

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 written¹), 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 economists—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 *ecology* and *economy* (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 non-human 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 publicly 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