
**Science as Myth (Whether Sacred or Not),
Science as Prism**

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Before I proceed to substance, I begin with a caveat similar to those we sometimes hear on NPR before an investigative-journalism story—something like ‘The Megapollution Corporation that I’m about to skewer is a sponsor of this radio network’. I have been acquainted with Lisa Sideris for many years and I have admired her work for just as many. Sideris’s chapter, ‘Science as Sacred Myth? Ecospirituality in the Anthropocene’, which I’m about to skewer, appears herein and in *Linking Ecology and Ethics for a Changing World: Values, Philosophy, and Action* (2013). I am a co-editor of that book; indeed, her chapter is included in the section of the book for which I had editorial responsibility. Further, without going into any gossipy detail, I should make it known that, as originally submitted, Lisa’s contribution met with vigorous complaints of conflation and misrepresentation on the part of some of the proponents of what she dubs ‘the new mythology’, and I assisted Lisa in revising her chapter to help obviate those issues.

Partly as a response to the aforementioned complaints about conflation and misrepresentation, early on Sideris distinguishes from one another various versions of the new mythology and their various proponents. They fall into two main cognitive complexes—the New (Big, Universe) Story/Journey of the Universe on the one hand, and the Epic of Evolution on the other—which differ dramatically in temporal and spatial scale. As the names suggest, the former is temporally calibrated in billions of years and spatially in light years and the latter is calibrated in millions of years temporally and spatially in miles or in kilometers. The

disparity in scale, especially in spatial scale, is because the only case of organic evolution that we know anything about is that occurring on Earth—but a speck (the planet) on a speck (the solar system) on a speck (the Milky Way galaxy) in the universe (which might be a speck in the multiverse if that new cosmological idea catches on). The intellectual ancestor of the former complex is Thomas Berry; and his descendants are Mary Evelyn Tucker, John Grim, and Brian Swimme, with Eric Chaisson as a fellow traveler. The intellectual ancestor of the Epic of Evolution is Edward O. Wilson, with Richard Dawkins as a fellow traveler. Wilson and Dawkins are evolutionary biologists by training, but also public intellectuals by dint of professional prestige and literary skills. Loyal Rue and Ursula Goodenough are apostles in the Church of the Epic of Evolution, while Connie Barlow and Michael Dowd are catechists and proselytizers.

Immediately after acknowledging the pluralistic character of the new mythology, Sideris claims, 'These individuals frequently reference one another's work and involvement in the movement, and they understand themselves and each other as part of a more or less cohesive group' (p. 138). As far as I am aware, however, Wilson and Dawkins have had no truck with Berry (who died in 2009) and Wilson rather little with his intellectual descendants, and Dawkins none with either group. With the exception of Barlow and Dowd, who characterize themselves as 'evolutionary evangelists', these individuals are indeed individual thinkers, and to characterize them as a 'movement' rhetorically assimilates their diverse but not unrelated individual intellectual projects to an ideologically unified political project.

Here's another caveat. I myself am a proponent of the religionization of science. Sideris goes easy on me and my views in her essay, apparently because of my rather emphatic rejection of 'epistemic arrogance' (assuredly not because she wanted to curry favor with me in my capacity as section editor and conflict mediator). That the scientific worldview is just more 'tenable' than other worldviews, not that it is true and all the others are false, is my epistemically 'modest' claim. As I am fond of saying: science just tells one story among many. But as I am also fond of saying immediately thereafter: some stories are better than others and the science story is the best of all for answering such questions as who we, as a species, are and the nature of the world we inhabit.

That's because the science story is constructed according to explicit epistemological rules and is self-correcting. My epistemological modesty follows not from any ethical commitment to diversity and inclusivity but from epistemology itself. Our minds model the world, and we cannot stand outside our mental models to see if they correspond point for

point with reality—because we have no direct access to reality. Reality is mediated by our species-specific sensory receptors and by both species-specific and culturally variable conceptual frameworks (Callicott 2013a). I am confident that there is a reality, but it's the unknown X factor and will always remain noumenal, *sensu* Kant. The best we human beings can do is to elaborate an imperfect and incomplete imaginary analogue of it. (Such thoroughly mathematized sciences as theoretical physics, however, stretch the meaning of 'imaginary'.) I was about to go on to say 'in our minds', but on reflection, the science story is a sprawling network of interconnected models, now become so vast that it has spilled out of even the collective Human Overmind and taken on a virtual life of its own. A microcosmic precedent of the science story is the corpus of Greek mythology, stored in the *collective* preliterate Greek mind, so vast that even the prodigiously capacious memories of the rhapsodes—some capable of unerringly reciting the entire *Iliad*—could not contain it all. (For some philosophical reflection on this phenomenon, I recommend Plato's *Ion*.)

Citing a paper of mine published in 2002, Sideris quotes me in a footnote as claiming to be 'a charter member of the board of directors of the newly formed Epic of Evolution Society'. I guess I must have been, if that's what I said I was...or maybe I was exercising a little poetic license (speaking of Plato)—I can't remember. In any case, Connie Barlow was intrigued to discover in something I wrote that I had innocently stolen (it seems) the phrase 'epic of evolution' from Ed Wilson, and she wanted to get acquainted with me—this all to the best of my recollection. But if there ever were an Epic of Evolution *Society* (a casual Google Search doesn't indicate that there still is, if there ever was), and I really was a charter member of its board of directors, I got kicked out of it because of my epistemological modesty. I once said to Barlow that evolution was not fact but theory—whatever truthiness my charter-member story has, this I do remember as actually happening. That was it; I was out (if I was ever in).

Other proponents of evolution (and science generally) as potentially a religious worldview have unfortunately not been as fastidious as I in their epistemic discourse (my personal anecdotes being epistemically something else altogether). They do, it seems, occasionally or even routinely speak as if science does indeed provide a True account of Reality. If Sideris has accurately represented Dawkins's discourse about rainbows—I wouldn't know because I haven't read him on that subject—he, for one, has been a bit epistemically indiscreet. But if pressed, I would expect that Wilson, Dawkins, Swimme, and Goodenough would make more considered and reflective claims about scientific 'knowledge',

giving due respect to such fundamental aspects of scientific epistemology as uncertainty and falsifiability. Sideris herself provides evidence of Wilson's epistemic caution, while claiming to demonstrate just the opposite. In purporting to document Wilson's subscription to the correspondence theory of scientific truth, Sideris actually documents Wilson's epistemic scruples: 'Truth in this context', she writes,

...often signals correspondence or conformity to facts. For example, sociobiologist Wilson, often credited with founding the Epic movement, insists that '[W]e must have a story to tell about where we came from and why we are here'. Science, Wilson (1998: 6-7) suggests, is 'a continuation on new and better-tested ground to attain the same end [as religion]... [I]n that sense science is religion liberated and writ large'. In this account of truth, a scientific story will, by definition, have the decisive edge (Sideris, p. 139).

Let me dissect this quotation from Sideris's essay and the quotation within that quotation from Wilson's book *Consilience*. Sideris represents the statement of Wilson's that she is about to serve up as an *example* of science's putative 'correspondence or conformity to facts'. But what Wilson actually declares is not that the science story (of where we came from and why we are here) is true, but simply that it is 'new and better-tested'. Note also that Sideris attempts to arouse animus toward Wilson by gratuitously introducing him as '*sociobiologist* E.O. Wilson'. Well, that was Wilson then (the mid-seventies) and this is Wilson nearly a quarter century later. Why didn't Sideris introduce him as 'entomologist E.O. Wilson'? After all, his earlier work on social insects is what established his scientific credentials (Wilson 1971). Doubtless because being an entomologist is reputable, but being a sociobiologist is, for some, disreputable. Consider an analogous case: Martin Heidegger joined the National Socialist German Worker's Party (Nazi Party, for short) in 1933 and remained a member until the party was crushed by the allied armies of the US, the USSR, and the UK. Further, Heidegger's philosophy exhibits affinities with National-Socialist ideology, as Michael Zimmerman (1994) and Charles Bambach (2003) have unequivocally demonstrated. Even so, no fair-minded scholar would introduce him as 'Nazi Martin Heidegger' for polemical purposes. As any good scientist, Wilson is not committed to his former theories just because they were his former theories. (I cannot say the same in Heidegger's defense, but shortly I will note a significant theoretical shift that Wilson has recently undergone concerning a matter directly related to sociobiology.)

While Wilson and the other actual scientists (in contradistinction to some science writers and proselytizers) might not put it as fashionably as I—'postmodern science', 'the science story', 'tenability', and such—their epistemology would pretty much coincide with mine. It's simply

basic, state-of-the-art scientific epistemology, nothing exotic or fancy. And on *any* epistemologically responsible account—not just the correspondence theory of truth—‘the scientific story...will have the decisive edge’. It may not be True, but it strives to be self-consistent, comprehensive, open to criticism and revision, and consilient as I go on immediately to explain.

The first rule of basic scientific epistemology is self-consistency. A proposed new theory in, say, quantum field theory is first examined by mathematicians looking for a formal contradiction. If they find one, then the theory is rejected on that basis alone. The biblical story, notoriously, has the world being created in six days in Genesis 1 and then in one day in Genesis 2. How could it be created in both one day and six? As to the aforementioned corpus of Greek mythology, one finds even more contradictions in that, so I am not suggesting that the biblical story is, in failing the self-consistency test, unique among pre-scientific stories.

The second rule of scientific epistemology is that a viable theory must comprehend all the available facts—all the available data. In the case of the theory of evolution, the basic facts consist of fossil remains of species of animals and plants of which no living specimens exist, anatomical resemblances among living species and between them and those in the fossil record, and a largely shared genome among living species that are anatomically and physiologically very similar.

And if new data turn up, which existing theory cannot comprehend, then existing theory is revised accordingly.

Actually, evolutionary biology is undergoing some rather profound revision as we speak. Lamarckism is making a comeback in the epigenetic governance of gene expression (Jablonka and Lamb 2010). And group selection, once anathema in the hyper-reductive evolutionary biology of the twentieth century—and in sociobiology—is now all the way back under the new name of ‘multilevel selection’ (Wilson and Wilson 2008). Furthermore, please note that multilevel selection has been emphatically endorsed by none other than E.O. Wilson, the second Wilson in the previous citation, the first being David Sloan Wilson—no relation. (D.S. Wilson never gave up on group selection, and so for E.O. to coauthor a paper with D.S. amounts to an implicit recantation of E.O.’s former opposition to group selection.) Evolutionary biology is, therefore, no longer entirely reductive.

A third rule of scientific epistemology is consilience among all the domains of science, a principle that Sideris unaccountably finds to be somehow problematic. Suppose an ecosystem ecologist suggests that a food chain can consist of any number of trophic levels—6, 10, 20, 50. Such a hypothesis is inconsistent with thermodynamics and therefore

cannot be seriously entertained in ecology (Post 2002). Notoriously, quantum field theory and the general theory of relativity are mutually inconsistent. Scientists do not just accept that two domains of science can be inconsistent one with the other, and so theoretical physicists doggedly pursue—for over a century now—the ‘theory of everything’, based on the principle of consilience (Hamber 2009). We now even have a biopic about it.

A close examination of Sideris’s strange hostility to consilience suggests that it is motivated by disciplinary defensiveness. The humanities become but the handmaidens of the sciences translating the science story into poetry and calling forth its inherent but insipient awe-inspiringness. What’s so wrong with that? As to the role of philosophy in relation to the sciences, I can speak from a half century of experience working primarily with scientists, not with my fellow philosophers—if for no other reason than that my work has been treated with undisguised contempt by my mainstream colleagues (both of the analytic and continental persuasions), but has enjoyed some traction among ecologists and conservation biologists.

One thing that conservation biologists have found useful is help from humanists in thinking about values, which many tend to regard, in their naïve positivism, as subjective surds, mere preferences. I prefer strawberry to chocolate ice cream and no amount of argument can convince me otherwise. But I don’t just prefer emancipation to slavery. I grew up in the Deep South in the 1940s and ’50s, when institutionalized racial segregation was taken for granted by me and everyone around me. I am now persuaded by rational argument—some of it genomic, that is, scientific—that racism is wrong. Philosophers are uniquely positioned to give an account of the difference between preferences and what I sometimes call ‘transcendent values’ and thus can illuminate the relationship of ethics and science and dispel fears among scientists about advocacy.

Scientists necessarily work on small paragraphs, perhaps even just sentences or in some cases even single words of the vast, self-consistent, consilient, ever-changing science story. As a philosopher, I have tried to articulate the big picture and to bring out the harmony, for example, between otherwise remotely related sciences such as ecology and quantum field theory (Callicott 1985). That’s in addition to my roles as values expert and epistemology cop—the latter generously attested to by Sideris.

Here’s something nice for historians to contribute to the science story, something that Carolyn Merchant (1980), for one, does in a masterly way: my experience suggests that most scientists have an ahistorical view of their enterprise. Historians of science can provide scientists with

a vivid recognition that yesterday's scientific 'truth' is today's scientific humbug and thus that today's scientific 'truth' may very well be tomorrow's scientific humbug. History foregrounds the dynamism of the science story and, just in itself, cautions against epistemic arrogance.

Gary Snyder's essay 'The Forest in the Library' provides a charming and engaging account of the relationship with science that awaits us humanists, if we will only seize the opportunity:

[W]e can say that the dissertations, technical reports, and papers of the primary workers are in a sense gobbled up by the senior researchers and condensed into conclusion and theory—new studies that are in turn passed up the information chain to thinkers at the top who will digest them and come out with some unified theory or perhaps a new paradigm. These final texts, which are built on the concentrated information assembled lower on the chain, will be seen as the noble monarchs of the academy forest. Such giants must also succumb in time and return to the forest floor.

When asked, 'What is finally over the top of all the information chains?', one might reply that it must be the artists and writers, because they are among the most ruthless and efficient information predators. They are light and mobile, and can swoop across the tops of all the disciplines to make off with what they take to be the best parts, and convert them into novels, *mythologies*, dense and esoteric essays, visual or other arts or poems (Snyder 1995: 202).

Sideris criticizes the putative universality of the new mythology—a myth for everyone. She seems to think that it is argument enough to point out that proponents of the new mythology think that the old religious myths are closed and dogmatic, intractable to evidence and argument alike. Well, aren't they? Maybe not in the halls of the University of Chicago Divinity School, but they certainly are in the pulpits of the Southern Baptist Church and the *madrassas* of the hoped-for Caliphate. Exposed to almost daily videos of beheadings in the name of Islam and settlement-building in the name of God-given Judea and Samaria, who can doubt that those good old-time religions are divisive and fuel violent conflict? The world we live in, thanks ultimately to science, is unified by transportation and communication technologies—for better or worse—and the enterprise of science is international. The astrophysics advanced at Tokyo Tech is the same astrophysics advanced at MIT. But the theology cogitated in Ryadh is by no means the same as that cogitated in Rome. What in the world (as it has become) could be wrong with a myth that everyone can share and share both equally and freely?

An understated theme in Sideris's critique of the new mythology is that science and religion are about different things. Doubtless they are, but the largely different things that they are about overlap at critical points. Religions and science both have something to say about the

natural world, its overall origin and structure. And I hope that Sideris would agree that what archaic religions have to say about those things has been superseded by what science has to say about them. But a lot of the adherents of biblical religions continue to believe that the world came into existence about six thousand years ago, that humans and dinosaurs lived side by side up until the flood (I suppose they think that Noah refused the dinosaurs passage on the ark), and that the End Times are nigh. Such beliefs are epistemologically corrupting. If those things can be believed then anything can be believed—for example, having mentioned the Nazis, that the Holocaust never happened. And delusions, especially collective delusions, are dangerous, not just for the delusional but for us all. One way to think of what the new mythographers are up to is to so expand the overlap of the things that religion and science are about, such that religionized science becomes a full-service religion. I just cannot understand why there should be anything wrong with that.

So much for a defense of science as myth, what about science as prism?

More careless discourse on the part of the new-mythology enthusiasts reviewed by Sideris leads them sometimes to give the impression that science itself, not what science discloses about the awesomeness of the world, is the object of their reverence. Yes, science is one of humanity's crowning achievements, but it's not the only one, nor is it an appropriate object of religious adulation. Again, if pressed those enthusiasts would surely agree that what science discloses about the natural world is what is awe-inspiring, and if science itself is awe-inspiring, it is precisely because of what it discloses about the natural world. The religions of the book provide a perfect analogy. Careless reverential discourse about the Torah, the Bible, and the Koran might give the impression that the books themselves are the objects of worship, not what they reveal about Yahweh/Elohim, God and His Son Jesus, and Allah and His Prophet. In the discourse of the religions of the book, book worship would be condemned as 'idolatry', wouldn't it? (I hope so.) To idolize science itself would be unscientific as well as narcissistic.

More seriously, Sideris claims that the scientific account of nature 'encourages a disparagement of human-level, lived experience of the natural world as *unreal*'. If so, that's another overlap with religion, especially with Hinduism and Buddhism. But also consider all the disparagement of 'worldly' concerns in Christianity, especially the disparagement of human-level lived sexual expression, particularly of the pluralistic variety. Sideris, however, is really getting at something else, a sort of old-school phenomenological critique of science as ontologically downgrading unmediated qualitative experience and ontologically privileging unexperienced theoretical entities such as atoms and genes.

Sideris writes in passing, 'I accept that it is problematic to assert that our sensory experiences constitute an unmediated encounter with nature' (p. 147). It's more than merely problematic; rather impossible, I would say, but I'm aware that other philosophers would disagree. So let's just leave it at problematic. She proceeds: '[N]evertheless, *science* is not the same thing as *nature*, and to study the former is not to experience the latter' (p. 147). True, if by 'study' you mean reading a textbook or listening to a lecture, but not if you mean observing plants and animals in the field—doing 'scientific natural history', as Charles Elton (1927: 1) defined ecology. 'Nor is the study of the former', she goes on, 'necessarily conducive to seeking out experiences of the latter' (p. 147). That will depend on the science. The study of genetics may not be conducive to seeking out experience of nature, but what about the study of marine biology or tropical ecology?

According to Aldo Leopold, science enormously enriches the experience of nature. Here follows just some of what Leopold (1949: 173-74) has to say about that:

We now come to another component [of the 'conservation esthetic']: the perception of the natural processes by which the land and the living things upon it have achieved their characteristic forms (evolution) and by which they maintain their existence (ecology). That thing called 'nature *study*', despite the shiver it brings to the spines of the elect [i.e., Calvinists], constitutes the first embryonic groping of the mass-mind toward perception.

The outstanding characteristic of perception is that it entails no consumption and no dilution of any resource. The swoop of a hawk, for example, is perceived by one as the drama of evolution. To another it is only a threat to the full frying-pan. The drama may thrill a hundred successive witnesses; the threat only one—for he responds with a shotgun.

This fact is important, and its potential power for bettering 'the good life' only dimly understood. When Daniel Boone first entered into the forests and prairies of 'the dark and bloody ground', he reduced to his possession the pure essence of 'outdoor America'. He didn't call it that, but what he found is the thing we now seek, and here we deal with things not names.

Recreation, however, is not the outdoors, but our reaction to it. Daniel Boone's reaction depended not only on the quality of what he saw, but on the quality of the mental eye with which he saw it. *Ecological science has wrought a change in the mental eye*. It has disclosed origins and functions for what to Boone were only facts. It has disclosed mechanisms for what to Boone were only attributes. We have no yardstick to measure the change, but we may safely say that, as compared with the competent ecologist of the present day, Boone saw only the surface of things. The incredible intricacies of the plant and animal community—the intrinsic beauty of the organism called America, then in the full bloom of her maidenhood—were as invisible and incomprehensible to Daniel Boone as they are today to Mr. Babbitt. The only true development in American recreational resources is

the development of the perceptive faculty in Americans. All of the other acts we grace by that name are, at best, attempts to retard or mask the process of dilution...

Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind (my emphasis).

How to build receptivity into the still unlovely human mind? Study evolutionary biology and ecology. Doing so may well be conducive to seeking out experience of nature. But even if seeking out experience of nature is otherwise motivated, evolutionary biology and ecology will greatly deepen and enrich the experience of it.

As compared with the competent ecologist of the present day, the competent ecologist of Leopold's day thought that Boone encountered a 'virgin' wilderness (which the *competent* ecologist of the present day would never describe in sexist metaphors)—a landscape of superorganisms, each in a state of dynamic equilibrium. The competent ecologist of the present day knows that Boone encountered a cultural landscape in a state of dynamic disequilibrium shaped as much by anthropogenic fire and predation as by natural disturbances and stochastic patch dynamics. But however much the quality of the mental eye of competent ecologists has changed in nearly three quarters of a century of scientific water under the bridge, our present-day scientifically ignorant Mr. Babbitts, sitting around playing video games, and our present-day Calvinists, dulling their senses with indoor bible study, perceive even less of the incredible intricacies of the plant and animal communities of America than the Mr. Babbitts and Calvinists of Leopold's day. And their experience of nature is certainly more superficial and impoverished than Daniel Boone's.

Let me relate a few of the dramatic ways my own experience of nature has been deeply enriched by the viewing of it through the prism of science. Before reading the following lines by Aldo Leopold, I saw—saw!—cranes as just another large wetland bird similar to herons except for flying with their necks straight out, not crooked into an S shape. After reading these lines and then studying up on the evolutionary biology and ecology of cranes my experience of and reverence for cranes was transformed:

[O]ur appreciation of the crane grows with the slow unraveling of earthly history. His tribe, we now know, stems out of the remote Eocene. The other members of the fauna in which he originated are long since entombed within the hills. When we hear his call we hear no mere bird. We hear the trumpet in the orchestra of evolution. He is the symbol of our untamable past, of that incredible sweep of millennia which underlies and conditions the daily affairs of birds and men (Leopold 1949: 96).

And my study of the evolutionary biology and ecology of cranes has indeed been conducive to seeking out experience of nature. I make an annual pilgrimage in late winter to the Aransas National Wildlife Refuge on the Texas Gulf Coast to experience whooping cranes on their wintering grounds.

My most recent work has been in the area of climate ethics, and in coming up to speed (or at least getting up and running) on Earth systems science, I noticed a shift in my aesthetic experience of nature. I began to attend to the air and to experience it in a new way, one might even say in a sacred way. I relished its oxygen component of 21% and was consciously grateful—a religious emotion—for the photosynthesizing beings that sustain atmospheric oxygen and the biospheric regulatory mechanisms that keep oxygen at an optimum ratio to nitrogen, the other dominant component of the atmosphere. I just returned from a four-month sojourn in Annapolis, Maryland. While there, I lived right on the harbor and found myself paying close attention to the rise in sea level—noticeable because some roads by the city docks that once were previously completely above the waterline were nowadays slightly submerged at high tide. As every scientifically literate person knows, the sea level is measurably rising—ultimately because of a slight shift in the chemistry of the atmosphere. Familiarity with Earth systems science has wrought a change in my mental eye, no less than crane ornithology had formerly done. By now, I was told, flooding of the downtown streets and sometimes the waterfront buildings of Annapolis regularly occurs during storm surges (which I was not there long enough to experience for myself).

It might be worth noting that just as sociobiology has latterly evolved into evolutionary moral psychology, the antecedent of Earth systems science is Gaian science and before that the Gaia hypothesis (Schneider et al. 2004). Given its genealogy going back to an originary goddess in Greek mythology, Earth systems science already just is myth, as well as prism.

Even the study of things that can be experienced only by the scientists studying them and which those scientists can experience only through perceptual prostheses—microscopes, for example—can provide a profoundly transformative prism for the rest of us. What I have in mind is the Human Microbiome Project, sponsored by the National Institutes of Health (Turnbaugh et al. 2007). Frederick Clements and his intellectual descendants—among them both Aldo Leopold and Eugene Odum—thought that ecosystems were superorganisms, but it turns out that organisms are superecosystems.

One collective delusion, which I think is especially dangerous, hails more from secular than religious mythology: the idea that we human beings are individuals, externally related social atoms (Callicott 2013b). Social-atomic individualism was variously theorized by Thomas Hobbes, René Descartes, and Gottfried Leibniz in the seventeenth century. Why is this collective delusion so dangerous? To indicate why it's delusional suffices to indicate its dangerousness. We are better understood to be nodes in incredibly complex networks of socio-environmental relationships than as ghosts inhabiting machines, souls incarcerated in bodies, egos in sacks of skin. Only if we conceptualize our identities relationally, as opposed to atomically, can we palpably appreciate our utter dependence on the functionality of the socio-environmental wholes in which we are embedded.

Our bodies are inhabited—nay, co-constituted—by thousands of species of microbes (Gilbert, Sapp, and Tauber 2012). Many of them are mutualists without whom we cannot digest food, ward off disease, and carry out many other physiological functions. A collective understanding of that may be the silver spike in the heart of social-atomic individualism.

Earth systems science and the Human Microbiome Project are complementary prisms. We are relationally embedded beings all the way down—from the global atmosphere that we inhale minute-by-minute, 24/7, to the organisms living with us on our skin, in our noses, mouths, uro-genital tracts, and guts, without whom we could not live at all. Yes, science is prism no less than it is myth.

Finally, I want to call attention to something that may go unremarked by her readers because it is not a matter of contention in Sideris's essay. Given her habitual hermeneutic of suspicion, Sideris appears to be surprisingly complacent about the Anthropocene idea, so much so that 'Anthropocene' appears in her title. She contrasts it with the 'Ecozoic', Brian Swimme's alternative name for the new geological era that is surely abhorning. And she characterizes his term 'Ecozoic' as 'explicitly prescriptive' and 'Anthropocene' as 'the more descriptive term'.

To summarize and generalize the usual criticism of the term 'Anthropocene', if not *explicitly* prescriptive, it is certainly *implicitly* so; or, more precisely put, it is implicitly normative. Hey, it's the Anthropocene, dude, get used to a biologically impoverished and increasingly energetic biosphere—with all that goes with it: intensified droughts and floods; more virulent diseases; drowned islands; inundated megalopolises; receding coastlines... It's the new normal, baby. Learn to love it. Enough already with all that nostalgia shit.

Whether implicitly normative or not, 'Anthropocene' is definitely not descriptive. Why? Because the Holocene was in fact the Anthropocene. Let me spell this out: the term 'Anthropocene' is more descriptive of the geological era that is ending than it is of the geological era that is beginning. Up to about now, for ten to twelve thousand years, an unusually stable and optimal (for a bipedal primate) climate regime has prevailed on Earth—and that made being 'on Earth' almost 'as it is in heaven', so to speak (Mackay et al. 2003). That Goldilocks climate fostered the development of settled agriculture. The development of settled agriculture fostered the development of cities. The development of cities fostered the development of civilization—art, music, letters, organized and institutionalized religion and government, law, politics, science, sophisticated technologies. And all of this fostered a tremendous increase in the human population. I do not doubt that the penultimate expression of those sophisticated technologies has triggered global climate change, nor that, with a new climate regime, the end of the Anthropocene (aka the Holocene) is in the offing. But what we are entering is the Post-Anthropocene geological age, not the Anthropocene, which is just coming to an end.

Two visions of the fate of *Homo sapiens sapiens* in the Post-Anthropocene are current.

According to the 'transhumanist' techno-optimistic vision, *Homo sapiens sapiens* evolves (in a Lamarckian manner) into *Homo sapiens cyborgiens* (Bostrom 2014). Nanotechnologies will be embedded in our brains and other organs; our genes will be redesigned to eliminate aging and maybe even death by natural causes; synthetic biology will compensate for the diminishment of Darwinian-evolved biodiversity after the sixth mass extinction has run its course.

According to the eco-apocalyptic vision, in a more energetic biosphere, diseases will proliferate; crops will fail; resource wars will ensue; nation states will devolve into failed states; the human population will crash; the remnants will be led by sociopathic warlords; and an irreversible Dark Age will descend upon the Earth (Lovelock 2006, 2009). To see the future firsthand, go (if you dare) to Syria, Somalia, Mali, Libya.

The 'more descriptive term' for neither of these futures is the 'Anthropocene'. In the former vision, *Homo sapiens sapiens* will have evolved into a new species; in which case, a term derived from *ανθρωπος* is hardly the fitting name of the era of its origin. And in the latter vision, while *anthrōpoi* will still be around, their populations will be reduced to scattered remnants and they will no longer be members of the dominant species on the planet. As are most other environmentalists, I am inclined to share the eco-apocalyptic vision. But, as for rectifying names, my

personal views are beside the point. Either way—the techno-optimistic way or the eco-apocalyptic way—the right name is not the ‘Anthropocene’.

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