

## **Gaia Again**

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Toby Tyrrell, *On Gaia: A Critical Investigation of the Relationship between Life and Earth* (Princeton University Press, 2013), 311 pp.

Michael Ruse, *The Gaia Hypothesis: Science on a Pagan Planet* (The University of Chicago Press, 2013), 251 pp.



I remember the first time I encountered Gaia. I remember sprawling across the comforter on my grandmother's bed—a thin white cotton blend mushroomed over with impossibly huge red roses—and puzzling furiously through James Lovelock's *Gaia: A New Look at Life on Earth*. I'm not sure how much of the book I really understood. (I was an earnest, but profoundly ignorant tween.) But I do remember my reactions to it. The world changed.

I was growing up on an island that was being eaten by the Gulf of Mexico—largely because of decisions that big rich people were making—and I was witnessing the not-so-slow poisoning death of one of the richest ecosystems in North America, the Mississippi delta's millions of acres of wetlands—for the same reason. My heart was breaking, and Gaia reassured me. It said to me that life will take care of itself, that humans cannot ever truly destroy it. Gaia also said to me that life mattered, the Earth was alive and it had intrinsic value. That was not something that the Cajun Catholicism available to me had ever said. (Fetuses mattered, but not great blue herons or girls.) Suddenly, I was not alone or less. I was an equal part of something, kin, and the living world I loved had a moral right to fair treatment.

I bring up my twinned reactions to Gaia not out of narcissism (I hope) but because these two implications of the theory—cheerful reassurance and ethical kinship—motivate the two very different books under review here today.

Since the chemist and famed inventor James Lovelock and equally notable microbiologist Lynn Margulis first proposed Gaia in the 1970s, their hypothesis has impelled the development of crucial systems-based approaches to studying life on earth, which have helped us understand how biota, particularly the human variety, impact our planetary life support. Gaia has also helped inspire the global outlook that fuels the modern environmental movement and its resistance to practices that are destroying those life support systems. And yet, in spite of—or

perhaps because of—its pervasive influence, both popular and scientific, Gaia has also proven one of the most polarizing scientific theories ever proposed.

Toby Tyrrell's *On Gaia: A Critical Investigation of the Relationship between Life and Earth* and Michael Ruse's *The Gaia Hypothesis: Science on a Pagan Planet* are the latest installments in that debate. They come at Gaia from almost diametrically opposed angles. Not only are their authors from very different disciplines (science and philosophy), they arrive at contrasting conclusions about the utility of the hypothesis because they focus on different Gaias: Tyrrell sees the Gaia that consoled a tween girl and Ruse the Gaia that connected her.

Let's start with Toby Tyrrell's *On Gaia: A Critical Investigation of the Relationship between Life and Earth*. Or rather, for the sake of clarity, let's start with Tyrrell's Lovelock. Pinning down the Gaia hypothesis (or theory, if you're one of the more convinced) is a bit like trying to staple jello to a wall, but Tyrrell gives it a valiant try. He quotes a number of Lovelock's definitions of Gaia, which have evolved since he and Margulis first formulated the idea, leaving us various "strong" or "weak" versions of the hypothesis. But, as Tyrrell says, "in a nutshell," Gaia "suggests that life has conspired in the regulation of the global environment so as to keep conditions comfortable" (2). Life interacts with biotic and abiotic entities (air, water, rocks, etc.) to maintain life. In the strongest version of Gaia, this "regulation" means that the planet Earth is in some sense a coherent living organism straining to keep itself alive.

The grandness of the hypothesis makes assessment difficult, but assessment is Tyrrell's aim. He is an Earth system scientist, a discipline largely created by Lovelock's and Margulis's work, and he is determined to evaluate the scientific evidence both for and against Gaia, including the huge caches of new data about Earth's climate and climate history collected in the four decades after the hypothesis' formulation. In his preface, he claims that "this is the first book to carry out a critical examination" of Gaia (ix), and to make that possible he breaks the hypothesis down into three testable "components":

- A. Earth is a favorable habitat for life.
- B. It has been so over geologic time as the environment has remained fairly stable.
- C. This is partly due to life's role in shaping the environment [...] (4)

He spends the rest of his 300+ pages showing that these contentions are mostly not true. He holds Gaia up against natural selection (still no clear mechanism to make the two cohere); he takes it to extreme environments and sees how well it helps explain complex chemical cycles and environmental feedbacks; and, most importantly, he walks Gaia through geological history and reveals a climate system that, instead of being benign and well-regulated as the hypothesis predicted, is often rather unfavorable to life and radically unstable, propelling life on Earth to the brink of absolute extinction more than once. And, yes, because of Gaia scientists now acknowledge that life does alter or even control vast non-living components of the Earth, like the make-up of chemicals in the atmosphere. But that

can upset as well as regulate favorable conditions, and the upshot of Tyrrell's analysis is that life persists less because of Gaia and more because of sheer dumb luck. It is a very able, even-handed, learned, and devastatingly thorough performance, overflowing with notes and supporting documentation, yet straightforward enough in its analysis that a lay person can follow it.

For such an effective assassin, however, Tyrrell seems to have surprisingly little malice in his heart. All his criticism is motivated by an urgent concern about the future of life on Earth. He worries about Gaia's reassurances. He worries that "[a] complacent belief in the comforting power of the Earth to self-heal [...] can come as unwanted baggage with the Gaia hypothesis," and, with habitat destruction, overpopulation, over-consumption, pollution, and especially global warming seriously compromising our planetary life support, "[w]e need to keep our eyes open for Achilles' heels in the Earth system that could make it particularly vulnerable to anthropogenic impacts" (218). Rather than leave it to Gaia, "[e]nsuring that the global environment remains propitious for life is up to us, and there is no Gaian safety net to come to the rescue if we mismanage it" (218). To effect this end, "[w]e need a deep and accurate understanding of how our environment works," not soothing fairy tales (218). By debunking Gaia and replacing it with a frighteningly unpredictable and fragile Earth, a gloomily "accurate" "understanding" is precisely what *On Gaia* delivers.

However, in spite of *On Gaia's* critical strengths and urgent purpose, it's an irritating book—or rather I should say that our second author, Michael Ruse, finds it so. In his own review of it, Ruse wonders why Tyrrell "bothered" to write a pointless exposé merely "confirming the general [scientific] opinion" about Gaia's fatal foibles (Ruse 56). Instead, he queries, would it not have been more productive to write "a positive volume" that investigated the "good effects" of the theory or at least inquired into its lasting general popularity? He wonders, "[I]s Gaia a story on its own?" (Ruse 56). In other words, perhaps Tyrrell should have written Ruse's book.

*The Gaia Hypothesis: Science on a Pagan Planet* tells Gaia's story. Ruse has constructed an intellectual genealogy for the hypothesis, which affords the "context" necessary for "understanding" (one of Ruse's favorite words) both how Gaia happened and why it has generated such a peppery witches' brew of enthusiasm and vitriol (4).

Ruse frames his investigation with this mystery. He wonders: "There is a puzzle—a puzzle from the sixties. Gaia is hated by those on the science-technology side, who might have been expected to show some sympathy. It is loved by others, those on the counterculture side, who might have been expected to have been wary, at least of its origins" (42). Why did the public embrace Gaia, and why did the scientific community (for the most part) come after it, red in tooth and claw? Or, perhaps even more puzzling, "Why did they [Lovelock and Margulis] think up and stick with such a hypothesis, especially when it was so professionally dangerous?" (42).

Ruse investigates these questions by plunging us back in time, all the way to Plato, and then hurrying us forward in leaps and bounds over several centuries of philosophy and science from Aristotle to Romanticism and German Idealism to Charles Darwin and Rachel Carson. The scope is tremendous, which is both the book's major strength and weakness.

On the positive side, the strategy gives us a clear narrative framework upon which to hang Gaia and the conflict over it. Ruse sketches a long-running philosophical battle between "mechanism" and "organicism." Mechanism, he explains, implies "looking at the material world as if it were a machine" that ticks along according to amoral "laws of nature" (68)—the metaphor still dominant in mainstream science. His definition of organicism is a bit murkier, largely because, as he points out, it covers a rather diverse lot of thinkers, but, overall, the organicists "are looking for balance, for integration, for equilibrium" (100). They focus on wholes over parts, groups over individuals, and cooperation over competition, and, most of all, "[t]hey seek [moral] value" (100) in the world and its operations. Organicists are thus given to holistic pictures of the Earth as a living being, often re-invested with the sentience or even soul that Descartes sought to rip from it. They concentrate on our connection to this living world and, by extension, the moral obligations we owe it.

In spite of the huge swathe of history the book skims, Ruse keeps us straight on course to answer his questions about Gaia's origin and controversy: first, we ultimately find that Gaia was born of a peculiar cross-fertilization of the two philosophies he's been tracking for the reader. Margulis was a committed organicist thinker, while Lovelock remains a mechanist, although one that was tremendously influenced by organicism in the person of his friend, the novelist William Golding. (Golding provided the name "Gaia," and it is a particularly exciting moment when Ruse lifts Golding so prominently into the picture and uses him to connect Lovelock with the anthroposophist and Waldorf school founder, Rudolf Steiner.) Second, Ruse demonstrates that the public loved Gaia because it hit at the right cultural moment—just as audiences were encountering the "big blue marble" vision of Earth—and the scientists hated it because it hit at the exact wrong cultural moment—right as attacks from religious conservatives had amplified their "insecurities" into a prickly bunker mentality (214). The overall argument is very tight, and, at its best, *The Gaia Hypothesis* demonstrates some delightful detective work presented in a deftly controlled narrative.

But now for the criticism. Sometimes more than the devil is in the details, the story is often in them, as well. While the overarching conflict between philosophies of mechanism and organicism is very useful, the stages sometimes lack concrete historical details, leaving the reader floating through clouds of overly vague and undifferentiated general ideas, unsharpened by the particularities of their place and time. Part of this is certainly the fault of the subject. Idealism, world-soul thinking, and/ or general "metaphysicianism" (as Edgar Allan Poe termed it) tends to the analytically fuzzy and repetitive, no matter what century

the thinker inhabits; but this mental amorphousness would seem to demand even more historical context (with more dates) to ground it. I would have particularly appreciated further context when the book was covering some of the important early parties on the organicist side, such as Schelling.

I also have to add that, on rare occasions, this rush through intellectual history lends itself to caricature. Take for instance the brief discussion of ecofeminism. In a book about a hypothesis that borrows its name from a goddess, one might expect a fuller and more precise discussion of this diverse school of thought. But unfortunately Ruse smooshes together Carolyn Merchant with Starhawk and accuses them of “ideological myth-making” and of contending that, “Now women have the chance to take control; only then will we see improvement” (139). This is straw ecofeminism. While some self-identified ecofeminists would probably agree with Ruse’s summation of their arguments, in fact, many of the more serious and influential ecofeminist thinkers—Merchant for one—have identified the impulse to “control” (rather than to egalitarianism) as a significant cause (not cure) of our ecological crisis.

But my disappointment with Ruse’s eco-femazons aside, he doesn’t slip up like this often, and, when he slows down, he draws out startling cultural connections that illuminate both the science and philosophy behind Gaia. For instance, Ruse explains some of the enthusiasm for Gaia by weaving it into the weird countercultural moment of 1960s America and painting surprising and vivid portraits of mystics like Oberon Zell-Ravenheart. Or, for example, in one of the book’s best moments, he connects Darwin’s commitment to individual/family over group selection to his immersion in Victorian industrialism and in his own successful, industrialist family: “The Darwin-Wedgewood clan could have given lessons to the Corleones,” he quips (92). I wanted more of this. I realize I am also asking for a 500-page book, but I think that such heftiness is appropriate to the topic and would have made for a much more satisfying treatment.

Besides, Ruse’s writing is so engaging I don’t think readers would get bored with a more detailed tome. Clear, free of jargon that hides so much, and unafraid of the useful pop culture reference, it is a pleasure to read. My favorite bit (other than his trippily delightful description of the Darwins as a mobster family out of *The Godfather*) occurs in the discussion of Rudolf Steiner. Ruse points out that Steiner, “affirms that there were actually two Jesus children who fused together to make the Christ, a bit like the Skeksis and Mystics who come together to make the urSkeks in the movie *The Dark Crystal*” (125). Not many books on intellectual history can surprise an out-loud laugh out of me. Plus, Ruse gets extra geek credit for proper use of Jim Henson’s most wonderful and woefully underrated film.

Ruse wraps up his investigation by bringing us back to his project’s higher moral aim, which includes highlighting those “good effects” of Gaia he saw lacking in Tyrrell’s analysis. In his preface, he had identified Gaia’s chief benefit as its implication that “our home, the planet Earth” is something “that has life, that has value, in its own right” (x). A living planet just might be worthy enough for humans

to protect rather than consume on our way to some alien afterlife. For Ruse, the environmental ethics popularized by Gaia's "pagan" investment of Earth with life outweighs the dangers of false reassurance that keeps Tyrell up at night. "Failure as science," he concludes, "is balanced by success as philosophy" (223).

Tyrell and Ruse both have the same monumental goal: saving life on Earth. They just disagree vehemently about whether Gaia will help or hinder. Strangely enough then, *On Gaia* and *The Gaia Hypothesis* work rather well together to give readers a vital panoramic view of this still-influential and urgently relevant idea. They both tell us that it may be time to remember Gaia again.

### Works Cited

Ruse, Michael. *The Quarterly Review of Biology* 89.1 (2014): 55–56. Print.