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# SYMBIOTIC PLANET

[ A NEW LOOK AT EVOLUTION ]

LYNN MARGULIS

# Symbiotic Planet

**Chiara Bottici**



## **Symbiotic Planet:**

**Symbiotic Planet** Lynn Margulis, 2008-08-05 Although Charles Darwin's theory of evolution laid the foundations of modern biology it did not tell the whole story. Most remarkably, *The Origin of Species* said very little about the origins of species. Darwin and his modern successors have shown very convincingly how inherited variations are naturally selected, but they leave unanswered how variant organisms come to be in the first place. In *Symbiotic Planet*, renowned scientist Lynn Margulis shows that symbiosis, which simply means members of different species living in physical contact with each other, is crucial to the origins of evolutionary novelty. Ranging from bacteria, the smallest kinds of life, to the largest, the living Earth itself, Margulis explains the symbiotic origins of many of evolution's most important innovations. The very cells we're made of started as symbiotic unions of different kinds of bacteria. Sex and its inevitable corollary, death, arose when failed attempts at cannibalism resulted in seasonally repeated mergers of some of our tiniest ancestors. Dry land became forested only after symbioses of algae and fungi evolved into plants. Since all living things are bathed by the same waters and atmosphere, all the inhabitants of Earth belong to a symbiotic union. Gaia, the finely tuned largest ecosystem of the Earth's surface, is just symbiosis as seen from space. Along the way, Margulis describes her initiation into the world of science and the early steps in the present revolution in evolutionary biology, the importance of species classification for how we think about the living world, and the way academic apartheid can block scientific advancement. Written with enthusiasm and authority, this is a book that could change the way you view our living Earth. *The Symbiotic Planet* Lynn Margulis, 1998. A distinguished microbiologist explains the importance of the symbiosis where different organisms contribute to each other's support and how this is changing our view of life on Earth. Lynn Margulis is an ardent supporter of the Gaia hypothesis, the idea that due to the finely balanced interdependence of all life forms, the planet functions as a single giant cell. Margulis argues that no organism is an island and that all are linked to each other. *The Symbiotic Planet* traces the evolution of planet Earth from the origins of life and of sex to the emergence of hyperseas and eerie future she describes for humanity.

*Thinking Like a Planet* J. Baird Callicott, 2014-01-06 Bringing together ecology, evolutionary moral psychology, and environmental ethics, J. Baird Callicott counters the narrative of blame and despair that prevails in contemporary discussions of climate ethics and offers a fresh, more optimistic approach. Whereas other environmental ethicists limit themselves to what Callicott calls Rational Individualism in discussing the problem of climate change, only to conclude that essentially there is little hope that anything will be done in the face of its perfect moral storm, in Stephen Gardiner's words, Callicott refuses to accept this view. Instead, he encourages us to look to the Earth itself and consider the crisis on grander spatial and temporal scales as we have failed to in the past. Callicott supports this theory by exploring and enhancing Aldo Leopold's faint sketch of an Earth ethic in *Some Fundamentals of Conservation*, a seldom-studied text from the early days of environmental ethics that was written in 1923 but not published until 1979, after the environmental movement gathered

strength **Gaian Systems** Bruce Clarke, 2020-09-29 A groundbreaking look at Gaia theory's intersections with neocybernetic systems theory Often seen as an outlier in science Gaia has run a long and varied course since its formulation in the 1970s by atmospheric chemist James Lovelock and microbiologist Lynn Margulis Gaian Systems is a pioneering exploration of the dynamic and complex evolution of Gaia's many variants with special attention to Margulis's foundational role in these developments Bruce Clarke assesses the different dialects of systems theory brought to bear on Gaia discourse Focusing in particular on Margulis's work including multiple pieces of her unpublished Gaia correspondence he shows how her research and that of Lovelock was concurrent and conceptually parallel with the new discourse of self-referential systems that emerged within neocybernetic systems theory The recent Gaia writings of Donna Haraway Isabelle Stengers and Bruno Latour contest its cybernetic status Clarke engages Latour on the issue of Gaia's systems description and extends his own systems theoretical synthesis under what he terms metabiotic Gaia This study illuminates current issues in neighboring theoretical conversations from biopolitics and the immunitary paradigm to NASA astrobiology and the Anthropocene Along the way he points to science fiction as a vehicle of Gaian thought Delving into many issues not previously treated in accounts of Gaia Gaian Systems describes the history of a theory that has the potential to help us survive an environmental crisis of our own making **Tales of Discovery** Miguel M. Garcia, 2024-01-02 Research data sharing has traditionally been

addressed to other peer researchers Nowadays there is general awareness that putting research at the disposal of society is beneficial and necessary However the popularization of science is a hard endeavor It must deal with transmission of transcendental knowledge with the appealing adornment of a good story but avoiding the risk of falling into banality This book consists in a series of individual stories delving into the world of biology and medicine Some topics included in this volume consist in the explanation of basic biological concepts like the origin of modern eukaryotic cells the importance of mutations as the driving force behind evolution the molecular ins and outs of the nervous system or the relevance of microorganisms to humans and science including food and energy industries Others rather lean to a more biomedical perspective and constitute popular cases that have been to some extent trending in global media outlets the divulgation of some current under-reckoned non-infectious pandemics like obesity and chronic pain the presence of longer living populations around the world named blue zones the American and African opioid crisis or the discovery and development of CRISPR-Cas as a promising genetic editing tool All chapters are depicted with accompanying illustrations thoroughly elaborated by professionals of Fine Arts to make it easier to understand for the non-experts but may perhaps also prove that the scientific method and multidisciplinary work are not unique to natural sciences but also shared by other apparently distant disciplines like arts Relationality Arturo Escobar, Michal Osterweil, Kriti Sharma, 2024-05-16 This important new book argues that at the root of the contemporary crisis of climate energy food inequality and meaning is a certain core presupposition that structures the ways in which we live think act and design the assumption of dualism or the fundamental

separateness of things The authors contend that the key to constructing livable worlds lies in the cultivation of ways of knowing and acting based on a profound awareness of the fundamental interdependence of everything that exists what they refer to as relationality This shift in paradigm is necessary for healing our bodies ecosystems cities and the planet at large The book follows two interwoven threads of argumentation on the one hand it explains and exemplifies the modes of operation and the dire consequences of non relational living on the other it elucidates the nature of relationality and explores how it is embodied in transformative practices in multiple spheres of life The authors provide an instructive account of the philosophical scientific social and political sources of relational theory and action with the aim of illuminating the transition from living within seemingly ineluctable toxic loops of unrelational living based on ontological dualism to living within relational weaves which we might co create with multiple human and nonhuman others Anarchafeminism Chiara Bottici,2021-11-18 How can we be sure the oppressed do not become oppressors in their turn How can we create a feminism that doesn't turn into yet another tool for oppression It has become commonplace to argue that in order to fight the subjugation of women we have to unpack the ways different forms of oppression intersect with one another class race gender sexuality disability and ecology to name only a few By arguing that there is no single factor or arche explaining the oppression of women Chiara Bottici proposes a radical anarchafeminist philosophy inspired by two major claims that there is something specific to the oppression of women and that in order to fight that we need to untangle all other forms of oppression and the anthropocentrism they inhabit Anarchism needs feminism to address the continued subordination of all femina but feminism needs anarchism if it does not want to become the privilege of a few Anarchafeminism calls for a decolonial and deimperial position and for a renewed awareness of the somatic communism connecting all different life forms on the planet In this new revolutionary vision feminism does not mean the liberation of the lucky few but liberation for all living creatures from both capitalist exploitation and an androcentric politics of domination Either all or none of us will be free **God? Very Probably** Robert H. Nelson,2015-11-11 In recent years a number of works have appeared with important implications for the age old question of the existence of a god These writings many of which are not by theologians strengthen the rational case for the existence of a god even as this god may not be exactly the Christian God of history This book brings together for the first time such recent diverse contributions from fields such as physics the philosophy of human consciousness evolutionary biology mathematics the history of religion and theology Based on such new materials as well as older ones from the twentieth century it develops five rational arguments that point strongly to the very probable existence of a god They do not make use of the scientific method which is inapplicable to the question of a god Rather they are in an older tradition of rational argument dating back at least to the ancient Greeks For those who are already believers the book will offer additional rational reasons that may strengthen their belief Those who do not believe in the existence of a god at present will encounter new rational arguments that may cause them to reconsider their opinion *How Non-being Haunts*

*Being* Corey Anton, 2020-11-03 How Non being Haunts Being reveals how the human world is not reducible to what is Human life is an open expanse of what was and what will be what might be and what should be It is a world of desires dreams fictions historical figures planned events spatial and temporal distances in a word absent presences and present absences Corey Anton draws upon and integrates thinkers such as Jean Paul Sartre Henri Bergson Kenneth Burke Terrence Deacon Lynn Margulis R D Laing Gregory Bateson Douglas Harding and E M Cioran He discloses the moral possibilities liberated through death acceptance by showing how living beings who are of space not merely in it are fundamentally on loan to themselves A heady multidisciplinary work How Non being Haunts Being explores how absence incompleteness and negation saturate life language thought and culture It details how meaning and moral agency depend upon forms of non being and it argues that death acceptance in no way inevitably slides into nihilism Thoroughgoing death acceptance in fact opens opportunities for deeper levels of self understanding and for greater compassion regarding our common fate Sure to provoke thought and to stimulate much conversation it offers countless insights into the human condition Earth, Life, and System Bruce Clarke, 2015-07-01 Exploring the broad implications of evolutionary theorist Lynn Margulis's work this collection brings together specialists across a range of disciplines from paleontology molecular biology evolutionary theory and geobiology to developmental systems theory archaeology history of science cultural science studies and literature and science Addressing the multiple themes that animated Margulis's science the essays within take up variously astrobiology and the origin of life ecology and symbiosis from the microbial to the planetary scale the coupled interactions of earthly environments and evolving life in Gaia theory and earth system science and the connections of these newer scientific ideas to cultural and creative productions Dorion Sagan acquaints the reader with salient issues in Lynn Margulis's scientific work the controversies they raised and the vocabulary necessary to follow the arguments Sankar Chatterjee synthesizes several strands of current theory for the origin of life on earth James Strick tells the intertwined origin stories of James Lovelock's Gaia hypothesis and Margulis's serial endosymbiosis theory Jan Sapp explores the distinct phylogenetic visions of Margulis and Carl Woese Susan Squier examines the epigenetics of embryologist and developmental biologist C H Waddington Bruce Clarke studies the convergence of ecosystem ecology systems theory and science fiction between the 1960s and the 1980s James Shapiro discusses the genome evolution that results not from random changes but rather from active cell processes Susan Oyama shows how the concept of development balances an over emphasis on genetic coding and other deterministic schemas Christopher Witmore studies the ways in which a concentrated animal feeding operation or CAFO mixes up natural resources animal lives and human appetites And Peter Westbroek brings the insights of earth system science toward a new worldview essential for a proper response to global change Bacteria to AI N. Katherine Hayles, 2025-02-12 A new theory of mind that includes nonhuman and artificial intelligences The much lauded superiority of human intelligence has not prevented us from driving the planet into ecological disaster For N Katherine Hayles the climate crisis demands that we

rethink basic assumptions about human and nonhuman intelligences In *Bacteria to AI* Hayles develops a new theory of mind what she calls an integrated cognitive framework ICF that includes the meaning making practices of lifeforms from bacteria to plants animals humans and some forms of artificial intelligence Through a sweeping survey of evolutionary biology computer science and contemporary literature Hayles insists that another way of life with ICF at its core is not only possible but necessary to safeguard our planet s future

**No Other Planet** Mathias Thaler, 2022-09-22 Visions of utopia some hopeful others fearful have become increasingly prevalent in recent times This groundbreaking timely book examines expressions of the utopian imagination with a focus on the pressing challenge of how to inhabit a climate changed world Forms of social dreaming are tracked across two domains political theory and speculative fiction The analysis aims to both uncover the key utopian and dystopian tendencies in contemporary debates around the Anthropocene as well as to develop a political theory of radical transformation that avoids not only debilitating fatalism but also wishful thinking This book juxtaposes theoretical interventions from Bruno Latour to the members of the Dark Mountain collective with fantasy and science fiction texts by N K Jemisin Kim Stanley Robinson and Margaret Atwood debating viable futures for a world that will look and feel very different from the one we live in right now

**The Anthropocenic Turn** GABRIELE DÜRBECK, PHILIP HÜPKES, 2020-03-12 This interdisciplinary volume discusses whether the increasing salience of the Anthropocene concept in the humanities and the social sciences constitutes an Anthropocenic turn The Anthropocene discourse creates novel conceptual configurations and enables scholars to re negotiate and re contextualize long established paradigms premises theories and methodologies These innovative constellations stimulate fresh research in many areas of thought and practice The contributors to this volume respond to the proposition of an Anthropocene turn from the perspective of diverse research fields including history of science philosophy environmental humanities and political science as well as literary art and media studies Altogether the collection reveals to which extent the Anthropocene concept challenges deep seated assumptions across disciplines It invites readers to explore the wealth of scholarly perspectives on the Anthropocene as well as unexpected inter and transdisciplinary connections

**Matrixial Breath** Christoph Solstreif-Pirker, 2025-09-26 Day by day the global climate crisis intensifies yet there are little changes in the behavior of privileged societies This book reveals that such paradoxical behavior is due to the prevalence of a narrative that considers planet Earth as a self sustaining system driven by a circular respiration pattern from one actor to the next It argues that transforming this prevailing planetary breathing pattern is necessary to change humans destructive behavior towards the morethan human environment The volume in particular references the feminine Matrixial Theory of psychoanalyst and philosopher Bracha L Ettinger In linking the Matrixial Theory to environmental issues for the first time it explores the rhythms and scopes of a Matrixial breath and what alternative forms of relationship between humans and nature might emerge from it It lays the foundation for an urgently needed subversion of thought and action toward novel ethics of breathing with beyond homeostatic reductionism

The first of its kind this volume will be indispensable for students and researchers of environmental ethics feminist thought climate studies social change or critical theory It will also be useful to cultural scientists artists philosophers ecologists theologians architects therapists social workers educators and politicians      Future Sacred Julie J. Morley, 2019-02-12 Reveals how our survival depends on embracing complexity consciousness and relating to nature and all life as sacred Rejects the survival of the fittest narrative in favor of sacred symbiosis creative cooperation interdependence and complex thinking Provides examples from complexity studies cultural history philosophy indigenous spirituality biomimicry and ecology to show how nature's intelligence and creativity abound everywhere Documents how indigenous cultures lived in relative harmony with nature because they perceived themselves as part of the ordered whole of all life In Future Sacred Julie J Morley offers a new perspective on the human connection to the cosmos by unveiling the connected creativity and sacred intelligence of nature She rejects the survival of the fittest narrative the idea that survival requires strife and offers symbiosis and cooperation as nature's path forward She shows how an increasingly complex world demands increasingly complex consciousness Our survival depends upon embracing complexity consciousness understanding ourselves as part of nature as well as relating to nature as sacred Morley begins by documenting how indigenous cultures lived in relative harmony with nature because they perceived themselves as part of the ordered whole of all life until modernity introduced dualistic thinking thus separating mind from matter and humans from nature The author deconstructs the fallacy behind social and neo Darwinism and the materialist theories of dead matter versus those that offer a connection with the sentient mind of nature She presents evidence from complexity studies cultural history philosophy indigenous spirituality biomimicry and ecology highlighting the idea that nature's intelligence and creativity abound everywhere from cells to cetaceans from hydrogen to humans from sunflowers to solar panels and that all sentient beings contribute to the evolution of life as a whole working together in sacred symbiosis Morley concludes that our sacred future depends on compassionately understanding and integrating multiple intelligences seeing relationships and interdependence as fundamental and sacred as well as honoring the experiences of all sentient beings Instead of mastery over nature we must shift toward synergy with nature and with each other as diverse expressions of nature's creativity      Symbionts Caroline A. Jones, Natalie Bell, Selby Nimrod, 2022-11-08 Essays conversations selected texts and a rich collection of thought provoking artworks celebrate a revolution in bio art Expertly designed by Omnivore and printed on special papers including chlorophyll cover and crush citrus and crush cocoa pages The texts and artworks in Symbionts provoke a necessary conversation about our species and its relation to the planet Are we merely mammalian weeds as evolutionary biologist Lynn Margulis put it Or are we partners in producing and maintaining the biosphere as she also suggested Symbionts reflects on a recent revolution in bio art that departs from the late 1990s code oriented experiments to embrace entanglement and symbiosis with living Combining documentation of contemporary artworks with texts by leading thinkers Symbionts which accompanies an exhibition at MIT



List Visual Arts Center offers an expansive view of humanity's place on the planet. Color reproductions document works by international artists that respond to the revelation that planetary microbes construct and maintain our biosphere. A central essay by coeditor Caroline Jones sets their work in the context of larger discussions around symbiosis; additional essays, an edited roundtable discussion, and selected excerpts follow. Contributors explore, among other things, the resilient ecological knowledge of indigenous scholars and artists and biofiction, a term coined by Jones to describe the work of such theoretical biologists as Jacob von Uexküll as well as the witty parafictions of artist Anicka Yi. A playful glossary puts scientific terms in conversation with cultural ones.

One Plus One Equals One John Archibald, 2014-06-26 We are in the midst of a revolution. It is a scientific revolution built upon the tools of molecular biology with which we probe and prod the living world in ways unimaginable a few decades ago. Need to track a bacterium at the root of a hospital outbreak? No problem: the offending germ's complete genetic profile can be obtained in 24 hours. We insert human DNA into *E. coli* bacteria to produce our insulin. It is natural to look at biotechnology in the 21st century with a mix of wonder and fear. But biotechnology is not as unnatural as one might think. All living organisms use the same molecular processes to replicate their genetic material and the same basic code to read their genes. The similarities can be seen in their DNA. Here John Archibald shows how evolution has been plugging and playing with the subcellular components of life from the very beginning and continues to do so today. For evidence, we need look no further than the inner workings of our own cells. Molecular biology has allowed us to gaze back more than three billion years, revealing the microbial mergers and acquisitions that underpin the development of complex life. One Plus One Equals One tells the story of how we have come to this realization and its implications.

**Encyclopedia of Evolution** Stanley A. Rice, 2009 Evolutionary science is not only one of the greatest breakthroughs of modern science but also one of the most controversial. Perhaps more than any other scientific area, evolutionary science has caused us all to question what we are, where we came from, and how we relate to the rest of the universe. *Encyclopedia of Evolution* contains more than 200 entries that span modern evolutionary science and the history of its development. This comprehensive volume clarifies many common misconceptions about evolution. For example, many people have grown up being told that the fossil record does not demonstrate an evolutionary pattern and that there are many missing links. In fact, most of these missing links have been found, and their modern representatives are often still alive today. The biographical entries represent evolutionary scientists within the United States who have had and continue to have a major impact on the broad outline of evolutionary science. The biographies chosen reflect the viewpoints of scientists working within the United States. Five essays that explore interesting questions resulting from studies in evolutionary science are included, as well. The appendix consists of a summary of Charles Darwin's *Origin of Species*, which is widely considered to be the foundational work of evolutionary science and one of the most important books in human history. The five essays include: How much do genes control human behavior? What are the ghosts of evolution? Can an evolutionary scientist be religious? Why do humans die? Are humans alone in

the universe      **Invisible Nature** Kenneth Worthy, 2013-08-06 A revolutionary new understanding of the precarious modern human nature relationship and a path to a healthier more sustainable world Amidst all the wondrous luxuries of the modern world smartphones fast intercontinental travel Internet movies fully stocked refrigerators lies an unnerving fact that may be even more disturbing than all the environmental and social costs of our lifestyles The fragmentations of our modern lives our disconnections from nature and from the consequences of our actions make it difficult to follow our own values and ethics so we can no longer be truly ethical beings When we buy a computer or a hamburger our impacts ripple across the globe and dissociated from them we can't quite respond Our personal and professional choices result in damages ranging from radioactive landscapes to disappearing rainforests but we can't quite see how Environmental scholar Kenneth Worthy traces the broken pathways between consumers and clean room worker illnesses superfund sites in Silicon Valley and massively contaminated landscapes in rural Asian villages His groundbreaking psychologically based explanation confirms that our disconnections make us more destructive and that we must bear witness to nature and our consequences Invisible Nature shows the way forward how we can create more involvement in our own food production more education about how goods are produced and waste is disposed more direct and deliberative democracy and greater contact with the nature that sustains us

**The Earth Is Our Home** Nelson Rivera, 2016-11-14 This book demonstrates that Mary Midgley's philosophy of evolution points the way towards considering the earth as our only true home since we are products of this planet and its evolving and complex life along with every other organism From the knowledge of ourselves as knowing animals with a biological as well as a cultural history Midgley proposes the elaboration of an evolutionary epistemology that situates us firmly on the earth together with other creatures while at the same time helping us to build knowledge of the world from the complexity of the human experience I like to call this approach by a known theological analogy a view from below that is from the underside of the world from the realms of nature and history Such an approach does not begin by assuming conceptions of design or order in nature a view that we term from above although it does not rule out the possibility of teleological or metaphysical constructions of reality in the long run This down to earth approach I consider essential for any philosophy or theology that wants to take evolutionary theory seriously while committed to a proper and non dismissive assessment of religious views

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### **Symbiotic Planet Introduction**

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