (the taboo of purpose)—the central insight of Gaia theory has since gained wide acceptance and is presupposed by the new polydisciplinary field of Earth system science. One of the leaders of this field, H. J. Schellnhuber (1999), has proposed the following:

> At the highest level of abstraction, the make-up of the Earth system E can be represented by the following "equation":
>
> $$E = (N, H) \quad (1)$$
>
> where N = (a, b, c, ...); H = (A , S). This formula expresses the elementary insight that the overall system contains two main components, namely the ecosphere N and the human factor H. N consists of an alphabet of intricately linked planetary sub-spheres, a (atmosphere), b (biosphere), c (cryosphere; that is, all the frozen water of Earth), and so on. The human factor is even more subtle: H embraces the "physical" sub-component A ("anthroposphere" as the aggregate of all individual human lives, actions and products) and the "metaphysical" subcomponent S reflecting the emergence of a "global subject." This subject manifests itself, for instance, by adopting international protocols for climate protection. . .
>
> Global environmental change is all around us now, and the material components of the Earth system, N and A, are behaving like a strongly coupled complex. . .
>
> But H embraces a second sub-factor, S, which makes all the difference. This entity, introduced as the "global subject" above, represents the collective action of humanity as a self-conscious control

> force that has conquered our planet. The global subject is real, although immaterial. (pp. C21–C22)

As we have seen, the biosphere, though quantitatively miniscule relative to the other spheres of the Earth's total ecosphere, is nevertheless qualitatively significant. The same holds for the anthroposphere, which, though itself (from a physical standpoint) a fragment of the biosphere, is responsible for the sixth mass extinction currently underway.[5] What is striking in Schellnhuber's proposal is that he explicitly recognizes an immaterial (and *metaphysical*) planetary ego or *global subject* as integral to the Earth system. In this he was preceded by Teilhard (2008), who claimed that, with the emergence of humans, the planet began to weave another, subtler sphere of mind or consciousness—the *noosphere*.

While I find Schellnhuber's (1999) idea of a global subject a step in the right direction toward a more integral Gaia theory, I would not want to limit the subjectivity of Gaia to the sphere of conscious human egos, at least not in their current ordinary states or modes. Although he is obviously cognizant of, and deeply concerned about, the worsening threats to the planetary ecosphere, Schellnhuber seems to share something of Teilhard's (2008) unbridled confidence in the promethean powers of the human noosphere to control the destiny of the planet, at least in the short to middle term. "The global subject," Schellnhuber writes, "will reign over the centuries to come. One of its most responsible tasks will be to seek out a tolerable environmental future from the infinity of optional co-evolutions of N and A. In other words, S must guarantee sustainable development" (p. 100).

But of course, there is no guarantee. At this critical point of our coevolution, there are only tentative indications of the global subject being "a self-conscious control force" with respect to the ecosphere, or even to its own anthroposphere. With all of our scientific knowledge and technological prowess, we are still struggling to emerge from the "Planetary Iron Age," as Morin (1999) puts it (p. 133ff). Whatever success we might have in becoming "co-pilots of the Earth" (p. 133ff) will depend not only on the adequacy of the increasingly sophisticated models of Earth system scientists, but on a more generalized mutation of consciousness in service of the fledgling Planetary era. Gaia theory and now Earth system science can themselves, as I have suggested, be taken as evidence of such a mutation at the more rarified levels of the noosphere. But even here, more work needs to be done. To understand Earth as a single, self-organizing system is a momentous intellectual achievement. A central task of a more integral Gaia theory, however, will be to illuminate the complex relation between the human and the rest of

the planetary ecosphere. Standard Gaia theory will quite naturally concern itself with a physiology of Earth (see Volk, 2003). Even here, however, the Gaia theorist or Earth system scientist cannot avoid taking the human factor into consideration, if only because Gaia has evolved to the point where the human has itself become a decisive geological force. In very real terms, therefore, there can no longer be a neat division between the natural and human sciences, between Gaia and anthropos.

TRANSDISCIPLINARY

Standard Gaia theory and Earth system science already represent significant challenges to the dominant trend in late modern science toward increasing specialization and disciplinary fragmentation. The sciences of ecology, for their part, are generally following the dominant trend.[6] Even Earth system science remains entrenched on one side of the great rift between the natural sciences and the humanities, despite the fact that, according to one description, it "embraces chemistry, physics, biology, mathematics and applied sciences in transcending disciplinary boundaries to treat the Earth as an integrated system" (Ruzak, 2013, "What is earth system *science*?" para. 1). The kind of poly- or multidisciplinary integration taking place in Earth system science is a necessary, but in itself still insufficient, expression of the transdisciplinarity called for by a truly integral ecology. Such an ecology, write Esbjörn-Hargens and Zimmerman (2009), "unites, coordinates, and mutually enriches knowledge generated from different major disciplines and approaches."

> Integral ecology can be: a) applied within a discipline (e.g., by integrating various schools of ecology); b) applied as a *multi*disciplinary approach (e.g., by investigating ecological problems from several disciplines); c) applied as an *inter*disciplinary approach (e.g., by using social science methods to shed light on economic or political aspects of environmental values); and d) applied as a *trans*disciplinary approach (e.g., by helping numerous approaches and their methodologies interface through a well grounded meta-framework). (p. 2)

To my mind, while an *integrative* ecology may indeed be multi- and interdisciplinary in nature, it is only by becoming *trans*disciplinary that ecology becomes integral.

The word *transdisciplinary* seems to have been coined by Jean Piaget at a conference on interdisciplinarity and higher education, held in Nice in 1970 (the same year, it is interesting to note, as the first Earth Day and the birth of the Gaia hypothesis)[7], where he remarked:

> Finally, we hope to see succeeding to the stage of interdisciplinary relations a superior stage, which should be "transdisciplinary," i.e. which will not be limited to recogniz[ing] the interactions and or reciprocities between the specialized researches, but which will locate these links inside a total system without stable boundaries between the disciplines. (as cited in Nicolescu, 2006, p. 142)

Esbjörn-Hargens and Zimmerman's (2009) "well grounded meta-framework," in the form of the AQAL model, is an example of Piaget's "total system" As with integral ecology itself, however, there is no single path into the transdisciplinary phase.

Three years after Piaget's coining of the term *transdisciplinary* (1973), the Center for Studies in Mass Communications in Paris, under the direction of Georges Friedmann, Edgar Morin, and Roland Barthes, was renamed the Center for Transdisciplinary Studies. From this point onward, Morin has been the leading figure of the center's research activities (in 2008 it was renamed the Edgar Morin Center), which have included the production of many hundreds of publications and dozens of international conferences. In 1994, the year before the simultaneous appearance of the term *integral ecology* in the writings of Boff, Berry, and Wilber, Morin collaborated with physicist Basarab Nicolescu and Lima de Freitas to convene the First World Congress of Transdisciplinarity and the promulgation of the Charter of Transdisciplinarity, whose 14 articles are equally relevant to the project of integral ecology (and integral theory in general).

"Transdisciplinarity," writes Nicolescu (2002),

> concerns that which is at once *between* the disciplines, *across* the different disciplines, and *beyond* all discipline[s]. Its goal is the understanding of the present world [an understanding in service of the entire Earth community, as the Charter makes clear], of which one of the imperatives is the unity of knowledge. (p. 44)

In response to this imperative, Nicolescu proposes three pillars of transdisciplinarity: (1) multiple levels of reality (addressing the question of ontology), (2) the logic of the included middle (addressing logic), and (3) complexity (addressing

epistemology or the question of method). The idea of multiple levels of reality will be familiar to anyone acquainted with traditional, premodern, or esoteric worldviews. Though not without interest, Nicolescu's presentation of three distinct realms seems somewhat simplistic when compared with the much richer and fully articulated descriptions of multiple levels of reality that one finds in such figures as Aurobindo, Steiner, Wilber, and Stanislav Grof, for instance. In any case, Nicolescu draws particular attention to the discontinuity between, on one hand, the material world as normally experienced, which more or less conforms to the laws of Newtonian physics, and on the other hand, the quantum realm, which requires its own laws or principles of intelligibility (notably, the principles of complementarity, uncertainty, and nonlocality). A third level, disclosed by certain kinds of nonordinary experience (which Grof would call holotropic), offers the possibility of intuiting the unitary reality that grounds the other two levels.

Though Nicolescu (2002) himself doesn't make the point, it would seem that, from an ecological point of view, the main levels of reality to be considered are those of the geosphere (or physiosphere), the biosphere, and the noosphere. These levels correspond to the traditional ontological levels of matter, life, and mind. Wilber (1995) has proposed a fourth sphere—the theosphere (the level of Spirit)—of which I will have more to say in the next section. Mainstream, disciplinary ecology grounds itself in the scientific study of the biosphere and its relations to the geosphere (with the study of biogeochemical cycles, for instance). By contrast, an integral, and therefore transdisciplinary, ecology is more concerned with the principles of intelligibility that allow for free passage between spheres (or levels or quadrants). For Nicolescu (2002), such passage demands a new kind of logic—that of the included middle—as a counter to the still dominant logic of the mechanistic paradigm. While I agree with Nicolescu that there is such a need, his proposal for a new logic is, to my mind at least, an impoverished version of the Hegelian dialectic. A much more coherent engagement with dialectical thinking is provided by the philosopher of science, Errol Harris (see especially Harris, 1987) and Nicolescu's sometime collaborator, Edgar Morin (on the relation of Hegel to Morin, see Kelly, 1988). I will not repeat here what is covered in the separate chapter of this book devoted to Morin. In this context, I would point out that Morin's understanding of the principles of complexity—especially the dialogic, the holographic principle, and recursivity—take us far beyond the old, reductionistic logic.

As for the third pillar of transdisciplinarity—complexity—Nicolescu (2006) remarks that it "is a modern form of the very ancient principle of universal

interdependence" (p. 153). While this is true enough, it does not take us very far. For Morin (1977), by contrast, the method or "way" of complexity—which is nothing other than the logic of transdisciplinarity—is that which allows us "to re-member the mutilated, articulate the disjointed, and think the obscured" (p. 23).[8] The challenge of complex thinking at the heart of transdisciplinarity

> involves the task of holding together, without incoherence, two (or more) ideas which are nonetheless contrary to one another. This is not possible unless we find, a) the meta-point of view that relativizes contradiction, and b) a way to insert into a productive feedback loop antagonistic concepts which thereby also become complementary (p. 379).

As noted in the previous section, the main theoretical contradiction finds expression in the rift between the natural and human sciences. An analogous contradiction is evident in the continuing tension between nonanthropocentrism (biocentrism and ecocentrism) and anthropocentrism in environmental ethics, a tension that also shows up in the contrasting positions of two of the founding figures of integral ecology: Thomas Berry and Ken Wilber. Berry's position on environmental ethics is decidedly ecocentric in emphasis. "The ecological community," Berry (1996) asserts,

> is not subordinate to the human community. Nor is the ecological imperative derivative from human ethics. Rather our human ethics is derivative from the ecological imperative. . . The Earth is not part of the Human Story, the human story is part of the Earth Story. (p. 8)

Clearly, however, Earth is part of the Human Story. It is a question, rather, of how Earth figures in the human story, and vice versa. Not only are there multiple stories on both counts, but the meaning of the stories is always subject to more than one reading. Elements of the Biblical story, for instance, have been interpreted by some to justify the domination of nature, by others to argue for the ideal of stewardship, and by yet others to suggest a more mystical and participatory view of the human-nature relation (see Bunge, 1994, and Baker, 1990).[9]

In stark contrast to Berry's ecocentric position, Wilber (2001) states:

> The fact that all holons [in this case, organisms] have equal Ground-value is confused with the notion that they must therefore all have equal intrinsic value ("bioequality"), and this

> completely paralyzes any sort of pragmatic action at all. It is much better to kill a carrot than a cow, even though they are both perfect manifestations of Spirit. They both have equal Ground-value, but one has more intrinsic value because one has more depth (and therefore more consciousness). (para. 6–7)

Wilber's position is consistent with the view, explored above in the section on the evolutionary principle, that life is the telos of matter, and mind the telos of life. We could extend this line of thinking to say that the biosphere is the telos of the geosphere, and the anthroposphere is the telos of the biosphere. In other words, it is only in and as human self-consciousness that the full potentials of matter and life (at least here on Earth) can be fully actualized. Whether in fact they will ever be fully actualized is another matter. We have seen that we are still in the Planetary Iron Age, but in principle, at least, the teleo-logic of Wilber's position is sound. The complexity of our evolutionary moment, however, calls for this kind of teleo-logic to be articulated with the kind of eco-logic represented by Berry, an articulation that Morin (2008) attempts when he writes:

> The world cannot appear as such . . . as the horizon of the eco-system, the horizon of *physis* [nature], without a thinking subject, the ultimate development of self-organizing complexity. But such a subject cannot appear except through a physical process, through which the phenomenon of self-organization developed, in a thousand steps, always conditioned by an eco-system becoming richer and vaster. And so the subject and the object emerge like two ultimate, inseparable consequences of the relation between the self-organizing system and the eco-system. (p. 23)

As for Wilber's (2001) appeal to pragmatic considerations, it appears to me that Berry (1996) is more sensitive to the pragmatic criticality of our evolutionary moment. While it may be the case, from a teleological point of view, that the anthroposphere represents a higher degree of actualization than the rest of the biosphere considered in isolation from the human, it is of course the case, as Morin (2008) points out above (and as Wilber himself recognizes),[10] that there can be no anthroposphere (or thinking subject) without the biosphere (the eco-system as object). The biosphere is not only integral to our evolutionary history and constitution, it is our very home (*oikos*). In trying to halt the collapse of the biosphere, we are also trying to halt the growing possibility of our own extinction.

Berry's (1996) position, however, is not merely pragmatic, nor is he calling for a new, ecocentric ethic merely as a means of preserving a meaningful human presence on the planet, which would amount to a provisional and instrumental ecocentrism in the service of a more fundamental anthropocentrism. "The basic ethical norm," as Berry says, "is the well-being of the comprehensive community, and the attainment of human well-being within this comprehensive community" (p. 8). Berry's meta-point of view, therefore, is that of the Earth community or Gaia as an integral whole. For Wilber (2001), on the other hand, the meta-point of view is provided by the AQAL version of integral theory, within which Gaia is understood as an intermediary level in only one of the four quadrants.

While it is probable that Berry and Wilber would agree on many essential points regarding the gravity of our planetary situation, factors that have contributed to its emergence, and even on specific matters of environmental policy, theoretical tensions between the two approaches remain. One important task of integral ecology will be to explore such tensions in ways that lead to better mutual understanding and to the possibility of novel and generative theoretical outcomes. The tension between the integral approaches of Berry and Wilber, which in significant respects reproduces the more pervasive disciplinary tension between the natural and the human sciences, is an invitation to the kind of transdisciplinary thinking invoked by Morin (1977) when he writes that the meta-point of view

> can only be a retroactive/recursive loop that does not annul, but rather feeds on those contrary movements without which it would not exist and which it integrates into a productive whole. In this way the antagonistic character of the [bio-]physical and of the anthropo-social points of entry becomes not only that which impedes, but also that which is necessary to, the constitution of the meta-system. . . It is in and through this loop or circuit that we can establish a twofold theoretical rooting in both "nature" and "culture," in the "object" as well as the "subject." (p. 276)

(RE)ENCHANTED

Transdisciplinarity, it will be recalled, "concerns that which is at once *between* the disciplines, *across* the different disciplines, and *beyond* all discipline[s]" (Nicolescu, 2002, p. 44). The previous section explored some ways in which an integral ecology moves beyond—*trans*/*meta*—the dominant tendency toward disciplinary

fragmentation. It is worth remembering that the disciplinary mind of modern science—which, as we have seen, extends to standard ecology as well—was schooled within the wider cultural process of what sociologist Max Weber called the "disenchantment (*Entzauberung*) of the world." For the ancients as well as for medieval and most Renaissance practitioners of *natural philosophy*, the cosmos was seen as pervaded with spiritual meaning. The Platonic notion of the World Soul (*anima mundi*); the Stoic idea of the cosmic Logos; Saint Paul's view of the world in labor with the cosmic Christ; Saint Francis's relationship to animals and to "Brother Sun and Sister Moon"; the magical correspondences between minerals, plants, animals, stars, and other heavenly beings of the alchemists; the two parallel "books" of revelation of the theologians (the book of scripture and the book of nature): these and other related notions all manifest the essential quality of what Owen Barfield (1988) calls "original participation," by which he means a mode of being and of consciousness that involves the idea that there exists,

> behind the phenomena, *and on the other side of them from me*, a represented which is of the same nature as me. Whether it is called "mana," or by the names of many gods and demons, or God the Father, or the spirit world, it is of the same nature as the perceiving self, inasmuch as it is not mechanical or accidental, but psychic and voluntary. (p. 42)

There are, to be sure, significant differences among the notions Barfield lists, or among those I listed above, for that which was thought to exist "behind the phenomena." The sequence leading from "mana" through "many gods" to "God the Father," for instance, arguably reflects an evolution of consciousness that itself involves increasing degrees of disenchantment, to the extent that the sacred or divine is associated with ever-greater transcendence relative to the everyday world of the profane. Compared with the secularized worldview of the later modern period, however, the worldviews associated with all of the notions listed are participatory insofar as they share the fundamental idea of an ontological continuity, however mediated, between the sacred and the profane.

In its extreme form, the later modern worldview denies the sacred altogether. This does not mean, however, that this worldview is without its idols. Something functionally equivalent to mana or gods persists wherever there is "ultimate concern" (Paul Tillich's term for the religious function), even if this concern is reserved for such notions as the "laws" of physics, selfish genes, power, or profit. Still, in the late modern worldview, whatever the object of ultimate concern, the tendency has been toward the view that "the human self," as Richard Tarnas

(2006) summarizes the situation, "is an infinitesimal and peripheral island of meaning and spiritual aspiration in a vast purposeless universe signifying nothing except what the human self creates" (p. 34).

If the premodern worldviews can be characterized as manifesting various forms of original participation, the late modern can be seen as tending toward "idolatry," which involves an instrumental relationship to phenomena as mere "things" without intrinsic meaning or value. Happily, however, Barfield (1988) also envisions the possibility of a *final participation*, and indeed not only the possibility, for its essential traits have been recognized and elaborated on as early as the first great countercultural projects of the Romantics and Idealists (Goethe, Schelling, Hegel) and those who have followed in their wake (Fechner, Jung, Steiner, Barfield himself, and many others) (see Kelly, 2010). Prominent among these traits is the aspiration toward a *re-enchantment of the world*. In contrast to original participation, however—and reflecting the intervening phase of modernity—the re-enchantment of final participation goes hand in hand with the recognition of the principle of evolution (of the dynamic type first articulated by Schelling), with a critical sensibility informed by the postmodern turn (in this case, with a constructive rather than a merely deconstructive inflection[11]), and increasingly, with an awareness of our crisis-ridden planetary context. The notion of final participation, in other words, overlaps considerably with the principles of integral ecology explored in this chapter.

As for how an integral ecology might approach the ideal of re-enchantment, various possibilities present themselves. As we saw in the previous section, Berry's (1996) biocentric approach takes the entire Earth community as the focus of ultimate concern. The same is true for Morin (2008), as seen in his proposal for a new species of religion based on the fact and ideal of planetary solidarity or "re-liance" (pointing to one etymological derivation of the word "religion"—from the Latin: *re-ligare*, to "tie back together") (see the chapter on Morin in this volume). Though heavily indebted to Teilhard, Berry and Swimme (and Morin, for that matter) consider Earth, and the wider cosmos of which it is an expression, as the ground of the sacred. In this way, one could argue, they implicitly reject Teilhard's panentheistic theology,[12] which conceives of the cosmos as the "body" of a Deity (the cosmic Christ) who retains a certain degree of transcendence over the material cosmos. At the very least, they remain agnostic about this and other meta-physical possibilities, preferring instead to concentrate on the inherently sacred character of our embeddedness in the physical cosmos.

Wilber, by contrast, explicitly aligns himself with the panentheistic tradition, drawing not only from Teilhard, but from Whitehead, Plotinus, Emerson,

Aurobindo, and certain strands of (especially Buddhist) esoteric teachings. His contribution to this tradition can be seen, as Zimmerman (2005) puts it, as an "effort to integrate nature, humankind, and Spirit [or ecosphere, anthroposphere, and theosphere] in order to form a constructive postmodernism that re-enchants the world without inviting personal and social regression" (p. 1,744). To guard against such regression, they maintain that, though the cosmos is indeed fundamentally sacred or divine (recall Wilber's distinction between ground and intrinsic value), as physical or material nature (nature with a lower case *n*), it is to be conceived as "but the lowest-level manifestation of Nature, understood as creative Spirit" (p. 1,744).

What they propose, in other words, is a version of the perennialist Great Chain (or Nest) of Being, the basic "levels" of which, as mentioned previously, are matter, life (matter and life being subsumed under "nature"), mind, and Spirit (or again, from an ecological perspective: ecosphere, anthroposphere, and theosphere). The levels are said to be hierarchically/holarchically related, such that "higher" levels transcend and include the lower, but not the reverse. Life, for instance, clearly "includes" matter insofar as it presupposes the chemical interactions by means of which cells are organized. Mind or consciousness, similarly, "includes" life insofar as some kind of living organization is necessary for the emergence of such mental processes as perception and thinking.

This sense of inclusion-as-dependence seems straightforward enough, but what does it really tell us apart from the fact that some forms of matter are organized in such a way that we recognize them as living, and that some forms of living organization manifest qualities that we associate with consciousness? We could just as easily say that matter "includes" life as a potential form of organization, and that living beings "include" mind or consciousness as one of their organizational potentials. As we saw above, if life is said to "emerge" out of matter, then life must somehow already be "in" matter as one of its hidden potentials. The same is true of the relation of mind or consciousness to life and matter. Indeed, the idea that the lower "includes" the higher as both potential and telos is, as we have seen, a core insight of the grand evolutionary perspectives of such figures as Aurobindo, Teilhard, and Swimme. To say "not the reverse," privileges involution over evolution and only makes sense from an introverted, subjective-idealist metaphysical position. (see Kelly, 2008)

The notion that the higher transcends the lower, if not qualified, is also problematic. It is true that more complex forms of organization allow for the emergence of novel properties not possessed by the elements of which the more complex forms are constituted. To take a very simple example, animals can (and must)

drink water to live. Two parts of liquid hydrogen to one part of liquid oxygen (the simpler constituents of water), however, cannot serve as substitutes! In this way the "higher" (H_2O) both includes and transcends the "lower" (O). Conversely, however, oxygen-respiring organisms cannot make due with a lungful of water! To paraphrase Morin (2008), we could say that, while the holon (in this case, the water molecule) is more than the sum of its parts (hydrogen and oxygen atoms), it is also less, in that properties of the parts are lost (in this case, the breathability of oxygen), virtualized, inhibited, or repressed once the parts get taken up into more complex forms of organization. This becomes even more obvious the "higher" one moves along the Great Chain or Nest of Being, as we know from the work of psychodynamic psychology (which recognizes the inevitability of repression and dissociation in human development) and critical theory (which highlights the ubiquity of oppression in social organization) (see Kelly, 2008).

Just as life can be understood as the telos of matter and mind as the telos of life, so the anthroposphere can be seen as the telos of the ecosphere. Here again, however, the "transcend and include" of any supposed hierarchical/holarchical organization needs to be qualified. The human potential to transcend the constraints of matter and life as normally understood has gone hand in hand with a now-critical dissociation of the anthroposphere from the ecosphere. The human presence on the planet has disrupted key bio-geo-chemical cycles and even threatens the viability of the majority of world's species. At this point, at least, any talk of the anthroposphere including the ecosphere has a hollow ring to it.

But what of the theosphere? Clearly, much depends here on how one understands the meaning of such terms as *Spirit*, the *sacred*, or the *divine* (*theos* or *to theon*). Personally, I find a minimalist version of the panentheist vision (which I imagine even Swimme and Morin would find acceptable) to be the most accommodating. By minimalist here I mean the simple recognition that the sacred or divine in some sense simultaneously pervades the cosmos and surpasses any attempt to delimit its ultimate nature and boundaries. From this perspective we could say that the theosphere does indeed both transcend and include the ecosphere, although, given the all-pervasiveness of Spirit, we would have to say that it is also included in the ecosphere. This kind of minimalist panentheism also encourages a willingness to suspend judgment regarding the ranking of religious or spiritual traditions or disclosures (for example, Wilber's view that "subtle" or "Deity mysticism" is superior to "psychic" or "nature mysticism") (see Wilber, 1995, 287ff). Of course, most of us will have our own assessments and personal commitments, but it should be clear by now that no argument as to the relative superiority of one tradition over another, however compelling to some, will

succeed in winning over those with seemingly incompatible views. This is not to say that we should avoid all comparison and critique, only that we should proceed with theoretical circumspection and metaphysical humility.[13]

Keeping the above considerations in mind, an integral-ecological understanding of the theosphere can be assisted by Gebser's general approach to the idea of structures of consciousness (particularly the magical, mythic, mental, and integral). Wilber has already done much to introduce Gebser to a wider audience and has made his own sophisticated contribution to an understanding of the structures. There are significant differences, however, between their approaches. Most notably, though Gebser recognizes that the structures emerged more or less sequentially as discontinuous "mutations" in the evolution of consciousness, he does not see them as hierarchically/holarchically organized. This is not the place for an extended discussion of the structures, but perhaps I can devote a few words to suggest how they might function as distinct modes through which the theosphere tends to manifest.

We have already seen how the materialistic and mechanistic paradigm can be taken as an expression of the hyper-perspectival, "deficient" mental structure (which Gebser also calls the "rational" structure, though perhaps "rationalistic" would be a better term). It is with the dominance of this deficient mental structure that we have Barfield's "idolatry" and the total disenchantment of the world (an eclipse of the theosphere, in effect). It is also, however, within the late-modern culture of idolatry that we see the emergence of the integral mutation. Again, I cannot, in this context, do justice to the richness of Gebser's understanding of the integral structure. Here I would point to what is perhaps its most distinctive characteristic: *diaphaneity* (or transparency). Unlike the other structures, which are mutually opaque to one another, the integral structure is, to varying degrees, diaphanous or transparent to the other structures, as it is to the mysterious Origin (*Ursprung*), which is both source and goal, *arche* and *telos* of the evolution of consciousness.

I say "to varying degrees" since expressions of the integral mutation must transpire, for the time being at least, from within a culture still in the grips of the deficient mental structure. Thus, for example, Wilber's (1995) AQAL model, and the integral ecology on which it is based, seeks to honor the virtue of all of the structures and explicitly recognizes the pervasiveness of Spirit as both ground and summit of the Kosmos. At the same time, however, by assimilating the structures to the notion of "levels" within the four "quadrants," one can see the persistence of (rational) perspectival thinking. Still, when subjected to a certain softening of the categories[14] (and of categorial thinking in general), the AQAL approach is

arguably the most compelling example of a comprehensive integral philosophy refracted, as it were, primarily through the mental structure.[15]

Whereas the mental structure discloses Spirit primarily by means of abstract categories and concepts (especially that of system), the mythic structure privileges metaphor, symbol, and literate narrative. The work of Berry and Swimme clearly makes good use of the mental structure. After all, Berry was trained as a cultural historian and Swimme as a mathematical physicist. Berry's much-quoted injunction to relate to Earth (and not merely to other humans, as in Kant's original formulation of the categorical imperative), not as a collection of objects, but as a communion of subjects, is a sublime expression of the best of what the mental structure has to offer. At the same time, however, the titles of Berry's best-known works—*The Dream of the Earth* (1990), *The Universe Story* (coauthored with Brian Swimme) (1992), and *The Great Work* (1999)—as well as the books and video productions of Swimme—*The Universe Is a Green Dragon* (1984), *The Hidden Heart of the Cosmos* (1999), *The Journey of the Universe* (coauthored with Mary Evelyn Tucker; 2011), *Canticle to the Cosmos*, *Earth's Imagination*, the *Powers of the Universe*—all attest to the primacy of the mythic structure in their approaches. Or perhaps it would be more correct to say that, as with Wilber, the integral structure is primary, but in this case in a manner that is especially transparent to the mythical structure.

With the magical structure, Spirit needs to be felt, sensed, and embodied. Its preferred mode of expression is not conceptual abstraction or literate narrative, but invocation and incantation. Again, since we are living in a late-modern culture, the mental structure will naturally be in evidence, and even most likely the base from which any integral impulses radiate. A striking example of an ecological approach that, though working from the mental structure, is especially transparent to the magical is the work of David Abram. The titles alone of his two books give a good indication of the nature of this transparency: *The Spell of the Sensuous: Perception and Language in a More than Human World* (1997); and *Becoming Animal: An Earthly Cosmology* (2011). As one of many representative passages I could choose to illustrate what we could call magical diaphaneity, consider the following from one of Abram's (n.d.) essays:

> Our animal senses know nothing of the objective, mechanical, quantifiable world to which most of our civilized discourse refers. Wild and gregarious organs, our senses spontaneously experience the world not as a conglomeration of inert objects but as a field of animate presences that actively *call* our attention, that *grab* our focus or *capture* our gaze.

> Whenever we slip beneath the abstract assumptions of the modern world, we find ourselves drawn into relationship with a diversity of beings as inscrutable and unfathomable as ourselves. Direct, sensory perception is inherently animistic, disclosing a world wherein every phenomenon has its own active agency and power. (para. 9)

Abram is one of the cofounders, along with Stephan Harding, of the Alliance for Wild Ethics. Harding has worked closely with Lovelock over the years, extending and deepening his mentor's version of Gaia theory. Lovelock's version is firmly anchored in the mental structure, though his bold decision to name the theory after a goddess began to clear a spot on the surface of the soot-encrusted pane of the mental structure. In Harding's (2006) hands, as we see in his major written work, *Animate Earth: Science, Intuition, and Gaia*, the living glow of the magical structure is clearly seen and felt. Though firmly anchored in the mental structure of the standard Earth sciences, not only does Harding consider Earth to be a living being, but in keeping with the panpsychism typical of the magical structure, the very molecules of life (carbon, hydrogen, nitrogen, phosphorus, and sulfur) are given distinct personalities consistent with their individual modes of agency. "Attraction and repulsion," he writes,

> have something to do with the intelligence, with the "soul" of the universe itself—they are the manifestation at the level of matter/energy of the participatory nature of electrons and protons, perhaps no different in principle to the attractions and repulsions that we humans feel towards each other. Thus, atoms, like humans, are constantly trying to find fulfillment. (p. 89)

An extended discussion of the principle of (re)enchantment in the context of integral ecology could include other, more explicitly religious, theological, or broadly spiritual approaches that have not been considered in this section, including those based in indigenous traditions, the world religions, neopaganism, and esotericism.[16] To conclude this section, I would mention an interesting example of an esoteric approach in which the magical and mythic structures are both in evidence. Marko Pogacnik (2008), an artist, geomancer, and "earth healer," has described his approach as *holistic ecology*. By this he understands an ecology that holds "a pluridimensional view of life, the planet, and the landscape" (p. 233). The practice of this holistic ecology includes working with "vital-energy centers or flows of vital powers," the perception and balancing of "masculine and feminine

powers" in the landscape, and interacting with "elemental beings and environmental spirits" (p. 233). A fascinating practice Pogacnik (n.d.) has developed is that of "lithopuncture" or "Earth acupuncture," where specially carved stones are placed at critical sites to effect healing by intervening in the subtle body of Gaia. "With methods similar to acupuncture and homeopathy," he writes, "it is possible to approach the vital, conscious and spiritual levels of a place, a town or a landscape" (para. 18).

Whatever one might think of the efficaciousness of the kinds of practices advocated by Pogacnik, his conviction that human beings are called to assume an active role in the healing of our ailing planet highlights a crucial feature of more integral approaches to ecology. Integral ecologies, and this in contrast to the still dominant view of science as something purely neutral, objective, and dispassionate, are forms of *activism*.

ENGAGED

The theories and findings of scientific ecology have always been looked upon as having practical applications (for resource management or ecosystem assessment restoration, for example). Active engagement in countering perceived threats to the integrity of the natural environment, however, was taken up by members of the conservationist and environmentalist movements. Informed by scientific ecology, environmental science or environmental studies, which emerged along with the post-sixties blossoming of the environmental movement, is generally directed to issues of public policy. As a discipline, or interdiscipline, it is clearly more explicitly engaged in the field of social and political action. Unambiguously engaged stances are apparent in such fields as political ecology, social ecology, socialist ecology, deep ecology, and ecofeminist ecology, among others. Whether or not such engaged ecologies (using the term in the broader sense, not limited to practitioners of scientific ecology) could also be considered *integral* would depend on the presence, or lack thereof, of the other four principles, and on one's relative weighting of those principles.

The modern environmental movement was arguably launched with the publication of Rachel Carson's (1962) *Silent Spring*, a classic early expression of an integral ecology. While the evolutionary, planetary, and (re)enchanted principles are not especially evident (as they are, by contrast, in her earlier book, *The Sea Around Us*, 1951/1991, and her later *The Sense of Wonder,* 1965/1998), they are nevertheless implicit. The force of *Silent Spring* lies in its transdisciplinary

orientation (highlighting links between the environment and the political economy, challenging the dominant worldview of technological progress) in the service of an engaged concern for the well-being of all living things. In this concern, Carson was clearly following in the footsteps of Aldo Leopold, whose earlier *A Sand County Almanac* (1949/1986), with its emphasis on the intrinsic value of a diverse and resilient biotic community, established the foundations for much of subsequent environmental ethics.

The decades following the birth of the environmental movement have witnessed a mounting wave of engaged ecological writing in response to the worsening planetary ecological crisis. An impressive example of contemporary engaged ecological/environmental writing that could be considered integral is Naomi Klein's 2014 book, *This Changes Everything: Capitalism vs. the Climate*. The evolutionary and planetary principles are evident in Klein's recognition that humanity, and indeed the entire Earth community, is poised on a threshold with, on one side, catastrophic climate change and its genocidal and ecocidal consequences, and on the other, the possibility at least of a sustainable Earth community. Klein seizes on the critical and complex character of the climate moment as offering

> an overarching narrative in which everything from the fight for good jobs to justice for migrants to reparations for historical wrongs like slavery and colonialism can all become part of the grand project of building a nontoxic, shockproof economy before its too late. (p. 154)

Klein's passionate engagement with the climate crisis is notable for the many links she reveals between the science of climate change and the political economy. While she considers many instances of resistance to the extractive economy that is driving the crisis, along with many specific proposals for sustainable alternatives, she maintains that,

> Fundamentally, the task is to articulate not just an alternative set of policy proposals but an alternative worldview to rival the one at the heart of the ecological crisis—embedded in interdependence rather than hyper-individualism, reciprocity rather than dominance, and cooperation rather than hierarchy. (p. 462)

Such an alternative worldview is necessary "not only to create a political context to dramatically lower emissions," but because

> in the hot and stormy future we have already made inevitable through our past emissions, an unshakable belief in the equal rights of all people and a capacity for deep compassion will be the only things standing between civilization and barbarism. (p. 462)

An essential feature of all five principles of integral ecology is resistance to the tendency of the dominant mechanistic paradigm toward reductionism and fragmentation, a tendency that well serves the goals of the ecocidal extractive economy. With respect to the principle of engagement, a manifestation of this tendency is the common assumption that theory and practice, or more generally consciousness and action, arise out of, or inhere in, something like Descartes's two ontologically sequestered substances (*res cogitans* and *res extensa*, or mind and matter). From an integral perspective, however, this assumption must be challenged, as indeed it has been in one form or another by all of the integrally oriented figures mentioned in this chapter.

In this connection, a figure not yet considered is especially relevant to the principle of engagement, and indeed to the project of integral ecology in general. Joanna Macy is variously described as a deep ecologist, systems thinker, Buddhist philosopher, and activist. In fact, however, each of these terms, in Macy's hands, and heart-mind, are mutually implicated. Deep ecology, systems thinking, and the Buddha dharma each provide alternatives to Cartesian dualism: the idea and experience of an embedded, deepened, and extended ecological self (Arnie Naess), the unity of Mind and Nature in the pattern that connects (Gregory Bateson), and the Buddhist insight into the mutually causal, dependent co-arising of all phenomena. According to Macy, these and other related insights from the new science and the world's diverse spiritual heritage can help catalyze a generative shift in perception, cognition, and being in the world. This shift constitutes the third, most fundamental dimension of the Great Turning from Industrial Growth Society to a Life-Sustaining Society in partnership with the whole Earth Community. (see Macy 1998, 2007).

The second dimension of the Great Turning has two complementary sides, a critical and a constructive. The critical side takes the form of analysis of the structural causes of our planetary predicament, and an uncovering of the dynamics of Industrial Growth Society and its plagues: ecospheric devastation, social injustice, and psychosocial and spiritual malaise. The constructive side involves the creation of alternatives to current social, economic, political, legal, and educational arrangements—too many to list here (see lists in Macy, 1998; also Brown, 2009; D. Korten, 2006; Hawken, 2007; and Morin, 2011).

The first dimension is what most people associate with the notion of activism and consists of holding actions in defense of the greater Earth Community. These include "all the political, legislative, and legal work required to slow down the destruction, as well as direct actions—blockades, boycotts, civil disobedience, and other forms of refusal" (Macy, 1998, p. 17). Klein's (2014) extended reporting on, and advocacy of, the global phenomenon of "Blockadia" (293ff.) well exemplifies the nature and importance of holding actions. All three dimensions of the Great Turning, however, as intentional modes of engagement with the planetary *kairos*, are forms of activism. It is only from the point of view of the dominant, dualistic paradigm that the most easily visible, first dimension alone qualifies as activism. In contrast to this view, I have proposed the idea of a spectrum of action, ranging from the more manifest to the more subtle. In this way we can appreciate how the third dimension—the insights leading to a shift in consciousness, as well as the critical moment of the second dimension—are not to be diminished as "merely" subjective or theoretical processes, but must be honored as genuine, and essential, forms of active engagement in the Great Turning.

Theoretical expressions of integral ecology, therefore, as examples of the third and second dimensions of the Great Turning, are themselves instances of what I and others call *subtle activism* (see Kelly, n.d., "The Hidden Face of Wisdom"; Nicol, 2015) The same holds for all engaged ecological writing, especially when it rises to the level of a Naomi Klein or Bill McKibben. Other, more experientially inflected, forms of subtle activism include actions for the protection, healing, or well-being of the Earth Community—Pogacnik's (2008) geomantic interventions would fall into this category, as would the Tibetan-inspired movement for the ritual burial of consecrated "Earth Treasure Vases" at vulnerable planetary hotspots (Earth Treasure Vase, n.d.). Given the planetary dimension of integral ecology, a significant and increasingly popular form of this kind of subtle activism involves the new phenomenon of global meditations. The first synchronized event of this type was the Harmonic Convergence in 1987, organized by Jose Arguelles and inspired by an interpretation of a critical transition point in the Mayan calendar. The end of the so-called Long Count of this calendar (December 21st, 2012, closing a 5,126-year cycle; the starting point, it is interesting to note, corresponds to the beginning of the historical period) was the occasion of many such events. The invitation to the 1997 global meditation organized by Jim Fournier (then a student in the recently founded program in Philosophy, Cosmology, and Consciousness at the California Institute of Integral Studies) as part of the GaiaMind (1997) Project reads as follows:

> Imagine people all over the world sharing a moment of meditation and prayer, a moment of unified global consciousness when people from the world's many diverse spiritual traditions simultaneously focus attention on our interconnected relationship with Gaia—the living earth. Each person bringing love, compassion and understanding to embrace the possibility of healing the social, ecological and spiritual challenges before us. As we approach the dawn of the new millennium, increasingly aware of our interdependence, we may choose to join together as a global community in such a moment to catalyze planetary transformation by both envisioning the light and facing the darkness of our times. (para. 1)

All five principles of integral ecology are evident in this call to action. There is a strong sense, poised on the threshold of the new millennium, of our *evolutionary kairos*. As a global meditation, the context is obviously *planetary.* Informed as it is by insights from the natural, social, and human sciences—as well as being open to dimensions of knowledge and experience that transcend the paradigmatic constraints of the sciences as normally conceived—the project is *transdisciplinary* in scope. The principle of *enchantment* is not only manifest in the explicit appeal to the world's religious and spiritual traditions, but more generally in the sense of conscious participation in the *anima mundi*, the "Mind" of Gaia.

Among the many initiatives that have followed in the wake of these pioneering efforts, I would mention the Gaiafield Project and its associated Subtle Activist Network, Center for Subtle Activism, and Gaiafield Alliance (Gaiafield Center for Subtle Activism, 2015). The project was founded by Leslie Meehan, David Nicol, and myself to help coordinate and catalyze "a multi-hub planetary network of subtle activists who participate in large-scale collective healing and global transformation programs following the Gaiafield Principles, which are in alignment with the broad principles set out in the 'Earth Charter,'" namely:

- Respect and care for the community of life
- Ecological integrity
- Social and economic justice
- Democracy, nonviolence, and peace

Following a successful staging of a live meditation event linking participants at the California Institute of Integral Studies, Findhorn College in Scotland, and Auroville in India, along with individual online participants from around the

globe, the Gaiafield crew organized two other live multisite and online events (with an online educational and experiential program leading up to the main events) in support of the best-possible outcome for the 2008 U.S. presidential elections (WiseUSA), for key events related to global response to climate change (WiseClimate), and for a series of events leading to and including 12/21/2012, a date that, whatever one may think about the Mayan calendar, became a kind of strange attractor for those attuned to the sense of *kairos* and *eschaton* that pervades our evolutionary moment.

Awakening to the potential of subtle activism in no way diminishes the need for more manifest actions (Macy's first dimension of the Great Turning) resisting business as usual and aiming at the transformation of concrete social and political power relations. Consciousness (or mind or Spirit) is clearly embedded in these relations, which, however, are equally embedded in consciousness. The relation between the two is complex, and any view that privileges one over the other can be taken as a manifestation of the paradigm of simplification. Just as not everyone is suited for the kind of frontline activism we associate with the heroic young man who stood steadfast before the tank in Tienanmen Square or the hundreds arrested for protesting the Keystone XL pipeline, not everyone is called to the path of subtle activism. The point is simply that, from an integral perspective, participation in the Great Turning demands engagement from across the entire spectrum of action, each according to their particular gifts and as the occasion arises. Anything less, this late in the game, can only be counted toward our collective disadvantage.

CONCLUDING REMARKS

I noted in the opening section of this chapter that each of the five principles implies the others and that only after having considered all five does a more integral (though by no means exhaustive) understanding of each of them begin to emerge. We saw how the evolutionary telos of the cosmos is woven into in the complex layering of Gaia's planetary spheres; how the nature of this layering calls for a transdisciplinary (meta-) point of view that not only overcomes the modern split between the natural and human sciences, between fact and value, but also helps clear a path toward a re-enchantment of the world; how such re-enchantment, itself a prime expression of the planet's evolutionary telos, manifests diversely through the structures of consciousness; and how, finally, the project of

integral ecology not only demands engagement in the planetary kairos, but even as a form of theoretical inquiry, constitutes an essential mode of such engagement.

Just as the diaphaneity of the integral mutation allows each of the structures of consciousness to serve as a primary focal point for the variety of possible expressions of an integral ecology, so it is with the five principles. Though each of the five principles is active in one way or another with all of the integral ecologists considered in this chapter, one or two tend to take center stage. For Esbjorn-Hargens and Zimmerman (2009), the principle of transdisciplinarity (in the form of system) is primary, as it is for Morin (2008) (in the form of method), with the principles of evolution and re-enchantment also strongly in evidence for the former, and planetarity[17] and engagement for the latter. For Berry and Swimme, the evolutionary principle is primary, though in a way that is intimately bound to that of re-enchantment. For Macy, though the other four principles are clearly active, they are active in a way that channels them directly through the principle of engagement.

The interpenetrating or mutually implicative character of the five principles points to an essential quality of integral thinking, which, in contrast to the reductive and fragmenting tendency of standard disciplinary discourse, is guided by an intuition of a particular kind of wholeness. The wholeness in question is not simple (or simplistic), but complex. It is a wholeness that, like that of life itself, of the living Earth and the cosmos at large, is woven of multiple and sometimes seemingly irreconcilable elements that can nevertheless work together to manifest an otherwise unrealizable creative potential. The emerging field of integral ecologies is a promising expression of this potential. It remains to be seen, of course, just how and to what extent, given the gravity of our times, this potential will be fulfilled.

NOTES

1. See Species Alliance (2009) and its major project to date: a full-length documentary, *The Call of Life: Facing the Mass Extinction*.

2. By *mind* here, I mean self-consciousness, particularly as enacted through symbolization. In the more general sense of interiority, as with Teilhard's (2008) idea of the *within* of things, *mind* is of course present from the beginning and all the way down.

3. See entry for "Biosphere" (2008) in the *New World Encyclopedia*.

4. To object to considering the Earth as a whole as alive seems as misplaced as denying that a tree is alive because only one percent of its mass consists of living cells (mostly as a thin layer just below the bark). Individual cells, for that matter, though indubitably alive, also consist primarily of apparently nonliving elements (such as cytoplasm or DNA). The emergent quality of life, in other words, is invisible to the merely quantitative or mechanistic gaze.

5. In recognition of the geological impact of the human, geologists are now proposing that we have passed out of the Holocene and into the *Anthropocene*. Erle Ellis (2011) says the following about the Anthropocene: "In the 16th century Nicolaus Copernicus moved the Earth from its privileged position at the centre of the universe. In the 18th James Hutton opened up depths of geological time that dwarf the narrow now. In the 19th Charles Darwin fitted humans onto a single twig of the evolving tree of life. As Simon Lewis, an ecologist at the University of Leeds, points out, embracing the Anthropocene as an idea means reversing this trend. It means treating humans not as insignificant observers of the natural world but as central to its workings, elemental in their force" (para. 4).

6. See, for example, some of the titles of papers in Volume 1 of *Current Trends in Ecology* (2006): "Flexible migration in diadromous fishes between freshwater and marine habitats, as revealed by otolith microchemistry," "Maternal attractant odour in newborn rat: Isolation and Bioassay," "Estimation of foliage characteristics of isolated trees with the Plant Canopy Analyzer LAI-2000."

7. And the same year, incidentally (1969–1970), that saw the emergence of the field of transpersonal psychology.

8. All of the translations of Morin in this paper are my own.

9. While it is arguably harder (some might say misguided) to make a case for an ecological reading of the mechanistic paradigm or global capitalism (which Berry focuses on in his critique, along with the Biblical traditions), an integral view of the evolution of consciousness could nevertheless see them as having played essential roles in the emergence of the Planetary era (see, in this connection, Kelly, 2010).

10. Corresponding to his distinction between *ground value* and *intrinsic value* above, Wilber has also characterized the relation between the biosphere and anthroposphere with the terms *fundamental* and *significant*, respectively (see Wilber, 1998).

11. The notion of a constructive postmodernism was first proposed by David Griffin (see Griffin, 1988).

12. Whereas, with pantheism, the cosmos as a whole (*pan*) is considered to be identical with the divine (*theism*), with panentheism (*pan*=all *en*=in *theism*=god,

but also god-in-all), the cosmos is conceived as suffused with the divine, which nevertheless both includes and transcends the cosmos.

13. Wilber's "postmetaphysical" turn is a step in this direction, as is Ferrer's participatory approach (which advocates a "dialectic of universalism and pluralism") (see Wilber 2006; Ferrer 2002; Kelly, 2008).

14. Wilber's alternative designation of the levels as "waves" and of the Great Chain of Being as a "Great Nest" is an indication of such a softening. As yet, however, there is no suggestion for an alternative for the notion of "quadrants."

15. Morin's paradigm of complexity and general ecology is also an example of the mental structure becoming more diaphanous through the integral mutation. Though less burdened by perspectival thinking than the AQAL approach, Morin's writings nevertheless retain much of the late-modern suspicion of spiritual transcendence (a suspicion shared to a lesser degree by Berry and Swimme), especially in the form of religious doctrines. The AQAL approach is much more accommodating in this respect, though there is the issue of its precommitment to a particular ranking of religious traditions.

16. An invaluable resource for those interested in pursuing the matter further is the ongoing work of two organizations: Religion and Nature (2014) (which is the gateway to information about the *Encyclopedia of Religion and Nature*, the International Society for the Study of Religion, Nature and Culture, and the *Journal for the Study of Religion, Nature and Culture*), and the Yale Forum on Religion and Ecology (n.d.).

17. I adopt this term from Gayatri Chakravorty Spivak. According to Katie Smith (n.d.), "Spivak argues that the popular conception of globalization as the financialization and computerization of the globe leads to a vicious system of exploitation, whereby it is assumed that the globe (as a kind of imaginary terrain that exists only on our computers) can and should be controlled to produce capitalist gains. Planetarity, on the other hand, is a more sensitive and attuned way of understanding the materiality of the world and our collective place and responsibility as humans within it. Spivak suggests that rather than being global agents we should instead imagine ourselves as planetary subjects, inhabiting a planet that is merely 'on loan' to us" (p. 2).

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PART III

EMERGING THEORIES

9

COSMOPOLITICS

Adam Robbert and Sam Mickey

WHAT FOLLOWS is a thought experiment in which we explore the possibility that the theory and practice of integral ecology can be defined in terms of the convergence of *cosmos* and *politics*: cosmopolitics. As a new approach to integral ecology, cosmopolitics requires a certain level of introduction. Indeed, even among scholars who use the term regularly—Isabelle Stengers (2010), Donna Haraway (2008), and Bruno Latour (2004b) among them—there exists little in the way of a comprehensive overview drawing together the many concepts and practices gathered under the term. To this end, our chapter is split into several sections that explore different facets of cosmopolitics. Each section is designed to both introduce an important element of cosmopolitics, and to gesture toward how these elements form important contributions to integral ecology. The sections are as follows.

"Cosmopolitan and Cosmopolitics" traces a brief history of cosmopolitan ideas through the Stoics and Cynics of ancient Greece, into the *jus cosmopoliticum* (cosmopolitical law) proposed by Kant, and onward to contemporary usages of the term to demonstrate how cosmopolitics both draws on and differs from these sources. Tracing this history is important since cosmopolitics is both rooted in these traditions, and, as we shall see, goes beyond them in important ways. Key to these differences is a section titled "Radical Realism," which begins to describe the ontological pluralism of cosmopolitics, and places particular emphasis on the influence of Alfred North Whitehead.

Cosmopolitics presents an integral ontology that overcomes the bifurcation of facts and values, subjects and objects, nature and society, and world and representation by arguing for multiple *modes of existence* (Latour, 2013a; Stengers, 2010) each with a distinct set of obligations, possibilities, and constraints. The section Collective History expands on these insights by describing how cosmopolitics offers a new relation to time, one that refuses the distinction between human history and natural or cosmic history. Two further sections—Ecology of Practices and Symbiotic Agreements—offer ways for us to relate to the radical pluralism of knowledges and worlds offered by cosmopolitics. These sections describe how knowledge, identity, and relationships are transformed and brought into dialogue with notions of difference, consensus, and agency. In particular, questions of globalization and collectivity are addressed in terms of more livable ecological arrangements between humans and nonhumans.

The section Multispecies Cosmopolitics opens into discussions of how nonhumans not only participate in cosmopolitics, but are themselves involved in intricate worlding adventures of their own. Here cosmopolitics is brought into dialogue with the growth and evolution of cognitive ethology, the study of animal minds (Bekoff, 2008). Additionally, while cosmopolitics takes seriously the reality of the multiple real worlds brought into being by nonhuman species, it also complexifies these views by introducing the agency of technology and ideas in relation to the formation of ecological collectives.

A final section, The Spirit of Cosmopolitics, applies the insights of cosmopolitics to issues of religious, spiritual, and secular diversity. With an emphasis on practice as a way of building relationships between humans and nonhumans, cosmopolitics complexifies the sacred-secular divide by drawing attention to the new associations and possibilities opened up by secular and nonsecular practices alike, giving rise to new approaches to human modes of ecological well-being.

By tracing the associations between humans, nonhumans, technologies, ideas, and practices, the chapter argues that cosmopolitics forms essential and unique contributions to integral ecology.

COSMOPOLITAN AND COSMOPOLITICS

The idea of cosmopolitanism has been traversing Earth for more than 2,000 years, with its beginnings in the terrain of ancient Greece, as philosophers started identifying themselves as citizens (*polites*) of the world (*kosmos*). In *The Lives of Eminent Philosophers*, Diogenes Laertius (1970) reports the following cosmopolitan

declaration of another philosopher—Diogenes of Sinope, founder of the Cynic philosophy: "when he was asked where he came from, he replied, 'I am a citizen of the world [*kosmopolitês*]'" (6.63). It is not clear to what extent the Cynic meant those words as a negation of his duties to his particular homeland, Sinope, or as an affirmation of his participation in a more universal homeland that exceeds and maybe also includes Sinope and Greece. Furthermore, to the extent that he did intend to affirm a universal politics, it is unclear how that universality was understood. Was he trying to affirm political uniqueness and difference or, on the other hand, was he trying to affirm political continuity and identity? Was he proposing to extend a politics that would include and enclose the whole world, or was he trying to open up the political boundaries that were fortifying his Greek *polis*?[1] Maybe difference and continuity, openness and enclosure?

These questions remain unanswered not simply because of a lack of textual evidence regarding the details of Diogenes's (1970) conception of cosmopolitanism. Rather, these questions remain alive because the questions themselves are part of the very idea of cosmopolitanism itself. Still today, theorists discuss cosmopolitanism in terms of the complex continuities and differences constitutive of citizenship and political participation. Writing about the "clash" between "universal concern and respect for legitimate difference," Kwame Anthony Appiah (2006) observes that cosmopolitanism is more of a question or problem than it is an answer, which is to say, "cosmopolitanism is the name not of the solution but of the challenge" (p. xv). Drawing us into questions of political universality and specificity, identity and difference, what can cosmopolitanism do?

"A citizen of the world," Appiah (2006) wonders, "how far can we take that idea?" (p. xv). This way of framing the question, however, is very limited. We join Appiah in wondering about how far we can take the idea of cosmopolitanism, but far more than that, we wonder about how far the idea of cosmopolitanism can take us. Are we taking it or is it also taking us? This question is not just a superfluous turn of phrase. It indicates that the idea is not necessarily reducible to an object of human control. The idea of cosmopolitanism, indeed any idea, is not just something that we can take somewhere, but is also something that, perhaps by surprise, takes us. To put it another way, the idea of cosmopolitanism is itself an entity undergoing uncertain transformations and producing unpredictable effects in the world. Perhaps this is precisely what the idea of cosmopolitanism can teach us: humans are not the only actors on the world's political stage.

Perhaps, if we apprentice ourselves to the idea of cosmopolitanism, it can teach us a new sense of who or what is meant by *us*, so that *we* is no longer an exclusively human club but integrates humans and nonhumans into an unruly

collective always under construction, always undergoing renegotiations of the relationships between its constitutive members (e.g., ecosystems, humans, fungi, ideas, institutions, galaxies, black holes, carbon dioxide molecules, etc.). Through this more open and complex sense of *we*, cosmopolitanism includes the actual cosmos. To some extent, this is a new approach to cosmopolitanism, sufficiently distinct from the traditional definition of cosmopolitanism as to warrant another term, a term that renews the procedures of politics (*politikos*) instead of presupposing who or what counts as citizens (*polites*), cities (*poleis*), and world (*kosmos*). Along these lines, Isabelle Stengers (2010, 2011) speaks of *cosmopolitics* to designate the ongoing procedures and events wherein humans and nonhumans participate in the craft of composing a shared world.

Stengers (2010) develops her concept of cosmopolitics explicitly "in contrast to Kant" (p. 79). What's wrong with Kant? Although Kant's anthropocentrism is undoubtedly untenable for Stengers, that is not what she challenges about his cosmopolitanism. Rather, his proposal for a *jus cosmopoliticum* (cosmopolitical law) seeks a universal law of hospitality that would bring "perpetual peace" between all members of "the human race" (Kant, 1999, p. 329). Perpetual peace forecloses the struggle to compose the world, which is not to say that Stengers favors war over peace. Rather, Stengers favors ongoing participation in the uncertain process of composing a cosmopolitical collective, which involves struggle—for instance, the struggle to ask whether or not nonhumans have any active role in the collective (a question that Kant does not ask). Donna Haraway (2008) provides an apt summary of the craft of cosmopolitics: "For Stengers, the cosmos is the possible unknown constructed by multiple, diverse entities. Full of the promise of articulations that diverse beings might eventually make, the cosmos is the opposite of a place of transcendent peace" (p. 83).

The decision-making process, Haraway notes, "must take place somehow in the presence of those who will bear their consequences," and that is no easy task, because getting "'in the presence of' demands work, speculative invention, and ontological risks. No one knows how to do that in advance of coming together in composition" (p. 83).

Although cosmopolitics is undoubtedly different from classical and modern cosmopolitanism, it would be a mistake to think that cosmopolitanism has always been assimilated into nature/society dualisms. For instance, subsequent to the Cynics, Stoic philosophers worked with the idea of cosmopolitanism. Latour (1999) is correct to say that the Stoics used the notion of cosmopolitics "to express an affiliation to no city in particular but to humanity in general" (p. 305). However, that is far from the whole story. For Stoics, humanity and the cosmos are intimately intertwined. It is true that, for Stoics, politics is a matter

of humans using reason and discourse (*logos*) to articulate their shared existence as citizens. However, that *logos* is not exclusively human. Stoic philosophy lets the cosmos speak, such that the cosmos is always already folded into politics, and human expressions of *logos* are grounded in the cosmic *logos*:

> The Stoic choice of life both postulates and demands, simultaneously, that the universe be rational. . . Human reason, which seeks logical and dialectical coherence with itself and posits morality, must be based upon a Reason possessed by the All, of which it is only a portion. . . It is a rational universe, but at the same time totally material. (Hadot, 2002, p. 129)

The Stoics thus adhered to a twofold conception of *logos*, wherein every uttered discourse (*logos proforikos*) explicates the discourse remaining within the cosmos (*logos endiathetos*). As William Hamrick and Jan van der Veken note (2011), this twofold *logos* overcomes any "bifurcation between Nature and the (cultural) idea" (p. 108). Furthermore, as Hamrick and Van Der Veken show, this Stoic insight is not an isolated incident. It appears in Whitehead's development of a philosophy that avoids the bifurcation of nature, and it also appears in the phenomenological philosophy of Maurice Merleau-Ponty, for whom human expressions of *logos* unfold from the *logos* of "wild Being" (p. 105). Indeed, in Merleau-Ponty's (1968) notes on his unfinished work articulating a "new ontology," he explicitly mentions his plans to develop a theory "of the *Logos endiathetos* (of meaning before logic)" (p. 169). This affirmation of the Stoic *logos* stands in contrast to the anthropocentric tendencies whereby phenomenology focuses on meaning within the limits of human experience alone. Merleau-Ponty's turn toward the *logos* of wild Being has supported the efforts of many phenomenologists—including ecophenomenologists—to challenge anthropocentrism and open phenomenology up to "carnal participation" in the cosmos, attending to the *logos* "that pronounces itself silently in each sensible thing" (p. 208; cf. Cataldi & Hamrick, 2007).

The point here is not just to trace the history of ideas about the cosmos from Cynics and Stoics through contemporary philosophers. Rather, the point is to show that the idea of being a citizen of the world is a problem, which opens up questions of continuity and difference that touch on the very meaning of the universe and the place of human existence therein. That problem is particularly pronounced in the friction between the anthropocentric focus of *cosmopolitanism*, for which the political world is populated exclusively by humans, and the

cosmic focus of *cosmopolitics*, for which the actual cosmos is folded into politics as a meaningful participant. The problem does not call for an answer or final solution as much as it calls for ongoing participation. In other words, the friction between cosmopolitanism and cosmopolitics is constitutive of the very notion that one can become a citizen of the world, and if one does away with that friction, one does away with any possibility of participation in a cosmos or politics.

RADICAL REALISM

If cosmopolitics can function as an integral approach to ecology, then it is an integral ecology for which integration is not a fixed solution but an ongoing and evolving problem that demands vigilant engagement. Stengers (2010) has much to teach us of the ways we can theorize that kind of cosmopolitics. The meaning of the simple term *cosmopolitics* seems almost self-evident—it refers to the politics of the cosmos. But this definition begs further investigation—what kind of "cosmos" has a "politics"? *Cosmos* in this context designates the multitude of beings that together construct reality, a pluralistic "possible unknown" (Haraway, 2008, p. 83) forming a collective society where "*society* has always meant *association* and has never been limited to humans" (Latour, 2004b, p. 451). This sense of cosmos is also drawn from William James: "[his] synonym for *cosmos* was *pluriverse*, a coinage that makes its awesome multiplicity clear" (Latour, 2004b, p. 454). Cosmos becomes attached to politics by means of the multiplicity of associations continually forged and broken between humans and nonhumans. The cosmos in this sense is itself a historical being not juxtaposed to the history of human beings, but is deeply involved with them. Latour (2004b) writes:

> The presence of *cosmos* in *cosmopolitics* resists the tendency of *politics* to mean the give-and-take in an exclusive human club. The presence of *politics* in *cosmopolitics* resists the tendency of *cosmos* to mean a finite list of entities that must be taken into account. *Cosmos* protects against the premature closure of *politics*, and *politics* against the premature closure of *cosmos*. . . But if *cosmos* is to mean anything, it must embrace, literally, everything—including all the vast numbers of nonhuman entities making humans act. (p. 454)

If the political cosmos means anything, it means the ecology of everything, human and nonhuman, certainly, but it also applies to the noetic dimension

of all living things, including their ethologies, interiorities, or knowledges. In this latter sense, cosmopolitics emerges as an integrative practice for navigating today's "discordant landscape of knowledge" (Stengers, 2010, p. vii). For Stengers this discord refers to the fissure between facts and values, subjects and objects, nature and society, time and history, or world and representation. Importantly, this discord is not merely a problem for knowledge, but for activating different kinds of relations between beings, since "Politics does not fall neatly on one side of a divide and nature on the other" (Latour, 2004a, p. 1). This fissure—an ontological bifurcation if there ever was one—places us in a quandary because, "Every time we seek to mix scientific facts with aesthetic, political, economic and moral values" (Latour, 2004a, p. 1), we find ourselves unable to bridge the gap that would allow us to see facts and values as two sides of the same integral ontology. It is almost as though the domains of aesthetics, values, and subjects belong to a different universe from facts, objects, and data, forever irreconcilable.

In the bifurcated view, subjects and objects form two adjacent spheres of reality separated by an immense gap overcome only through practices of representation: Cultural knowledge is shaped so as to create a mirror image of an external and unified world. Language, society, and history fall on one side of the line, while the world, as it exists in itself, falls on the other. However, as Latour (2004a) notes, "the terms 'nature' and 'society' do not designate domains of reality; instead, they refer to a quite specific form of public organization" (p. 53). Cosmopolitics suggests a unique practice of relating to these bifurcations: participation in an a priori heterogeneous world, not just at the level of knowledge and concepts (epistemological pluralism) but at the level of being itself (ontological pluralism). This indicates the pervasive influence of Whitehead (1978) on cosmopolitics, as it echoes his "ontological principle": "actual entities are the only *reasons*; so that to search for a reason is to search for one or more actual entities," not to search for overarching abstractions of nature and society (p. 24). Thus instead of spatializing reality by positing two separate containers—one called "nature" and one called "society"—cosmopolitics suggests that there are many more modes or domains of reality than the bifurcated view suggests. The task here is to trace the multiplicity of associations between entities as participants in a common, ecological collective where nonhumans also have a voice in the polis: "To limit discussion to humans, their interests, their subjectivities, their rights," writes Latour (2004a), "will appear as strange a few years from now as having denied the right to vote of slaves, poor people, or women" (p. 69).

By suggesting an ontological pluralism, cosmopolitics renders an account without a giant gap between two distinctly separate spheres (Nature and Society),

and instead navigates a terrain filled with innumerable tiny gaps and crossings between beings; a pluralistic cosmos, a panoply of collectives. Without reifying the knowledge-world gap, cosmopolitics nevertheless sees the gap between knowledge of a being and the being itself as indicative of an ontological problem of relations in general. In Latour's (1999) words, "the immense abyss separating words and things can be found everywhere," (p. 51). The shift from one enormous gap to innumerable tiny gaps is significant: By "not having to fill a huge and radical gap between two realms, but merely to shift through many little gaps between slightly different active entities" (p. 148), cosmopolitics returns us to the wild diversity of things without appeal to subject-object, nature-culture dichotomies. Here "the fragile gulf of reference" (Latour, 2004a, p. 85) that puts so much pressure on language to represent an entire world does not disappear entirely, but becomes only one of many links that mobilizes the collective in certain ways. Thus, rather than thinking of knowledge exclusively as a tool for epistemological inquiry, cosmopolitics describes the ontology of knowledge by approaching knowledge as one of the many links that creates associations between beings, instead of a unique mode responsible for representing all of them.

In this cosmos of radically diverse border crossings, the point is not to separate and distinguish those entities that belong to nature—e.g., trees, genes, sex, species, extinction—and those that belong to culture—e.g., farms, gender, crime, breeding, laws. Instead, cosmopolitics attends to the complex vectors and relations by which one entity attaches to another, and the consequences and benefits wrought by those relations. The role of knowledge here is to trace or create connections, which is to say that knowledge is neither universal nor particular from the perspective of cosmopolitics; rather, knowledge is evaluated in terms of its mobility—its ability to travel and effect networks of human and nonhumans in different domains.

Oriented toward a panoply of collectives, cosmopolitics asks a different set of questions, groping not toward a bipolar opposition between nature and culture, but toward specific entities or events: What kind of entity is climate change? Are genetically modified foods "natural"? How do we make sense of the knowledge and fictions that shape human social arrangements and bodily constitutions? By asking these kinds of questions, cosmopolitics acknowledges that there is no longer, and perhaps never was, a nature-culture divide to arbitrate. In this sense, cosmopolitics overcomes what Whitehead (1920)—a key influence on Stengers—calls "the bifurcation of nature," which separates the material world from the world of knowledge and ideas ("the byplay of the mind") (p. 30). Bruno Latour (1999) thus notes that cosmopolitics "acquired a deeper meaning through its use by Isabelle Stengers to mean the new politics that is no longer framed inside the modernist settlement of nature and society" (p. 305).

Once the bifurcation of nature has been abandoned, the number of ontologically real modes of existence multiply. Thus, instead of a two-world theory of nature and society locked in a battle for the supremacy of knowledge, Stengers (2010) suggests there is no single "mode of existence" (p. 11) or "unifying body of knowledge" that "will ever demonstrate that the neutrino of physics can coexist with the multiple worlds mobilized by ethnopsychiatry" (p. vii). This is a crucial point: while there is no single, totalizing mode that can incorporate all other modes within its terms, this is not to suggest that no work bridging knowledges and practices can be done; quite the opposite. Cosmopolitics views each mode of existence as irreducible and unique, a mosaic or bricolage of diverse relations. By invoking the neutrino and ethnopsychiatry, Stengers foregrounds the disparate knowledge practices drawing together humans and nonhumans on the Earth today. The neutrino—an electrically neutral and weakly interacting subatomic particle—belongs to the world of quantum mechanics, physicists, nuclear reactors, gamma rays, and underground detector arrays. No less real than the neutrino, ethnopsychiatry carries its own histories and practices. "Ethno" draws in the meanings and concepts generated by a specific people, nation, class, or tribe directed toward healing the "psyche"—often meaning soul or mind. Ethnopsychiatry is the study of associations between practitioners, practices, methods, tools, and concepts of mind that generates healing modalities among specific groups of people.

The insight of cosmopolitics is that, as diverse actors generating multiple effects on the Earth, the world of the physicist and the ethnopsychiatrist do not form a stable whole unified by a metaperspective that arbitrates both, nor are they reducible to a universal common denominator. The neutrino and ethnopsychiatry are not simply entities revealed by different epistemic lenses, as if knowledge simply catalogued different perspectives on a single reality; they are, rather, attached to adjacent but entangled worlds of disparate practices, histories, and material relations that together forge irreconcilable entities that cannot be readily transported across domains. This is not to say that all hope for coexistence is lost. Rather, the point is that coexistence is not a given but a very difficult and uncertain achievement that requires a great deal of translation, and adventures in translation risk losing much along the way.

COLLECTIVE HISTORY

The multiplicity of modes of existence implied by cosmopolitics suggests that if we can permit the term *multiculturalism*, we must also submit to the term

multinaturalism—that is, if we are to continue using the old language at all (Latour, 2004). The turn to multinaturalism reframes the possibilities of knowledge, and here cosmopolitics suggests something radical, but perhaps completely sensible: there is not a single world revealed through a multiplicity of perspectives; instead, there is a multiplicity of worlds, entwined with one another and made present by different sets of practices of humans and nonhumans. Thus instead of trying to speak correctly of a single world as it is apart from all knowledges, practices, and instruments, cosmopolitics takes the position of a *collective history* wherein social history and cosmic history are deeply entangled in multispecies ecologies that include built environments, technologies, and knowledges.

In saying that humans and nonhumans belong or pertain to one another, cosmopolitics suggests not just a shared *synchronic* relationship between different kinds of beings, but a *diachronic* one as well. This is the payoff of collective history: it allows us to stop "consider[ing] certain entities such as ferments, germs, or eggs sprouting into existence as being radically different from a *context* made of colleagues, emperors, money, instruments, bodily skills, and so on" (Latour, 1999, p. 165). This in turn allows practices rooted in cosmopolitics to observe that "the definitive line of demarcation at which history stopped and natural ontology took over has disappeared" (Latour, 1999, p. 166). Cosmopolitics thus tries to link the human and nonhuman in two ways: temporally, by refusing a sharp distinction between history and natural ontology, and contiguously, by refusing ontological distinctions between human subjects or artifacts from nonhuman ones to begin with.

The temporal, diachronic dimension of cosmopolitics recurs through "ecological singularities" (Stengers, 2010, p. 115). These singularities defy strict boundaries between causes and effects, or conditions and events, creating multiple universes of value (to use the term Stengers borrows from Felix Guattari). In one sense there are no causes or conditions acting from the outside because there is no unitary, transcendental mold that forms the structure of possibility for all the creatures living on the "inside" of its conditions. Rather, conditions are themselves immanent values—ingredients acting from within a specific event—that acquaint us with a range of qualitative multiplicities (Stengers, 2010, p. 194). By acknowledging such multiplicity, cosmopolitics foregrounds the "modes of presence" (Stengers, 2010, p. 169) brought into relation by different practices, practitioners, and the nonhuman artifacts they assemble. Returning to our example, the neutrino and ethnopsychiatry from the view of qualitative multiplicity occupy different—though entangled—universes of value, each one mobilizing its own territory populated by unique collectives of humans and nonhumans.

To read one territory in terms of another is difficult and dangerous, because each operates by means of a differing set of practices and material relations, and reducing one territory to another could damage the integrity of either or both of them. The most detailed exposition of the work required to translate between disparate domains can be found in Latour's (2013) *An Inquiry into Modes of Existence* (AIME). While this work details many of the defining characteristics that allows dialogue and alliance building between modes—politics, law, fiction, technique, religion, morality, economics, and ecology among them—AIME nevertheless situates itself as an ongoing, empirical, and collaborative enterprise drawing from a wide range of scholars and practitioners to continually describe and revise the movement and emergence of new of modes of existence.

For cosmopolitics, then, there is no sovereign power under which all modes of existence can be organized, and there is no meta-language through which one can master the diversity of discursive practices. All meta-languages are terms that unite different entities from the inside at a cost; and, like conditions, they are immanent to events, rather than external to them. For Guattari (2000), the task of liberating ecological singularities means that "we must reappropriate Universes of value" (p. 68) from any such sovereignty or master signifier. This applies to all knowledges, including physics, which is Stengers's primary concern in her seven-volume *Cosmopolitics* series.

While physics is often viewed as a sovereign system of knowledge against which all others must be tested, physics is itself at risk of reduction to its own system of valuation. In other words, for Stengers (2010), physics has itself been reduced to a certain kind of physics, expressed historically as "the triumph of the physics of laws over the physics of phenomena" (p. 175). In Stengers's view, "Physics, today, is haunted by laws, and as long as this is so, as long as it presents itself as the science that discovered that nature obeys laws, it will stand as an obstacle" (p. 87). The relationship between laws and phenomena is an important one for cosmopolitics. Rather than saying that there are no physical laws—an untenable position—Stengers gives a more complex picture of the entanglement of laws and phenomena. Cosmopolitics invites us to think with an ecological and historical conception of physics that includes the physics of phenomena and the physics of laws, where the physics of laws are themselves immanent to the ecological circumstances from within which phenomena interact.

> On the topic of the relation between laws and phenomena, Stengers again draws heavily from Whitehead. For Whitehead (1968), laws are more accurately described as habits—behavioral characteristics

> of interacting phenomena emerging from a particular stage of their development (p. 154). More descriptively, Whitehead (1991) writes: The laws are the outcome of the character of the behaving things: they are . . . "communal customs" . . . This conception should replace the older idea of given things with mutual behaviour conditioned by imposed laws. What we know of external nature is wholly in terms of how the various occasions in nature contribute to each other's natures. The whole environment participates in the nature of each of its occasions. Thus each occasion takes its initial form from the character of its environment. Also the laws which condition each environment merely express the general character of the occasions composing that environment. (pp. 48–49)

For Stengers and Whitehead the relationship between laws and phenomena is complex: laws are not external or unified containers acting from outside or below the level of phenomena; rather, they are powers that emerge from within the qualities and interactions of phenomena themselves. Thus, instead of trying to anoint an absolute sovereign from which a feudal hierarchy of knowledge can be built, cosmopolitics suggests a different, more democratic way forward: cosmopolitics approaches each territory of entities as populated by distinct possibilities, qualities, and obligations. Each territory possesses its own "habits" or "customs" that take the shape of immanent laws influencing the behavior of individuals.

But how do we approach these distinct territories in a way that integrates their respective values without assimilating them, including them without enclosing them? Cosmopolitics offers us a series of additional practices and concepts to help orient us toward these multiplicities.

ECOLOGY OF PRACTICES

Practices always entail the composition of new relations, and continue only insofar as the relations forged in turn promote the continuation of a particular practice. Cosmopolitics is not a universal law established once and for all. It is an unknown that challenges us to participate in the composition of the messy collective in the making, to engage in "the question of an ecology of practices" (Stengers, 2011, p. 356). The "cosmopolitical question" calls for an integral approach that aims to "sustain the obligation to resist the code words" that impose themselves on the ecology of practices and short-circuit the ongoing composition of the collective

(Stengers, 2010, p. 80). How can we integrate the full panoply of diverse modes of existence into a shared world? How can we decide who we are or what "we" is? We can decide only by inhabiting the question, working with the friction inherent in the idea of a politics of the cosmos.

A key concept addressing the dynamic between constraints and obligations is the ecology of practices. Each term in the phrase has a specific meaning: *Ecology* in this context refers to the study of the complex and uncertain interactions between more than just organisms and environments but, more generally, between any beings, each of which is itself composed of a multiplicity of interactions, and these interactions are never merely material but always involve value and the production of meaning. Thus, ecology is "the science of multiplicities, disparate causalities, and unintentional creation of meaning" (Stengers, 2010, p. 34). By linking ecology to causality itself, cosmopolitics takes a much broader, metaphysical approach to ecological relations than is considered in the regular use of the term. The cosmos from this view is itself an ecology of interacting beings, ideas, practices, and technologies. *Practices* are ways of cultivating new relations between human and nonhuman members of a community, as opposed to methods for representing or accessing an external, unified world. Taken together these terms suggest a dual relationship to the ontology of values: certain practices bring into existence certain values, and certain values maintain the existence of certain kinds of practice. By positing a dual mode in which values enable certain practices and delimit others, Stengers (2010) is led to give an account of "reciprocal capture"—the role "a dual process of identity construction" (p. 36) plays in creating new relations and constraints between beings. If ecological singularities emphasize the unique, transformative punctuation wrought by new events in a collective history, reciprocal capture, for its part, emphasizes the achievement of stability, habit, and custom between and among beings.[2]

Reciprocal capture also activates a new dimension within the agency of knowledge, and has important consequences for thinking about the effects of knowledge on communities of humans and nonhumans. Instead of representing or reflecting the external world, knowledge claims mobilize new relations between humans, between nonhumans, and between humans and nonhumans. In addition to making present the requirements and obligations of knowledge-making practices, reciprocal capture "can also question certain practices because of what they require" (Stengers, 2010, p. 69). Stated differently, reciprocal capture resists the temptation to bifurcate our knowledge about the cosmos from the cosmos within which it is an influential agency. For example, we never simply have "physics"—a finite but growing body of knowledge that describes the functioning of the

physical universe—we always have physics along with physicists, quarks, gluons, protons, measuring instruments, wars, treaties, personalities, financiers, institutions, ideologies, economic goals, technologies, safety protocols, and intellectual property rights. This is not to say that physics is just another relative system of knowledge—one as good as the rest—but to emphasize that the human and the nonhuman always interpolate one another in the creation of knowledge. To say it again: human history (physicists, instruments, wars . . .) and cosmic history (quarks, gluons, protons . . .) form a single, collective history. This bears significant similarities to Thomas Berry's conception of human and cosmic evolution as part of one epic journey or *universe story*.[3]

Knowledge, from this view, is not what is achieved when researchers are able to detach from the worlds they study like disinterested observers; rather, knowledge is a powerful link between researchers and the subjects of research. Knowledge attaches and entangles rather than clarifies and separates; it necessarily multiplies relations between beings, and foregrounds the way concepts and ideas capture researchers just as much as researchers produce them. For Stengers (2010), concepts are "highly singular creatures, who haunt their creators, and who are given the power to impose their own questions upon them" (p. 222). Another way to say this is that it is as much the physicist who is captured and transformed by her neutrino, as it is the neutrino who is captured and transformed by its encounter with the physicist, not unlike the mutually transformative relationship between ethnopsychiatrists and the psychic worlds they aim to heal. Once the physicist becomes aware of the entity she has called *neutrino*, she must add this being to her list of entities that shape and define the scope and capacities of her practice as a scientist. The "cosmos" of "cosmopolitics" has entered and disturbed the "politics" that was once considered a solely human affair.

SYMBIOTIC AGREEMENTS

While reciprocal capture points to the entangled, coinvention of identities, it does not suggest a consensus of conflicting parts brought into an ideal peace or overarching harmony—but this lack of a priori consensus between values does not foreclose the possibility of mutually enhancing relationships. Indeed, consensus does not enhance but rather effaces the incompatible differences that mark ecological singularities. Cosmopolitics calls for a more dynamic sense of togetherness. Perhaps instead of consensus, cosmopolitics can be described in terms of dissensus (Rancière, 2010). In his exposition of a generalized ecology,

Félix Guattari (2000) proposes dissensus as a key concept for liberating singularities from the imposed consensus of what he calls "integrated world capitalism": "Rather than looking for a stupefying and infantalizing consensus, it will be a question in the future of cultivating a dissensus and the singular production of existence" (p. 50).

"Symbiotic agreements" describe the dissensual events in which different modes of existence render one another stable (Stengers, 2010, p. 35). When a practice maintains a certain set of values that in turn stabilize the practice, a symbiotic agreement has formed. The cosmopolitics of a symbiotic agreement bears on ethical practices of knowledge and decision-making, calling for responsibility—a "sharing of suffering," wherein our practices participate in the struggles and challenges of whatever modes of existence we are engaging (Haraway, 2008, p. 72). As Donna Haraway (2008) notes, "cosmopolitics is a practice for going on, for remaining exposed to consequences, for entangling materially with as many of the messy players as possible" (p. 106), and for acknowledging that many of the relevant players are nonhumans.

Furthermore, doing the work of integrating as many symbiotic agreements as possible amid the vast diversity of modes of existence, cosmopolitics involves a critique of the homogenizing hegemony of globalization. However, this does not mean that cosmopolitics is simply against globalization. It is against the homogenizing hegemony of the dominant form of globalization, which spreads rapacious consumerism and military-industrial power around the planet. Rather than resting with a reactionary antiglobalization (*alter-globalisation*), cosmopolitics nurtures the development of an alternative approach to world-building, an "other-globalization" (*autre-mondialisation*) (Haraway, 2008, p. 3). Politics, long thought to be a specifically human affair, must now play out globally in ecological settings, abjuring any imposed homogenization of ecological differences and instead facilitating the participation of the varied and diverse beings affected by any decision. In this ecological model of global politics, "decisions must take place somehow in the presence of those who will bear their consequences" (p. 83). The point is to avoid homogenizing the diverse modes of existence composing the Earth community. Affirming planetary diversity means staying with the friction between the myriad interested parties involved in any decision-making process. To stay with the friction is to keep open the struggle of composing a shared world (Tsing, 2004). The bad news is that this is a dangerous and uncertain struggle that might not work out well for present or future generations of the human species. The good news is that humans are not alone in the struggle.

"There is a promising autre-mondialisation to be learned in retying some of the knots of ordinary multispecies living on earth" (Haraway, 2008, p. 3).

MULTISPECIES COSMOPOLITICS

While so far we have described cosmopolitics, symbiotic agreements, and reciprocal capture primarily in terms of humans, their technologies, and knowledge-making practices, the concepts also apply to multiple species, making important contributions to thinking about ecological relationships in general. The *autre-mondialisation* suggested by cosmopolitics involves bringing all Earth species into a common collective. A central component of a multispecies cosmopolitics is the growing field of cognitive ethology—the study of animal minds (Bekoff, 2008)—a field cosmopolitics draws from and complexifies in unique ways. Dwelling on the growth of approaches to ethology in recent years is essential to understanding how cosmopolitics renders these insights anew.

Initially, a behavioral approach to ethology dominated discussions of what humans could know about the lived experience of nonhuman beings (Proctor, 2012). The behavioral approach, utilized for much of the twentieth century, rejected the idea that nonhuman subjectivity, sentience, or affect could be studied, and sometimes denied that these qualities even existed in nonhuman beings. More recent approaches, however, have begun to include a broader range of attributes such as sentience (i.e., thoughts, feelings, and emotions) (Proctor, 2012), experiences of joy, pleasure, pain, and fear, including specific psychological conditions such as schizophrenia (Proctor, Carder, & Cornish, 2013), and more complex functions such as memory, mind-reading ("theory of mind"), sense of future, and preferences (Jones, 2012). A milestone in the study and acceptance of the reality of animal sentience is the Cambridge Declaration of Consciousness (CDC) published in 2012, which, among other important claims, argued that "The neural substrates of emotions do not appear to be confined to cortical structures" (Low, 2012, para. 3). Why is that claim important? And how does it relate to cosmopolitics? By articulating the fact that nonhumans *feel*—but not necessarily in a way similar to how humans or other mammals feel—the CDC goes a long to combatting the anthropocentrism that has hampered research into the lived experience of nonhuman animals (Proctor, 2012), and this makes the declaration a key ally to the practices espoused by cosmopolitics.

While the CDC represents an enormous and important step in advocacy and policy efforts to recognize that nonhumans feel pain, joy, sorrow, and pleasure,

anthropocentrism—and what some researchers call "mammalcentrism" (Proctor, Carder, & Cornish, 2013, p. 884)—is still a strong influence in the field of cognitive ethology. Here molecular biologists, including the influential writings of Lynn Margulis, offer a helpful, nonanthropocentric view of cognition. Margulis, writing with her son Dorian Sagan, argues:

> I can point to conscious, actively communicating, pond-water microscopic life. . . The processes of perception, awareness, speculation, and the like evolved in the microcosm: The subvisible world of our bacterial ancestors. Movement itself is an ancestral bacterial trait, and thought, I am suggesting, is a kind of cell movement. (p. 114)

If we take seriously the insights of these cognitive ethologists and molecular biologists, we find a new view of the ecosystem as a whole that any practice of cosmopolitics must take seriously: all organisms, from bacteria to mammals, to divergent extents and degrees, possess some level of mind or sentience. Human ecologist Alf Hornborg (2001) reflects on this vision:

> Each organism and species exists by virtue of its capacity to perceive and interpret the world around it. An ecosystem is not a machine, where the various components mindlessly fulfill their functions as a reflection of the external mind of the engineer. Ecosystems are incredibly complex articulations of innumerable, sentient subjects, engaging each other through the lenses of their own subjective worlds. (p. 125)

Multispecies cosmopolitics does not just recognize the multiple universes of value activated by different human practices, but also recognizes those universes of value that belong to the entangled worlds of nonhuman species.

While the insights of cognitive ethology drawn at multiple scales from the microbial to the multicellular make important contributions to cosmopolitical ideas of reciprocal capture, ecologies of practice, and collective history, they nevertheless make an omission that allows cosmopolitics to expand on their insights: in these approaches to ethology, there is often no accounting for the role played by inorganic and technological actors in the constitution of human and more than human ecologies. As an influential factor in the constitution of Earth's ecologies, technology must be factored into the coevolution of human and nonhuman species. Here Donna Haraway's (2008) work on cosmopolitics and companion species is particularly insightful. Drawing attention to the increasing

role played by technology in the ecological configuration of the Earth, Haraway suggests that "technological assemblages" constitute their own kind of "species" where "technology is a relational practice that shapes living and dying" (p. 283).

What cosmopolitics tries to describe is that ecologies are irreducibly complex societies of value-emitting organisms, technologies, and abiotic entities that are themselves centers of valuation. Technologies, no less than organic species, generate their own systems of values, constraints, and obligations that need tending to. How do technologies generate their own system of values? To explore this question, Haraway (2008) draws on the work of Don Ihde. Ihde writes: "Insofar as I use or employ a technology, I am used by and employed by that technology as well. . . We are bodies in technologies" (as cited in Hararway, 2008, p. 249). Haraway, building on Ihde's conception of technology, is interested in the differences that technologies make as companion species in the evolution of human and more-than-human collectives. For Haraway, technologies are infolded into the embodiment of experience, and attach humans and nonhumans in new ways, as for example in the case of the electron microscope, which connects us to the subvisible kingdom of beings Lynn Margulis drew our attention to earlier. Through microscopes, "we experience in optic-haptic touch the high mountains and valleys, entwined organelles and visiting bacteria, and multiform interdigitations of surfaces we can never again image as smooth interfaces" (p. 249).

Centrally, cosmopolitics recognizes that technologies, not unlike living beings, are never value-neutral, tools empty of their own content or characteristics, supplied with agency only when put to use by human aims and interests. Technologies of all kinds—no matter what their use—are treated as dynamic and lively agencies, bringing forth a series of unpredictable constraints, requirements, and possibilities that cannot be theorized in terms of their human usefulness alone. In other words, cosmopolitics recognizes that different practices performed by all organisms and technologies generate new and diverse relations of significance, and these relations are best understood in terms of the constraints and possibilities attached to each territory, rather than encroached on by the demands of a universal map of knowledge describing a single reality. This is grassroots integration, wherein our comprehension of and responses to ecological phenomena are not determined from on high by detached observers but emerge in the act of companioning with as many species as possible—participating in the material-semiotic networks of all the beings involved in the situation, human and nonhuman, corporeal and incorporeal, natural and artificial, familiar and uncanny.

In addition to recognizing the multiple agencies of nonhuman ethologies and technologies, cosmopolitics also honors the unique role played by the ecology of ideas or knowledge. Stengers (2013) in particular juxtaposes the knowledge ecology to the knowledge economy to foreground the power knowledges—including concepts and fictions—have in shaping humans and human practices, as well as the effects these practices have in shaping nonhuman communities. For Stengers, ideas, concepts, and fictions have an important force all their own that must be accounted for. Similarly, Haraway (2013), drawing from the work of Marilyn Strathern, notes that "it matters what thoughts think thoughts; it matters what knowledges know knowledges; it matters what relations relate relations; it matters what worlds world worlds." The idea expressed here is that, much like reciprocal capture refers to the way in which different practices fold back to encourage certain practices and identities, thoughts, ideas, and knowledges are also "captured" by one another, exerting influence on each other and on the psyches that deploy them. We are captured by ideas just as we capture them. The central claim is that ideas, no less than practices, are "themselves technologies for pursuing inquiries. It's not just that ideas are embedded in practices; they *are* technical practices of situated kinds" (Harway, 2008, p. 282).

Multispecies cosmopolitics is thus about recognizing the entanglement of human and nonhuman practices and ethologies, the values and requirements wrought by technology, and the influential agency of the ecology of knowledge and ideas.

THE SPIRIT OF COSMOPOLITICS

How far can the idea of cosmopolitics take us? It can take us toward an integration of facts and values, nature and culture, nonhumans and humans. It can take us toward participatory engagements with the frictions and struggles necessary to the composition of a shared world. It can take us toward an other-globalization oriented toward mutually enhancing relations between all of Earth's ecological singularities. Lest we stop there and assume that cosmopolitics does not take us any further, it is important to mention that cosmopolitics takes us beyond modern secularism and its dismissal of religion and its disenchantment of the cosmos. It takes us beyond the homogenizing abstraction that freezes the complex processes of diverse religious and scientific practices and isolates them into two mutually exclusive categories, two reified categories, two frozen frames: Science and Religion. Cosmopolitics takes us beyond the "freeze-framing" whereby moderns

oppose the beliefs and images (iconolatry) of religions to scientific knowledge and the destruction of fabricated images (iconoclasm) (Latour, 2010, p. 121).

When the freeze-frames are gone, we can follow religions as well as sciences as they enact confluences of invented images and discovered knowledges, such that iconolatry and iconoclasm merge in the constructive and destructive clash of images—"*iconoclash*" (Latour, 2010, p. 68). To engage this friction is to engage the cosmopolitical task of speaking about religion after secularism. Such a task involves a methodical ambivalence. It involves joyfully celebrating the abundance and diversity of modes of existence, yet it also involves the immense challenge of following the twists and turns of each mode without assimilating it into frozen frames or rigid maps. Latour (2013b) articulates this ambivalence in the title of his book on the truth conditions of religious practices, *Rejoicing: Or the Torments of Religious Speech*.

With much joy and much troublesome work, cosmopolitics takes us toward a recuperation of diverse traditions and knowledges excluded or delegitimized by secularization. This includes, for instance, a recuperation of witchcraft. Influenced by the laudable work of the neopagan witch Starhawk, Stengers (2009) suggests that the cosmopolitical celebration of ongoing speculative invention is a practice of witchcraft, which is to say, it is a matter of sorcery or magic, which is not a matter of the false beliefs and superstitions dismissed by secularism but rather a craft for empowering humans to forge alliances with diverse modes of existence. That means not only forging alliances with animals, herbs, and seasonal transformations, but also forging alliances with the Goddess celebrated by neopagan practitioners.

As Stengers observes, "the sorceresses' Goddess" can be found "everywhere that joy, invention, and connection are. When new possibilities of thinking and acting appear, it is an ontological, or cosmological, event that we must learn to celebrate, even if it's precarious, precisely because it's precarious" (Stengers, 2009, p. 10). Religious traditions and spiritual practices are here not opposed to scientific perspectives. The Goddess is *everywhere* that joy and creativity occur. When two people are connected in marriage, when a new species is discovered, when a piece of music inspires joy in its listeners, when physicists discuss new ideas about neutrinos, in all such instances, and so many more, Stengers finds the Goddess. Again, the Goddess is not a question of belief, but is an event in which one can participate and celebrate.

Every new event or connection unfolds the divine creativity of the Goddess, such that every new fact harbors capacities for transformative agency, in much the same way that a sacred artifact can harbor a power to heal, protect, purify,

or curse. To put it another way, every fact is a fetish, in the anthropological sense of human-made objects that are attributed with their own powers. In the terminology of Latour (2010), for whom fact and fetish implode in the complex process of making (*facere*), every object that humans experience or interpret is a "factish god." In the parlance of contemporary philosophical trends, in which "object-oriented ontology" has garnered much attention, a Latourian cosmopolitics of factish gods can be described as "object-oriented theology," a theology for which divinity takes place in any being, any event or thing, any new connection or invention (Miller, 2013). Object-oriented theology resembles what would more traditionally be called animism, which resonates with Stengers's commitment to the Earth-based spirituality of neopaganism.

Although Latour does not pay as much attention as Stengers to witchcraft and the sorceresses' Goddess, he nevertheless affirms that religious ways of knowing are not about belief. Latour (2013b) "no longer believes in belief" (p. 3), but sees religion and all other ways of knowing as different kinds of inventive or transformative practices, in short, practices of making—crafts. "Despite all claims to the contrary, crafts hold the key to knowledge" (Latour, 1988, p. 218). In this sense, Latour, himself a Catholic, reiterates the point made throughout his own tradition that one must "do the truth" (*facere veritatem*), as one hears in the Gospel of John (3:21).

Christianity, witchcraft, and all religious traditions can be understood in terms of their various practices of crafting truth, where every new truth, every fabricated fact, pulses with creative agency or transformative power. These various practices—meditation, yoga, magic, contemplative prayer, trance dance, etc.—are among the species that must be integrated into the multispecies knots of cosmopolitics. Some of these species are more difficult to recuperate than others, especially to the extent that their history is marked by oppression and subjugated knowledge. For example, whereas Christians already hold positions of power in many social contexts today, practitioners of witchcraft have been the subject of severe exclusions and horrifying violence throughout modern history. "The smoke of the burned witches still hangs in our nostrils" (Starhawk, 1982, p. 219).

Stengers realizes that it might seem regressive to invoke witchcraft to deal with the serious issues facing civilization today. However, she sees witchcraft differently. "Don't say witches are regressive" (p. 11), writes Stengers (2009). Rather, she urges us to recognize how witches develop practices that are "capable of connecting with what is unique in our epoch, including the threat of new types of powers for which we lack a concept and have never experienced" (p. 11). The new threat she mentions comes from the "capitalist sorcery" of militarized

neoliberal models of globalization, which impose "infernal alternatives" onto the citizens of the world, so that we must choose passive acceptance or futile resistance (Pignarre & Stengers, 2011, p. 24).

The craft of world-building is a speculative process of invention, a magical practice that exceeds the limits of market rationality. To counter the capitalist sorcery that is short-circuiting cosmopolitics and colonizing the planet, to recuperate universes of value in our collective history, we are called to develop our own practices of sorcery, our own speculative inventions, and to do so, we should not underestimate the abundance and diversity of potential allies—multispecies kinship groups of people, organisms, ecosystems, practices, ideas, technologies, traditions, and so much more. We are called, in other words, to build alliances and summon new possibilities for coexistence in a complex cosmos.

Is cosmopolitics an ally of integral approaches to ecology? The easy answer: of course! Integral ecologies converge with cosmopolitics in working to overcome the bifurcation of the cosmos into opposed camps of nature and culture or subjects and objects, and furthermore, they converge in nurturing the ongoing composition of a shared yet heterogeneous collective of all beings, human and nonhuman, on Earth and throughout the entire cosmos. The more precise answer: we do not know, at least not yet. Let's stay with the question, practice, and find out what truths we can craft together, sharing in suffering as well as celebrating along the way.

NOTES

1. The Greek word *polis* is etymologically derived from the Proto-Indo-European root **pelə-*, which connotes an enclosed and fortified space: "Citadel, fortified high place" (Watkins, 2000, p. 64).

2. "Reciprocal capture" is a term influenced by Deleuze and Guattari's notion of "double capture," which "views all relationships as event"—the creation of something new. However, Stengers's (2010) aim is slightly different: She wants to direct reciprocal capture to "a relationship endowed with a certain stability . . . it is relevant whenever the 'marriage' produces . . . identifiable heirs" (p. 266n11).

3. See Sam Mickey's chapter in the present volume "For an Emerging Earth Community: Thomas Berry and a Shared Dream" for a further discussion of Berry's work.

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10

ON A FEW MATTERS OF CONCERN

Toward an Ecology of Integrity

Adrian Ivakhiv

THIS CHAPTER BEGAN AS A RESPONSE to a trend in contemporary philosophy called "object-oriented philosophy," or "object-oriented ontology," which emerged as part of a broader movement known as "speculative realism." Object-oriented philosophers, such as Graham Harman (2005), Levi Bryant (2011), Ian Bogost (2012), and Timothy Morton (2013), begin from the premise that the best description of the world is one that attends closely to the objects that make it up. This is their realism, more broadly, and their "objectivism" (or perhaps "objectality"), more specifically. While this premise sounds, at first blush, not unlike phenomenologist Edmund Husserl's call back to the things themselves, the difference is that Husserl approached those "things" through the human perception of them—to which Martin Heidegger, Maurice Merleau-Ponty, Jean-Paul Sartre, and others added an emphasis on interpretation, language, discourse, embodiment, decision, and other contextual determinants of our experience.

Object-oriented philosophers are more interested in decentering human perception and experience, so that it is no more valued in principle than any other kind of experience. In part, this is out of a desire to account for a world that, as Levi Bryant (2010) has put it, "far from reducing the number of existing objects as alleged by reductive materialisms, has actually experienced a promiscuous proliferation and multiplication of objects of all sorts" (para. 1).

This desire to acknowledge the proliferation of objects is a valuable step for philosophy to make insofar as it returns us to a concern for the world, and not merely for humanity. Such an approach should clearly be of interest to any emergent integral ecology. Yet it is important to recognize that this proliferation results, in large part, from the tremendous proliferation of commodities within a capitalist world-economy—the most productive economy the world has seen, and one whose productivity relies on the extraction of substances from their processual relations to produce things that appear to have no such relations—objects that are simply there, for us to admire, desire, purchase, and use. The "objectivity" of these objects is a product of a set of relations; it is illusory, or partial in any case, to the extent that these objects are not simply objects as such, but that they, for all their specificity, arise out of certain kinds of processes (extractive, productive), give rise to others (consumptive, waste-producing), and entangle their owners in relational ecologies that are morally imbued, materially generative, and dramatic in their effects on the world that is passed on to future generations.[1]

The approach I advocate in what follows shares object-oriented philosophers' goal of a metaphysical realism, but approaches it from a direction that is in some respects the polar opposite. It begins from the premise that, in an ultimate sense, there are no objects, only events, and that what defines those events is a relational encounter in which subjectivity is central. This does not mean that it begins as a revolt against substance, for the world of relational process is as substantive as any world of objects can be. It begins, however, from the subjective encounter. It begins, following Alfred North Whitehead (1933), Martin Heidegger (1962), Bruno Latour (2003), and Isabelle Stengers (1997), from matters of concern, and it does this because it is such matters that we are always in the midst of. It begins, then, with a refusal to extricate the knowing self or subject from the relations that constitute it.

This makes the proposed understanding congruent, in many ways, with a Wilberian postmetaphysical integral ecology, but different in its sensibility. Where Ken Wilber's (2000) and Sean Esbjörn-Hargens and Michael Zimmerman's (2009) goal is to create an overarching understanding of the universe that would encompass all perspectives and approaches within itself, the process-relational perspective I develop begins from the inside, as it were—from the inner texture of experience, and our shared experience, in particular, as humans living in the twenty-first century—and only moves hesitantly toward generalization and system-building. It thus avoids conjuring up color-coded "levels" that would presume to capture different social and natural phenomena into some universal classificatory system. The differences between such a Peircian- and Whiteheadian-inspired

phenomenological integralism (if it be called that) and a Wilberian integral ecology have been largely left aside for a future discussion.[2] This chapter presents, instead, an evocation of what a process-relational ontology entails at its phenomenological and hermeneutic outset: a beginning from matters of concern, yet a beginning that allows a reaching outward to others who are similarly bound up—openly and not deterministically—within their own matters of concern. Such a start, I believe, is necessary before an appropriate ecology of integrity can be developed. I will propose a few moves toward such an ecology in my conclusion.

MATTERS OF CONCERN

Everything begins with matters of concern.[3] Such matters are always, as they have ever been, matters that involve us, touch and brush up against us, envelop us, or otherwise call on us to respond to them.

By *us*, I have in mind not only humans, the collective we who have become the default in-group of philosophical thinking in the Western tradition. I do not exclude humans, but neither would I circle my philosophical wagons around them. This *us* is more like a call, an appeal, a network-building probe or vector. Sometimes the extent of that network has been taken for granted: members of a tribe or nation, philosophers, citizens, humans. But in times like ours, the *us* ought to be much more open than that, and this opening-outward is the vector I would like to pursue in what follows, even if the tools I use—language, of a philosophical kind—will not reach all of us directly. The *us* is the coming-in-to-being of responsiveness, in all its many forms.

As for the matters, they are such because they matter, they make a difference; so we call them to mind, we pay them attention. Mattering, they come to mind; minding, we come to matter. Matter and mind are nothing of themselves except as they come, and in the time that they come, to each other. The same can be said of subjects and objects: they are nothing except as they arise with respect to each other. Concern is precisely that with respect to that brings them together.

To be sure, there are things, things that happen. There are matters, matters that come to mind. The sequence I would like to posit, considered as a kind of ideal or logical progression, follows the triadic phenomenology laid out by Charles Sanders Peirce (1958a): there is, first, the *thing*, then the *happening*, then the *matter* of which the happening is a sign, a reminder, a call, a prompt, an issue, a problem, a pattern, a law. There are, in other words, the spontaneously generated qualities—not Platonic Ideas, but simply the potentials inherent in

anything, structured by the nature of its forward movement; then come the relations, as certain of these potentials become actualized in real encounters; and, thirdly, there arise the mediated consistencies, habits, patterns, regularities, laws, generalizations, and meanings. This triadic dynamic is always at work, and constitutes the heart of the worlding of the world (any world): in this way things become, and in this way they come to signify.[4]

But to call the things *objects* (or *holons*) is already to suggest too much about them. There are, from this perspective, neither subjects nor objects at the outset, just things in their singularity. This is the world of virtualities, which is not yet a world, but what precedes worlding. Actualizing, those virtualities become happenings: they intervene into the times of other things, each imposing itself on another, each resisted by others. This is the world of events and relations, which is the world in the process of being made, of being woven into fabrics of relational force and counterforce, networks, systems, webs. This is the world that scientific analysis likes to probe, methodically and systematically. Finally, there is the world of significance, the world that is now fully *a world*, inhabited. Humanists prefer to start here, analyzing our significances as things not to be taken for granted, but always produced. But where humanists often stop short is in recognizing that neither the happening nor its significance is peculiar to humans. Humans do it, but so do many others: we make sense of things, which thereby become signs, meanings obtained about a world through the things, the images, the objects we encounter. We feel, and respond, to that which happens, and in the responding we generate a world.

What I am describing here is a view of the world as made up of relational processes, events of encounter, acts of experience, and nothing else. Everything there is *takes place*, which is to say that it *gives place*, it *places* (as Martin Heidegger might say). Its taking place is what gives it existence, but its specific kind of existence is what constitutes it at the outset, as the thing that it is, the thing in its *firstness*, to again use the logical-categorical terminology of Peirce. In existing, it has entered into relations, or *secondness*; its moment of existence (and we are talking about moments here, events, and nothing else) are inherently relational. In coming to exist, its singular origin withdraws from itself and from others; but once it is existent, for the moment that it is, it becomes part of the field of potentialities for the next set of existents. As Alfred North Whitehead (1933) describes things—that is, events—these are constituted by the encounter of an emergent subjectivity, a mental moment of pure feeling, with some *matter* that is there for it to behold and to respond to. The occasion is dipolar: at one end mental or subjective, at the other physical or objective. But the subjectivity lasts as long as the moment, which begins with a *prehension*, a taking into account, and rounds off with a satisfaction,

a *concrescence*, at which point the subject becomes an object, a datum, for the next set of moments that may emerge. And so on, ad infinitum.

In this way the world proceeds, an "advancing assemblage" of "processes of experience" (Whitehead, 1933, p. 197), a simmering ocean of becoming, subdivisible into streaming, temporal, relational vectors. None of these processes is exactly alike: there are different kinds, varying in texture, in extent, in stability, in rate of change and style of movement, in manner of organization. In the encounters between emergent processes, the organization of such processes folds over, takes on a layering of surfaces and depths, of outwardness and inwardness, and interacts to create larger processes, larger networks, whose consistencies give us the world, or worlds, that we and others perceive and inhabit. Perceiving, we respond, and responding we come to inhabit; we habituate. The world, in the end, is a world of evolving habits shot through with chance and with novelty, which seeds it with further novelty, further habituation, further evolution.

Between Whitehead and Peirce and the other thinkers who could be drawn into a process-relational account of things, there are many discrepancies, gaps and divergences one could spend lifetimes splicing or smoothing over. The list of such thinkers might include Zhuang Zhu, Heraclitus, Nagarjuna, Śāntarakṣita, Fazang, Zhiyi, Dogen, Bruno, Spinoza, Leibniz, Schelling, Goethe, Nietzsche, Bergson, Dewey, James, Aurobindo Ghose, Nishida Kitaro, Keiji Nishitani, Charles Hartshorne, Gregory Bateson, Gilbert Simondon, Gilles Deleuze, Michel Serres, Nicholas Rescher, Bruno Latour, Isabelle Stengers, Robert Corrington, John Deely, Manuel DeLanda, Freya Mathews, and others.[5] And between them one would find debates over the constitutive weight of novelty as opposed to habit, continuity versus discontinuity, relational symmetry versus asymmetry, and other themes. A wall built with the materials they together provide might not withstand the spring's first flood. But a life raft built from them could carry us far from where we started. And since nothing stays in place for long (at least if what they tell us is true), it's the carrying that counts, not the flood control.

Having laid out this set of preliminary constellations to orient us, we must eventually return to what we have in our midst, which are always those matters of concern. Projects, in other words, but projects that take their start from situations.

A FEELING FOR EXPERIENCE

An ant colony builds itself from the actions of its members: gathering leaf litter, sticks, bits and pieces of the environing world, tunneling, communicating, building, nursing. None of these ant "individuals," not even the queen herself,

could act in this way without the rest of the colony. Both the "body" and the "mind" of the colony—its "objective" parts, those we can see, describe, dissect, and measure, and its "subjective" parts, which are the moments of felt decision that turn an ant this way rather than that way in its crossing of a trail in a forest, or those that bring a team of ants together to haul a large leaf or dead grasshopper—these are all dispersed in space, they are *spaced*, detached from each other physically (or so it appears when we observe them), but *mentally*, in terms of the interactive processing of signs and relations, they are networked together into a coordinated collectivity.

The network of the colony is not only made of those ant bodies, but also what they are capable of and what they do with things—with soil, leaves, sticks, pieces of food. By most objective measures, anthills are cities: they include complex systems of transportation, communication (pheromone-based), ventilation, sewage disposal, food production (the farming of plants, the growing of fungus, the raising of aphid "cattle"), cooperative labor, warfare, and slavery.[6]

In the worlds of ant colonies, however, what are the "objects" and what are their "relations"? An individual ant could hardly exist on its own, though a lost ant might be able to find food and maneuver its way into another colony (though what will happen to it there is another matter).[7] A colony could hardly have emerged without its environment, such that the colony-landscape network, the subterranean city with its above-surface hinterlands and the patterns and relations holding them together, is itself an object of sorts. But if one is to say that the reality is made up of objects engaged in relations, one would have to draw lines (around ants, or colonies, or something) that, like light waves and particles, are sometimes there and sometimes not. The result would be little better than acknowledging that reality includes textural lumps and nodes in the networks that make it up. Lumps, nodes, and networks are descriptions of things from their outside.

A process-relational view, following Whitehead (1933) and Peirce (1958a) (and consistent with Wilber, 2000), insists that there is also an *inside* to everything, an interiority, but that this interiority is not normally found at the level of the everyday distinguishable object. Such distinguishing will, after all, vary depending on the thing doing the distinguishing; ontology and epistemology, in this way, are tightly interwoven within each fragment of existence.[8] Rather, the interiority is of the moment, the event, the act of prehension and concrescence. The reality of the ant metropolis, then, is one of *events* of feeling and decision, acts in response to those matters of concern, the entanglements of subjectivation and objectivation that are occurring everywhere in their own time.

A process-relational ontology, following Whitehead (1933), takes the world to be dynamic and always in motion. Its fundamental constituents are not objects, permanent structures, material substances, cognitive representations, or Platonic ideas or essences, but relational encounters or events, moments or acts of existence. An actual occasion, as Whitehead calls such an act of existence, is a "drop" or "throb of experience," a process of "actualization of potentiality" that is inherently "emotional" and "prehensive" in nature. Whitehead revises Descartes's claim that "the subject-object relation is the fundamental structural pattern of experience" (p. 189) by disentangling this relation from enduring substances (and from the knower-known relation) and placing it instead in the momentary arising of each actual occasion. Each such occasion is characterized by a mental pole set against a physical pole, a subject emerging momentarily in relation to an object, which is the datum or data set that comes inherited from the immediate past and from its immediate outside.

"The basis of experience" is, for Whitehead (1932), "emotional"—and for Peirce, one of "feeling."[9] Its "basic fact" is "the rise of an affective tone originating from things whose relevance is given" (p. 130). A subject emerges *in concern* for an object, with each defining the other in the process. "An occasion is a subject in respect to its special activity concerning an object; and anything is an object in respect to its provocation of some special activity within a subject" (p. 131). Individual subjectivity, for Whitehead, or "our consciousness of the self-identity pervading our life-thread of occasions, is nothing other than knowledge of a special strand of unity within the general unity of nature," a unity in which the "general principle is the object-to-subject structure of experience," the "vector-structure of nature," "the doctrine of the immanence of the past energizing in the present"(p. 143), "the transference of affective tone, with its emotional energy, from one occasion to another" (p. 144). "Each occasion has its physical inheritance and its mental reaction which drives it on to its self-completion" (p. 146).

These quotes address the more microscopic or molecular level of the view I am presenting. There are other levels, including a level of complexity in which the universe can only be conceived as a tumbling forward of such interrelated and interacting, differentiating and coming together, moments of experience. Whitehead's (1979) descriptions of *nexus* and *societies*—constellations of mutually coordinating occasions, which enjoy a relative persistence over time, over space, or both—begin to account for the more stable entities making up the universe. But other relational descriptions, such as Latour's (2005) actor-network theory, Deleuze and Guattari's (2005) assemblage theory, and De Landa's (2009), Protevi's (2009), and others' adumbrations of these, are better at accounting for

the different ways that *different* things come together into patterned networks, with agency (subjectivity) and givenness (objectivity) distributed in particular ways through those networks.

A process-relational ontology that attempts to provide a realistic depiction of the world must take note of distinctions between different sorts of relational processes. Such processes can be fast or slow, thick or thin, complex or simple, opaque or translucent, extensive or intensive, linear or multilateral, smooth or stratified, hierarchical or egalitarian. Relational processes have unfolded historically in ways that have given the world its complex and variable textures: its folds, thicknesses, speeds, movements, rhythms, consistencies, patterns, trajectories. The universe, in this view, is continuous (for the most part), but the continuities are pleated and enfolded, inflected with waves, currents, undulations, and vortices. It is a generative and open universe governed by intensifying, differentiating, and habit-taking tendencies. And it is within these habit-formed folds and pleats that we, human subjects, typically find ourselves.

A WORLD OF EVENTS

If there are discontinuities in this account of the universe, there is no object alone, none that is capable of remaining itself under every set of possible conditions. Because it is process, there is always an interdependence between a thing and its environment (which means, other things that preceded it and with which it has been in prehensive or semiotic contact). An organism and its environment mutually shape each other, not only in the evolutionary history that the organism has inherited, but in the active life history of that organism (Lewontin, 2002). And where there are many organisms mutually shaping themselves and their environments, there is, to creatively misquote Jerry Lee Lewis, a *whole lotta shapin'* going on.

To stick, for the moment, with living things: all such things consume, produce, and metabolize other things. In the process, both the thing and its environment change, even if certain sets of formal relations are conserved over time. Individual organisms maintain a certain structural coherence; humans maintain a recursive sense of identity over time. Such sets of persistent formal relations make it possible for us to recognize certain things as individuals or persons. But any such designation is a social, or context-dependent, designation; it applies conditionally and relationally to selected kinds of things and not to others. A human, for instance, is an individual to another human, or to a dog, but probably not to an

ant, a bacterium, a quark, a fungal growth, a corporation, or a star. Its individuality is a matter of its location within a set of relations where its individuality counts, where it makes a difference, where it matters. Mattering, in this sense, is what makes a world.

What matters is what is significant, what is to be taken into account; it is material, but what is material is always also processual, relational, and energetic, always a mix of the subjective or mental (viewed from the inside) and the objective or physical (viewed from the outside). And by the same token, what to us appears individual, an object in its own right, to another sort of entity may be nothing of the sort. Each in its own domain defines its world, perceives and orders its world. Here is the Kantian correlation, the mind-world relationship that Quentin Meillassoux (2008) identifies as the crutch at the heart of philosophy since Kant. But it is not an exclusively human crutch, separating an *us*, those that think, from a *them* who do not. It is spread through all things, an opening that takes root at the heart of each thing, each event, each occasion of which the universe is made—and that comes to extinguish itself at the end of that event, giving way to another, and another.[10]

But that world, the *Umwelt* of the thing in question, is not merely its own. It is built of signs, of things standing for other things, where the signs, or the meanings they carry, are not merely conceived "in the mind" of that thing. The meanings emerge out of a set of dependent, triadic relations, as Peirce described them. For something to carry meaning there must be, in his terms, a *representamen*, or sign vehicle, which carries the meaning by standing for something else; an *object*, which is the inaccessible something else being referred to; and an *interpretant*, which is the meaning created for a beholder at a given moment.[11] Signness happens; it is a process of becoming. But it is anchored within the universe, and once it has happened, that sign, the vehicle of meaning, becomes datum for the next moment of semiosis. As the subject of an occasion (in Whitehead's sense) takes another as its object, prehending and responding to it, so that other (the object) is always connected to a more distant otherness, a withdrawing otherness that lies beyond the given occasion. It is that which ties that occasion to the rest of the universe.

These are, then, the moments that move together in various ways to create the patterned regularities of the world as we know it. And this world we know is unique to the *we* who know it, though it is always connected to the worlds of the other *we*s who know their worlds in their own ways. For humans, this world is made up of distinct objects: persons, cats, cars, and cans of soup, each performing the activities that makes them what they are. But for many unlike us—ants,

amoebae, bacteria, electrons, oxygen molecules, biospheres, stars—things may be quite different. We share the same universe, however, and so we may as well use our imaginative abilities to describe that universe in a way that might apply as well as to amoebae and stars. A process-relational ontology differs from an object-centered ontology in its belief that the best first step toward a more cosmopolitically common ontology is the step that claims that events, processes, and not enduring objects, are primary (Stengers, 1997).

That world, according to a process-relational view, has a relational complexity that eludes a division into objects. There are boundaries, firewalls—as Graham Harman (2005) calls them—between the internal and external, or domestic and foreign, relations of an object, an entity or set of relations that persists over time and external change. But even a firewall requires maintenance, and its activity is a matter of doing, of behavior, or at the very least of habit. A bear or tree goes into hibernation for the winter, then reemerges into action when spring comes. A caterpillar recedes into a cocoon, which one day is shed as a butterfly emerges. I learn how to consume vast quantities of alcohol, or to become a heroin addict, or to spend most of my time in online game worlds, surfacing for food or drink only once or twice a day but dramatically affecting the features of the game world. My partner grows a fetus within her body, which is born and, in intimate interaction with her and other humans, becomes a child and eventually an adult. The Earth begins to convert carbon dioxide into oxygen, leading to the emergence of aerobic organisms. Each of these is a transformation, which may be patterned over time in relation to its environment, or which may be singular and irreversible. Among the irreversibles is the point at which a body we call *living* collapses in its vital circulations, those that maintain it with a certain integrity of structure and allow for an integrated engagement with its outside, and restabilizes at a reduced level of activity, at which the hair becomes mere hair, the bones mere calcium compounds, the body mere body, no longer social, no longer person. At this level, too, molecular and electrochemical life continues.

COMPOSING INTEGRITY

The point, for a process-relational philosophy, is to develop a vocabulary sensitive to the various kinds of change, interaction, emergence, network-building, and system maintenance that make up the world as it proceeds forward from one moment to the next, developing new habits and actualizing new potentials along the way. We find ourselves amid those relations, tied to things, material densities,

in specific ways, and come up against the challenges those ties, those habits and tendencies, run up against. Our questions, our matters of concern today—such as how to satisfy the requirements of 7 billion humans, how to balance these against each other, and how to manage our activities so they remain within an allowable basin of error rather than bifurcating through an irreversible shift in global climate systems to something unseen in tens of thousands of years—these are all questions of relational design (where *design* is a verb and not a noun), questions of *composition*. Habits and patterns of interaction have developed over time. Alliances have been built—between humans, photosynthetic processes called "grasses," and herbivorous processes called "sheep," "cows," and the like; or between humans and flesh-compounding processes called "fossil fuels." Interactions have intensified, but knowledge of the sustainability of those interactions has lagged behind their novel production. Humans, like other animals, are experimental and pragmatic modes of functioning for whom error follows trial, learning follows error, and innovation, where it occurs, follows or accompanies learning.

There are, in all such relations, matters of concern. There are things that happen, and that provoke a response. Observing the many things that happen, relational processes all, we note a scale of complexity and differentiation, of pattern-making at variable levels of order. There is feeling, feeding, oxygenating, reproducing, socializing, swarming, migrating, erupting, quaking, thinking, dramatizing, road- and city-building, boundary-maintaining and -crossing, warring and peacemaking, atmosphere-carbonizing, and much more. These relational events, these networkings, are always and everywhere temporal, dynamic, interactive, effective, and affective. They are verbs rather than nouns, processes rather than objects; they are verbs connecting nouns or nodes, which are temporary congealments, eddies in the stream. An amoeba responds to an object in its environment by moving toward it or away from it, or by ingesting a part of it. The molecules of a slab of metal mingle with oxygen to create rust. The slowness of the latter, and the minimal amount of agency compared to what we humans are used to, in no way eliminates the structural parallel with our own activities. Neither does the magnitude and impact of a much grander scale of event: a stream's damming by a family of beavers; a gathering of world leaders upstream from the dam (say, in Bretton Woods, New Hampshire, in 1945) agreeing on an international financial architecture that will shape the world for the next 45 summers; a volcano's erupting 28 million years ago, extinguishing many of the life forms on the planet's surface.

There are events, which become matters of concern, and that is where we find ourselves. Mattering, they come to mind. Minding, we come to matter. And in

the moment of contact there is a feelingful act, a decision, a choice, which is the hinge on which all things (perpetually) turn. It is where the action is. And with each turn of the wheel, each point of decision, each feelingful response to the world, a new world, a new set of possibilities, comes into being. Time's arrow is, in this sense, asymmetrical, with novelty entering into every moment, changing the equation for the next moment and the next. As Whitehead (1933) puts it, "The creativity of the world is the throbbing emotion of the past hurling itself into a new transcendent fact. It is the flying dart, of which Lucretius speaks, hurled beyond the bounds of the world" (p. 177). In the process, the world is continually renewed, and we are invited to be part of its renewal. How we, all of us (subatomic particles, organisms, suns), follow our invitations determines the trajectory of its further renewal.

It is this matter of how we take up those matters of concern that can guide us toward an ecology of integrity. We arise at decision points, poised at new folds in the fabric of becoming; so do we all, whatever forms we take, human-like or not. An ecology of integrity, I am proposing, is an ecology—a knowledge (*logos*) of our home (*oikos*)—that respects the soundness and the wholeness (*integritas*) of the relations that constitute us, the potentials they carry, and the undetermined futures they open up toward. It does this not by focusing on objects—the things we can distinguish out there in the world—or on the relations between those objects, as ecologists have tended to do. Rather, it acknowledges that the "objectivities" we perceive are one face of the things that are "out there."

The other, the subjective, always recedes from us; it is always the "in here," even if it is not *our* "in here." In this, I am arguing no less than Ken Wilber's (2000) AQAL formula suggests: that we observe both the inner and the outer, the I/We and the It/Its. Neither, furthermore, is permanent; the two arise together from interactions that change each. (This is its Whiteheadian process-relational claim.) In this sense, there are no quadrants, but only relational events that perpetually move, and integrate, each becoming-subject with its becoming-object, and vice versa.

An ecology of integrity further assumes that there is process both at the heart of every event-entity and folded into, and unfolding through, the capacities that are actualized (or not) in every moment. This folding into (and forking out of) refers to what we might call the *structure* of things. But the ecology I am proposing does not commit itself to any levels; to posit such levels would always, in its reading, be only hypothetical. This structure is as simple as processual structures come (in Peirce's, 1958a, argumentation): it is triadic, consisting of

the quality (firstness), the relation (secondness), and the pattern (thirdness). In the unfolding of triads, however, there is endless flowering.

One such triad that is particularly acute in the moments of decision by which entities (or eventities) like us become, is the triad of that which Peirce (1998b) called the "normative sciences." Unlike phenomenology, which for Peirce inquires into phenomena as they *appear* (that is, in their firstness), and metaphysics, which inquires into reality as it *really and ultimately is* (in its thirdness), the normative sciences examine phenomena in their secondness—that is, in the ways they act on us and we in turn can act on them.

The three normative sciences, for Peirce (1998b), are aesthetics, ethics, and logic, and they respectively concern the art of cultivating habits that allow us to appreciate and manifest the beautiful or admirable (aesthetics),[12] the just and virtuous in our relationships with others (ethics), and the truthful in our understanding of the world (logic). Explicating these would take us well beyond this chapter; but the general point is that each is an open process of discovery, through observation, action, and interpretation, by which we cultivate virtuous relationships in response to others that, in their own ways, can be encouraged to do the same.[13]

An ecology of integrity is, in this sense, not a mere study, but always an appreciation (being aesthetic), an action (that is ethical), and a commitment to learning alongside others into the indefinite future (which is logic, as conceived broadly by Peirce). To the extent that all perceptions arise in relational contexts, aesthetic perception involves perception of a thing against and in relation to its background—a perception of the wholeness of what appears in its arising and passing, which means an observation of something that is emerging into being (firstness), into interactivity (secondness), and into meaning (thirdness).

Ethics, in turn, is about cultivating ways of responding to others such that we sympathetically recognize their positioning in their interactions with us. If ethics is the cultivation of skillful action in response to others, and if self and other are perceived as dynamically interactive forms—signs, in effect—arising out of patterned relations, then ethics becomes a matter not of rules and injunctions, but of motivated action amid encounter. It involves the cultivation of empathic relations, relations amid subjectal arisings—self-semioses (since Peirce argued that the self is a sign) that we know arise independently of us, yet are in some sense analogous to our own subjective arisings.

Finally, informed by the aesthetic (in-habited feelings and percepts) and the ethical (in-habited action), logic becomes something different from the rule-based form of reasoning that is commonly counterposed against the failings of illogic.

It is, rather, more akin to what we might call *eco*logic, a skillful understanding of relational emergence (appearance), interaction, and generality.

An ecology of integrity built on these understandings situates ourselves as active respondents in the midst of matters of concern, and nudges us toward perceiving these matters as relational in ever-widening contexts. At a time when these contexts raise urgent questions about our relations with a thickening and widening array of others, such an integral ecology becomes far more than a study or mapping of ecologies or of ontological levels. It becomes a cosmopolitical project, an active and ongoing logo-ethico-aesthetic practice.[14] For we are all caught amid matters of concern, minding our matters and mattering what we mind. And as our interrelations become ever more joined—agonistically, yet always with a promise of reaching new perceptions and understandings—we also grasp toward a cosmopolitics that brings ever more of us together. In this the *us* is always open-ended, never predetermined, and ultimately takes us far beyond any *us* we might imagine.

NOTES

1. I acknowledge that the use of the word *object* by object-oriented ontologists is not identical to the use I am making of it, nor is it a definition that presupposes an inherent opposition between objects and subjects. Nevertheless, I believe that my use of the words *object* and *objectivity* are more faithful to their use in common English usage, and therefore less confusing than the use of these terms in the discourse of object-oriented ontology.

2. Wilber's (2000) indebtedness to Peirce and especially to Whitehead is easy to discern in his more recent writings, from *Sex, Ecology, Spirituality* on. He, and Esbjörn-Hargens and Zimmerman (2009), critique Whitehead in particular for missing certain key pieces of the integralist picture: they argue that Whitehead's ontology, while correct in its starting points, is not all-quadrant or all-level. I have argued elsewhere that these critiques deserve further scrutiny, but that they may be somewhat unfair. See Ivakhiv (2011a, 2011b, 2011c, 2011d) on the blog *Immanence* for examples.

3. Bruno Latour (2003, 2005) has argued, in a series of writings, that we must shake the notion that science will resolve our problems through its attendance to matters of fact, and must instead start from matters of concern. This step is akin to, and in effect an extension of, Heidegger's philosophical move of placing *Da-Sein*, the human being-there, within its milieu of concerns such that

it is defined not by the Cartesian *cogito* ("I think, therefore I am") but by caring ("I care, therefore I am") or at least by a Whiteheadian feeling ("I feel, therefore I am"). In the process-relational view I am articulating here, this Heideggerian starting point becomes universalized, democratized, and Whiteheadized, as it were, acknowledged as an ontological first principle. "Concernedness," as Whitehead (1932) writes, "is of the essence of perception," and the perceptual, or relational, encounter is at the heart of every event that makes up the universe (p. 135). For a critique of this notion of matters of concern, from a feminist perspective that argues that *concern* ought to be replaced with *care*, see Puig de la Bellacasa (2011).

4. Peirce's triadic outline of the logical categories of all experience was an obsession throughout his philosophical career. It took many forms, and in the end was the single contribution he felt was most original and significant in his philosophy. For one version of it, see "The Principles of Phenomenology: The Categories in Detail" (Peirce, 1958b).

5. Whitehead's metaphysics is the one most commonly referred to as "process-relational"; see especially his magnum opus *Process and Reality* (1979) and the more elegant synopsis found in Part Three of *Adventures of Ideas* (1933). C. Robert Mesle's (2008) *Process-Relational Philosophy: An Introduction to Alfred North Whitehead*, while an oversimplified introduction to his thought, makes clear why the term is appropriate. More generally, however, the term *process-relational* provides a good description for common themes across a wide range of traditions, including process philosophers in the West (such as many of those mentioned); artists and writers such as the Romantics and Transcendentalists (Coleridge, Emerson, Muir, et al.); a variety of African and indigenous philosophies; the writings of mystics from Plotinus and Shankara to Rumi and Boehme; and much of what falls into the Buddhist, Daoist, and neo-Confucianist traditions of South and East Asia. Related views have become influential within contemporary postconstructivist or nonrepresentational scholarship in the social and cognitive sciences, including in actor-network theory, enactive cognitivism (Francesco Varela and others), developmental biology (Susan Oyama), ethology and biosemiotics (Jakob von Uexkull, Thomas Sebeok, Jesper Hoffmeyer), nonrepresentational and socionatural geography (Nigel Thrift, Sarah Whatmore, Steve Hinchliffe), and the speculations of theoretical physicists and biologists such as David Bohm, Ilya Prigogine, and Stuart Kauffman. What these thinkers share, for all their diversity, is a focus on the world-making creativity of things—on how things become rather than what they are, on emergence rather than structure. Process-relational thinking is an alternative not only to *materialism* (the view that matter is fundamental and that human consciousness or perception is a

byproduct or epiphenomenon arising out of material relations) and to *idealism* (the view that perception, consciousness, thought, spirit, or some other nonmaterial force is fundamental and that material relations are secondary), but also to those interactive and dialectical philosophies that presume a relatively closed binary substructure of one kind or another (such as matter versus spirit, idea, or mind; or a conception of opposites, such as *Yin* and *Yang*, in which homeostatic balance rather than evolutionary change is considered the baseline norm). That said, process-relational themes can be found fairly prominently in the work of four of the giants of modern philosophy: Hegel, Marx, Nietzsche, and Heidegger.

6. For general accounts of process-relational themes, see Nicholas Rescher (1996), *Process Metaphysics: An Introduction to Process Philosophy*; Rescher (2000), *Process Philosophy: A Survey of Basic Issues*; Rescher (2007), "The Promise of Process Philosophy"; Douglas Browning and William T. Myers (1998), *Philosophers of Process*; and David Ray Griffin (1993), *Founders of Constructive Postmodern Philosophy: Peirce, James, Bergson, Whitehead, and Hartshorne*. For examples of the evolving dialogue among the different positions within process-relational theory, see Keith Robinson (2008), *Deleuze, Whitehead, Bergson: Rhizomatic Connections*; Michel Weber (2004), *After Whitehead: Rescher on Process Metaphysics*; Catherine Keller and Anne Daniell (2002), *Process and Difference: Between Cosmological and Poststructuralist Postmodernisms*; and Steven Shaviro (2009), *Without Criteria: Kant, Whitehead, Deleuze, and Aesthetics*. Comparative studies of process philosophy and Buddhism include Steve Odin (1984), *Process Metaphysics and Hua-yen Buddhism: A Critical Study of Cumulatie Penetration vs. Interpenetration*, and Peter P. Kakol (2009), *Emptiness and Becoming: Integrating Madhyamika Buddhism and Process Philosophy*).

7. "The commonalities between ants and people are striking. Both alter nature to build nurseries, fortresses, stockyards, and highways, while nurturing friends and livestock and obliterating enemies and vermin. Both ants and humans express tribal bonds and basic needs through ancient, elaborate codes. Both create universes of their own devising through the scale of their domination of the environment. As inveterate organizers, ants and people face similar problems in obtaining and distributing resources, allocating labor and effort, preserving civil unity, and defending communities against outside forces" (Moffett, 2010, p. 223).

8. For instance, if it is an Argentine ant from San Francisco being dropped off in San Diego, it will fit in seamlessly within its new host group, which is of the same colony or nationality, as Mark Moffett (2010) calls these groups. But if it is dropped off in Mexico, or in one of the other three colonial territories of Californian Argentine ants, it will likely be murdered very quickly.

9. An adequate ontology will have to be of the sort that allows for the kinds of knowing, or prehending, that are possible in the world. There is no way we can account for the ontology of the world without factoring in the actual existence of our own knowledge of it. Knowledge and truth are not mere reference, descriptions corresponding to something but themselves floating free of the world, with no existence of their own. Truth is an *event* and knowledge is a vector, as Latour (2008) puts it. In turn, an adequate epistemology will have to account for the kinds of processes and relations that make up those events of knowing, or, more broadly, prehending, since it is events of knowing/prehending/responding/accounting that, in a process-relational view, make up all there is.

10. The differences between Whitehead and Peirce, while significant, are beyond the scope of this article. For comparative insights, see the respective chapters on the two philosophers in Charles Hartshorne's (1984) *Creativity in American Philosophy*; Sandra Rosenthal (1998), "Contemporary process metaphysics and diverse intuitions of time: Can the gap be bridged?"; Robert C. Neville (2004), "Whitehead and pragmatism"; and the writings of Robert S. Corrington.

11. The view expressed in this paragraph makes process-relational ontology different from object-oriented ontology. For the latter, the individuality of an object is irrespective of how it is perceived or prehended by others. In a process-relational ontology, on the other hand, what is real is relational processes, events, and thus the individuality of a constellation of such events—a human being, or a society in Whitehead's (1979) terms—is no more real than the individuality of each of the occasions making it up. The perception of a persistent individuality requires a sharing of perception across adjacent and related occasions. The ontological reality of specific things—persons, social collectives, nations, and so on—depends on the forms of recognition that make those things possible. Take away the perceptions, the recognitions, and societies fall apart. Ontological complexity of any order, then, is impossible without the epistemological complexity that it relies on, and describing the first without describing the second makes for an inadequate understanding of both.

12. Peirce's (1958a) analysis of the sign can be compared to Whitehead's (1933) analysis of a prehension as similarly involving three factors: "There is the *occasion of experience* within which the prehension is a datum of activity; there is the *datum* whose relevance provokes the origination of this prehension; this datum is the prehended object; there is the *subjective form*, [emphasis added] which is the affective tone determining the effectiveness of that prehension in that occasion of experience" (p. 176). In addition to the temporary subject and object, then, there is the occasion itself that mediates between them and makes

them possible, an occasion that rounds itself off with a "concrescence." Peirce's (1958a) description of the *sign* as the elemental process making up the universe stresses *interpretability* or the generation of *meaning* as the core of that process. Whitehead's (1933) emphasis, on the other hand, is on feeling or affective tone, which he elsewhere relates to appearance as opposed to reality. In both cases, novelty arises in the subjective form—Whitehead's affective tone, Peirce's interpretant—that emerges in each prehensive or semiosic occasion.

13. *Beauty* is a risky term here, since it is culturally variable. Peirce found it inadequate, preferring the Greek terms *kalos* and *agamai*, since they accommodated the unbeautiful within their scope, and Peirce acknowledged that aesthetic goodness is hardly encompassable within our perception of what is pleasant or not. On this, see Kent (1987).

14. The division of the normative sciences into aesthetics, ethics, and logic came relatively late in the development of Peirce's thought and is found in its most complete form in his writings and lectures from 1902 onward. See, for instance, the fifth of his Harvard lectures on pragmatism, "The Three Normative Sciences," (Peirce, 1998b), and "An Outline Classification of the Sciences" (Peirce, 1998a). See also Beverley Kent (1987) *Charles S. Peirce: Logic and the Classification of the Sciences*. For discussion of aesthetics, ethics, and logic in Peirce, see Bent Sorensen and Torkild Leo Thellefsen (2010), "The Normative Sciences, the Sign Universe, Self-Control and Relationality—According to Peirce"; Martin Lefebvre (2007), "Peirce's Esthetics: A Taste for Signs in Art"; Carl M. Smith (1972), "The Aesthetics of Charles S. Peirce"; and Herman Parret (1994), *Peirce and Value Theory*.

15. On this kind of "cosmopolitics," see the chapter in this volume by Adam Robbert and Sam Mickey; and also Adrian Ivakhiv (2012) "Religious (re-)turns in the wake of global nature: Toward a cosmopolitics."

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11

ANIMAL WORLDS

The Importance of Biosemiotics for Integral Ecology

Sean Esbjörn-Hargens

THERE ARE AT LEAST TWO COMMITMENTS that set integral ecology (IE) apart from most other approaches to the natural world.[1] First, IE is committed to including human interiors into our understanding and approach to environmental studies. It does this through the inclusion of key insights from dozens of schools of psychology, with a particular emphasis on developmental psychology and cultural worldviews. To more adequately address today's complex environmental issues, IE considers it necessary to include a more comprehensive understanding of what we call *interiors*, which include such aspects of psychology as belief, emotions, perception, motivation, values, personal experience, and mental models. IE includes these aspects of human psychology to gain insight into the developmental capacity to take more perspectives, including the development of ecological awareness. IE is also keenly interested in how nature appears to people operating from differing worldviews, such as those informed by traditional, modern, and postmodern values. Thus, IE is very interested in the movement of individual and collective identity from egocentric ("me") to ethnocentric ("my group") to sociocentric ("my country") to worldcentric ("all of us") to planetcentric ("all of us and our planet"). This developmental trajectory from ego- to planetcentric has many important implications for enacting a thriving planetary civilization.

Second, IE is committed to including animal interiors into our understanding and approach to ecological science. It does this through including dozens of

scientific and philosophical approaches that explore animal consciousness, communication, and culture, with a particular emphasis on the field of biosemiotics. To adequately understand the natural world and the organisms that inhabit it, IE posits that it is necessary to include a more comprehensive understanding of animal worlds, including their capacities for first-person, second-person, and third-person experiences and perspectives.

Of these two commitments—including human interiors in environmental studies and including animal interiors in ecological science—the latter is the more radical because it directly challenges many mainstream views of reality, and the implications for our scientific and ecological institutions are quite profound. Furthermore, this second commitment is arguably the more important one of the two insofar as it, in many ways, presupposes and builds on the first commitment. Including human interiors more comprehensively in our approach to environmental studies helps lay the groundwork for including animal interiors in our practices of ecological science. For these reasons this chapter focuses on the importance of biosemiotics for IE.

BIOSEMIOTICS: AN INTEGRATIVE SCIENCE OF ANIMAL EXPERIENCE

Biosemiotics emerged out of the work of the Baltic German biologist, Jacob von Uexküll (1864–1944), who studied the phenomenal, cognitive, and interpretive world of animals. He is best known for developing the concept of *Umwelt* to explore in a scientific way how organisms subjectively perceive their environment. Much of his writing and research was devoted to describing the various subjective worlds of animals. He is considered the founder of biosemiotics.[2] Biosemiotics is the scientific study of the way organisms interpret, communicate, and exchange information through signs.[3] The term *biosemiotics* was first used in 1962 by the German doctor F. S. Rothschild, but it was Thomas Sebeok's increasing reference to and use of Jacob von Uexküll's Umwelt theory in the 1960s and 1970s that contributed the most to the development of biosemiotics. Key figures include Jacob von Uexküll, his son Thure von Uexküll, Jesper Hoffmeyer, Claus Emmeche, and Thomas Sebeok.

In many ways, biosemiotics is an integrative science, which is illustrated by its goal of overcoming a number of dualisms, including subject-object, knowledge-information, culture-nature, mind-body, and the split between the humanities and the natural sciences (see Kull, 1998, p. 307). IE builds on the integrative

orientation of biosemiotics and helps to transform it into a more explicit integral approach to animal worlds. For example, the study of the history of biosemiotics reveals a division between what IE calls *interior subjective approaches* (i.e., the left-hand side of integral theory's four quadrants) and *exterior objective approaches* (i.e., the right-hand side of integral theory's four quadrants).[4] Thus, the right-hand approaches (e.g., Marcello Barbier's, 2003, "organic codes") emphasize autopoiesis and cognitive ethology, whereas the left-hand approaches (e.g., Hoffmeyer's, 1996b, signs of meaning and Markos's, 2002, biohermeneutics) emphasize interpretive and hermeneutic aspects. Currently, biosemiotics is most influenced by the Copenhagen-Tartu school (Soren Brier, Claus Emmeche, Jesper Hoffmeyer, Kalevi Kull, and Thomas Sebeok), which is grounded in the Peircean–von Uexküllian approach that emphasizes the interpretive (e.g., interior) dimensions of cells and organisms. In contrast, Marcello Barbieri (2003), an embryologist, is not willing to push interpretation that far down the evolutionary spectrum and emphasizes that cells are *code makers*, not *interpreters*. Barbieri takes a more mechanistic and quantitative approach to semiosis.

Since Barbieri (2006) is the editor of the first introductory book of biosemiotics (*Introduction to Biosemiotics*) and is editor-in-chief of the new *Journal of Biosemiotics*, which launched in 2006, it remains to be seen to what extent he might influence the emergence of more right-hand approaches to semiosis and inadvertently or intentionally marginalize left-hand approaches.[5] IE feels that both types of approaches to biosemiotics have something valuable to contribute to an integral understanding of animal worlds. IE uses four irreducible and equiprimordial dimensions or terrains to understand animal worlds. The next section is devoted to presenting these four terrains through an illustrative example of a frog. This section will serve to illustrate how integral theory can be used to frame the field of biosemiotics in an IE context.

THE FOUR TERRAINS OF A FROG

Drawing on its four-quadrant model, IE points out that we can approach the four terrains of, for example, a frog, from *quadrants* (four ontological dimensions, looking *as* a frog onto the world through four distinct modes of being) or from *quadrivia* (four epistemological perspectives, looking *at* a frog in the world through four distinct views). If we focus on the four quadrants of a frog (i.e., its four unique ontological dimensions), we see how a frog perceives its own world through each perspective (which is possible because each unique perspective

supports perceiving the world through that dimension—i.e., dimensions and perspectives co-arise; ontology and epistemology are distinguishable yet integrated).

IE refers to this quadratic perception as "tetra-hension" (expanding Whitehead's notion of prehension to more explicitly include intersubjective and interobjective dimensions).[6] Tetra-hension occurs at all levels within a frog and consists of four distinct modes of nonreflective perception of an individual. These include the subjective perception of protoexperience; the objective perception of the five senses; the intersubjective perception of resonance with other beings; and the interobjective perception of functional fit (functional apprehension) with the environment. Each of these modes of prehension reveals a different world: a subjective world, an objective world, an intersubjective world, and an interobjective world. If we were to focus on a quadrivium, we would see how humans use different disciplines—e.g., psychology (UL), biology (UR), anthropology (LL), and ecology (LR)—to perceive frogs through each of the four perspectives.[7] As an example of what I am talking about, let us take a quick tour of the four terrains of a frog.

As presented above, a frog experiences itself and its world through four distinct modes of nonreflective perception: the subjective perception of itself, others, and its world; the objective perception of the five senses; the intersubjective perception of resonance with another organism; and the interobjective perception of social and ecological dynamics. Each of these modes of basic awareness reveals a different world: an intentional world, a sensory world, a relational world, and a social world (see Figure 11.1).

Terrain of Experience: The Frog's Intentional World

The terrain of experience includes the frog's subjective or intentional world (i.e., its phenomenological experiences). This terrain represents the frog's first-person awareness—its somatic experience of hot and cold water, physical pain, pleasure, and various impulses. The frog does not have a self-conscious relationship to these experiences, but it does have an interior that supports a variety of subjective experiences, even if they are relatively simple. This terrain is one of the primary places where von Uexküll's pioneering work in Umwelt theory, or the subjective universe of animals, contributes in important ways to IE. As Jesper Hoffmeyer (1996b), a Danish leader in the field of biosemiotics, explains:

> We need a theory of organisms as subjects to set alongside the principle of natural selection, and Jakob von Uexküll's Umwelt theory is just

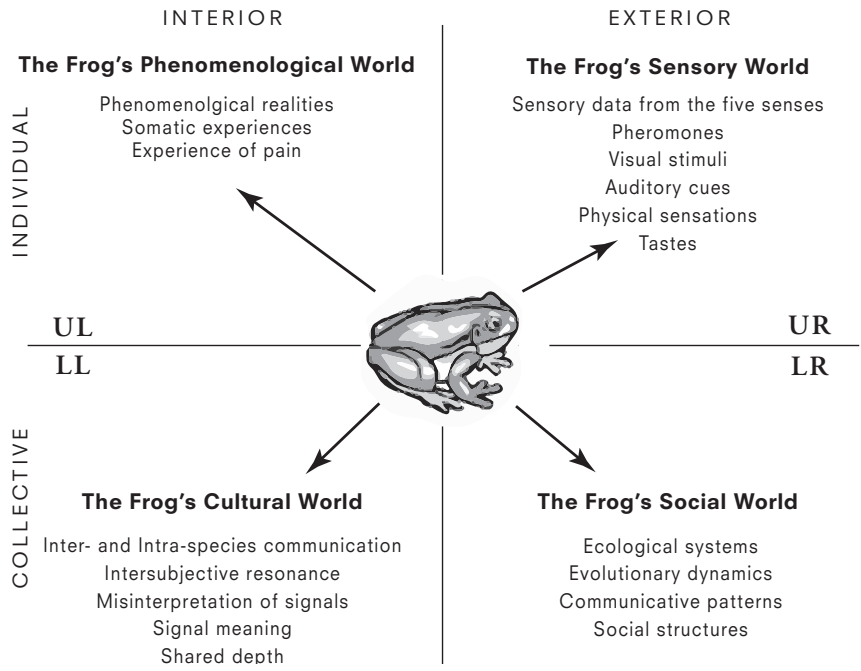

Figure 11.1. Four views of a frog.

> such a theory. . . One can never hope to understand the dynamic of the ecosystem without allowing for some form of Umwelt theory. (p. 58)

Thus, by including this terrain, IE makes a strong commitment to developing an integral theory of organisms as subjects. This qualitative aspect of IE is further developed below in the section on the terrain of culture.

Terrain of Behavior: The Frog's Sensory World

The terrain of behavior includes the objects of the frog's senses and capacity to perceive movement and differentiate its surroundings. For example, the field of sensory ecology provides insight into the sensorial capacity of organisms and how they register pheromones, visual stimuli, auditory cues, skin sensations, and tastes. Accurate perception is crucial for the frog's survival. This terrain also includes how the frog registers its environment and interfaces with it as a result.

The frog's senses can be understood either from a physiological dimension, such as through its nervous system and neurochemistry, or from a phenomenological dimension, through the frog's subjective experiences. In the former, we as humans would be examining via a quadrivium the UR quadradic dimension of the frog. In the latter the frog would be examining via a quadrivium the UR quadradic dimension of its environment through the phenomenological experiences (Umwelt) it has through registering signals with its senses. If we try to understand that process of the frog in an objective way, we get Francisco Varela's biological phenomenology.[8] A quadradic perspective of the behavior terrain of a frog emphasizes how the frog itself perceives its exterior world, just as the terrain of experience highlights how a frog perceives its interior world.

The point being made is twofold. First, an integral approach to organisms (as members of an ecosystem), and to frogs in particular, would not just focus on the exterior quadrivia of a frog, its behavior and its ecosystemic role, but would also include a recognition of its interior quadrivia, namely, that it has subjective experiences and intersubjective resonance between two organisms where the similarities of their individual interiors find resonance with each other. Second, an integral approach would also honor a frog as a perceiving being with four distinct dimensions-perspectives. In other words, it is not enough to expand our quadrivium of the frog, how we hold it as an object of investigation, to include looking at its subjective and intersubjective dimensions. In addition to the fact that we can view the frog in four ways, we must also recognize that the frog itself views its world in four ways—that it actually has or even exists as four dimension-perspectives. Thus, ecological science generally examines only two of four quadrivia of a frog and denies that it has any perspectives of its own, thereby only investigating two of eight dimension-perspectives. To grant it any quadrant perspectives would be to reorganize it as a subject in its own right. IE recognizes all four quadrivia and all four quadrants of all organisms.

Thus, modern biology and science-based ecology are based on taking a quadrivium of an objective organism using what IE calls zone 6 (empiricism) and zone 8 (systems theory), whereas semiotic biology (e.g., biosemiotics) is based on complementing those quadrivia with a quadratic understanding that recognizes in various ways that the organism is a subject that tetra-hends its environment. Thus, biosemiotics takes a quadratic view of a subjective organism using primarily the inner zones of 5 (autopoiesis) and 3 (hermeneutics) and to some extent 1 (phenomenology) and 7 (social autopoiesis).

As the theory of autopoiesis points out, the frog does not see the ecosystem, in fact the ecosystem does not even exist for the frog—only what could be called

an *eco-patch* exists in the frog's cognizing of its environment. In other words, frogs do not see systems, they see bugs (and not in the way we see them!). This is what Varela referred to as biological phenomenology (i.e., the study of what phenomena exist within various worldspaces of biological organisms) or the view from the inside. This "insider's view" of the frog is not a view of the frog's first-person experience or "I-ness" but rather is a conceptual-scientific view of how the frog cognizes and registers various phenomena within its biological world.[9]

Terrain of Culture: The Frog's Relational World

The terrain of culture includes the frog's communication and exchange of meaning with frogs and other animals such as snakes, birds, insects, mice, and foxes. When organisms communicate and interpret each other's signals (e.g., sounds and body language), they create a *semiotic niche*, or an intersubjective space of meaning.[10] Frogs, like all sentient beings, have a specific semiotic niche. This intersubjective space meshes or collides with the depth of meaning in other organisms. A frog that misunderstands the intentions of a roaming fox—jumping at the wrong moment—is likely to end up as dinner. Consequently, interpretation and misinterpretation of signals plays an important role in an organism's survival and reproductive success. Biosemiotics emphasizes that sign production and interpretation are fundamental to organisms. Consequently, many biosemioticians take the position counter to neo-Darwinism and claim that the mechanism of evolution is not survival of the fittest, but rather an organism's ability to interpret their environment.[11] This amounts to nothing less than a revolution within ecological sciences, because interiors become in some respects more important than exteriors. Hoffmeyer (1996b) underscores this insight through his notion of *semiotic freedom*:

> The most pronounced feature of organic evolution is not the creation of a multiplicity of amazing morphological structures, but the general expansion of "semiotic freedom," that is to say the increase in richness or "depth" of meaning that can be communicated: From pheromones to birdsong and from antibodies to Japanese ceremonies of welcome. (p. 61)

Hoffmeyer is very clear that what he has in mind with the use of semiotic "depth" and "freedom" is to be contrasted with "information," which in the IE framework would be associated with the right-hand quadrants:

> Semiotic freedom refers not only to the quantitative mass of semiotic processes involved but even more so to the quality of these processes. We could perhaps define it as the "depth of meaning" that an individual or a species is capable of communicating." (p. 62)

In fact, Hoffmeyer prefers *semiotic freedom* over *semiotic depth* due to an association of depth with "logical depth."[12] However, IE is quite comfortable with either phrase and even prefers "semiotic depth" since depth is already a term used in the integral model to refer to the complexity of interiors. While integral ecologists agree with Hoffmeyer that semiotic freedom is a noteworthy and all-too-often disregarded aspect of organic evolution, an integral approach emphasizes the tetra-enactment of evolution where experience, behaviors and genetics, interpretations, and environmental pressures all play an important role in the selection, fitness, and development of species.

Thus, an integral evolutionary theory involves not only sexual selection (UR) and environmental pressures (LR) but organisms interpreting their environment and each other (LL) as well as experiencing themselves (UL). So not only is it survival of the strongest (UR) and fittest (LR) but survival of the best interpreter (LL) and experiencer (UL).

Biosemiotics provides a powerful critique of neo-Darwinism's right-hand emphasis by claiming that interpretation is the primary driver of evolution. For example, in addition to genetic fitness, Hoffmeyer (1998) discusses "semiotic fitness" or an "increasing depth of meaning," which he explains "results in the continuing growth of depth of interpretative patterns accessible to life" (p. 291). Of course many biosemioticians are exchanging one quadrant absolutism for another, favoring cultural (LL) selection over natural (UR and LR) selection—which is why an integral evolutionary theory would include all four quadrants as aspects of evolutionary selection. Wilber (2006a) states,

> Thus, each holon must be able to register the external it-world accurately enough (*truth*); each holon must be able to register its internal I-world accurately enough (*truthfulness*); it must be able to fit with its communal or social system of *its* (*functional fit*); and it must be able to adequately negotiate its cultural milieu of *we* (*meaning*). (p. 34, emphasis in original)[13]

Kull (2004) argues that von Uexküll's views on evolution are often seen as being emblematic of a premodern understanding, when in fact I would argue that

they are more representative of a postmodern perspective alongside approaches such as autopoiesis.[14] As such biosemiotics is viewed as ushering in post-Darwinian biology (in contrast to the longstanding neo-Darwinian period), which naturalizes interiority by recognizing through the functional cycle that subject and object (i.e., the organism and the environment) enact and coconstitute each other.[15]

In IE we refer to a frog's semiotic freedom as its *culture* (i.e., the general, intersubjective space between individual frogs). Frog culture includes all the ways frogs communicate interior meaning through exterior vehicles (vocalizations, pheromones, movement, visual display, touch). It also includes the ways frogs interpret inorganic features and other animals within their world. IE does not assume any degree of self-reflectivity on the part of frogs. But frogs do share an intersubjective space among themselves and with other organisms!

Biosemiotics calls the sum total of all semiotic niches the *semiosphere*.[16] The semiosphere is a relatively autonomous sphere of communication and meaning that exists between all organisms.[17] Kull (1998) explains that the "Semiosphere is the set of all interconnected Umwelts. Any two Umwelts, when communicating, are a part of the same semiosphere" (p. 305). Kull has a slightly different opinion of the semiosphere than Hoffmeyer. Hoffmeyer suggests that the semiosphere may be partially independent of the organisms' Umwelt. Kull asserts that the semiosphere is "entirely created by the organisms' Umwelts. Organisms are themselves creating signs, which become the constituent parts of the semisophere. This is not an adaption to environment, but the creation of a new environment" (p. 305).

For IE, this semiotic network is actually a tetra-occasion. Thus an integral approach to biosemiotics (LL) would include the study of bio-syntax (LR), bio-signifieds (UL), and bio-signifiers (UR).[18] However, the LL intersubjective (biosemiotics) aspect is what we have in mind here when integral ecologists describe the semiotic niche. IE views the semiosphere as the intersubjective space generated by all the phenomenological spaces of various organisms in communication both in terms of integral theory's zone 3 hermeneutics and zone 7 social autopoiesis.[19] As a result, the term *semiotic niche* is typically used to highlight the LL hermeneutic dimension of an organism. However, it is recognized that some uses of semiotic niche are more closely aligned with zone 7. When using concepts such as semiotic niche or Umwelt you have to be clear about whether you are talking about them in the context of quadrants (e.g., looking AS a frog) or quadrivia (e.g., looking AT a frog). For example, IE uses Umwelt to refer sometimes to the UL dimension of an organism (e.g., when taking a quadrivium on an organism and acknowledging it is a subject) and sometimes to refer to the quadrants of an

organism (i.e., their capacity to take perspectives: tetra-hension). Either usage is accurate as long as you are clear which one you are utilizing.

In addition to embracing a view of animal intersubjectivty and culture, IE adopts a pansemiotic position, like that associated with Charles S. Peirce (who, it is worth noting, is a major source of influence on biosemiotics). Pansemiotics serves as the LL quadrant correlate to IE's panpsychist (or more accurately paninteriority) position associated with the UL quadrant. Peirce believed that everything in the universe was perfused with signs. Claus Emmeche (1999) outlines the pansemiotic thesis and is worth quoting at length:

> The universe is perfused with signs, semiosis is not only a process found in all living nature among beings which are organic, functional wholes (organisms as interpreters, or interpretants). The sign, its object and its interpretant are universal categories, which existed (eventually in degenerate form) even before the origin of life. The pansemiotic thesis may be read as a version of panpsychism; the idea that matter is effete mind, or that the qualities of experience, sensation, pain or feeling come in degrees, and that even inorganic systems may have, eventually to very small degrees, such qualities. If one does not like the idea of emergence (as a sudden appearance of qualitative new irreductible properties, cf. Baas and Emmeche 1997), and embraces a continuity thesis (that mind is continuous with matter, and that systems with meaning-attributing capacities have originated from, or are a certain organization of, material systems), one is more inclined to such a view of nature, according to which mental phenomena are not simply found in the brain (and presuppose the body of a whole multicellular organism) because also single cells of any kind, not only complexes of nerve cells, have "mind," "feeling," "consciousness" (or semiotic capacity)—at least to a tiny degree. Of course, a problem with this idea is that it is painfully difficult to give precise scientific meaning to the claim that single cells or even non-cellular systems have feeling, even to a very tiny degree, if one by meaning demands clear and fulfilled conditions of verification (or assertability or falsifiability) and not just appeals to special intuitions that seem to differ among semioticians as well as metaphysicists. This demand of clarity may be perceived by general semiotics as unnecessarily restrictive, but its fulfilment should facilitate communication between scientists and semioticians. (p. 91)

Wilber (2006a) echoes this pansemiotic position when he explains:

> Even electrons have to interpret their environment—not to mention bacteria, worms, and wolves. . . The deer watching a hunter must interpret the hunter's actions, and not merely react to each of the them like, say, a falling rock. Precisely because all holons (all the way up and down) contain a moment of sentience, they will always have to interpret their environments and therefore interpret each other's interpretations. Needless to say, adequate interpretation therefore demands same-depth translation. If one holon attempts to interpret a holon of greater depth, something will definitely get lost in the translation. (pp. 80–81)[20]

Having presented a strong case for the interpretive and intersubjective aspects of animals let me now turn our attention briefly to the last terrain: the terrain of systems.

Terrain of Systems: The Frog's Social World

The terrain of systems includes the various roles, patterns, and relationships that structure the behavior of frogs among themselves with regard to organisms and to the physical environment. This terrain includes the various systems of norms and rules that structure the perceptions of frogs and how as a result they participate in the ecological, evolutionary, social, and communicative. Frogs unconsciously participate in all kinds of syntactical elements. The totality of social exchanges among frogs, with other organisms, and with the physical environment comprises an important aspect of the frog's ecological niche. In addition, there are various social structures and regulations that frogs adhere to that are informed by ecological pressures and evolutionary dynamics. These various systems comprise the frog's social world.

TOWARD AN INTEGRAL UMWELT THEORY

In short, a frog, like other organisms, has four distinct dimensions and perspectives or lived worlds. Not only does an organism perceive its environment (a third-person perspective), it also perceives others (a second-person perspective), and it perceives itself (a first-person perspective). Thus, in addition to a

perceptual or sensory world (objective), an organism has an intentional world (subjective), a cultural world (intersubjective), and a social world (interobjective). Drawing on biosemiotics, IE refers to these four distinct but related worlds as an organism's Umwelt. As noted above, various subschools of biosemiotics tend to use Umwelt as a primary referent for phenomena associated with different zones of integral theory's integral methodological pluralism (i.e., phenomenological [Z1], hermeneutic [Z3], cognitive [Z5], and communicative [Z7]). IE expands the notion of Umwelt to refer to all of these: the organism's capacity for quadratic perception.

In contrast to this more integral definition of Umwelt, Umwelt in its narrow usage, as noted above, typically refers to just the organism perceiving the UR (the subject's perceptual world of their external environment). For example, in the context of this more commonly used narrow sense, Emmeche (2001) claims that the Umwelt of an animal is not the same thing as the mind of an animal:

> The mind is a broader notion than the Umwelt, so, for instance, there can be a lot of activity in a living organism which is of a mental, or semiotic, character, but which does not figure as a part of the animal's phenomenal world. (p. 654)

Even though Umwelt is just a particular aspect of mind, Emmeche goes on to explain that

> the Umwelt notion is of central importance to the development of a coherent theory of the qualitative experiential world of the organism, a task present day biology must face, instead of continuing to ignore a huge phenomenal realm of the living world—the experiential world of animal appetites, desires, feelings, sensations, etc. (p. 660)

The common English translation of Umwelt as both environment and as an organism's subjective universe has created confusion because biologists think of environment as something external and independent of an organism's perception of it. However, what von Uexküll was highlighting in his use of the term "Umwelt" is that an organism enacts the "outside" world. In other words, von Uexküll was carefully avoiding the myth of the given by emphasizing the perspectival nature of the environment. Thus, Umwelt is not referring exclusively to the UL phenomenology of an organism (1p: 1-p) but rather to how an organism (1p) perceives the UR objective world around itself through its senses (3-p). In

other words, the Umwelt of an organism is not subjective in the sense of a subject perceiving its own embodiment (1p: 1-p), but rather in the sense of recognizing that there is a subject perceiving an object and enacting its world (1p: 3-p). Thus, IE helps us clarify what is meant by Umwelt. But what Umwelt theory does is acknowledge the subjectivity of an organism, thereby paving the way to expand our notion of Umwelt (1p: 3-p) to include subjective and intersubjective perspectives enacted by the organism (1p: 1-p, 2-p, 3-p). Thus, Umwelt theory recognizes an organism's subjective (1p) universe (3-p) and is often used by biosemioticians to explore an organism's subjective (1p) social world (2-p) and sometimes used to explore an organisms subjective (1p) inner world (1-p). Integral ecology makes explicit from the outset that an organism has quadrants (1p) and therefore has subjective 1-p, intersubjective 2-p, and (inter)objective 3-p perspectives.

Likewise *Umwelten*, the plural of Umwelt, generally refers to the shared or overlapping of an Umwelt between two or more organisms.[21] One of the most extensive discussions of Umwelt available in the literature occurs in Kull (2001), *Jakob von Uexküll*, which has over 20 articles exploring it, including a 150-page section devoted to the meaning of Umwelt.[22]

Since Umwelt is often framed as "all the meaningful aspects of an organism's world," this would include not just 3-p realities but also 2-p and 1-p perspectives. Thus, the "subjective universe" of an organism in an integral approach to Umwelt theory becomes a fourfold perspectival world (i.e., organisms have four dimension-perspectives as a result of their being-in-the-world). Their four irreducible dimensions allow them four distinct perspectives. By expanding Umwelt theory to refer to the quadrants of an organism, we make explicit the four dimensions of an organism's perceptual world. Thus, in Umwelt theory not only do organisms have an outer world (*Umwelt*), they also have an inner world (*Innenwelt*), and an *others* world (*Sozialenwelt*).

Each of the frog's four rich terrains is already studied by various scientific disciplines.[23] We use biology to study the objective organism (UR), standard ecology to study the interobjective biosphere (LR), phenomenological (e.g., cognitive and emotional) ethology to study the subjective perspectives of organisms (their Umwelts) (UL), and biosemiotics to study the intersubjective semiosphere (LL)—see Figure 11.2. Clearly, each of these disciplines studies more than just these terrains, but these placements reflect the methodological strength of each discipline. IE integrates these four terrains and their respective disciplines so as to understand the depth and complexity of organisms' fourfold world.

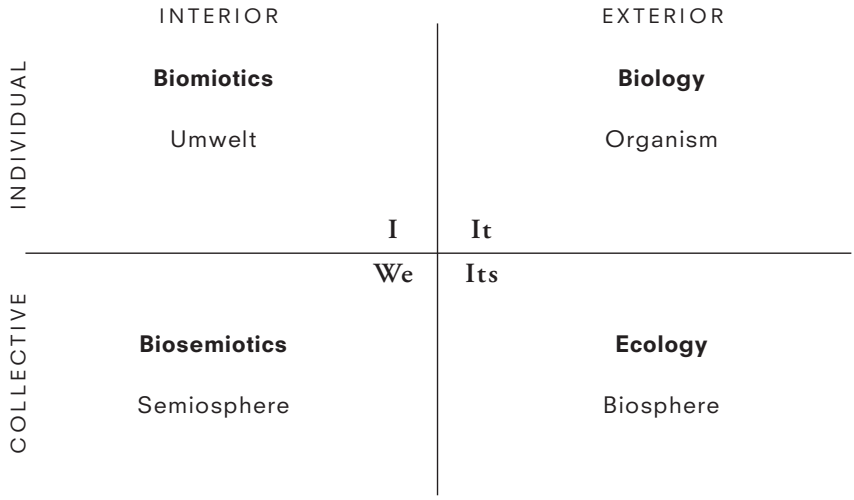

Figure 11.2. Four sciences used to study an organism.

It is worth noting that Figure 11.2 is emphasizing the subjective and intersubjective dimensions of Umwelt and semiosphere in contrast to typical objects of study of biology and ecology, which cannot recognize these interior dimensions of organisms due to their methodological approach. In contrast, biosemiotics makes use of left-hand methodologies to explore the qualitative aspects of organisms. This is a quite unique approach that differs even from approaches that appeal to autopoiesis (e.g., cognitive biology), which often acknowledge animal interiors but are not able to say anything about them because their methodology only gives them access to the inside of exteriors (zone 5 and 7 realities). In other words, what distinguishes Umwelt theory from being just a theory of autopoiesis is not the recognition that an organism is a subject—both do that. But it is only biosemiotics that uses left-hand methodologies that allow it to discuss the phenomenological, interpretative, motivational, and intentional aspects of an organism. Of course there are biosemioticians who reduce their field to autopoietic methods, but in general biosemiotics is a multiple-zone endeavor spanning across left- and right-hand methodologies.

This use of left-hand methodologies can be found in Jacob von Uexküll's Umwelt research methodology (*Umwelt-Forschung*), which is designed to "research into phenomenal worlds, self-worlds or subjective universes, i.e. the worlds around animals as they perceive them" (T. von Uexküll, 1982, p. 1). This methodology is built on the assumption that reality is not independent of its observer but

rather is enacted through signs and consists of reconstructing the way nature is enacted. In short, the biosemiotics methodology has postmetaphysical leanings. This postmetaphysical potential of biosemiotics (especially if it is situated within the integral approach) is revealed by Torsten Ruting (2004):

> Uexküll focused on meaningful responses which enable every organism, humans included, to actively realize its own life-world—its unique *Umwelt*. Consequently, scientists were subjects interpreting and constructing their objects. Besides this refutation of scientific objectivism, Uexküll's concept of the universe as the creation of countless individual *Umwelten* challenged the idea of one universal objective world. Refuting reproaches of solipsism, Uexküll did not deny the existence of a physical world, but rejected the claims of its universally equal intersubjective significance and labeled them "metaphysical." However, Uexküll emphasized that intersubjective (interspecies) understanding is the central aim of biological investigation. (p. 49)

Thus, biosemiotics accomplishes its methodology through what Thure von Uexküll (1982) terms *participatory observation*, where observation involves documenting what signs are registered by the organism through a detailed understanding of the sensory organs of the observer. With this understanding in place, it is possible to "observe how the living being decodes the signs it receives in the course of its behavioral activity" (p. 4). Thus, participation refers to the ethologist's capacity to reconstruct the Umwelt of an organism based on what signs it can receive and how it interprets them. Thure von Uexküll is clear that this process is not one of sympathetic understanding and should not be confused with empathy. This Umwelt-research method aims to create a theory of what nature means to the vast number of Umwelts that are enacting the world around them and overlapping with each other. There are two primary tasks identified by Thure von Uexküll that Umwelt-research must accomplish. First, it must describe how sign processes at the cellular level give rise to more complicated Umwelts and in particular the Umwelt of the researcher. Second, it must describe how the outside objective world that is perceived by an organism arises out of its subjective Umwelt. The solution to this second task involves integrating epistemology and biology. Only when these two tasks are accomplished, T. von Uexküll claims, "can the true task of Umwelt-research be tackled: to construct from the discoveries we have made regarding the construction of our human subjective universe a model for the construction of the subjective universes of other living

beings (their Umwelts)" (p. 10). The field of biosemiotics is devoted to accomplishing these tasks and has made much progress in these areas. IE adopts a position toward other minds that includes both the insights and techniques of Griffin and von Uexküll and adds to them, resulting in a very effective way of accessing and describing animal subjectivity.[24]

Von Uexküll's notion of "functional cycle" describes how an organism enacts its Umwelt (i.e., surrounding environment) through cognitively registering phenomena and then responding. As a result, it has many similarities with the descriptions of "structural coupling" in autopoeisis theory. While the functional cycle is typically understood in autopoeitic terms (zone 5), it can be understood in structural terms (zone 2). For example. Jean Piaget recognized this twofold process in cognition. He labeled these two functions *organization* and *adaptation*. *Organization* refers to the many interrelationships between cognitive activities and *adaptation* points to an organism's interaction with the environment. In effect, organization is the inner process and adaptation is the outer process. Like von Uexküll, Piaget saw these two aspects of cognition as inseparable:

> They are two complementary processes of a single mechanism, the first being the internal aspect of the cycle of which adaptation constitutes the external aspect. . . These two aspects of thought are indissociable: it is by adapting to things that thought organizes itself and it is by organizing itself that it structures things. (as cited in Miller, 2002, p. 64)

Piaget's language is very similar to a description of the functional cycle used by biosemioticians. The value in pointing this out is that it highlights why some uses of Umwelt refer to left-hand structural-phenomenological-interpretive realities and some to right-hand autopoeitic-behavioral-informational realities: the functional cycle can be used to describe zone 2 structures as associated with Piaget and zone 7 structural couplings as associated with Maturana and Varela (1987, 1991). Adding to the confusion, Maturana and Varela refer to their autopoetic approach as *biophenomenology*, which is misleading in that they are not using phenomenology to refer to subjective realities associated with zone 1 or 2. Rather they are describing the cognitive or phenomenal world of the organism—the world that is enacted by what the organism is capable of registering through its senses and reacting to through its behavior.

CONCLUSION

IE defines ecology as the study of *the subjective and objective aspects of organisms in relationship to their intersubjective and interobjective environments*. Thus, the field of biosemiotics is important—even crucial—for IE to make good on this definition as it provides a theoretical basis and methodological orientation to understanding animal worlds. Ecological science is understandably and predominately a third-person approach to the natural world. IE is committed to augmenting this (inter)objective approach with a rigorous mixed-methods (i.e., qualitative and quantitative) study of animal worlds. Including subjective and intersubjective dimensions of animals within ecological science is a tall order, but one that IE feels is necessary to more fully understand ecological dynamics. The recognition and systematic inclusion of animal interiors is one of the features of IE that sets it apart from other schools of ecology. Thus, the importance of biosemiotics for providing IE with a way to understand and include animal worlds cannot be overstated.

NOTES

1. See "An Overview of Integral Ecology" in this volume for an introduction to my approach to IE. Also see Esbjörn-Hargens & Zimmerman, 2009, *Integral Ecology*, for an extended treatment. This present chapter brings together the many sections, perspectives, and points distributed throughout *Integral Ecology* that discuss animal worlds. As such, this chapter represents the first distilled overview of IE's position on animal worlds.

2. See T. von Uexküll (1982); J. von Uexküll, *The Theory of Meaning* (1982) and *A Stroll through the Worlds of Animals and Men* (1992); and Kull (2004), *Jacob von Uexküll*.

3. Foundational texts in Biosemiotics include Thomas Sebeok and Jean Umiker-Sebeok (1999), *Biosemiotics: The Semiotic Web 1991*, and Jesper Hoffmeyer's (1996b) *Signs of Meaning in the Universe*. Current publications include Anton Markos's (2002) *Readers of the Book of Life*; Claus Emmeche, Kalevi Kull, and Frederik Stjernfelt's (2002) *Reading Hoffmeyer, Rethinking Biology*; and Marcello Barbieri's (2003) *The Organic Codes: An Introduction to Semantic Biology*. For a good overview of biosemiotics see Barbieri's (2006) recent *Introduction to Biosemiotics*; Sebeok, Hoffmeyer, and Emmeche's (1999) *Biosemiotica*; and Emmeche, Hoffmeyer, and Kull's (2002) *Biosemiotics.* For an

overview of 22 basic hypotheses that inform biosemiotics see Stjernfelt (2002), "*Tractatus Hoffmeyerensis*." For a similar list based on Jesper Hoffmeyer's writings, see Emmeche, Kull, and Stjernfelt (2002), "A Biosemiotic Building."

4. For a history of biosemiotics and an overview of its various schools, see Favareau (2007).

5. This right-hand versus left-hand tension in biosemiotics is explored by Artmann (2007).

6. See Wilber (1995, esp. pp. 92–93 and p. 600) for a discussion and critique of Whitehead's notion of prehension.

7. See *Integral Ecology* chapter 6 for two examples of a quadrivia: an oak tree and toxic emissions (Esbjörn-Hargens and Zimmerman, 2009).

8. See Evan Thompson's (2007) *Mind in Life* for a great overview of Varela's work and its relevance to animal sentience.

9. See the classic paper by Lettvin, Maturana, McCulloch, and Pitts (1965), "What the Frog's Eye Tells the Frog's Brain"; and Maturana and Varela's (1991) *Autopoiesis and Cognition* and their more accessible overview of autopoiesis, *The Tree of Knowledge* (1987). For a great overview of autopoiesis applied across multiple domains and its relationship to the phenomenological approaches of Husserl and Heidegger, see Mingers's (1995) *Self-Producing Systems.* An important book that highlights the zone 5 aspects of autopoiesis is Winograd and Flores's (1986) *Understanding Computers and Cognition*, which draws many parallels between computer design and cognitive processes. Weber's (2002) "The 'Surplus of Meaning': Biosemiotic Aspects in Francisco J. Varela's Philosophy of Cognition" provides an important look at how Varela's work can serve biosemiotics.

10. Hoffmeyer (1996b) developed the idea of a semiotic niche: "The semiosphere imposes limitations on the *unmwelt* of its resident population in the sense that, to hold its own in the semiosphere, a population must occupy a 'semiotic niche'" (p. 59).

11. See Hoffmeyer's discussion of intentionality in "Origin of Species by Natural Translation."

12. For a discussion of subjectivity in the context of organisms and the semiosphere see Hoffmeyer's "What It Is to Be a Subject?" and his discussion of "semiotic freedom" (Hoffmeyer's "The Unfolding Semiosphere"). While Hoffmeyer advocates the inclusion of subjectivity, it is worth noting that he all too often discusses the exterior aspects of signaling in the semiosphere: "sounds, odours, movements, colours, electric fields, waves of any kind, chemical signals, touch, etc." (p. 290). Though he is explicit that "semiotic freedom does not simply refer to the wealth or quantity of semiotic processes around but rather to the quality

of such processes: The depth of meaning a culture, an individual or a species is capable of communicating." (p. 291) Thus, Hoffmeyer includes information (span) and knowledge (depth) in his understanding of semiotic processes within and between organisms. Also see Hoffmeyer, "Evolutionary Intentionality."

13. In a recent book, *Evolution in Four Dimensions*, Eva Jablonka and Marion Lamb (2005) take a step in this direction by including four inheritance systems in their presentation of evolution: genetic, epigenetic, behavioral, and symbolic. However, their approach still is overly reliant on right-hand factors. Even their discussion of language and symbolic communication is largely couched in LR terms and concepts.

14. For a recent discussion of von Uexküll's own evolutionary position see Kull (2004), "Uexküll and the Post-Modern Evolutionism."

15. 15. For an interesting integration of Darwinian thought and the hermeneutics of Heidegger, see Markos, Grygar, Kleisner, and Neubauer (2007), "Towards a Darwinian Biosemiotics: Life as Mutual Understanding." And for an exploration of the role biosemiotics can play in integrating Darwinian and creationism views of evolution see Rothschild (2002), *Creation and Evolution*.

16. The concept of the semiosphere was developed by the Estonian semiotician Jurdi Lotman (1984). For articles on Lotman's notion of the semiosphere see Merrell (2001), "Lotman's Semiosphere, Peirce's categories, and cultural forms of Life," and Chang (2003), "Is Language a Primary Modeling System? On Juri Lotman's Concept of Semiosphere." For other discussions of the semiosphere see the special issue of *Semiotica* (1998) "Semiotics in the Biosphere" Volume *120*(3–4), which is dedicated to reviewing Hoffmeyer's *Signs of Meaning in the Universe*. For an interesting article that explores the development of semiotic space (i.e., environment, Umwelt, semiosphere) in relationship to traditional, modern, and postmodern worldviews see Lotman (2002), "Umwelt and Semiosphere."

17. For a presentation of 17 different but complementary definitions of semiosphere see Kull (2005), "Semiosphere and a Dual Ecology." Interestingly, in this article Kull argues that biosemiotics is a qualitative ecology: "There is an ecology that has been developed as a natural science, according to the Modernist model of science—a field of quantitative research of environment with organic systems in it, without any intrinsic value or meaning in itself. And there is an ecology that includes meaning and value. The latter would include ecophilosophy, biosemiotics, semiotic ecology. . . Thus, semiosphere is a concept of fundamentally [a] postmodern approach" (p. 184). He goes on in that article to define the semiosphere as a "heterogeneous space (or communicative medium) enabling qualitative diversity to emerge, to fuse, and to sustain" (p. 185). Similarly, in his

article "Does a Robot Have an Umwelt?" Emmeche (2001) refers to biosemiotics as a *qualitative organiscism*.

18. See Wilber (2006b, 2006c, 2006d) for a discussion of integral semiotics. Information is a quadratic affair, which is why Wilber's integral semiotics is so important. In general there are two major approaches to information in the universe and biosphere: there are those that emphasize syntax and those that emphasize semantics. Søren Brier (2002, 2003, 2007) is developing an integral approach to semiotics that combines N. Luhmann's communication theory, C. S. Peirce's semiotics, Maturana and Varela's autopoiesis, and E. Husserl's phenomenology in a way that honors all four quadrants on their own terms. In fact, in his 2003 article "The Cybersemiotic Model of Communication," he provides a figure that presents "four main areas of knowledge" that develop (i.e., that have levels of complexity): consciousness [UL], life [UR], energy [LR], and meaning [LL] (p. 78). See also Brier (2002), "Luhmann Semioticized."

19. For a concise overview of integral methodological pluralism and its 8 zones see chapter 1, Wilber (2006e), *Integral Spirituality*.

20. For another example of hermeneutics occurring between a human and a nonhuman organism, in this case gorillas, see Wilber, (2006d), pp. 62–64.

21. For an exploration of organisms and their translation between partially shared worldspaces, either intraspecies or interspecies, see Kull and Torop (2000), "Biotranslation."

22. For an interesting article that links Umwelt theory with the deep ecology platform, see Tonnessen (2003), "Umwelt Ethics." For a valuable and lucid overview of four approaches to how subjects perceive objects and their environment, see Susi and Ziemke (2005), "On the Subject of Objects." This article contains one of the best summaries of Umwelt theory that I have come across.

23. For another extensive example of the quadrants of an organism, see Wilber's (2006c) discussion of a goose (pp. 49–50 and pp. 100–104) and of a bacterium (pp. 56–60), which he concludes by explaining, "each bacterium has an interior sensation (or prehension), an exterior registration (or rudimentary cognition of its enacted world), an inter-exterior system of communication (which forms part of its social system or ecosystem), and therefore an inter-interior harmonic resonance with other bacteria (and other sentient beings)" (p. 60).

24. For a fascinating account of how biosemiotic research can shed light on the inner world (i.e., qualitative and subjective) of animals' minds, see the four case studies presented in Pain (2007), "Inner Representations and Signs in Animals."

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PART IV

PRACTICAL APPLICATIONS

12

TOWARD AN INTEGRAL ECOLOGY OF WORLDVIEWS

Reflexive Communicative Action for Climate Solutions

Annick De Witt and Nicholas Hedlund

INTRODUCTION

While global environmental protection has been on the international political agenda since the 1972 United Nations Conference on the Human Environment, efforts have not altered the fundamental trajectories of human-induced environmental degradation (Biermann et al., 2012). As many now recognize, the failure to alter their course is largely due to widespread disagreement and gridlock in the global debate on contemporary sustainability challenges such as climate change (Hulme, 2009; Nisbet, 2009; Victor, 2011). It is therefore becoming increasingly clear that the lack of agreement and the often intensely polarized perspectives this lack is based on is itself a major, if not *the* major obstacle to forging robust, effective solutions and building a secure, sustainable, and flourishing civilization in our twenty-first century planetary era (Kelly, 2010). As Hulme (2009) has argued, differences in *worldview* and culture often underlie the ubiquity of such diverging and polarized perspectives in stakeholder negotiations and public opinion, thereby hampering the communication and cooperation that is so urgently needed.[1] For example, several voices have pointed out how intractable political conflicts in the United States are the result of culture wars, or clashes in worldviews. It has also been asserted that diverging worldviews are at play in international conflict (see e.g. Koltko-Rivera, 2004).

However, since our planetary issues are increasingly interconnected and multifaceted, transcultural and transdisciplinary cooperation is absolutely necessary;

these issues are simply far too complex to be solved from one or two perspectives, disciplines, or modes of rationality (Benedikter & Molz, 2011; Held, 2006). While the divergence in perspectives and cultures clearly leads to misunderstanding, conflict, and inertia, some voices have also emphasized the *value* of such diversity for addressing our pressing global issues (Calicott, 2011; UNESCO, 2002). Precisely because of the diverse range of solutions, strategies, and perspectives that different cultural worldviews tend to bring forth, cultural diversity can be seen as having the potential to enhance our overall capacity for (cultural) adaptation and transformation (see also O'Brien, 2009).

Thus, overall there appears to be a growing recognition of the critically important phenomenon of worldviews in the urgently needed transformation to sustainable societies (see e.g. Esbjörn-Hargens, 2010; Hedlund-de Witt, 2013b; Hulme, 2009; O' Brien, 2009; O' Brien, St. Clair, & Kristoffersen, 2010). More specifically, some authors argue (see e.g. Esbjörn-Hargens & Zimmerman, 2009) that some degree of mutual understanding and synergy between divergent worldviews is essential to fostering sustainable climate solutions.[2] We therefore argue that basic insight into, and awareness of, worldview dynamics can prove useful in fostering such mutual understanding, as well as leveraging and aligning diverse cultural potentials, generating constructive communication, and ultimately sharing action to transform social structures and institutions in the service of climate change adaptation and mitigation. In our view, it is precisely through an empathic understanding of other worldviews and their ways of relating to issues such as climate change that we can expect to craft strategic communications and make progress in galvanizing a larger part of the population in this important deliberation regarding our shared well-being. The aim of this chapter is therefore to explore how insight into the nature and structure of the predominant worldviews in the West can be applied to communicative action and policy-making for climate solutions.[3]

We begin, in the next section, by discussing the notion of worldview—especially in relation to such similar concepts as ideology, paradigm, and discourse—and clarify the philosophical foundations of our understanding and usage of this concept, and of our research approach in general. Next, we introduce the *integrative worldview framework* (IWF), an interdisciplinary framework that synthesizes research from a number of fields, including developmental-structural psychology and sociology. The concept of worldview is operationalized into five major aspects: *ontology*, *epistemology*, *axiology*, *anthropology*, and *societal vision* (Hedlund-de Witt, 2012, 2013b). Using these five worldview aspects as an organizing scheme, this framework offers a synoptic overview of the structure and

systematic interrelationships of the predominant worldviews in (but not limited to) the West—worldviews referred to as *traditional*, *modern*, *postmodern*, and *integrative* (see also De Witt, De Boer, Hedlund, & Osseweijer, 2016; Hedlund-de Witt, 2013a, 2014b). In the next section, we translate the basic insights of the IWF to issues of multistakeholder communication, intending to demonstrate how this framework holds the potential to illuminate key barriers to mutual agreement and collective action, and to enact strategic opportunities toward sustainable climate solutions. We show how this framework has the potential to serve as (1) an heuristic for cultural and psychological self-reflexivity, (2) an analytical tool for understanding worldview dynamics in society, and (3) a scaffolding for effective climate communications and transformative solutions. We close with a discussion on the IWF, while offering suggestions for further research.

DEFINITION OF KEY TERMS AND PHILOSOPHICAL FOUNDATIONS

In earlier research exploring the philosophical foundations and evolution of the concept (Hedlund-de Witt, 2013b), *worldviews* have been defined as the inescapable, overarching systems of meaning and meaning-making that to a substantial extent inform how humans interpret, enact, and cocreate reality. More specifically, they are complex constellations of epistemic capacities, ontological presuppositions, and ethical and aesthetic values that converge to dynamically organize a synthetic apprehension of the world. This definition highlights the power of worldviews in generating real-world, causal effects, thereby emphasizing their complex, interdependent relationship with the actual events that worldviews bring forth.[4] Simultaneously, this definition emphasizes that worldviews are not a patchwork of loosely related phenomena but a coherent pattern or *system* that integrates seemingly isolated ideas into a common holistic structure (see also Inglehart & Welzel, 2005, p. 4). The concept of worldview may appear, at first sight, to be similar or even interchangeable with concepts such as *ideology*, *paradigm*, and *discourse*, and they indeed possess some degree of referential overlap. However, worldviews can nonetheless be clearly distinguished from these concepts—a task we feel is worth taking up in an effort to clarify the concept and to articulate the philosophical foundations undergirding our understanding and usage of the term.

The concept of *ideology*, while elusive, can be defined broadly as a set of beliefs, values, and goals of a social or political group that explain or justify the

group's decisions and behaviors.[5] While the concept of worldview conveys that the world is viewed or known differently by different viewers, thus denoting a standpoint that is more or less open to recognizing and honoring external standpoints, an ideology is often defined as explicitly favoring and propagating one point of view above all others—asserting the superiority and dominance of this perspective (Benedikter & Molz, 2011).

The notion of *paradigm* comes from the Greek *paradeigma*, meaning pattern, example, sample. Kuhn (1996 [1962]) gave the term its contemporary meaning when he adopted the word to refer to the set of practices that provide model problems and solutions (*exemplars*) for a community of researchers, thereby governing a scientific discipline at any particular period of time. While a paradigm tends to define what is valid and what not for the whole of the ideological constellation of a given time and place, the worldview concept, in contrast, potentially explicates and acknowledges the existence of different viewpoints, even if they are in conflict with each other—thus, optimally, being "contradiction-capable" and paradoxically constituted (Benedikter & Molz, 2011, p. 34).[6]

Discourses, according to Foucault (1972), are "practices that systematically form the objects of which they speak" (p. 49). Others have defined the concept of discourse as "an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices" (Hajer & Versteeg, 2005). Discourse analysis therefore "sets out to trace a particular linguistic regularity that can be found in discussions or debates" (Hajer & Versteeg, 2005, p. 175), thereby aiming to reveal the underlying ideas, assumptions, power structures, and interests that often implicitly guide these debates—as well as those that it precludes. Discourses thus define and constitute objects as well as the boundaries of what is taken to be socially acceptable or deviant (Mert, 2012). Although there is overlap between worldviews and discourses, we argue that discourse analysis is generally more focused on specific content (such as the debate around sustainable development, or ecological modernization), while the concept of worldview aims to clarify and explicate the ontological, epistemological, and axiological foundations, or deep structures, undergirding any such content.

Moreover, looking at both concepts from a historical perspective, one could argue that the concept of discourse is closely associated with postmodernity, and can only be adequately understood as a response to the problematics of modernity. It is in this light that we tend to understand discourse theory's interest in "dethroning" and deconstructing (what is often seen as) the oppressive, monistic metanarratives of modernity (e.g., that of "progress" and the "triumph of

science") and revealing their underlying power dynamics and interests (see e.g. Bentz & Shapiro, 1998; Butler, 2002; Hacking, 1999). In contrast, we argue that the concept of worldview, at least in its contemporary meaning,[7] is necessitated by the predicament of our late postmodern period. This period is characterized by a plurality of competing and often intensely polarized perspectives, a profound loss of meaning and purpose among many due to the loss of overarching narratives,[8] and urgent, increasingly interconnected planetary issues that demand the coordination of polarized perspectives (see e.g. Benedikter & Molz, 2011; N. H. Hedlund, 2010) . While the concept of worldview reflects the constructed dimension of our positions and emphasizes the responsibility and empowerment that that can bring, it concomitantly tends to acknowledge the inevitability and even usefulness of overarching frameworks for human cognition and functioning (see notably Koltko-Rivera, 2004; Naugle, 2002; Taylor, 1989). This stands in sharp contrast with a primary impulse in postmodernity, which arguably tends to discard overarching frameworks and narratives—Lyotard (1984) famously defined the postmodern as "incredulity towards metanarratives" (p. xxiv). Moreover, while postmodern discourse theory has been criticized for its extreme epistemic relativism and ontological antirealism (Alvesson & Sköldberg, 2009; Butler, 2002), the concept of worldview, in our eyes, conveys a (critical) realist commitment to a world out there, which is to some extent independent of, and thus not completely subject to, our human constructions (Bhaskar, 2008 (1975)). This comes to expression in the word itself, which emphasizes *world* equally to *view*, and integrates them into a larger whole. As we are employing it, the concept thus reflects a philosophical perspective or *research worldview* (Creswell & Plano Clark, 2011), aiming to integrate the most important insights of both realism, emphasizing an independently existing world that can in principle be objectively investigated, and social constructivism, emphasizing our view as human construction and product of historical, political, and cultural contingencies, to name a few.

Our understanding here has been informed by contemporary philosophies that position themselves as alternatives to both naive realism (e.g., positivism) and social constructivism, building on some of their most important insights while simultaneously aiming to transcend their widely perceived shortcomings. These philosophies, most notably, include critical realism and integral theory (see e.g. Bhaskar, 2008 (1975); Esbjörn-Hargens & Wilber, 2006). In effect, our notion of worldview reflects what we see as an emergent ontological and epistemological position that honors not only the creative agency of the human subject, but also the reality and even agency of objects in the world (Bhaskar, 2008 (1975)).

As such, we see this understanding of the notion of worldview as reflecting an emergent intellectual formation that has yet to achieve widespread appeal within the academy and public sphere, but is arguably quite apropos in relation to our contemporary planetary demands and life conditions.

Additionally, while discourses tend to be conceptualized as somewhat arbitrary constructions rooted in the power interests of the dominant or privileged classes, we tend to see worldviews as much more nonarbitrary, structured phenomena, rooted in a broader logic and patterning that cannot be reduced to historical, cultural, and political contingencies alone. That is, we tend to maintain a generally dialectical, developmental view of culture and society. However, this position also contrasts in important ways with the notion of development in its modernist connotations—that is, of a unilinear, triumphalist developmental progression from "primitive" levels of social evolution toward the "civilized" status represented by the modern West.[9] Rather, we argue for a much more complex, dialectical, open-ended, and unpredictable process of change. In this understanding, development is decoupled from the notion of progress (i.e., one can also speak of negative developments), while some form of qualitative or structural change can nonetheless be observed. This means that not only do certain qualities increase or decrease according to one or more specific criteria, but also that different criteria are appropriate for an adequate description of a new developmental stage. Thus, in a developmental movement two or more qualitatively different stages can always be systematically distinguished (Van Haaften, 1997). Moreover, new stages do not randomly arise, but they evolve out of and are in some sense "produced" by the antecedent stage. In the words of Van Haaften (1997), the later stages

> depend on the earlier ones in the sense that the prior stages are necessary (though of course, not sufficient) conditions for the coming about of the later ones. It is in this sense that several stages can be identified as causally and conceptually connected parts of a single developmental sequence. (p. 18)[10]

In our view, a primary aim of worldview analysis and research is to enhance reflexivity and generate insight into worldviews, as well as to support mutual and empathic understanding between them, thereby aspiring to serve dialogue, cooperation, and integration. In a similar fashion, several pioneering worldview theorists have argued that the concept of worldview is of crucial importance for areas such as conflict resolution and peace psychology (Johnson, Hill, & Cohen,

2011; Koltko-Rivera, 2004; see also Van Egmond & De Vries, 2011). Clearly, we are speaking here of a potential of a certain definition of the concept of worldview, rather than of a universal or preordained meaning. Thus, one simplified way to understand the differences between these concepts is that while ideologies in their primary function notably justify a certain perspective/practice, paradigms define and prescribe, and discourses reveal them, (consciousness of) worldviews, in our eyes, has the potential to bring together and generate deeper understanding and dialogue, and potentially integrate different perspectives and practices. The IWF, which we will turn to in the next section, builds on this understanding of worldviews, and aspires to enact this potential for deeper understanding, cooperation, and integration across worldview boundaries.

THE INTEGRATIVE WORLDVIEW FRAMEWORK: TOWARD AN INTEGRAL ECOLOGY OF WORLDVIEWS

In this section we aim to provide an overview of the predominant worldviews in (but not limited to) the West, by introducing the *integrative worldview framework* (IWF). The IWF is an interdisciplinary framework that synthesizes original quantitative and qualitative research (De Witt et al., 2016; De Witt, Osseweijer, & Pierce, 2015; Hedlund-de Witt, 2012, 2013b, 2014a; Hedlund-de Witt, De Boer, & Boersema, 2014) with extant research from a number of fields, including, notably, sociology and developmental-structural psychology. The IWF uses the worldview concept, and its operationalization into five aspects, as an organizing scheme (see Table 12.1 for an overview of these five aspects) for delineating and depicting four major worldviews: *traditional*, *modern*, *postmodern*, and *integrative* (see Table 12.2 for an overview of these four worldviews). This depiction is of an *ideal-typical* nature (Marshall, 1998; Weber, [1922] 1963), aimed at providing a very general and broad overview of the primary assumptions, themes, and concerns of each of these worldviews, as well as provisionally suggesting the larger developmental trajectory that they seem to display. Moreover, whereas the depiction of traditional, modern, and postmodern worldviews is grounded in robust empirical research, the depiction of the integrative worldview is based on a more limited data pool and is therefore currently somewhat speculative (Hedlund-de Witt, 2013a). In short, we see the IWF, in its current form, as a provisional model and heuristic that can be used for fostering reflexive inquiry and communicative action.

In the next section, we articulate our broad understanding of the interrelationships within and between the IWF's four primary worldviews, as well as its ethical implications. Then, in the subsequent section, we aim to provide a general sketch of these worldviews in their sociohistorical context, to convey to the reader a general sense of them, rather than a comprehensive and systematic overview. In the final section we discuss the theoretical foundations of the IWF.

Table 12.1. The five aspects of the integrative worldview framework (Hedlund-de Witt, 2012, 2013b).

Working definition of worldview

Worldviews are inescapable, overarching systems of meaning and meaning-making that to a substantial extent inform how we interpret, enact, and cocreate reality; they are complex constellations of epistemic capacities, ontological presuppositions, and ethical and aesthetic values that converge to dynamically organize a synthetic apprehension of the world.

Five aspects of worldviews, including exemplary questions and concerns for each of them

1. **Ontology:** A perspective on the nature of reality, often enriched with a cosmogony.

   What is the nature of reality? What is nature? How did the universe come about? If there is such thing as the divine—what or who is it, and how is it related to the universe?

2. **Epistemology:** A perspective on how knowledge of reality can be acquired.

   How can we know what is real? How can we gain knowledge of ourselves and the world? What is valid knowledge, and what is not?

3. **Axiology:** A perspective on what a good life is, in terms of morals, quality of life, and ethical and aesthetic values.

   What is a good life? What kind of life has quality and gives fulfillment? What are our most cherished ethical and aesthetic values? What is life all about?

4. **Anthropology:** A perspective on who human beings are and what our role and position is in the universe.

   Who or what is a human being? What is the nature of the human being? What is the role and purpose of human existence?

5. **Societal vision:** A perspective on how society should be organized and how societal problems and issues should be addressed.

   How should we organize our society? How should we address societal problems and issues?

Toward an Integral Ecology of Worldviews

In including these four major worldview structures, the IWF can be understood to disclose a kind of *integral ecology of worldviews*, illuminating how different beliefs and values are systematically interrelated through various psychocultural worldviews, and how those worldviews exist in complex, dynamic interrelationships with a plurality of other worldviews—as well as with biophysical, political, economic, and institutional dimensions of reality. This understanding of an ecology of worldviews points toward an empathic disposition in one's relating to other worldviews. A basic premise of the IWF is that every worldview is partially right, has intrinsic value, and can make important contributions to the larger interrelated (ecological) whole (Wilber, 2000). Similarly, the IWF posits that no worldview is intrinsically better than another; rather, worldviews should be seen as deep structures that can come to expression in more and less healthy ways, and in more and less ecologically sustainable ways. This means, as several authors have pointed out, that every worldview at least has the potential for an ecological expression (see e.g. Esbjörn-Hargens & Zimmerman, 2009). By being aware of this potential of each worldview—that is, its healthy values and enduring truths—we can, in our communication with individuals or groups inhabiting other worldviews, orient toward supporting these potentials, rather than activating their less-optimal expressions.

It is important to underscore that these worldviews are fundamentally *deep* structures, or underlying dynamic patterns that therefore vary in terms of their culturally and individually relative *surface* contents or expressions (Wilber, 2000, drawing on Noam Chomsky). For example, a traditional ontology will be expressed through different surface contents depending on whether that worldview is situated within a Christian or Hindu religious-cultural context, but will share certain underlying commonalities.[11] Furthermore, it is crucial to bear in mind that these worldviews are not to be understood as rigid characterizations of people, but rather refer to general homologies of perspective. Moreover, human beings are highly complex creatures, who cannot be exhaustively described through any theoretical framework. Additionally, in our view, individuals do not simply hold one worldview in a monolithic manner, but rather tendentially or probabilistically inhabit a predominant worldview, while expressing elements of other worldviews depending on a variety of contextual variables. For the aforementioned reasons, we argue that the accurate and ethical usage of this worldview framework depends on such a nuanced understanding.

It is also important to point out that although value priorities and orientations may shift with changing worldviews, most values and perspectives associated with earlier worldviews do not necessarily disappear: they simply decrease in exclusive priority as they become integrated as structural subcomponents of later worldviews, which transcend and include certain aspects of them while jettisoning others (Wilber, 2000). For example, certain traditional and modern values remain within postmodern worldviews, but they may be considered to be a lower priority and visible only in some contexts and situations (O'Brien, 2009). Wilber (2000) elucidates this phenomenon by distinguishing between what he calls *enduring* and *transitional* structures. Enduring structures are the elements of a worldview that, upon their evolutionary emergence, persist in the developmental process, despite being subsumed and synthesized by a later worldview. Conversely, transitional structures are the worldview elements that are phase-specific and thus are largely negated and replaced by later, subsequent structures in the developmental trajectory of emergent worldviews.[12] As we will discuss later, this rather technical distinction turns out to be of significant practical importance for generating effective communications that can resonate with multiple worldview audiences simultaneously.

A Sociohistorical Sketch of the IWF's Four Worldviews

Empirical research and theory in both sociology and developmental psychology appear to posit at least three worldview structures, or in the words of Charles Taylor (1989), *families of views*, which are understood to be predominant in the West: a traditional, modern, and postmodern worldview. For example, the *World Values Survey*—the largest existing worldwide, cross-cultural, longitudinal data set on cultural beliefs, values, and worldviews—demonstrates substantial value differences between traditional, industrial (modern), and postindustrial (postmodern) societies. The social science climate researcher O'Brien (2009, pp. 168–69) articulates these differences as follows:

> Traditional worldviews may, for example, place a greater emphasis on the set of values associated with conservation, which include tradition, security, and conformity. Modern worldviews may place emphasis on values associated with self-enhancement, such as power, achievement, and hedonism. Values linked to openness to change, such as stimulation and self-direction, may bridge both modern and postmodern worldviews. Finally a postmodern worldview may emphasize values that focus on self-transcendence, such as universalism and benevolence. (pp. 168–169)

Such differences in worldview also come to expression in distinct epistemic patterns, which the World Values Survey found to be characterized by a move from religious authority to secular authority (that is, a secularization *of* authority) in the process of modernization, to an internalized authority (or an emancipation *from* external authority) in the process of postmodernization (Inglehart, 1997; Inglehart & Welzel, 2005). As Taylor (1989) argues in his seminal work, *Sources of the Self*, our contemporary cultural landscape is characterized by a profound tension between an Enlightenment-inspired, instrumental, disengaged, objectified understanding of reality (modern worldview), and a post-Romantic, expressive cultural current that sees nature as inner source (postmodern worldview). Next to that, he refers to a traditional or theistic worldview:

> [T]he lines of battle are multiple and bewildering . . . I have been sketching a schematic map which may reduce some of the confusion. The map distributes the moral sources into three large domains: the original theistic grounding for these standards [traditional worldview]; a second one that centres on a naturalism of disengaged reason, which in our days takes scientistic forms [modern worldview]; and a third family of views which finds its sources in Romantic expressivism or in one of the modernist successor visions [postmodern worldview]. (pp. 495–496)

While these terms are used to refer to a variety of different and sometimes divergent phenomena in an assortment of distinct contexts, we make use of the terms *traditional*, *modern*, and *postmodern* for a number of reasons.

First, these terms are broad, widely used constructs that capture the general thrust of the historical-developmental trajectory of cultural epochs and worldviews in the West, as described by numerous philosophers of Western thought, historians, and social scientists (see e.g. Bhaskar, 2008 (1975); Giddens, 2009; J. Habermas, 1976; Jürgen Habermas, 1987/2000; Hartwig, 2011; Inglehart, 1997; Ray & Anderson, 2000; Tarnas, 1991; Taylor, 1989; Wilber, 1995). Thus, they appear to be apt terms to deploy for conceptualizing the deep structures of worldviews in a wide-ranging manner, generically linking the individual and collective, as well as integrating multiple, domain-specific theories. Moreover, because these terms appear to be fairly common, they seem to have widespread cultural cachet, and be graspable in a relatively intuitive manner. However, needless to say, understanding worldviews in terms of such a high-level framework is necessarily based in a sweeping generalization of the complexities and ambiguities of reality. Nevertheless, in our eyes, such simplification is justified by its heuristic

value: offering a kind of generalized orienting framework that can *ideal-typically* structure research and analysis and generate testable hypotheses, while being complemented by knowledge of more concrete and specific instantiations.

In addition to the traditional, modern, and postmodern worldviews, the IWF includes a fourth, somewhat hypothetical, emergent worldview structure. This post-postmodern, *integrative* worldview appears to be primarily characterized by its self-reflexive attempt to bring together and synthesize many of the enduring elements of the earlier worldviews, notably spirituality and rationality.[13] In the words of Benedikter and Molz (2011, p. 29):

> The current constellation in the European-Western hemisphere is witnessing a significant increase in "spiritually" informed paradigms that claim to be at the same time "rational." Though these paradigms sometimes deploy ambiguous concepts of "spirituality" and "rationality," have very diverse features, are not infrequently opposed to each other and are of varying quality, their common core aspiration can be said to be, in the majority of cases, integrative, inclusive and integral. These terms imply an attempt to reconcile spirituality and rationality, transcendence and secularism, as well as "realism" and "nominalism," with the goal of building a more balanced worldview at the heart of Western civilization than the ones we have had so far, which have by and large been biased either towards secular nominalism on the one hand, or religious transcendentalism on the other. (p. 29)

Having provided a partial and concise sketch of these major worldviews, we will now turn to the broader theoretical foundations of the IWF.

Theoretical Foundations of the IWF

In addition to the original and sociological research cited above, the IWF builds on, among others, the scholarship of the German social theorist Jürgen Habermas (1976; 1989 [1962]) and that of the American theoretical psychologist Ken Wilber (1995, 2000). Both Habermas and Wilber have correlated the intersubjective or collective (cultural) worldview structures with the subjective (psychological) structures of the individual as disclosed by neo-Piagetian developmental-structuralists.[14] Moreover, both these theorists have emphasized the dialectical-developmental logic that seems to underpin these individual and collective structures. Wilber in particular has correlated and forged a detailed synthesis of these psychological and cultural trajectories. While the correlations

between these trajectories need further empirical research and validation, they appear to accord with other correlations made by a number of respected theorists (e.g., Cook-Greuter, 2000; Kegan, 1982, 2001), and can therefore, in our eyes, be provisionally employed.

Both Habermas's and Wilber's theories of cultural development are primarily grounded in the work of the Swiss psychologist Jean Piaget (1896–1980) and his followers. In the wake of the early pioneers in the field of psychology, Piaget employed empirical methods to observe and code the patterning of diverse capacities for thought and action, observed as human beings develop from infancy to adulthood. In this way, he rationally reconstructed the conditions for the possibility of various cognitive skills/events, and designated several stages that he saw as fundamental *epistemic* structures, or structures of knowing, through which aspects of the world are cognized and disclosed. Over the course of his career, Piaget amassed a copious body of evidence for his developmental theory—known as *genetic epistemology* (referring to the origins or *genesis* of knowledge, not to genetics in the biological sense of genes)—essentially pioneering the field of developmental-structuralism and inspiring many researchers to further probe, test, and expand on his model. This neo-Piagetian stream of developmental-structuralism has subjected Piaget's model to careful scrutiny, and the model has generally stood the tests of time and demonstrated both its scientific validity and cross-cultural universality (Gardiner & Kosmitzki, 2004).[15] Moreover, researchers in the neo-Piagetian tradition have found evidence for cognitive development beyond the level of formal (abstract, rational) operations—that is, various levels of *postformal* (systemic, dialectical) thinking (Commons, Richards, & Armon, 1984; Kegan, 1994; Rose & Fischer, 2009). Additionally, various researchers have used a broadly Piagetian developmental-structural approach to delineate stage models in a number of domains or capacities, such as *cognition* (Commons et al., 1984; Rose & Fischer, 2009), *socio-emotional* (Kegan, 1982, 1994, 2001), *ego-identity* (Cook-Greuter, 1999, 2000, 2002; Loevinger, 1977, 1987), and *morality* (Kohlberg, 1984). Thus, from a summative point of view, developmental-structural psychology demonstrates that individual development is characterized by discrete, unchanging, and hierarchically structured stages in domains such as cognition, ego-identity, and moral reasoning that must be navigated in the process of learning.

Thus, the IWF adopts Habermas's (1976) and Wilber's (2000) general approach of linking the domains of collective (cultural) and individual (psychological) development. In this way, the pool of cross-cultural evidence in (neo-)Piagetian research constitutes an important basis for the IWF, because their

Table 12.2. The IWF ideal, which typically constructs traditional, modern, postmodern, and integrative worldviews in the contemporary West, using the five worldview-aspects as a coding scheme (see also Hedlund-de Witt, 2013a).

	Traditional worldview	Modern worldview	Postmodern worldview	Integrative worldview
Ontology	Religious/metaphysical monism. Reality as singular, transcendent.	Secular materialism. Reality as singular, immanent.	Postmaterialism. Reality as pluralistic, perspectival, constructed.	Holism/integralism (unity in diversity). Reality as transcendent *and* immanent.
	Universe as purposively constructed whole. God-created universe *ex nihilo*.	Mechanistic universe brought about by random selection.	Multiple cosmogonies/ cosmogony as social construct.	Universe as evolving, creative manifestation of source/spirit.
	Transcendent God/Creator is separate from profane world; dualism.	Material reality devoid of meaning, intentionality, consciousness; dualism, disenchantment.	Reality as discontinuous and fragmented, meaning as social construct; antiessentialism.	Outer and inner reality co-arising, interdependent; reenchantment.
	Nature as embodiment of meaningful, imposed order (e.g., God's creation).	Nature as instrumental, devoid of intrinsic meaning and purpose. Resource for exploitation.	Nature as constructed through a plurality of cultural values, meanings, and interests.	Nature as intrinsically valuable. Frequently seen as divine force that humanity is part and expression of.
Epistemology	Naïve realism; emphasis on concrete-literal interpretations of religious doctrine (literalism, dogmatism).	(Post-)positivism; emphasis on reality as objectively knowable (empiricism, reductionism, scientism).	Social constructivism; emphasis on reality as constructed (pluralism, relativism).	Critical realism, pragmatism; emphasis on reality as approachable through integration of sources of knowledge.
	Religious/conventional authority (scripture, divine revelation, tradition).	Secular authority (science, the state).	Internalization of authority (e.g., moral, emotional, intuitive, artistic knowing)	Triangulation of authority (scientific, spiritual/ religious/philosophical, and subjective knowing).
	Implicit methodology.	Quantitative methods; methodological monism.	Qualitative methods; methodological pluralism	Mixed methods; integrative pluralism.
	Substantive rationality.	Procedural rationality.	Skeptical rationality?	Synthetic rationality?

Axiology	Traditional values (e.g., security, tradition, conformity, obedience, humility). Emphasis on community, family. Preconventional morality?	Rational-secular, materialist values (e.g., power, achievement, hedonism, stimulation). Emphasis on independent individuality. Conventional morality?	Self-expression, post-materialist values (e.g., openness to change, self-direction). Emphasis on unique individuality. Postconventional morality?	Self-expression/self-transcendence values (e.g., universalism, self-actualization)? Emphasis on embedded, relational individuality, Universal morality?
Anthropology	Humanity in managerial stewardship role vis-à-vis nature. Prime purposes determined by larger order and social roles. Human being as sinful/fallen from grace. Dependent on religious/metaphysical authorities for salvation. Ethnocentric identity?	Humanity in promethean control over nature. Prime purposes of a material, hedonistic nature. Human being as self-optimizing, independent being. *Homo economicus.* Sociocentric identity?	Humanity in cautious relationship to nature. Prime purposes are found within, intrinsic. Human being as self-expressing, unique individual. Worldcentric identity?	Humanity in unity and synergy with nature. Prime purposes found within, serving the larger whole ("service through self-actualization"). Human being as evolutionary cocreator, with a vast—though generally unrealized—potential. Planetcentric identity?
Societal vision	Traditional societies, emphasis on (subsistence) farming. Traditional and religious authorities and values as source of solutions to societal and environmental problems.	Industrial societies, emphasis on mechanized modes of production (e.g. industrial/conventional agriculture). Technological optimism: science and technology as solutions to societal and environmental problems.	Postindustrial societies, emphasis on service economy and creative industries. Scepticism of status quo, idealism: mobilization of the public through revealing injustices as prime solution to societal and environmental problems.	Increasing emphasis on services, creative industries, and social/sustainable entrepreneurship. Integrative vision: emancipation of the public through consciousness growth and a synthesis of interests and perspectives as solutions to societal and environmental problems.

empirically grounded theorizing arguably contributes to the disclosure of aspects of each worldview; the (neo-)Piagetian model(s) of cognitive development contributes to disclosure of the *epistemological aspect* of each worldview; Kohlberg's (1984) model of moral development contributes to our understanding of the *axiological aspect*; while Cook-Greuter's (1999) model of human self-identity generates insight into the *anthropological aspect*. The distinct developmental trajectories disclosed by the above researchers thus appear to coincide with discrete ontological, epistemological, axiological, anthropological, and societal visionary aspects of each of the major worldviews.

Having discussed the general contours and foundations of the IWF, we will turn to address the application of this model to communications in service of building solutions to our pressing ecological and social challenges.

APPLYING THE IWF FOR REFLEXIVE COMMUNICATIVE ACTION

In this section we will demonstrate the practical value of the IWF, by applying it to climate communications. In this context, the IWF serves three major purposes. First, the IWF can serve greater self-reflexivity vis-à-vis policymakers and communicators' own worldviews. Such self-reflexivity appears to be essential for effective climate communications. Second, we argue that the IWF can serve as an analytical tool to foster greater understanding of worldview dynamics at play in sustainability debates and issues, as well as in societal dynamics at large. Such an understanding of the worldviews operating among stakeholders or segments of the population appears to be essential to generate effective policies and communications. Third, the IWF can serve as a kind of scaffolding for the process of crafting effective communications by tailoring them to resonate with the cognitive and motivational flows of the various worldviews. We now discuss each of these three major functions of the IWF in relation to aiding "reflexive communicative action" for sustainable climate solutions.

The IWF as Heuristic for Cultural and Psychological Self-Reflexivity

As several authors have argued, greater self-reflexivity is an essential prerequisite for crafting effective communications in service of solutions to complex social-ecological challenges such as climate change. Such self-reflexivity, in our view, can be conceptualized as having two dimensions: the cultural and psychological.

Cultural self-reflexivity has to do with the critical examination of the collective, cultural, or intersubjective elements of the worldview(s) that one is embedded in. In this context, it has been argued that the lack of reflection on the dominant framing around global environmental issues such as climate change is problematic for communication strategies (De Boer, Wardekker, & Van der Sluijs, 2010; Nisbet, 2009; O'Brien et al., 2010). For example, Shellenberger and Nordhaus (2004, p. 7) accuse the American environmental movement of "failing to question their most basic assumptions about the problem and the solution" (p. 7)—notably the assumption that the problem should be framed as environmental. According to these authors, "the environment" is a category that reinforces the idea that the environment is a separate thing that humans are set apart from and superior to. Framing the problem as environmental also may tend to reinforce a proclivity to understand it as a special-interest issue, rather than one that is potentially relevant for everyone's basic safety, security, and (economic) well-being—that is, an issue that is relevant to basic concerns of everyone.[16] Thus, as these authors illustrate, all too often environmental communicators appear to reflect a lack of self-reflexivity—that is, they are unconscious of the position of their own worldview within the larger ecology of worldviews, thereby inadvertently rendering it paradigmatic and projecting it onto others.

The problematic nature of such an approach reveals itself in practice when, for example, environmental groups concerned with climate change highlight the perilous plight of the polar bear as the clarion call for action. In our view, such a narrative is likely to be appealing mostly to the limited segment of the public sphere that inhabits a postmodern worldview, since this worldview is constituted by a worldcentric self-understanding (in the *anthropology* aspect) that includes, and therefore tends to care for, nonhuman species such as polar bears, on a global scale. People with this worldview are thus much more likely to be compelled by the (worldcentric) environmental values that such a communication presupposes. Employing such a strategy may significantly limit the potential for climate communications to achieve widespread impact and even generate negative associations for certain population segments, actually alienating them from further engagement with these issues (e.g., "Why are those environmentalists so worried about polar bears, when I and so many others are unemployed and struggling to make ends meet?"). In daily language, this well-known phenomenon of worldview-groups most effectively communicating their messages to those who already tend to agree with them is called "preaching to the choir." As several authors (e.g., Nisbet, 2009; Shellenberger & Nordhaus, 2004) contend, insufficient cultural self-reflexivity appears to be widespread within the contemporary

context of climate communications and may be an important mechanism contributing to the lack of large-scale behavioral change and the various gridlock dynamics that tend to dominate stakeholder negotiations.

Therefore, decision-making and communication processes may potentially benefit from making worldviews more transparent and promoting systematic reflection on them—that is, engaging in a process of cultural self-reflexivity. Such cultural self-reflexivity may contribute to the use of a more comprehensive repertoire of methods and tools, and may enable policy-makers to avoid locking in on nonreflected frames (see also De Boer et al., 2010). For that reason, we suggest that communicators, strategists, and policymakers engage in a reflective inquiry with an eye for self-assessment of their own predominant worldview structure. One way this can be done is by investigating, reflecting on, and dialoging about one's answers to the exemplary worldview questions in Table 12.1, and by reading through the aspects of each worldview as denoted in Figure 12.1, noting patterns of resonance or dissonance between the structural descriptors and one's own felt sense of one's predominant assumptions and values.

In addition to its cultural variant, greater *psychological self-reflexivity*, or self-reflexivity on a more personal and emotional level, is essential, as Moser (2007) argues:

> Maybe the first insight is for communicators themselves to acknowledge their own emotional responses to environmental degradation and society's responses. Many choose to work on climate change because of deep passions and emotional, identity- and value-driven motivations, and thus are likely to experience strong emotional reactions. (p. 72)

Such reflexivity is highly beneficial, as "unacknowledged feelings among communicators can lead to the impulsive, frustrated, or at least unskillful use of threat and guilt appeals which are unpredictable at best and counterproductive at worst" (Moser, 2007, p. 72). For example, it seems likely that environmental communications appealing predominantly to the psychology of fear (e.g., apocalyptic predictions or scenarios, however realistic and well-founded they may be) may reflect, in part, a projection of the communicator's own fears, in the absence of sufficient psychological self-reflexivity.[17]

Such unacknowledged feelings and judgments may also pertain to whole worldview structures. Take, for example, the frequent, wholesale postmodern environmental disdain for the modern worldview's proclivity toward corporate enterprise, which fails to acknowledge any positive value that this proclivity has also brought forth alongside its ecologically destructive and socially oppressive

consequences.[18] Becoming aware of and reflecting on such unacknowledged feelings and judgments is a crucial step toward generating authentic empathy, mutual understanding, and effective communications with other worldview audiences. The process of working through these blockages and judgments in relation to various worldviews is a crucial form of vertical *intrapsychic integration* (N. H. Hedlund, 2008). If communicators cannot take the perspective of another worldview, this is probably a sign that they need to cultivate a greater capacity for mutual understanding—that is, the capacity to inhabit and empathetically resonate with divergent worldviews. This capacity, as several authors argue, is a necessary prerequisite for engaging in communications that foster coordination, bridge divisions, synthesize positions, and synergistically align perspectives toward common goals and win-win solutions (Brown & Riedy, 2006; Esbjörn-Hargens & Zimmerman, 2009). However, to engage other worldview audiences from such a place of authentically wanting to understand and resonate with (rather than change) them, one will need to *bracket* one's own positions (or practice epoché, as the phenomenologists call it; see e.g. Moustakas, 1994) and be open to *being changed* or changing oneself. It is precisely this openness that potentially allows the outcome of the encounter to become truly participatory, emergent, and mutually transformative. In short, such psychological self-reflexivity and integration will generally support one to communicate in a more whole, empathic way that engages people more deeply and personally (see also Moser, 2007), and therefore more effectively fosters climate solutions.

The IWF as an Analytical Tool for Understanding Worldview Dynamics in Society

Next to greater self-reflexivity, the IWF can also serve as an analytical tool to foster greater understanding of the worldview dynamics at play in climate and sustainability debates, as well as in society at large. An understanding of the worldviews operating in particular target segments of the public sphere appears to be essential to generate effective policies and communications. As many studies suggest, research into the values and views of specific populations is necessary to generate effective interventions and communications (see e.g. McKenzie-Mohr & Smith, 2008; Steg & Vlek, 2009). However, in our view, an overarching framework like the IWF, which synthesizes existing research across multiple disciplines, may effectively disclose the general contours of the values and views of the primary subculture populations in the West. By providing a backdrop that

can guide researchers in mapping a highly complex social landscape, the IWF can potentially augment and/or scaffold the need to conduct further research.

We will now briefly illustrate how this framework may facilitate better understanding of (environmental) controversies, by using the example of the complex debate around biotechnology, and its potential merits and risks in terms of sustainable development (De Witt et al., 2015).[19] Several studies suggest that the various positions and opinions that the public holds toward industrial biotechnology can be understood in terms of larger cultural patterns or worldviews. While often attempts are made to understand societal responses to such complex debates in terms of a simple binary of "for" or "against," "supporters" or "objectors," a deeper inquiry reveals that both of these positions may be founded on very different values and styles of reasoning. For example, objectors appear to have very diverse arguments for eschewing vaccinations, ranging from religious arguments and rejection of government overreach in the name of individual freedom (associated with a traditional worldview), to appraising risks based on a "holistic" understanding of body and mind and distrust grounded in the view that mainstream medicine is too entangled with the (profit-driven) pharmaceutical industry (associated with a postmodern or integrative worldview).

Similarly, in a Europe-wide study, two different patterns of resistance against biotechnology were found, which from the perspective of the IWF could be characterized as *traditional* and *postmodern* forms of skepticism. The data showed that the different groups of skeptics were not only characterized by demographics (age, education level, residence), but also by their political, religious, and value orientations. As the authors of this study argued, "modern biotechnology is commonly confronted by both a 'pre'-industrial critique of intervention in 'nature's order,' as well as a 'post'-industrial critique of the potential risks involved with the new technology" (Nielsen, Jelsøe, & Öhman, 2002, p. 192). While the traditionalists appear to be critical on a more principled, a priori basis, the postmoderns tend to demonstrate a more pragmatic orientation, emphasizing that intervention in nature through biotechnology is not reprehensible per se, but that it instead depends on conditions and circumstances, such as potential risks, perceived benefits, and the regulations in place. Moreover, the results also showed that while postmoderns tended to trust NGOs such as environmental and consumer organizations, traditionalists were less sure whom to trust, generally placing more trust in medical authorities, and in some Catholic countries, in religious organizations. Postmoderns also displayed a much higher level of active participation in the biotechnology discourse, generally pleading for regulation

of the industry, labeling of genetically modified foods, and public consultation (Nielsen et al., 2002).

Thus, individuals with a traditional worldview may be sceptical of industrial biotechnology because technological intervention in nature is seen as a priori unacceptable—since there tends to be a belief in a natural, God-created order that humans should not interfere in ("Mankind has no right to play God!"). On the other hand, individuals with a more ideal-typically postmodern worldview may be sceptical because of the risks and uncertainties that are hard to oversee—nature is conceptualized as a complexly interrelated, somewhat fragile, set of systems (Nielsen, Jelsøe, & Öhman, 2002; see also Thompson, Ellis, & Wildavsky, 1990). In contrast, individuals with a more modern worldview may exhibit more trust in science and technology and have fewer problems with interfering in nature, frequently displaying a technological optimism, or techno-trust, that assumes that environmental problems and other risks will be solved or managed through the further development of science and technology (Hedlund-de Witt et al., 2014; Koppejan & Asveld, 2011).

The IWF as Scaffolding for Effective Climate Communications and Solutions

The IWF can also function as a kind of general scaffolding to support the crafting of effective climate communications. As communication research has contended, to be effective, messages need to resonate with the worldviews—that is, the assumptions, values, and visions—of the audiences that they aim to convince or inspire (McKenzie-Mohr & Smith, 2008; Moser & Dilling, 2007; Nisbet, 2009). Next to the importance of resonating with the audience's worldviews and values, many researchers have emphasized the importance of communicating positive and *empowering* values and aspirations (Moser & Dilling, 2007). In this context, it has been argued that many communication strategies around environmental issues are problematic, because they aim to increase the sense of urgency through fear, guilt, or shame appeals (which, according to the majority of studies, tends to be counterproductive except for under specific circumstances; see Moser, 2007), or because they tend to be overly technical, dry, or scientific (Lappé, 2011; Leiserowitz, 2007). Futerra (2005, 2009) therefore speaks of the need to articulate a compelling *vision*, as communications about sustainable development need to be associated with the positive aspirations, values, and worldviews of the target audience—just as traditional marketing does. Other authors have

argued that communicators need to tap into culturally resonant, positive, empowering values and personal aspirations, and "envision a future worth fighting for" (Lappé, 2011; McKenzie-Mohr & Smith, 2008; Moser, 2007; Moser & Dilling, 2007; Shellenberger & Nordhaus, 2004). Thus, communications appear to be more successful when they are vision- and value-driven rather than problem-centered, precisely because it is through (positive) values that approaches can connect to what motivates people and what is important to them (Schösler & Hedlund-de Witt, 2012). Developing and articulating an inspiring vision for the future that appeals to multiple worldview structures therefore demands a careful and detailed exploration of the different values and views that are the motivational drivers behind the solutions, policies, or strategies that one is trying to advocate. Such an exploration has the extra advantage of inviting strategists and policymakers to examine their strategies and solutions with more critical awareness and from a multiplicity of perspectives rather than merely their own, possibly facilitating greater *policy-reflexivity* (see e.g. Huitema et al., 2011; PBL, 2004). As we have described above, the IWF can serve this reflexive process, and may generate a greater understanding of what drives other worldview groups.

Communicators thus can use the IWF to investigate and reflect on what is valued and what is experienced to be inspiring by multiple worldview audiences. Generally, it is important to tailor communications to resonate with and appeal to the enduring elements of the multiple worldviews, thereby as much as possible averting the alienation of later worldviews. For example, when one appeals to the more universal, religious, or spiritual core of a traditional worldview rather than to their more dogmatic, ethnocentric, and authoritarian expressions, this is likely to be more respected and potentially even well received by modern and postmodern worldview audiences, while a more authoritarian and ethnocentric religious dogmatism will tend not to engender such a response. Conversely, when reason and science are invoked as important yet partial modes of knowing that can be complemented by faith and religiosity, rather than panaceas that eradicate the need for faith, individuals inhabiting a traditional worldview will probably be more receptive to such communications (see also Jürgen Habermas, 2010).

Generally speaking, while the *transitional* aspects of worldviews tend to give rise to conflict and polarization with other worldviews, the *enduring* aspects tend to be more compatible with the content and preferences of other worldview structures. It is therefore preferable to craft messages that prioritize an appeal to the enduring aspects of earlier worldviews, as these elements will be largely maintained in subsequent development and thus later worldview audiences will find them relatively easy to resonate with, whereas the converse is not true (that

is, the enduring aspects of the later worldviews may not resonate for the earlier worldviews). Moreover, in a Maslowian manner, when those with earlier worldviews feel assured that their fundamental needs and values are addressed, they are more likely to be open to other values and needs.

To illustrate the strategy of crafting communications that appeal simultaneously to the enduring elements of multiple worldviews, consider the following hypothetical example of a campaign to address climate change by advancing renewable energy and efficiency technologies.[21] One could begin by emphasizing the values of increased homeland security and personal safety, as a result of greater energy independence and less reliance on foreign oil from politically unstable regions (e.g., the Middle East). Such a strategy then draws on traditional values, which, in their enduring form, tend to have widespread appeal (i.e., everybody generally can resonate with the need for safety and security). Additionally, the notion of energy independence often resonates with the traditional worldview's proclivity to express ethnocentric values through identification on the level of the nation-state and a primary concern for one's own national interests and autonomy (see e.g. Beck & Cowan, 1996; Cook-Greuter, 2000, 2002). Such traditionalist forms of nationalism are often amenable to the idea of domestic ownership and control over energy production. One could then build on these traditional values and integrate key modernist values by highlighting the potential economic advantages, such as increased competitive advantage, innovation, job creation, profit, and overall economic growth—all as results of investments in renewable energy. Furthermore, one could emphasize the benefits in relation to climate change, such as biodiversity, the environment, global solidarity, and social justice, which tend to be more valued by more postmodern audiences. Lastly, for certain niche audiences, it might be skillful to underscore the ways in which such an initiative may serve the transformation of humanity's relationship to the environment and contribute to the emergence of a flourishing planetary society, thereby resonating with the emerging integrative worldview. See Figure 12.1 for an example of such a tailored communications strategy.

When policies, strategies, and communications are crafted to effectively resonate with the intrinsic motivational flows of each worldview, meeting them where they are rather than implicitly demanding that they identify with various assumptions and values associated with a different worldview, one is practicing effective *translation*, or *structural assimilation*, to borrow the term used by Piaget (Piaget & Inhelder, 2000/1969). This is the practice of effectively translating a message into language that resonates with, and is appropriate for, the intended audience's "native" worldview in its already-existing structure. Simply put, it means

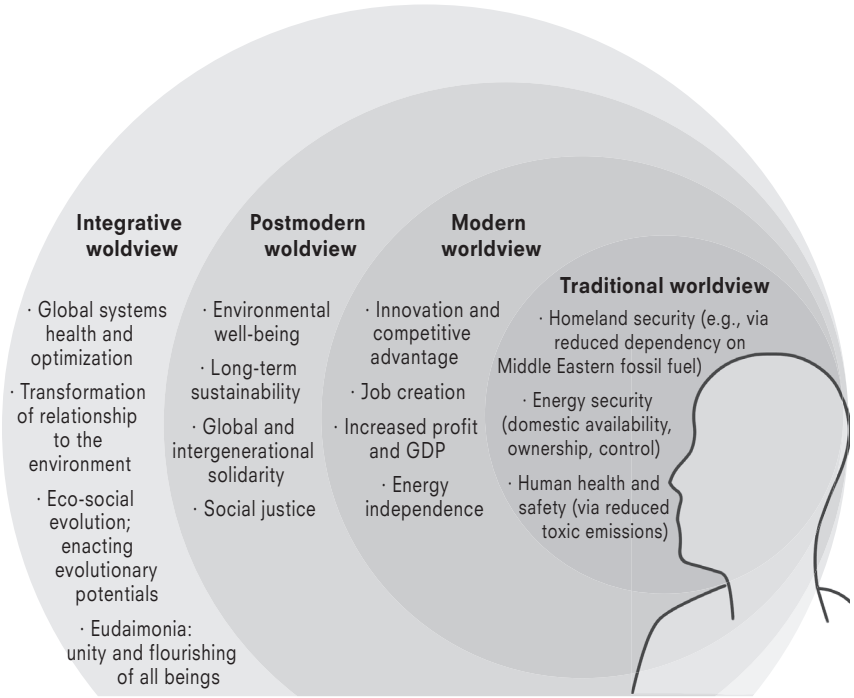

Figure 12.1. Example of Framing Communications for Renewable Energy Initiatives to Multiple Worldviews

crafting a communication (or, for that matter, developing a strategy, campaign, or policy proposal) in such a way that it resonates and aligns with the audience's core view of the world. In contrast, *transformation*, or what Piaget calls *structural accommodation*, consists of attempting to use the communicative act as a practice to change the receiver's worldview. In effect, this amounts to an attempt to transform the worldview of the receiving audience. Due to complex ethical as well as pragmatic questions associated with this last strategy, we will not discuss this further here.[22] In general, we suggest communicators employ a translation strategy, as we think individuals have the right to be where they are in terms of their predominant worldview, and should be respected and honored as such. Through translation, communicators can focus on creating supportive conditions for people to express the enduring potentials and values of their worldviews.

We also argue that strategies, initiatives, and communications should be developed and framed in a way that, as much as possible, synergizes the different worldview and value orientations, rather than focusing on the views and values of one group and opposing or omitting the rest. For example, Shellenberger and Nordhaus (2004) propose a way to address "environmental" issues—which

can be understood as a predominantly, though not exclusively, postmodern concern—that synergizes them with core values of the larger public, such as traditional family values, or modern technological innovation and competition values (see also Dilling & Farhar, 2007). In a similar vein, framing theorists have explored multiple frames—such as social progress, economic development and competiveness, morality and ethics, public accountability and governance—that can be used to synergize the interests and aims of the communicators with those of the larger public (De Boer et al., 2010; Nisbet, 2009). Precisely because most environmental issues are complex and multifaceted, their proposed solutions tend to be viable for syntheses that appeal to multiple value orientations or worldview audiences.

The following example illustrates how a sustainability initiative can appeal to multiple worldviews and can thus be communicated in a synergistic fashion. In studying the emerging values and views of the organic and "Slow Food" movements—the forerunners of the transition to a more sustainable, plant-centered, organic/local diet—it was found that individuals associated with these movements tend to be inspired by a pluriform value palette, which appears to be potentially compelling to multiple subcultures and worldview audiences (Schösler & Hedlund-de Witt, 2012). This value palette ranged from more traditional values (such as an emphasis on and appreciation for family-owned farms; local livelihoods; traditional production methods; simple, seasonal, artisanal foods produced and prepared according to grandmother's recipes; strong social ties between producer and consumer), to modern values (flourishing economies; the pleasure of taste; high-quality foods; abundance and variety; experimentation and innovation; health and nutrition), to postmodern values (environmental well-being; animal welfare; pure, natural foods and mindful eating; food choices as an expression of one's individuality; vitality and holistic health). These various value sets can all potentially be highlighted in a synergistic communication strategy, foregrounding and backgrounding certain of them depending on the particular audience.

DISCUSSION AND CONCLUSION

As stated in the introduction, the aim of this chapter is to explore how insight into the nature and structure of the predominant worldviews in the West can be applied to communicative action and policy-making for climate solutions. In the second section we defined our key terms—notably the concept of worldview—and articulated the philosophical foundations of our understanding and usage of

these terms. In the next section we introduced the integrative worldview framework (IWF)—a generalized, orienting, heuristic framework for understanding and investigating both the different aspects of worldviews and the general contours of the predominant worldviews in the West—referred to as traditional, modern, postmodern, and integrative. In the subsequent section, we demonstrated how this framework is relevant in the context of climate communications, serving as: (1) an heuristic for cultural and psychological self-reflexivity, (2) an analytical tool for understanding worldview dynamics in society, and (3) a scaffolding for effective climate communications and solutions.

However, while we feel that the IWF holds the potential to empower individuals and organizations to work with the crucial but oft-overlooked interior realities of worldviews and their complex interrelations more effectively, the IWF is explicitly intended as a provisional conceptual framework or orienting heuristic that can advance our investigation and understanding of worldviews and their dynamics, rather than as a rigid or reified model with which to categorize and label people, stakeholders, or organizations. Indeed, the real-world empirical terrain of our contemporary social landscape is highly complex and messy, and is not readily disclosed in a comprehensive manner by any conceptual framework. Rather than aiming to fully describe, explain, or predict this complexity, the IWF aspires to highlight its most salient patterns, helping one to navigate it. As the saying goes, the map is not the territory. However, a good map can be extremely useful in navigating the territory! Moreover, although we emphasize (an understanding of) worldviews as a critically important element in any sustainability or climate-change policy, strategy, and communication, we are aware that other dimensions of reality—behavioral, political, institutional, socioeconomic, et cetera—deserve equal consideration.

To be sure, further research into the IWF is needed, with respect to both the framework itself and its concrete application in various contexts. Further empirical investigation and validation of the different worldview aspects (for example, ontology, epistemology, axiology) and their interrelationships are needed. For example, the extent to which the various aspects of each worldview tend to "hang together" or correlate within individuals or stakeholder groups remains to be empirically explored in a robust manner. Furthermore, the development of a rigorous psychometric assessment that can obtain high degrees of validity and reliability is crucial for the theoretical development of the IWF (for a first, reasonably succesful attempt at developing such a psychometric see De Witt et al., 2016). In addition, there are many domains of further research where the IWF could fruitfully be applied as an orienting heuristic. For example,

the framework could be applied to explore the scientific, public, and policy debates around climate change, using the IWF as heuristic for analyzing the various voices and positions in these debates with greater nuance and depth (see e.g., De Witt, 2015; Hedlund-de Witt, 2014b). Such research projects will probably expose areas in the IWF that need further theoretical development, leading to its refinement, augmenting the framework in an iterative manner, and demonstrating how and in which contexts it can be best applied.

Despite the aforementioned complexities and the arduous work of successfully applying the IWF within the real-world context of disagreement and gridlock, we hope that the framework, as outlined in this chapter, might contribute to fostering greater self-reflexivity among communicators and policymakers, greater understanding of the intricate interrelationships within and between worldviews, and constructive communication and cooperation across various worldview perspectives in service of climate solutions and global flourishing.

NOTES

1. Communication can be understood here in the sense of Habermas' (1987) communicative action: communication based on deliberation and dialogue oriented toward the establishment of greater mutual understanding.

2. It should be noted, however, that mutual understanding here does not mean that social actors need to achieve comprehensive agreement or share the same worldview. As Hajer (1995) and Hajer and Versteeg (2005) argue, actors who can be proven to not fully understand each other can nonetheless produce meaningful political interventions. According to these authors, misunderstanding can actually be functional for creating a political coalition. So while we tend to highlight the benefits of mutual understanding—that is, actors who inhabit divergent perspectives coming into real human contact and empathizing with each other—we are aware that misunderstanding can also potentially be generative.

3. To address global issues such as climate change, we need a global perspective on worldviews, and a global understanding of them. However, while some of the foundational theories drawn on in the formulation of the IWF (e.g., Inglehart's World Values Surveys, Piaget's genetic epistemology) have been empirically demonstrated to be largely valid across cultures, the IWF itself, as a synthetic construct, has only been substantiated by data (based on survey research and in-depth interviews) derived from a Western context (De Witt et al., 2016; Hedlund-de Witt, 2013a, 2014a). Thus, while we hypothesize that the

framework refers to deep structural worldviews, as opposed to culturally relative surface structures, this has not been explored to date. It is nonetheless important to note that the present context-specificity of the IWF implies a number of limitations in attempting to apply it outside of the West.

4. However, this is not to suggest that reality itself is fundamentally contingent on worldviews and their epistemic-hermeneutic functions; in our view, aspects of reality (e.g., generative mechanisms, structures) exist as such, independent of and anterior to interpretation and construal via worldviews (for a more in-depth discussion of this issue see N. Hedlund, 2015, in press).

5. It is worth noting that, while it is defined in a variety of ways across a number of contexts, the notion of ideology often evokes Marxist connotations. For the Marxist tradition, ideology is a fundamentally distorted way of viewing the world that essentially functions to serve (and mask) the interests of the dominant class while maintaining various oppressive and alienating dynamics for the subordinate classes (that is, the ideas of the dominant class are the dominant ideas) (Edgar, 2008). However, beyond this more critical perspective, it is possible to define ideology more neutrally. For example, ideology can be defined as "a fairly coherent and comprehensive set of ideas that explains and evaluates social conditions, helps people understand their place in society, and provides a program for social and political action" (Ball & Dagger, 1991, p. 8, quoted in Luftig, 2009, p. 48). Thus, one might say that ideologies are principally about translating ideas into social and political action—they are sets of ideas used to mobilize the masses.

6. In general, the concept of worldview intrinsically seems to suggest an understanding of and commitment to judgmental relativity, that is, an awareness of the existence and potential validity of other worldview perspectives (e.g., Wolters, 1989). However, as Sean Kelly (personal communication, August 13, 2013) underscored, a worldview can also function as an unconscious pre-given, which is generally just as resistant to contradiction as ideology. This possibility that one's worldview persists as an unconscious pre-given points to the potential for the worldview concept to foster reflexivity and heightened consciousness with respect to one's own worldview perspective and its niche within a larger ecology of worldviews.

7. The concept of worldview (*Weltanschauung)* was coined by Kant (1790/1968), in his *Critique of Judgment*, referring to the universal human structures that inform our cognition and perception and thereby create our phenomenal reality. However, the concept in its contemporary meaning—emphasizing the diversity between human beings and their cultures, as well as

these culture's own (individual) volition and agency with regard to this diversity—is much newer (Naugle, 2002). As several other authors have argued, "the construct is inherently postmodern in its implicit position that reality is, at least to some extent, subjectively constructed rather than objectively universal in its totality" (Koltko-Rivera, 2004, p. 8; see also Wolters, 1989).

8. Because, as Taylor (1989, p. 27) argues, overarching frameworks are the structures through which we make sense of our lives morally and spiritually (see also Spretnak, 1999).

9. Such an approach has, in our eyes rightfully, been deconstructed by (notably postmodern) philosophers, anthropologists, and sociologists alike, mainly because of its Eurocentric, neocolonial, and derogatory implications, and its commitment to an oversimplified ontological parsimony that is out of step with the complexities and messiness of the empirical evidence (see e.g. Ferguson, 2002; Marshall, 1998).

10. This also implies that the later stages of development are not univocally "better"—morally or otherwise. Habermas (1976, p. 164) speaks of the *dialectics of progress* in this context, observing that "evolutionarily important innovations mean not only a new level of learning but a new problem situation as well, that is, a new category of burdens that accompany the new social formation" (p. 164). Moreover, as Kegan (1982) argues, "A developmental perspective naturally equips one to see the present in the context both of its antecedents and potential future, so that every phenomenon gets looked at not only in terms of its limits but its strengths" (1982, p. 30). Thus, despite what are in our eyes warranted (notably postmodern) critiques, part and parcel of our understanding of dialectical development is a critical distancing from the "growth to goodness" assumptions that have often plagued the discourse, and a concurrent differentiation between *descriptive* and *normative* dimensions of development (see e.g. Stein, 2012).

11. For example, Inglehart and Welzel (2005) observe that the cultural traditions that historically shaped a society show a lasting imprint on, and thus *interact* with, the developmental process of value change, rather than being immune to change or being completely overtaken by it.

12. Related to this is Inglehart and Welzel's (2005) argument that "cultural change is path dependent" (p. 20)—that is, although under certain (socioeconomic) life conditions systematic changes tend to take place in what people believe and what they want out of life, the influence of cultural traditions does not disappear. While values can and will change, they continue to reflect a society's cultural heritage.

13. Ray and Anderson (2000) use the terms *traditional*, *modern*, and *cultural creatives* to describe three predominant cultural groups discovered in their large-scale empirical research in the United States and Europe. Their terms "traditional," and "modern," roughly seem to correlate with the IWF's "traditional," and "modern" worldviews. However, we see Ray and Anderson's "cultural creatives" as a catchall term, where the IWF distinguishes between "postmodern" and "integrative."

14. Notably, Habermas draws explicit linkages or homologies between collective sociocultural evolution (*phylogeny*) and individual, psychological development (*ontogeny*). Habermas distinguishes a number of stages of collective cultural development, which he explicitly refers to as "worldviews," claiming that the pattern of development of individual identity is key to uncovering societal changes (Held, 1980). More specifically, Habermas links the individually focused findings of the Piagetian stream of developmental-structural psychology (i.e., Piaget, Loevinger, and Kohlberg) to the sphere of sociocultural evolution by observing that various stages of individual development undergird historical-structural transformations in the social domain (for example, in moral, legal, and political systems).

15. As Gardiner and Kosmitzki (2004, p. 123) state, "These stages have been studied from a cross-cultural perspective, and research evidence suggests that some aspects may be universal (the sequence of stages) while others (the stage of formal operations) may not" (p. 123). More specifically, most researchers in the field appear to agree that Piaget's stage-sequence and fundamental model is cross-culturally valid, yet this does not mean that all people in all cultures will reach his latest, formal operational stage.

16. O'Brien et al. (2010, p. 7) also question the accurateness and usefulness of framing climate change as an *environmental* problem, thereby giving rise to "a climate system that is separate and external to human activities," resulting in a managerial discourse that points to "institutional and policy failures as the ultimate cause of the problem, and technocratic interventions as the solution" (p. 7).

17. A notable example in this context is the work of Joanna Macy (2007), who, after participating in the environmental and peace movements for decades, developed a set of practices for environmentalists to foster emotional growth, teaching them to constructively work with their "negative" emotions (fear, anger, despair, sadness, etc.), thereby empowering them to avoid burnout and be more effective overall.

18. Ironically, this kind of disdain is almost exclusively found in advanced industrial societies characterized by, and built on, this kind of successful, modern corporate enterprise (Beck & Cowan, 1996).

19. In addition to the emerging bioeconomy, another interesting example could be noted here—in the context of recent U.S. presidential politics. The culture wars in the contemporary West, and notably the U.S., can be understood as a stark polarization between different worldviews (see also Koltko-Rivera, 2004). A telling instantiation of this dynamic is the following statement by 2012 U.S. Republican presidential nominee Mitt Romney: "President Obama promised to slow the rise of the oceans and to heal the planet. [Audience laughs]. My promise is to help you and your family." This quote, in our view, can be readily understood through the lens of the IWF, and highlights, as we have contended before, that environmental issues and climate change have frequently been conceptualized and communicated in a way that does not successfully convey their pertinence to the personal values and concerns of certain worldview audiences. For these people, the rising of the oceans can apparently be seen as laughable, because its direct connection to the security and well-being of themselves and their families appears to remain opaque. The notion and rhetoric of "stopping the rise of the oceans and healing the Earth"—in our eyes a statement that predominantly tends to appeal to a postmodern worldview audience—appears to be experienced by more traditional (and to a somewhat lesser extent modern) worldview audiences as, we would presume, an out-of-touch, highfalutin, abstract concern that is in sharp opposition with their own, much more urgent and down-to-earth familial and socioeconomic concerns. While for audiences with a (post)modern worldview, it appears to be more self-evident that the needs and interests of "you and your family" will ultimately depend on the health of the Earth (as the comedian Stephen Colbert humorously remarked in response to Romney's words: "How many of your families live on the planet?"), from a more traditional perspective, these relationships appear to be much less obvious.

20. Understanding these patterns of resistance to biotechnology in terms of a traditional and a postmodern worldview aligns better with some of these authors' own framings, because according to them, the "modern" group is characterized by "postmaterial values," and tends to articulate a "postindustrial" critique with respect to biotechnology. Additionally, in virtually every respect, the characteristics of this group align better with an ideal-typical postmodern worldview—their emphasis on uncertainty, systemic impacts, and unpredictability; their trust in nongovernmental and societal organizations; their politically left-wing inclination; their emphasis on the marginalization of certain interests; and their

distrust of corporations to adequately take care of societal interests and needs. It appears that because these authors study "resistance" to biotechnology, rather than the different positions with respect to biotechnology (thereby seemingly making the acceptance of biotechnology the implicit norm), the ideal-typically modern position tends to be overlooked. This example thereby underscores and illustrates how the IWF can support (heuristic) understanding of the larger currents and patterns in certain complex sustainability debates.

21. As an example of an initiative to advance renewable energy and efficiency on the level of a nation-state, see *Reinventing Fire* by Amory Lovins and the Rocky Mountain Institute (2011).

22. According to Brown and Riedy (2006, p. 6), "transformative communications face a major obstacle: people change their worldview rarely, and there is no clear understanding of how to catalyze that change" (p. 6). Harvard developmental psychologist, Robert Kegan (1982), points out in *The Evolving Self* that it takes approximately five years to change a worldview if the right conditions are present. Jane Loevinger (1977), a pioneer in understanding ego development (which is central to one's worldview), states that "Ego development is growth and there is no way to force it. One can only try to open doors" (p. 426).

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13

ECOVILLAGES

Bridges to Integral Community?

Karen T. Litfin

The next Buddha may take the form of a community.

—THICH NHAT HANH

HOMO SAPIENS IS AN ECOLOGICAL ODDITY: the species that separates itself from the whole—but only, as it turns out, in our own minds. In 1800, when the human population was one billion and most Europeans never reached their thirtieth birthday, the story of humanity's separation from—and domination over—nature made sense. Today, the dawning Anthropocene signals the end of nature. Likewise, the so-called individual, utterly reliant on a vast web of external ecosystems and internal microbial networks, is exposed as a biological fiction. The ironic denouement of modernity's story of separation, along with its ontological basis in individualism and its epistemological basis in scientific reductionism, is that we are not separate. Yet the unfolding crisis carries within itself the seeds of a new story. If independence and mastery were the bywords of the old story, interdependence and cooperation are the bywords of the new. The tapestry of reality turns out to be more intricately interwoven—in a word, more whole—than the mechanistic mind could ever have imagined. Depending on the perceived pace of cultural transformation relative to biospheric unraveling, this can be good news or bad. Taking the long view without being naive,

integral ecology embraces this pivotal moment as an opportunity for personal and cultural transformation, because the end of nature spells the end of a highly circumscribed construction of humanity.

Across their diversity, integral ecologies share three vital commitments, which in turn raise three vital questions. First, they highlight the subjective and intersubjective dimensions of environmental problems. In a world where materialistic explanations and solutions prevail, this commitment represents a radical point of departure. On this view, the untenable situation of exponential growth on a finite planet represents a crisis of meaning as much as a biophysical crisis, raising a foundational question: Who am I and who are we in relation to? By framing the current morass in evolutionary terms, integral ecologies raise a second question: How might we develop new modalities of human beingness? Third, integral ecologies share a commitment to integrality (i.e., to the wholeness of creation), both physically and metaphysically conceived. This wholeness opens up the possibility that we can consciously access the evolutionary intelligence that animates the cosmos for one simple reason: it also animates ourselves. The third question, then, is: How do we find our place within this complex wholeness?

As helpful as integral theory is as a prod to our thinking, the vital questions it raises must ultimately be answered with our lives, for it is our ways of living that are unraveling the fabric of life. If the integral vision remains merely conceptual, leaving our social and material lives untouched, then it hardly qualifies as integral. Taking to heart integral ecologies' three vital questions, we are compelled to answer the perennial human question: How, then, shall we live? After nearly 20 years of teaching international environmental politics and watching planetary conditions go from bad to worse, this question presses on me. For me, theorizing about planetary interdependence was simply not an integral practice. I wanted to find people who were devising ways of living that could work for the long haul, and who were doing this work individually and collectively, outwardly and inwardly. In other words, I set out looking for people who were practicing integral ecology—regardless of whether they used this language.

My search led me on a global journey to ecovillages, intentional communities at the leading edge of sustainable living. Ecovillages are springing up in tropical, temperate, and desert regions; among the rich and the very poor; in cities and the countryside. Their residents espouse beliefs rooted in each of the world's major religions, in paganism, and in atheism, as well in a spectrum of moral codes and spiritual worldviews. Over the course of nine months, I lived in 14 communities and did in-depth interviews with 140 ecovillagers. The smallest,

Los Angeles Ecovillage, had 40 members; the largest, Auroville,[1] had a population of about 2,000.

Across this diversity, ecovillagers share the following basic perceptions about the world:

- The web of life is sacred, and humanity is an integral part of that web.
- Global environmental trends are approaching a crisis point.
- Positive change will come primarily from the bottom up.
- Community is an adventure in relational living—ecologically, socially, and psychologically.

As a consequence of these beliefs, ecovillagers are unusually sensitive to the consequences of their actions, both near and far, and unusually open to sharing. If I had to choose one word to express the essence of ecovillage culture, it would be *sharing*.

Because ecovillages share material resources, their per capita consumption and their incomes tend to be far lower than their home country averages. Yet their cultural life exudes a sense of abundance, not poverty, rooted in the kinds of intangible sharing—knowledge and skills, joys and sorrows, births and deaths—that are the essence of community. Human relationships, therefore, are the foundation for ecological sustainability. Yet these also make ecovillage life challenging.

Sustainability, the overarching commitment of ecovillages, is sometimes depicted as a stool with three legs: ecology, economy, and society. While this metaphor is helpful in moving beyond a narrow biophysical understanding, the three-legged stool sidesteps the inner dimension of sustainability, the perennial questions of meaning and cosmological belonging that have informed human existence for ages. Leaving aside the age-old debate between materialism and idealism, few would dispute the fact that our inner lives—our beliefs, feelings, and narratives—strongly condition our actions, policies, and technologies. Perhaps one of the most significant contributions of integral ecologies is that they highlight this crucial (albeit elusive) subjective and intersubjective dimension of sustainability—consciousness.

Consequently, I prefer to represent sustainability as a house with four windows: ecology, economics, community, and consciousness (E2C2). Each window faces a different direction, thereby presenting a distinctive angle while also disclosing a view of the other three windows. In their holistic approach to sustainability, ecovillages are particularly comprehensible through the fourfold lens of E2C2, but it can illuminate any human endeavor. Like cultures everywhere, ecovillages

tends to highlight certain elements of E2C2 over others, yet each window affords an essential view into each community.

Given the strongly integrative nature of ecovillage life, E2C2 takes on a dynamic, self-reinforcing character, with the light from one window reflecting and refracting the light from the others. Sieben Linden's ecological focus, for instance, is primary, but members' differences about what that means for everyday life prompted them to take up various psychological and spiritual practices. And for self-identified spiritual communities like Findhorn, Damanhur, and Auroville, consciousness is the very soil from which their ecological, social, and economic practices grow. These communities are of particular interest because they aspire to be integral communities. In other words, they aspire to the realization and embodiment of a subjective and intersubjective state of integration.

E2C2 resembles Ken Wilber's (1995) version of integral theory's four-quadrant model, but it is distinct. Like the AQAL model, E2C2 recognizes the objective and subjective dimensions and the individual and collective dimensions of life. E2 (ecology and economics) depicts the right-hand quadrants—the objective worlds of ecosystems and material exchange, while C2 (community and consciousness) aligns with the left-hand quadrants of collective and individual interiorities. Yet as the image of a four-windowed house suggests, E2C2 is not so easily disaggregated—particularly in practical matters. In approaching the question of how we shall live, E2C2 gives us more traction than the AQAL map, because, rather than four abstractions, it offers four substantive windows through which to ask and answer the question. In a very practical way, we can ask how a community lives ecologically, economically, and in the fields of individual and collective consciousness. The fact that ecovillages can be viewed through these four windows, however, does not make them integral communities; indeed, even hydraulic fracturing can be viewed in light of E2C2!

In highlighting interiority, the AQAL model offers a helpful antidote to flatland materialism (Wilber, 1995). Yet AQAL is a mental construct—albeit a fairly comprehensive one—not a literal depiction of reality. While the taxonomic mind might lean on the double dichotomies of inner/outer and individual/collective, the larger mind that intuits an implicit wholeness at the heart of things can never be satisfied with a grid-based model of reality. Surely mind and body are not so easily differentiated, nor, as most social scientists acknowledge, is the individual ever distinct from social context. And if we shift our inquiry to everyday experience, the lines separating the quadrants blur even further. In which quadrant, for instance, does commerce fall? Or driving? Or breakfast? An integral theorist might respond that this is precisely the point: every phenomenon can be analyzed

in terms of each quadrant. Yet this response itself reveals the truth of the matter. The four quadrants are analytical constructs. In the real world, the quadrants are never distinct, nor can they capture the wholeness of reality. Attending to each of the quadrants might be a helpful practice in moving toward wholeness, but such a practice neither constitutes nor confers integrality.

Drawing from Sri Aurobindo's notion of gnostic community, I see integral community as a tremendous developmental achievement encompassing the inner realization and outer embodiment of the oneness at the heart of existence by a collective and its individuals. Such a community would function from a unified collective consciousness that transcended and included the core individuality of its members. This, I believe, is the meaning of Thich Nhat Hanh's statement about the next Buddha. Our efforts toward such a community, he adds, "may be the most important thing we can do for the wellbeing of humanity and the earth." To my mind, an integral community would synthesize every plane of human experience—the heights and depths, the inner and outer life, and the awakened individuality and collectivity, placing these at the service of the whole.

Whether or not the Buddhist monk's prognosis is correct, there is strong evidence that the two master agendas of our time, the inner transformation of consciousness and the outer exigencies of global justice and sustainability, are converging. Within ecovillages, this convergence takes the form of a heightened sensitivity to the integration of the inner and the outer—the psychological and social, the economic and ecological, the material and spiritual dimensions of life—in service to the larger whole. Yet, as some essays in this volume note, integrative is not the same thing as integral. While ecovillages take an integrative approach to E2C2, most do not aim to become integral communities. By virtue of their intensely integrative approach, however, they are laying the foundation for this possibility.

This essay suggests that ecovillages—particularly those with a collective approach to inner life—can be viewed as embryonic integral communities. This thesis is a sequel to my recent book, which depicts ecovillages as evolutionary laboratories running collective experiments in every realm of life, from agriculture and natural building to interpersonal and even interspecies communication (Litfin, 2013). A central claim of that book is that the "scientists" in these laboratories are not disinterested observers. To the contrary: every ecovillager I interviewed reported extraordinary personal growth through their experiments. Their accounts suggest that when people come together to transform their material and social landscape, they simultaneously enrich their inner landscape; in so doing, they open up new material and social possibilities. Whether their language

is secular, religious, or spiritual, the journey entails much the same effort: the work of moving from a fragmented me-centered world to an integrated tapestry of social, ecological, and even cosmological relationships. The inner work is absolutely vital to the outer work—which, I believe, is equally true for those of us who may never visit an ecovillage. Whatever our metaphysical beliefs, sustainability turns out to be an inside job.

In the following section, I unpack the concept of integral community before turning to the larger question of how ecovillages could be relevant as forerunners to this possibility.

STAGES OF COMMUNITY

Drawing on the work of Susan Cook-Greuter (2002), Terri O'Fallon (2007) offers a developmental typology of communities ranging from premodern to postmodern. In traditional communities, conformity to rules and roles subsumes individual preference and belief. As examples, O'Fallon cites the Catholic Church and the rural immigrant farming community of her childhood. In the stage associated with modernity, adherence to tradition gives way to rationality, efficiency, goal orientation, and individual initiative. A modern person might belong to multiple goal-oriented communities (e.g., a sports team, a PTA, a company, a sales team, a diet club, a political party, or a self-help group). In each case, individuals' choices reflect their perceived interests. Over time, as one comes to see that one's "individuality" actually encompasses many selves and, like others' beliefs and opinions, is socially constructed, one begins to question goal orientation and even (perhaps) rationality itself. At this stage, postconventional communities emerge in which people engage with diverse perspectives and therefore reflect more deeply about their own ways of knowing. Here, the emphasis is more on process and insight than interests and goals. Examples might include therapeutic groups, cross-cultural encounters, and communicative salons such as World Café and Nonviolent Communication practice groups. According to O'Fallon, these three types of community—traditional, modern, and postmodern—can be found coexisting in many societies today.

O'Fallon (2007) suggests that once the capacity to distinguish between and accept these three kinds of community is established, the possibility of integral community emerges. For the first time, people can easily engage with mixed perspectives because "their identity is based on wholeness and integration of individual, collective, subjective and objective perspectives inclusive of the former levels" (p. 14).

Whether or not they are familiar with integral theory, these people have, through their own lived experience, internalized a map of the developmental territory. Seeing that every perspective—including their own—represents some facet of an unfolding wholeness, they embrace paradox and experience conflict as a means to expanded awareness. Individual and collective transformation go hand in hand. O'Fallon (drawing from Kegan, 1994) cites as examples the relational fields in which the Palestinian discovers her Israeli-ness, the rich man discovers his poverty, and the woman discovers her inner masculinity. While these communities are rare, they are becoming more common (Hochaka, 2005).

Rather than "integral," I prefer to call these communities "integrative" because their members do not generally live in a state of integral consciousness. Their focus on integrating the disparate dimensions of reality, however, makes them an intermediary step between postconventional and integral communities. Despite our different terminology, my research substantiates O'Fallon's (2007) central point. What I call the "integrative level" appears to be at the leading edge of community engagement. Moreover, we can expect this trend to continue as it seems to follow almost inexorably from the postconventional level.

In the next section, I examine the integrative strategies of ecovillages with a twofold aim. First, I illuminate the synergistic possibilities that emerge with a strongly integrative approach to E2C2. Second, I highlight the all-important and oft-neglected dimension of consciousness in igniting and realizing these possibilities. I have selected seven communities with an eye to these aims. Four are self-identified as spiritual (Auroville, Damanhur, Findhorn, and Konohana); one (Sarvodaya) is culturally interreligious with a cohesive spiritual worldview; one has an eclectic worldview, with much of the membership shifting over time from a secular to a spiritual worldview (Sieben Linden); and one is primarily secular (Svanholm). Focusing on the spiritual communities enables me to hone in on the interior dimensions of sustainability, including on how a transitional and a secular community facilitates comparative and developmental analysis. And the extraordinary geographic, cultural, and socioeconomic diversity of the seven ecovillages demonstrates the global character of integrative approaches to E2C2.

ECOVILLAGES AS INTEGRATIVE COMMUNITIES

The term *ecovillage* is relatively new to the popular lexicon, arriving at around the same time as the Internet. Yet the concept has deep historical roots in the ideals of self-sufficiency and spiritual inquiry that characterize monasteries and

Table 13.1. Ecovillages at a glance

Community	Country	Approximate Population (2012)	Landscape	Founding Date	Primary Worldview
Aurovilee	India	2,000	Rural	1968	Spiritual
Damanhur	Italy	1,000	Rural	1975	Spiritual
Findhorn	U.K.	600	Rural	1962	Spiritual, eclectic
Konohana	Japan	80	Rural	1994	Spiritual
Sarvodaya	Sri Lanka	15,000 traditional villages	Rural	1957	Interreligious
Sieben Linden	Germany	140	Rural	1997	Eclectic/ transitional
Svanholm	Denmark	140	Rural	1979	Secular

ashrams, the social movements of the 1960s and '70s, and (in the Third World) the participatory development movement (Dawson, 2006). While the communitarian impulse is an ancient one, the social alienation and creeping global ecological crisis of the late twentieth century spurred its growth and endowed it with a sense of urgency. In terms of O'Fallon's (2007) typology, ecovillages are almost by definition postconventional: their members have deliberately walked away from the hyper-individualism associated with consumer society.[2] Equally important, by adopting a lifestyle premised upon self-governance and sharing, they have committed themselves to a high degree of social and psychological process work. This left-hand quadrant work can serve as a tremendous developmental catalyst; on the other hand, it can also spell a community's painful demise. Diana Leafe-Christian, author of several books on communities, estimates that this is fate of perhaps 90 percent of all intentional community initiatives. My own sense is that the success rate is increasing, thanks in no small part to the smorgasbord of personal and interpersonal skills that has emerged in recent years. In any case, every ecovillage has its own distinctive culture, complete with spoken and unspoken rules, beliefs, practices, celebrations, and patterns of communication.

Beginning in the 1990s, these largely isolated initiatives began to coalesce as a global movement. At a 1991 conference in Denmark, Diane and Robert Gilman introduced the term *ecovillage*, which they defined as a human-scale, full-featured settlement in which human activities are harmlessly integrated into the natural world in a way that supports healthy human development and can be successfully continued into the indefinite future. In 1995, the first international ecovillage conference was held at Findhorn and the Global Ecovillage Network (GEN) was established. GEN's original vision—that new ecovillages would sprout like mushrooms—did not come about. Instead, the primary impact of ecovillages' global array of educational programs has been to make existing neighborhoods look more like ecovillages. Education is a vital aspect of eco-villages' integrative approach to sustainability and is itself implemented in an integrated fashion, through a learning-infused experience of ecovillage living. When ecovillages offer GEN's most popular course, Ecovillage Design Education, the community literally becomes the classroom.[3]

Through ecovillages' integrative approach to E2C2, we can see how the light from the window of consciousness is refracted through the other three windows. We can now catch a few glimpses of ecovillage life with an eye to how their inner work enlivens and magnifies their ecological, economic, and social work toward sustainability. The anecdotes are intended to be suggestive and evocative more than conclusive.

ECOLOGY

Imagination, the capacity to envision an alternative story, is a powerful impetus for social change. As tempting as it might be to focus on the picturesque qualities of ecovillages—their cob houses, solar panels, rainwater catchment—these are reflections of intangible stories and states of consciousness. Ecovillages are as much story-telling as ecological laboratories. Most are telling some variation of a simple but profound story that conveys both the current human predicament and its potential resolution. In a nutshell, the story is that, having come directly out of nature and thus being inseparable from it, we can forge a viable future by tapping into the evolutionary intelligence that brought us to our current juncture. While ecovillagers differ in how they describe and access this intelligence, they concur on the basic story line and that we must access a larger intelligence to guide us through these times. Thomas Berry (1999) calls this the Great Work of our time; Joanna Macy (2012) calls it the Great Turning. *Work* and *turning* describe where the story leads but not the story itself, which I prefer to call the

Great Unfoldment. The new story is essentially the narrative of cosmological and biological evolution retold in lyrical terms—and with a sense of urgency befitting the times. The Great Unfoldment unifies a range of apparent dichotomies: humanity and nature, biology and geology, and, for some, nature and spirit. Blending ancient wisdom with contemporary science, this story is cropping up all over the world; ecovillages are enacting it in a highly focused and integrated fashion.

Moving from a story of separation to one of belonging entails a transformation of consciousness. As it turns out, five of the communities I visited (Findhorn, Damanhur, Auroville, Sarvodaya, and Konohana) are first and foremost spiritual—not ecological—communities. Their spirituality is embodied and relational, aiming not for liberation from this world but rather for its transformation. Tellingly, the first four of these are also by far the largest communities I visited. Their tremendous dynamism suggests that a primary commitment to the interior dimensions of sustainability is a strong galvanizing force.

Because of its size and it age, Findhorn has been called the mama ecovillage, but in 1962, its three mystical founders did not have ecology on their minds. Rather, they were attuning to divine guidance through prayer and meditation and following this guidance wherever it led. Having never gardened, they were surprised to receive detailed instructions on soil building, planting, and harvesting from nature spirits. By the early 1970s, their astonishing harvests on Scotland's sandy, windswept soils brought scientists, the media, and thousands of young people to their doorstep. The founders left, but decades later, Findhorn's residents invoke their basic instruction, Attune to Spirit, Attune to Earth, in their daily meditations and work.

As part of a course called Experience Week I worked on Findhorn's seven-acre organic farm and experienced attunement and another community motto: work is love in action. During each morning's attunement circle, the farm's focalizer explained the day's tasks. In silently attuning to our specific task, the point was to discern not what we wanted but rather what we were called to do. Somehow there was always the right number of bodies for each job. We were encouraged to work in silence and to feel ourselves as one body. As I harvested beans and shoveled compost, I found myself reveling in the harmonious companionship of my coworkers. Each day, we were all astonished by how much we accomplished.

Half a world away, 15,000 traditional Sri Lankan villages work with Sarvodaya, a highly successful participatory development network whose full name, Sarvodaya Shramadana, means "the awakening of all through the sharing of labor." The basic premise is that by collaborating to meet their needs, villagers simultaneously

enhance their material, social, and spiritual well-being: "We build the road, and the road builds us." The wellspring of this ambitious work is a simple but powerful peace meditation.

One morning at Sarvodaya's headquarters in the sprawling city of Colombo, I struck up a conversation with the senior meditation instructor. Meditation, he explained, is more than a private matter; it is a dynamic force for progress. For Sarvodaya, social problems—war, poverty, environmental destruction, oppression of women—are rooted not in institutions or even behavior, but in consciousness. "Therefore," he said, "if we want to establish peace among ourselves and with nature, we must first establish peace in our own minds." Mr. Mahanama offered to teach me the peace meditation.

Arriving at Vishwa Niketan, Sarvodaya's meditation center in the afternoon heat, I soon felt worlds away from the noisy city. Mr. Mahanama gave me these instructions:

> Sitting in a comfortable position, silently honor your own religion or belief system. Recognize that every religion is a reflection of the truth.
>
> Now become present in the body and notice the mind relax. Gradually become aware of the in and out breath as it moves through your nostrils. Do not change the breath; only observe it. Notice that there is nothing you can call *I* or *mine* in this process. See that this air was and will be breathed by millions of sentient beings. So too are the warmth, the fluidity, and the hardness of the body all part of the universe. Feeling this connection to all life, realize that you cannot harm another without harming yourself.
>
> Watching the mind, notice how sensations, perceptions, volitions, and thoughts arise faster than lightning. Observe the stream of consciousness as it flows. By returning to the breath, notice the mind becoming still.
>
> Understanding that there is neither *me* nor *mine* in the body or in the thoughts, allow the entire world to grow closer to your heart. As loving-kindness and compassion fill your mind, extend these qualities to everyone: people you know and don't know; people you like and don't like; and finally to everyone and all beings. Allow this compassion to extend in all directions, and also to the past, present, and future.
>
> Through these waves of compassion, feel yourself connected to all things. Then quietly return the awareness to your body and your surroundings.

Rather than retreating into an otherworldly bliss, I felt myself embedded in a vibrant web of relationships, both human and nonhuman. In the ensuing days as I visited Sarvodaya's villages, I had a visceral reference point as people described the meditation's impact on their lives. I could only imagine the transformative potential of whole villages engaging in this practice as they dug wells, built schools, and learned organic farming together.

Across the Bay of Bengal, Auroville's pioneering ecological work is rooted in Sri Aurobindo's world-affirming spiritual injunction, "All life is yoga." Auroville's Earth Institute, for instance, has invented a hand-operated machine, the Aurum, to build comfortable and sustainable homes from compressed earth bricks. The bricks are made from soil unearthed for a building's foundation or wastewater treatment system. Auroville is dotted with hundreds of compressed-earth buildings. Their graceful domes and arches, often painted white on top to reflect the sun's rays, make them an inexpensive and beautiful solution to south India's scorching temperatures.

Mud bricks might not sound particularly spiritual, but for Sat Prem, director of the Earth Institute, they are. I attended his talk on earth building as a solution to the burgeoning influx of newcomers to Auroville. At the end, he said, "I don't see the Earth as a formless material without consciousness, but as Spirit consciously disguised as matter." His comment echoed a core belief among Aurovilians: that biophysical reality is an evolutionary unfoldment of the Divine.

The notion that ecological problems are, at root, problems of consciousness is a running theme in many ecovillages. While Konohana's fields at the base of Mt. Fuji constitute the basis of this farming community's economic and social life, they serve to an even greater extent as a field of spiritual practice. In each action, word, and thought, members are expected to seek divine guidance. Their motto, "Before cultivating the field, cultivate the mind," infuses their daily work and nightly harmony meetings. In Japan, a country that imports most of its food and grows less than 1 percent of it organically, Konohana stands out: it is 100 percent organic and almost fully food self-sufficient, producing 260 varieties of vegetables and 11 kinds of rice.

One secret to Konohana's success is Konohana-kin (pronounced *keen*), a fermented bacterial brew applied to the soil, fed to livestock, and even ingested by residents each day. Konohana-kin is based on Effective Microorganisms, a technique developed by Teruo Higa, a Japanese agricultural scientist, to maximize the production of beneficial bacteria. Konohana develop its own formula with various proportions of molasses, brown rice, tofu refuse, bamboo leaves, and pine needles. Konohana-kin, considered by residents as "a gift from the Divine,"

serves simultaneously as a fertilizer, pesticide, cleaning agent, and preventive medicine. Because it is a dietary staple for the community's goats and chickens, their excrement has no foul odor and antibiotics are unnecessary. Likewise, Konohana members drink Konohana-kin every day. In 14 years, they informed me, nobody has had a major illness.

I asked the community's founder and spiritual teacher, Furuta Isami (known as Isadon), about how this bacterial brew fits into the community's larger mission. "Our vision is that human beings will learn to live in harmony with nature," Isadon said. "Here in Japan, people wear masks and put disinfectants in their toilets to kill the bacteria. The Japanese are a super-hygienic people. It's a violent approach: they are at war with bacteria, but we need bacteria to live. At Konohana, we are finding ways to cooperate with bacteria to make life better." I asked Isadon to sum up his teachings. "It is simple: forget about yourself and give. This is how all other living things live. Because we have such a high capability, we have been able to disconnect ourselves from the natural way, and so people suffer."

Wendell Berry (1987) suggests that spirituality and practical life should be inseparable: "Alone, practicality becomes dangerous; spirituality, alone, becomes feeble and pointless," he writes. "Alone, either becomes dull. Each is the other's discipline, in a sense, and in good work, the two are joined" (p. 145). Intuitively, I agree, but I imagined that most ecovillages would be so busy shrinking their ecological footprints that they would have little time for contemplation. To the contrary, they tend to be quite adept at integrating inner and outer reality. I expected, for instance, that Club 99, Sieben Linden's ultra-low-consumption neighborhood, would be obsessed with its vegan, zero-fossil-fuel agriculture. Yet I had some of the most numinous conversations of my journey in their strawbale common house, whose ecological footprint is 5 percent that of a comparable German home. Maybe I shouldn't have been surprised: for thousands of years, religious leaders have linked material simplicity with inner growth. Likewise, many ecovillagers experience a synergistic relationship between ecology and spirituality.

ECONOMICS

In our economically polarized world, where the average per capita income is roughly $7,000 but extremes of overconsumption and destitution persist, the down-to-earth prosperity of ecovillages demonstrates the possibility of a globally viable happy medium. In the heart of pricey Germany, for instance, Sieben Linden members subsist with pleasure on $12,000 a year. Yet frugality is only one

component of ecovillage economies. Equally important, they have found creative ways to extricate themselves from the global economy through shared property, collaborative consumption, right livelihood, and a hyperlocal approach to the flow of money—all of which rests on and reinforces a narrative of belonging.

Only two of the ecovillages I visited were communes, and both enjoyed a supportive cultural context. In Japan, where the traditional culture reveres family ties, Konohana is listed as a family for tax purposes and its members relate to one another as family. They live in close quarters, work side by side in the fields, eat their meals at one long table, and discuss the day's activities each night after dinner. Like a close-knit family, Konohana disburses the earnings from its member-owned farm equally. When my translator, Michiyo Furuhashi, came to Konohana, she took an 80 percent pay cut from her work as an environmental consultant for Unilever Corporation, reducing her annual income to $7,000 and her living expenses to $3,000. "Our income is so low that we pay no taxes," Michiyo said. "I have never lived on so little, but I feel so rich!"

Within Denmark's strong welfare state, Svanholm operates as a *kommune*, which interestingly means both community and commune. Unlike in the United States, where "commune" may have negative connotations, Svanholm is proud to be one of the last surviving communes. Like Konohana, Svanholm members' assets and earnings go into the common pool. Everybody receives a minimum salary decided at the annual budget meeting. In 2009, it was about $47,000, making Svanholm the most prosperous ecovillage I visited. I wondered about those who might take advantage of the system. Birgitte Simonsen, a sociology professor and one of the community's founders, assured me that Svanholm's arduous membership process weeds out the lazy ones. "We probably turn down 80 percent of those who want to join," she said. "People here need to be able to work and relate well. We need a lot of trust to make Svanholm work, so people need to show they're trustworthy." Trust, not ideology, is the key to Svanholm's collective economy. This is a constant theme in ecovillages: trusting, earning trust, discerning when to trust.

Interestingly, it was at Svanhom, which prides itself in having "both feet on the ground," that I encountered the strongest aversion to spirituality. Indeed, several members described themselves as "allergic" to it. When I asked him about his spiritual beliefs, René Van Dam, one of Svanholm's chief builders, was blunt. "*Phhh!* I'm a very skeptical person and I don't want bullshit! Yes, we have love and beauty here, but don't call it spiritual! That makes it sound magical, not real." Later in the conversation, however, he waxed eloquent about his sense

of the Earth as an integrated living system. "We're like a collection of micro-organisms on this super-organism! But that's biological, not spiritual."

While Svanholm avoids spiritual language, I suspect that some of its experiments in communal living are more effective in softening the boundaries of ego than lofty meditation practices. The community's ability to stay the course over three decades is largely due to the social trust that comes from sharing income and property. Within a global economy that places a premium on looking out for "me and mine," this arena of sharing can serve as a field of practice for moving from a story of separation to one of belonging.

To my surprise, most jobs in ecovillages are quite ordinary: cooks, housecleaners, carpenters, plumbers, web designers, beauticians, farmers, accountants, teachers, etc. Unlike the anonymous relationships that pervade mainstream jobs, however, ecovillage jobs are about real relationships with people and resources. As a corollary, the same money can circulate for quite some time. The yoghurt maker buys milk from the dairy farmer, who buys vegetables from the crop farmer, who gets her hair cut by the community hairdresser, who pays a community accountant to keep her books, and so on. Some ecovillages go a step further: they mint their own currency. Damanhur's *credito*, for instance, has been a primary instrument in revitalizing the surrounding economically depressed valley. Spiritually, members refer to the *credito* as "clean money" because it is not based on violence and greed. In a more practical vein, it enables the community to develop its internal economy.In *The Wealth of Nature*, John Greer (2011) enumerates three economies. The primary economy comprises Earth's biophysical systems; the secondary economy conjoins these with human labor to generate goods and services; the tertiary economy constitutes the monetary flows that facilitate the exchange of goods and services. In truth, what most of us consider the economy—the secondary and tertiary economies—rests on a multilayered gift economy of symbiotic relationships. From the biotic food web of soil to *Wikipedia*, the modus operandi of a gift economy is to pay it forward (Hyde, 1983; Litfin, 2010). While gift economies are marginalized in today's world, anthropologists consider them to be the bedrock of culture.

Among the ecovillages I visited, I found some intriguing experiments in gift economics. Sarvodaya's foundational premise, for instance, is *shramadana*, the gift of labor. While Auroville, which aspires to an all-for-one-and-one-for-all nonmonetary economy, is very far from this goal, it has spawned some promising innovations. At Indus Valley restaurant, customers pay whatever they wish for their wholesome vegetarian meals, which means that some pay nothing. After four years, the restaurant is still in business. At Pour Tous ("For All" in French)

Distribution Service, Auroville residents who pay a small monthly fee can take whatever food and household goods they need. Everybody I interviewed praised the new system.

For the vast majority of us who are tied to the market economy, a gift economy may sound quite foreign. But if we pay attention, we see that we are the unwitting beneficiaries of a mind-bogglingly complex gift economy provided by what Greer call the primary economy. The obvious question, then, is: how do we offer our own gifts to sustain this marvelous flow of gifts? The answer spans every dimension of E2C2.

COMMUNITY

As evolutionary laboratories, ecovillages are running a range of relational experiments. I continually heard that human relationships were both the most challenging and most rewarding aspect of community life.

"Being here is like being in a fire," one ecovillager told me. "Your lack of trust, your anger, your family neuroses—everything that separates you from the rest of the world is going to come out here! Getting over our individualistic culture means remaking ourselves."

"The whole ecological problem is about us," he continued. "We're a whole different order; we're the part of nature that becomes conscious and takes responsibility. We're an unfinished species. I think we have maybe 100 years to prove we deserve to be here." By standing in the fire of community, ecovillagers are rewriting the story of separation with their own lives. Even if their original intention was to live sustainably, the choice to do so in community throws them into a transformational cauldron.

This is one reason that, among ecovillages, the line between the spiritual and the material seems to be dissolving. Dieter Halbach, a former leader of the German peace movement and the man often credited with starting Sieben Linden, described this transition. The divide between spiritual and political communities, he said, ran deep during the 1970s and 80s. Intent on transforming society only after attaining enlightenment, spiritual communities were generally hierarchical and lacking in economic transparency. Political communities, on the other hand, were more egalitarian but frequently dissipated their energies on lengthy meetings.

"Because of my bitter experiences in politics and communities, I saw from the outset that we needed someone to help us cultivate our inner culture. So I

brought in a friend, a Buddhist psychotherapist and an organic farmer. Now we've come to a point where we can accept some hierarchy. We've learned that when we find the right person for the job and trust them, things flow better. This frees up time and energy to give back to the larger society. Sieben Linden started out as political, but now we're bridging the divide. It's very exciting. We're now in a position to help spiritual communities, and they're calling on us."

Surprisingly, I first encountered the term *collective intelligence* in Germany, a fairly secular culture, where ecovillagers were working with Thomas Hübl. They spoke about learning how to go beyond one's own conditioning and inhabit the collective field that unites us all. To my ears, it sounded like intensive schooling in how to participate consciously in the Great Unfoldment. Intrigued, I attended one of his workshops. Over a dozen ecovillages were represented, including a sizeable contingent from Findhorn. Thomas suggested that whereas the modern identity is a fixed sense of self, we are more akin to rivers, each residing at a specific "cosmic address" from which we transmit our entire past and future. "In this next level of evolution," Thomas said,

> We are learning that we are not a collection of "I's," like a six-pack where the bottles clash together. The contraction of the "I" limits our energy. Seeing through our habits, we become aware of the space between us, which frees up our collective intelligence. Then we can talk from life, not about it.

He described the shift as "moving from particle consciousness to field consciousness." Thomas's perspective echoed the evolutionary story I found percolating through ecovillages, but his ability to convey it experientially through small-group practices was something new for me (see Hübl, 2015).

As I travelled through ecovillages, I found myself increasingly fascinated by this nebulous yet vital quality called *trust*. What is trust? How is it created—and destroyed? Sharing may well be essential to sustainability, but so long as we have a choice, sharing only makes sense in the context of trust. If we assemble a list of best ecovillage sustainability practices, every one of them is greatly enhanced by trust: car-sharing, co-ownership of property, collaborative consumption, community food production. And if I were to assemble a list of reasons for why communities fail, the breakdown of social trust would surely top the list. So far as I know, no community has ever collapsed for want of composting toilets, but many have been torn asunder when trust wore thin.

Building trust can be a messy process, but when we come together authentically, transcending and including our individuality, something is born that is far greater than the sum of its parts—something we seem hard-wired to want: a culture of belonging. By virtue of their highly integrative approach to E2C2, ecovillages are pioneering new stories of belonging—which is none other than the psychosocial counterpart of sustainability. When we relate as integral parts of a greater whole, we automatically experience a greater sense of belonging, but we are powerless to create a culture of belonging alone. For that, we need one another.

IN SUM

In these necessarily brief glimpses into ecovillage life, we see some of the synergistic possibilities entailed in a strongly integrative approach to E2C2. Ecological practices such as natural building, organic farming, and frugality simultaneously express and reinforce stories of cosmological belonging. Likewise, the subjective and intersubjective dimensions of ecovillage life are crucial to their material and social successes. And the very act of coming together with others calls into existence a collective field of consciousness such that every ecovillage has its own cultural norms and shared stories. Equally important, the inevitable personal and interpersonal challenges make ecovillages transformational cauldrons. By definition, they begin as postconventional communities, because their very premise entails a far-reaching critique of mainstream culture. As ecovillagers become increasingly able to witness and embrace the relativity of diverse perspectives, which includes their own, conflict becomes a means to expanded awareness. Consequently, they report experiencing ever-more-integrated states of consciousness. These progressively widening circles of identity, particularly because they are materially grounded, make ecovillages likely sites for the development of integral consciousness and therefore of integral community.

Yet we need not live in an ecovillage to learn from their experiments. Whenever we come together with others for the purpose of planting a seed for a viable human future, we create a crucible for the transformation of consciousness. When we approach life as an integrated whole, revering the space between, we are consciously reweaving the scattered strands of the prevailing culture. Using an integral developmental model, we can understand ecovillages as adaptive responses to an unfolding evolutionary crisis. At this historic juncture, just as the petroleum-based era of hyperindividualism seems to be reaching the end of its tether, these emerging collective experiments are enacting a new story of

belonging by interweaving the ecological, economic, social, and spiritual dimensions of life. Being the ecological oddity that we are, we must now consciously integrate ourselves into the tapestry of life, and we can look to ecovillages as forerunners in this adventure.

NOTES

1. Auroville calls itself a "universal township," not an ecovillage. Because of its renowned sustainability practices and its membership in the Global Ecovillage Network, I included it in my study. Auroville's grounding in an integral spiritual practice also makes it a likely candidate as a nascent integral community.

2. While this is most obvious in affluent countries, traditional villages adopting the ecovillage model also exhibit postconventional qualities. As I found in Sarvodaya, a participatory development network, engaging issues of gender, ethnicity, and religion inevitably opens up the kinds of diversity conversations and process work that characterize postconventional communities. Community development, therefore, need not follow a linear path.

3. The Ecovillage Design Education curriculum is available as a free download at the GaiaEducation (n.d.) website.

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