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Abstract

In *Down to Earth* and *Facing Gaia*, Bruno Latour flirts with treating Earth as an intentional entity—an implication already present in his adoption of “Gaia” to describe earth systems. In addition, he proposes that science and religion be put on an equal footing with regard to producing reliable knowledge about the world, suggesting that they are simply two equally contending parties along with many others such as nations, regions, ethnicities, etc. This essay argues on the contrary that scientific knowledge practices incorporate a critical attribute absent from religions, namely the power of disconfirmation. By largely ignoring this attribute, Latour drastically downplays the ability of the sciences to deliver robust, reliable knowledge about the world, at precisely a time when scientific methods are crucial to understanding global warming, species extinction, the coronavirus pandemic, and many other threats facing life on earth. To explore why the appeal to an intentional Earth is attractive to Latour and many others, this essay analyzes N. K. Jemisin’s “Broken Earth” trilogy, in which Father Earth figures as the living antagonist to the varieties of people inhabiting this future time. At the same time it acknowledges the power of kinship and the problems it poses for human solidarity, thus anticipating the problems of Latour’s proposed politics of disunity, the trilogy also holds open the possibility of a future when all people, human and not, can live and flourish together.

About the author

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As posthumanism continues to spread and diversify into the posthumanities, its different versions draw inspiration from a shared hope. At its core, posthumanism focuses on the dismantling of traditional ideas about the human—what human being is, how humans relate to nonhumans, how the meaning of human life is changing under the influence of technological innovations—and explores possibilities for new configurations that the dismantling opens up. The hope, of course, is that these can better address the challenges that the human species faces in the twenty-first century, from environmental degradation to viral pandemics and a host of other problems such as Global Hunger and Thirst, Global Energy, and Global Security. None of these “Grand Challenges,” as the sciences call them, can successfully be solved by a single region or nation acting by itself. Global in nature, the challenges require collective actions and shared goals to have even a chance of being mitigated, much less solved. The urgent problem for the posthumanities, which include contributions from animal studies, the environmental humanities, studies of science and technology and much more, is to craft conceptual frameworks and undertake interpretive analyses that seize the opportunities opened by posthuman inquiries and create pathways toward more sustainable, just and vibrant futures for humans and nonhumans alike.

Given this goal, no one seemed better positioned to undertake it than Bruno Latour.

In the landscape of Science and Technology Studies (STS), no figure looms larger. From his early co-authored Laboratory Life through We Have Never Been Modern and An Inquiry into Modes of Existence, Latour has consistently broken new ground and advanced the field in definitive ways. It was with real anticipation, then, that I turned to his latest work, Down to Earth and Facing Gaia, where he analyzes what he calls the New Climatic Regime. To my surprise, these works not only failed to live up to my high expectation but also contained conclusions that, in my view, range from misguided to downright dangerous. I have no doubt that Latour intended these works to be constructive interventions. Why and how
did they go so wrong?

Assessing his intervention requires that we look not only at his conclusions but also the lines of thought that lead to them. A crucial turning point is the idea that organisms and environment are so entwined that no separation can be made between them, a strategy that leads him virtually to erase the distinctions between living organisms and material processes. He incorporates into this idea many concepts from his earlier works, particularly his critique of the Moderns, those scientists (and others) who want to draw a firm line between Nature and Culture. This mistaken strategy, Latour argues, is not only impossible but deeply injurious to our view of the world. Specifically, the Moderns employ rhetoric and enact assumptions that make the Earth seem inanimate and devoid of agency, even as various areas of science (with a small “s”) engage in research that shows an ever-increasing proliferation of agencies, from plants to bacteria. Latour aims to demolish this “deanimated” view (FG 142) by attributing agency not to individual actors but rather to “waves of action” (FG 101) uniting environment and organism, thus rendering the earth active (not merely reactive). In chastising the Moderns, however, he takes the extreme position that science can have no claim to superior knowledge over religion; rather, each is a commensurable party which must be forced into negotiations with one another and with other parties. In following this line, Latour’s thought veers into minefields that threaten to destroy our best resources to ensure that the planet remains livable, for humans and non-humans alike.

Probing the affectional (and not merely intellectual) implications of his argument, we might wonder what the world as he envisions it would look like if fleshed out into a fully imagined scene. N. K. Jemisin’s “Broken Earth” trilogy (The Fifth Season, The Obelisk Gate, and The Stone Sky) is admirably suited to the purpose, for her texts represent an Earth that is not only a sentient being but aware of the humans on its surface and engaged in mortal combat with them. Whereas Latour merely suggests the possibility of earth as intentional agent, Jemisin employs the full force of vivid storytelling to explore this premise. Juxtaposing her trilogy with Latour’s late works shows how a cultural constellation of ideas can expand in ways that reverberate with fundamental preconceptions of what, in human life, is most precious and most worth preserving, and at what cost to others, humans and nonhumans. It also reveals the dangers in escalating these human-specific values to a planetary scale, including the rhetorical distortions...
that the term “Anthropocene” performs in fusing geological time scales with human activity. Spectacular storytelling, at which Jemisin excels, may nevertheless lead to flawed philosophy. The better way, this essay argues, is to recognize the profound differences separating living entities from material processes, and to endorse scientific procedures as pathways to robust and reliable knowledges about our world.

1. Agents and Actors in Facing Gaia

Urging us to face Gaia, Latour makes three claims that are at least in tension with one another, if not contradictory: 1) that the chemical and material processes of the planet are self-regulating and no intentionality is involved; 2) that biological organisms strive to maximize their survival by interacting with, and thereby modifying, their environments; and 3) that environment and organism are so entwined through recursive feedback loops that one cannot distinguish between them and it is therefore necessary to abandon the notion of organisms altogether, considering instead “waves of action.” The problem lies not in claims 1 and 2 by themselves, but begins to surface in the third claim when they are co-joined.

Underlying these tensions is a central question: does the planet have intentionality? Here the vectors of Latour’s claims point in different directions. If it is impossible to separate organisms and environments, and if organisms definitely do have intentionality, either intentionality must be considered beside the point, or environments should be treated as if they, too, have intentionality. At various points Latour tries out both of these arguments, but is unable definitively to settle on either, for the good reason that both lead him into contradictions. He cannot persuasively argue that intentionality is beside the point, for it is crucial to his view of organisms as actors in active interplay with their environments: “each organism is fighting to increase its chance [of survival] by altering its environment, while all the others are doing the same. A concatenation of agents but not of parts fitting together, a multiplication of agencies” (FG 98). If organisms have intentionality, however, this would presumably provide a basis for making a clear distinction between environment and organism. Refuting this possibility creates the impetus to claim intentionality for environments as well.

This impetus is clear in a draft Latour circulated prior to the Gifford Lec-
tures that became, after revision, the published book *Facing Gaia*. Here is the relevant passage from the draft:

Whatever is reacting to your actions, loop after loop, begins to take on a consistence, a solidity, a coherence, that, for sure, does not have the technical predictability of a cybernetic system, but which nonetheless weighs on you as a force to be taken into account. This is what happens when you keep adding the “response” of the ice sheet to the “response” of acidity of the oceans to the “response” of thermohaline circulation, to the “response” of biodiversity, and so on and so forth. Such an accumulation of responses requires a responsible agency to which you, yourself, have to become in turn responsible. Here again, the performances end up generating a competence: “behind” these cumulative responses, it is hard not to imagine that there exists a power that does listen and answer. To grant it a personhood is not to imply that it may speak and think or that it exists as one single substance, no more than you would do with a State, but that in the end it has to be recognized as a politically assembled sort of entity. What counts is that such a power has the ability to steer our action, and thus to provide it with limits, loops and constraints (pdf, *Facing Gaia*, Lecture 6, “Inside the ‘Planetary Boundaries’: Gaia’s Estate).

Significantly, this passage does not appear in the published version of *Facing Gaia*, perhaps because of pushback Latour received from the Gifford Lecture audiences. Instead we have this, the passage where Latour quotes approvingly a disclaimer from Lovelock in which Lovelock explicitly denies the implication of the planet as an intentional agent: “neither Lynn Margulis or I ever proposed that planetary self-regulation is purposeful . . . in the arguments over Gaia quite often the metaphor not the science was attacked. Metaphor was seen as a pejorative, something inexact and unscientific. In truth, real science is riddled with metaphor” (Lovelock, quoted in FG 135). As a literary critic, I of course agree with his point that “real science is riddled with metaphor.” But also as a literary critic, I hasten to add that such metaphors are never devoid of connotation and can have powerful effects in directing thoughts along some paths rather than others. By adopting Gaia as his name for the planet, Latour (like Lovelock) can play a double game, benefitting from its implication of personhood while simultaneously seeming to deny (in his published version) that planetary systems have intentionality.

Now let us piece together the thread that Latour strategically cuts off and follow through on the idea that whereas organisms have intentionality, that earth
processes are not “purposeful” (*FG* 135). This would seem to provide a clear basis to distinguish between organisms and the chemical and other material processes taking place on the planet, namely that organisms follow pathways that increase their chances of survival, whereas material processes have no such directionality. No doubt, as Latour argues, there are multiple and complex feedback loops between organisms and processes. To cite one of his examples, the climate evolved as a result of the action of millions of organisms, and organisms arose as a result of planetary climate changes, most dramatically in the shift from anaerobic bacteria, for which oxygen is a toxin, to aerobic bacteria able not only to tolerate oxygen but to use it in their metabolic processes. These feedback loops notwithstanding, there exists an important distinction between material processes and organismic activity, which can be summed up by the fact that organisms *have stakes* in what happens, whereas material processes do not.

Having stakes does not necessarily imply having intentions, desires, or motives, or for that matter a mind or brain. It simply means lifeforms that survive and reproduce preferentially seek out and follow pathways that enable them to do more of the same. They do so, of course, for reasons that Darwin laid out more than a century ago. Those organisms that survive will increase the percentage of their genes in the gene pool and thus perpetuate and proliferate their adaptive behaviors, while those that do not survive and reproduce will not pass on the genes and gene-directed behaviors they enact. Even viruses, a liminal case of life insofar as they replicate but cannot do so by themselves (hijacking the cell’s machinery for that) nevertheless activate the same processes of replication and survival as motors driving them toward behaviors most conducive to increasing their chances of survival.

In this respect, material processes follow very different scenarios. Does a mountain prefer pathways that would prevent it from eroding? Do rocks care if they decay, thereby releasing oxygen into the atmosphere? Certainly these events create opportunities that organisms evolve to exploit, but unlike lifeforms, the mountain does not seek out opportunities to prolong its existence, nor do rocks try to discover ways to avoid decay. To demonstrate otherwise (in the real world as distinct from literary fantasies), one would have to show that multiple pathways are possible, and that a substance preferentially chooses one that favors the continuation of its existence. To my knowledge, no such demonstration has ever been made. Does this mean that the Earth then should be seen as inanimate, a
prophecy Latour detests? Not at all, for several reasons. First, the earth includes all the lifeforms that inhabit it, not only of the geological formations in active interplay with them. Second, material processes themselves have tremendous agency, for example when water freezes in a rock crack and shatters a boulder. Agency is not the same as having stakes, a difference denoted by naming material processes as agents, and lifeforms as actors.

2. Are Science and Religion Really Commensurable?

In *Facing Gaia*, Latour leaps from his holistic vision of waves of action to the astonishing proposition that there is no fundamental difference between science and religion. Here, I think, the wounds inflicted on him from the Science and Culture wars of the 1970s-1990s, even though they have long healed over, nevertheless have left visible scars. He distinguishes between Science (with a capital S) and the many diverse disciplines of science (with a small s), arguing that those who appeal to Science frequently invoke the “laws of Nature,” so that Nature becomes the ultimate court of appeal. But as his work has extensively documented, there is no “Nature” that can be separated from culture, especially not in the sciences, where multiform practices inevitably involve both. Thus, he argues, Science becomes an ideological formation and in this respect is analogous to the obviously ideological nature of Religion (with a capital).

In detail, Latour’s argument runs thus. Although the two have different ultimate courts of appeal (Nature for Science, God for Religion), they converge not only in being ideological but also in that each has its complementary supplement that subverts its central claim. Science has the scientific disciplines and subdisciplines, which do not follow a unified methodology, nor do they all make the same kinds of claims about the “laws of Nature.” Religion, for its part, has the individual specific religions, which do not all recognize the same versions of God. Latour’s complaint is not so much with the sciences or religions as with the grand overarching claims made by Science and Religion.

In equating the two, however, he ignores critical differences that subvert the equivalency he wants to institute between them. These can be summed up in the idea of disconfirmation. As Donna Haraway (1988) has argued in relation to situated knowledge, there is no God’s-eye view that will give us a complete-
ly “objective” and transcendent perspective. We are human and cannot escape seeing with human eyes, with all the cultural and physical biases, filters, and species-specific perspectives that entails. Karen Barad (2007) makes this point forcefully in relation to experiments in quantum mechanics, but as she shows, it applies more generally to scientific research of all kinds. Scientific research never yields absolute knowledge—but it can and does regularly give reliable knowledge that is robustly valid within the parameters of given circumstances and perspectives. Thus, as I argued years ago, science cannot tell us what “reality” is, only how it manifests itself to us (1993). But it can tell us unambiguously what reality is not, through its power of disconfirmation. The history of science is replete with important instances in which erroneous theories were proven wrong: phlogiston, the ether, spontaneous generation, different rates of gravitational acceleration for objects of different weights, etc.

Over the years, Latour’s work has consistently ignored or underplayed the power of disconfirmation. Focusing instead on the ways in which cultural preconceptions and practices interpenetrate scientific research, he has sought to demonstrate the unavailability of absolute knowledge—a claim that many scientists misinterpreted as saying that science produces no worthwhile knowledge at all. Facts, as Latour has argued for years and restates in Facing Gaia, are constructed through social and political processes as well as through scientific debates, involving multiple trials of strength and recruitment of allies, among other practices. Like the contingent knowledge that confirmation produces, disconfirmation also depends on recruiting allies and other social processes. But once disconfirmation gains enough strength, it yields knowledge that goes beyond species-and-cultural contingency into a kind of absolute: it announces that whatever “reality” is, it is not consistent with this way of looking at things.

To my knowledge, nowhere in Latour’s oeuvre does this aspect of scientific investigation get extended treatment. Rather, over and over, the emphasis falls on the difficulties of establishing positive knowledge that is subsequently incorporated into the scientific edifice of established facts. Such a strategy is understandable, articulated in the “Strong Programme” as the argument against asymmetry, the idea that accepted scientific theories result from “good” science, while disconfirmed theories are labeled as defective or “bad” science. The Strong Programme insisted that this amounts to a Whiggish interpretation of the history of science, retrospectively applying the labels “good” and “bad” with the hind-
sight of knowing who the historical winners and losers would be. The same criteria, its proponents insisted, must be used for both confirmed and disconfirmed theories. So far so good, but there still remains a difference between confirmed theories (which may include any number of unrecognized assumptions and ranges of applicability), and disconfirmed ones, which although they may also contain unrecognized assumptions, have through social, political, and scientific practices nevertheless been shown not to be consistent with our human experience of “reality.”

The power of disconfirmation is an extremely important characteristic distinguishing science from religion. Religions have no consistent, interpersonal methods to disconfirm a claim; if someone says she has received the Holy Spirit, or has sincerely repented of her sins, or has seen the face of God, how can such claims be disproved? Scientific theories, by contrast, can and do have disconfirmation procedures. Unlike confirmation, which requires an assumed match between a model and (some aspects of) reality, disconfirmation does not imply anything specific about the nature of reality, only that whatever it may be, the aspects disconfirmed are not consistent with whatever it is. It limits rather than specifies, and in this sense, produces knowledge that is no less socially produced but less permeated with species-specific perspectives and assumptions.

Perhaps unconsciously (since he does not comment explicitly on the parallel), Latour reinscribes his vision of myriad biological species striving with others for survival advantage into the human realm, imagining that Science, Religion and other parties should all have to strive with/against each other for survival advantage, with Science being granted no special privilege over any of the others, including Religion (FG 252). This astonishes me, because it throws away the most powerful resources we have to make the planet more livable for us and other lifeforms, namely the privilege we grant scientific research in establishing facts about ocean temperature rise, extinction of species, rising carbon dioxide levels, etc. Now more than ever, in this era of novel coronavirus, we cannot afford to regard religious faith and scientific knowledge as essentially the same, with or without the capital letters. This seems so obvious that I am at somewhat of a loss to explain why Latour would argue the opposite. His tone seems to indicate that the critiques directed at him (often unfairly) during the Science Wars have not entirely lost their sting for him, as when he refers ironically to the delicate sensibilities of the scientists whom he pretends to try not to offend, even while his rhet-
oric performs the opposite. He writes, “Let us take care not to hurt the feelings of persons who seem very sensitive to these contradictions but also seem to lack any resources for overcoming them . . . Even if these people [scientists] respect no one, we must try to speak to them with respect; this is the only way to struggle against any form of fundamentalism. We must especially avoid imitating their bad manners” (FG, 166-167). Thus he positions scientists as similar to jihadists, ready to take offense at the slightest violation of their codes and consistently displaying intolerance toward the views of others.

3. Facts, Politics, and the Dangers of Binary Oppositions

Another aspect of Latour’s argument stands up better to scrutiny, that scientists should abandon their traditional stance of being above politics because they are “objective,” merely stating facts. This leads to the inconsistency referred to above, in which scientists are caught between wanting to appear not to take sides even though the facts they proclaim make taking sides an imperative. As Latour points out, facts are of course involved in politics, a truism very much on display now in the US as infectious disease experts try to walk a fine line between being factually accurate and not contradicting the Trump administration’s latest pronouncements about the coronavirus. Facts are proven reliable not because they do not involve social and political processes, but precisely because they are socially constructed and have endured multiple “trials of strength,” as Latour called them (1987, 93). Latour cannily shows how climate skeptics have exploited this vulnerability, for instance in “climategate” when emails revealed some political motivations among scientists (FG 25-26). Hence they are not truly “objective,” the skeptics argue. At the same time, the skeptics pose as being “objective” themselves, using the pretense of scientific debate to create pseudo-controversies, paying large sums to “experts” who will testify on their behalf. Their intent, of course, is to create enough doubt to fog over the overwhelming scientific consensus about anthropogenic contributions to global warming.

Although Latour clearly sees that there is an enormous difference between the faux debates sponsored by climate skeptics and the commitment of scientists to take political action when the facts they construct point to environmental devastation, inexplicably he nevertheless urges that they both be given equal status.
as contending parties. Scientists, he argues, are to be included but granted no special privileges in deciding truth claims. This untenable position is underwritten by his use of Carl Schmitt’s political philosophy, evoked both in *Down to Earth* and *Facing Gaia*. Schmitt of course was the philosopher strongly identified with the Nazis and also with political populism. While calling him a “toxic” figure (*FG* 228), Latour nevertheless adopts pages from Schmitt’s playbook in arguing that the essential first steps are to identify your friends and, just as importantly, your enemies. Concurrently, Latour specifies, it is necessary to know what your territory is and what you are willing to do to defend it. Here the argument gets murky, because Latour wants “territory” to be understood not solely in geopolitical terms but also as networks, for example, the networks that surround the proper functioning of scientific instruments. This vision is not quite all-against-all, the prospect that Hobbes sought to escape by proposing a social contract, but it clearly would lead to a highly divisive and fractured world, in which any number of vested interests face off against one another with no overarching authority to adjudicate between them.

In my view, this is precisely the kind of scenario that leads to deadlock, dysfunctionality, and bad outcomes. A case in point is contemporary US politics, where populism is rife, demonization of opponents is standard fare, and lies and falsehoods are everywhere. A better model, it seems to me, is offered by contemporary feminism. After several generations of “not on my back” protests and resistances against white middle-class privileges, feminists of many persuasions have nevertheless found ways to work together to accomplish common goals. Alliances and coalitions have proved effective in promoting and accomplishing positive changes, even in the face of well-funded adversaries with deep pockets dedicated to the capitalistic drive for profits over every other consideration.

In this regard, arguably the most dangerous of Latour’s proposals is creating a divide between the “earthbound” and “humans” (*FG* 247). The earthbound are those people who recognize the interdependence of all living creatures, including humans, and the precariousness of the critical zone upon which all life depends. “Humans,” by contrast, are those who evade these realizations and engage in actions that endanger us all, for example polluting the environment and gutting environmental protections to facilitate exploitation of resources. But this kind of rhetoric is more poisonous even than the toxicity of Schmitt. In fact, there are no humans who are not earthbound, insofar as all life depends upon a livable plan-
et—only some who do not recognize their earthbound status. Creating this rhetorical divide encourages a “holier than thou” attitude among those who consider themselves earthbound and invites them to heap scorn on the benighted “humans” while congratulating themselves on their ideological purity. This is precisely the kind of attitude that Latour himself condemned in his influential essay, “Why Has Critique Run Out of Steam?” (2004). In calling everyone who does not consciously consider themselves earthbound “humans,” Latour creates a binary “Us” versus “Them,” when in reality the differences fall upon a spectrum laden with many complex issues. Further, announcing that “Humans are now at war with the Earthbound” (FG 247), he creates exactly the kind of scenario that Schmitt recommended, drastically undermining possibilities for alliances and increasing polarizations between people. As if this were not bad enough, Latour sometimes writes as if nation-states are already things of the past, but they remain very much on the scene and no doubt will persist into the foreseeable future. His erasure of nation states adds to his vision of many equally contending parties with no overall authorities, but it also makes his vision far from the reality in which we actually live. Latour’s argument, then, falls far short in many respects, both in its construction of political realities and in its recipes for how to bring about positive change.

Its dangerously fantastical nature notwithstanding, Latour’s vision corresponds uncannily well to the kind of world that Jemisin envisions in her “Broken Earth” trilogy.

This is storytelling of a high order, having achieved the remarkable feat of winning the prestigious Hugo Award for each of the trilogy’s novels in three successive years (2015, 2016, 2017). Add the fact that Jemisin is an African-American woman in a field dominated by white men, and the accomplishment is as unique as it is stunning. These remarkable novels allow us to explore fully the premise of an intentional Earth and the kind of world associated with it.

The first volume, “The Fifth Season,” explains that a Fifth Season is not part of the regular seasonal rotation but rather an extended period of seismic instability, when the earth’s crust is rent open and poisonous gases, debris, and ash are belched into the atmosphere. The result is similar to the climactic “winter” created when a huge asteroid crashed into the earth, ending the reign of the dinosaurs and creating conditions in which no animal over forty pounds could survive. Over thousands of years, humans have devised methods to survive a Season, in-
cluding building up stores and altering their modes of interaction. Moreover, it is not only humans who are affected; entire ecologies also drastically alter their behaviors. The kirkhusa, for example, a dog-sized mammal kept as a pet in normal times, turns vicious in a Season and attacks humans; boilbugs, normally dormant, become active and devour not only carcasses but living creatures as well. Social order in general breaks down, and communities (“comm”) that typically engage in peaceful trade turn suspicious at best and murderous at worst. The result is a world in which contending parties struggle against others for survival advantage, with no superior authority to adjudicate between them. In her fictions, then, Jemisin creates the kind of conditions that Latour argues we should recognize and work to institute. The social, political, economic and affectional forces activated by the extreme conditions of a Season bring about an “all against all” dynamic in which the stakes are not only individual but also species survival.

In this sense, it serves as a thought experiment exploring the implications of Latour’s vision and extrapolating its consequences to a planetary scale. It enables us to ask questions about the vision Latour proposes: is this the kind of world in which we would want to live, and if not, what forces would be effective in combatting it? What would happen if the Earth was indeed an intentional being, as Latour sometimes implies, capable of responding to injuries inflicted on it by humans? How might humans evolve in relation to an intentional Earth, and what kinds of social structures would be instituted to deal with this evolution? Finally, the trilogy enables us to understand on a deep level the attractions that induce people to want to believe in an intentional Earth, as well as their relation to the staples of human existence, especially the bonds of kinship between parent and child.

4. Evolving Humans in the “Broken Earth” Trilogy

The Seasons have been going on for thousands of years—long enough for even the glacial pace of biological evolution to produce mutations. The most important are the orogenes (in less polite terms, roggas), humans able to sense motion in rock strata and interact with it directly. Keeping pace with this change are social structures designed to control them, neutralize their abilities, and keep them subservient. These tasks are performed by the Guardians, a ruler class who
have had their lives lengthened, their abilities extended, and their powers enhanced by the implantation of “corestones” into their brain stems. Corestones, the two later volumes reveal, have been extracted from the heart of the living Earth, and they function as intensely ambivalent objects. On the one hand, they impart astonishing powers to the Guardians, for example enabling them to live for well over a thousand years. On the other, they form a precarious bridge between the Earth and the implanted Guardians, an opening that the Earth is always lurking to exploit by bending the human will to serve it rather than the Guardian’s individual or class interests.

Because orogenes have powers that other humans do not, social structures and societal norms have evolved not only to control but also to stigmatize them, making them objects of derision and denigration as well as fear among the general populace. Jemisin creates parallels with racisms in our world that are extensive and deliberate. An evolving part of the trilogy’s narrative arc is the slow discovery of the historical slander that has been foisted on the orogenes, the attempt not only to curtail but also to hide a crucial aspect of their powers, and the slow realization of what it would mean for them to come into their own.

(Almost) the first orogene we meet is Essun, a mother and wife who discovers that her husband Jija has killed their infant son because he suspected the child was a rogga. Moreover, he has left town with their pre-teen daughter Nassun, thus initiating a major plot trajectory as Essun sets out to track them and recover her only living child, a trek that will take her almost to the trilogy’s end. The discovery of her status as an orogene comes after she intervenes in a major seismic upheaval to protect her home and town from an enormous earthquake; the shockwaves split and go around the town, then continue southward. To anyone who looks, it thus becomes obvious that the town has been protected by a rogga. Her powers are further revealed when she attempts to leave town after the headman has ordered the gates closed. When she persists and the guards attempt to attack her, she kills them by drawing energy from the ambient rock and creating a torus, a spiral-shaped zone that instantly freezes everything in its circumference.

Only retrospectively do we realize that most of the first volume is dedicated to this character, because she undergoes three name changes. In her childhood she is known as Damaya, found as a “feral” orogene by the Guardian Schaffa and taken to the Fulcrum to be trained and made subservient; then as Syenite, the name she takes as a young woman skilled enough to have won four (out of a pos-
possible ten) rings as testimony to her growing powers as an orogene; and finally as Essun, the name she takes to hide in obscurity after the cataclysm that separates her from her sometime-partner Alabaster and forces her to kill the child they had together, to save him from being captured by the Guardians in a repetition of her own fate (a la Morrison’s *Beloved*). Only at the first volume’s end can we understand its beginning in the Prologue, when a man (whom we will come to know as Alabaster) stands beside a female figure (later revealed as a stone eater) and uses his enormous power as an orogene to open a huge Rift in the earth’s crust and initiate a thousand-year-long Season, the one that may lead to the mass extinction of life on earth, including humans. Thus the first volume has a circular structure, an appropriate design for a Season that will serve both as beginning and end to the trilogy’s plot trajectory.

5. **Inventing “Magic”**

To make the Earth credible as an intentional and sentient being, Jemisin invents a new quality that inheres in all living creatures as well as in Earth’s stone heart, called simply “magic.” Perceived by orogenes as silver threads that become more closely entwined as a life force intensifies, magic becomes the fantastical element capable of making artifacts come alive, as well as the bridge that joins flesh with stone. Although trained by the Fulcrum to look only down toward the Earth rather than up, Essun after she breaks away from her Guardian gradually discovers the power of the obelisks that float in the sky, mysterious artifacts from a long-dead civilization. The largest of the more than two hundred that populate the atmosphere is the onyx, which Essun eventually perceives as not only being alive but also as a deeply intentional and thoughtful entity. “Now I know: put enough magic into something nonliving, and it becomes alive,” she thinks (*SS*, 332). It will be the onyx’s ability not only to connect with orogenes but to discern their innermost feelings and desires that becomes decisive in the trilogy’s climax.

In their alive state, magic’s silver threads are vibrantly entangled and full of energy. However, as Essun and Alabaster discover, there is a price for learning to manipulate them. Expending the enormous energy required to intervene in magic’s structure has the ironic effect of straightening out the silver threads on one’s
own body, causing body parts to petrify into stone. Alabaster, after he creates the Rift and initiates what may be humankind’s final Season, finds that his arms are turning into stone. Similarly, Essun suffers the same fate when she uses her power to perceive and manipulate magic, having first her arm and then one of her breasts turn to stone, and finally at the end, her entire body.

The dialectic between flesh and stone had been anticipated by Latour, and indeed, one could argue, by the entire discourse of the Anthropocene, a term with roots in geological classifications. Commenting on a 2011 report by the Subcommission on Quaternary Stratigraphy, Latour compares it with earlier views of Man as master, Earth as object. He writes that “the tone is no longer triumphal; there is no longer any question of ‘mastering’ nature. Instead, the focus is on searching the sedimentary ruins for traces of earlier humans who had been turned to stone. As in a new master-slave dialectic, features of both, human and stone, end up melding. Anthropomorphism of the critical zones, petromorphism of humans. In any case, we have a fusion of geohistorical forces in what truly resembles a witch’s cauldron” (115-116). No doubt Jemisin’s trilogy is deeply indebted to similar ideas, which she literalizes in having flesh turn to stone not over eons, but in an instant when an orogene manipulates magic.

The contrary movement, of stone turning into flesh (or something like it), is exemplified in the stone eaters. The third volume is largely devoted to their story, narrated by Houwha, a character who appears in the first volume as Hoa, presenting as a flesh-and-blood child later revealed as a disguise that he creates to make himself appealing to Essun. The stone eaters, we eventually learn, originated as an anthropomorphic and enfleshed artificial species created by the same long-dead civ that made the obelisks, the society of Syl Anagist. The fates of the two artifacts are entwined, for the artificial species, called “tuners” by their creators, were made specifically to interact with and harness the obelisks’ power.

6. Tools or People?

The tuners are regarded by their keepers as mere tools rather than as people with rights; indeed, their indoctrination has been so thorough that that is how they regard themselves. Human-like in appearance, they differ enough from biological humans so that they are immediately recognizable as others, a condition
further aligning them with racial prejudices. Like many slaves in the pre-Civil War American South, the slightest gesture of resistance is enough to provoke punishment, in their case by being sent to the “briar patch,” an allusion resonating through African-American literature from Ralph Ellison to Toni Morrison and connoting both slavery and invisibility. It is only when Kelenli appears that they—and we—discover exactly what the “briar patch” entails.

Kelenli explains that she was the prototype for the tuners. Unlike them, she is sufficiently human in appearance to pass. Indeed, she was a teenager before her real status was revealed to her and Gallat, the “brother” with whom she was raised and who has now become the head “conductor,” as those who rule the tuners are called. Houwha/Hoa thinks, “What is that like, being treated as human when one is not? . . . We are treated like weapons that might misfire at any moment” (SS, 49). Weapons in extraordinary cases, yes, but on an everyday basis, tools. When Houwha repeats to Kelenli what he has been taught, that “I’m a tool,” he senses anger in her response; accordingly he intuits that “Kelenli hates what I have just said” (SS, 101).

Kelenli’s ostensible goal, assigned by the Syl Anagist conductors, is to enlarge the context in which the tuners operate so that they can work together more efficiently. This is to prepare them for the big day when the “Plutonic Engine” will be activated through Geoarcanity, initiating procedures that will mine the Earth’s own reserves of magic to provide seemingly endless power to Syl Anagist. As Houwha comes to understand, it is the ultimate sacrilege against the Earth, and as the humans learn too late, the Earth will retaliate in kind.

Learning the truth about the briar patch tips the scale for the tuners, catalyzing them into revolt. Kelenli arranges for them to visit an old power station, where the banished tuners have had their personhoods stolen, their consciousness snuffed out, and their vitality reduced to mere existence, with the remnants of their magic turned into power sources for the city. This, the tuners realize, is a deeply wrong violation of a thinking person that converts him into a mindless tool. With this, the tuners resolve to sabotage the looming Geoarcanity project, which Houwha observes from ground zero, the moon base from the Plutonic Engine is to be launched. At the one who will control the onyx, the central cabochon of the obelisks, Houwha serves as the lead tuner, the fulcrum through which the power of the others will be channeled and harnessed. As the moment approaches, he thinks, “We are aligned. We all want this. We will prove by our actions today.
that we are more than tools. Even if we aren’t human, we are people” (SS, 329).

When the climactic moment arrives, the tremendous energy of the combined obelisks is used not to start the Plutonic Engine but rather is re-directed by the rebelling tuners onto the moon, resulting in an enormous explosion so strong that it wrenches the moon out of its Earth-centric orbit and sends it flying off into space. Disrupting the gravitational forces that have kept the moon tethered to Earth also initiates huge tectonic movements in the Earth, thus causing the first Season to erupt, retrospectively named the Shattering. This narrative account arrives, however, only near the trilogy’s end. First the trilogy’s readers, like Essun herself, must plow through records compiled over millennia that have erased and distorted the truth of the Syl Anagist situation, although hints of it have survived in folklore and forbidden texts.

Along with shattering the Earth-Moon system, the cataclysm also transforms the tuners, turning them in stone eaters, the humanoid species that in the trilogy’s present coinhabits the earth with humans. Whereas the tuners like humans had enfleshed bodies, the stone eaters are literally made of stone; they store parts of their bodies as stone fragments and munch on them for nourishment; and they have the ability to move through the Earth’s stony mantle as if it were air. In addition, they have become effectively immortal. Their bodies may be attacked and the parts dispersed, but over eons, a fragmented stone eater may reassemble itself. Thus Latour’s comment about petromorphism becomes a literary representation, just as anthropomorphism of the Earth is also rendered literally the case in the trilogy’s narrative.

7. An Intentional Earth

As the trilogy progresses, the Earth emerges as a fully intentional actor. At first it speaks only through the corestone implanted in a Guardian, indicating that the Guardian has gone over to the dark side of enacting Earth’s will rather than his or her own. Gradually, however, it begins to speak on its own behalf, hailing its various human addressees with “Hello, little enemy.” The Earth’s enmity is a response to the Syl Anagist society’s attempt to harness its magic, perceived by the Earth as an unconscionable theft. Moreover, the Earth’s response to the Moon’s departure echoes through folklore as the father mourning the loss of his
only child.

Now the Moon is returning. Through its new centuries-long orbit, it will again come close to the Earth, presenting the possible opportunity to recapture it in Earth’s gravitational field. In the historical present of the trilogy’s narrative, the Moon’s return has initiated fierce competition among the Earth’s inhabitants and indeed the Earth itself, each jostling for advantage over rival factions. Some stone eaters, especially Hoa, see it as an opportunity to use the obelisks to recapture the Moon and thus placate the Earth; other stone eaters, particularly Steel, want the Moon to crash into the Earth, smashing the planet and ending all life, the only way in which he can conceive of escaping the prison of his immortality. The orogenes at the center of these contending forces are Essun and her daughter Nassun, because only they have the necessary power to open the Obelisk Gate and use its power to intervene on a cosmic scale, whether for a fatal apocalypse or another chance.

8. Kinship Above All

As the climax approaches, kinship bonds take center stage. For Nassun, it is not love for her father Jija (whom she has killed in self-defense) or for her mother, whom she believes has forsaken her, but for Schaffa, the surrogate father whom she believes has tried to protect her and who has inspired her fiercely loyalty in return. For Essun, it is her love for her daughter, her sole surviving child, felt with an intensity that trumps every other loyalty--to partner, comm, species, even the unborn child she carries. By centering the characters’ emotions on kinship, Jemisin taps into one of the near-universals of human sociality, as well as the primary needs to feel loved and protected and the desire to belong to something or someone greater than the self. Indeed, she amplifies the theme to planetary scope by figuring the Moon as the Earth’s missing child, a loss deemed so grievous that the Earth has regarded all humankind as its enemies henceforth.

That the fate of the planet hangs in the balance seems to be a mere after-thought for the adolescent Nassun, who intends to destroy the planet as a way to stop Schaffa’s pain and avenge her own wrongs. Only when the Earth zombie-walks the comatose Schaffa into an automated surgical center to have his corestone removed does Nassun understand that the Earth is offering another
way; if Schaffa is turned into a stone eater, he will live forever without pain. The only catch is that she cannot transform him alone; the change she initiates will make every living human into a stone eater as well, thus bringing about the extinction of the human species. That this scarcely matters to her could, except for Jemisin’s masterful control of narrative tone, become a parody of self-centered narcissism. For her part, Essun intends to try to save the Earth and the living creatures on it, including humans, by capturing the Moon and re-establishing the Earth-Moon system, but in the end her love for her daughter overwhelms her, and she yields to Nassun’s desires. Here too, it’s as though a telescope focused on the cosmos has been turned wrong way around, so that the one human focused in the lens looms larger than the Earth or indeed the entire solar system.

All this makes for intense narrative suspense, but if we look beyond the moment for its deeper significance, the implications are horrifying. Weigh one crippled and far from innocent character in the balance, and judge him, as Nassun does, to be worth more than the continuation of the human species? Confront a lost child and judge her needs more important than everything else, as Essun does, including not just self but friends, tribe, and all humans? What Jemisin gives us in the trilogy’s climax may be the very human inclination to place oneself and one’s desires at the center of the cosmos, but it should not be mistaken for a recipe for achieving a peaceful and thriving world. To her credit, she seems to recognize this in crafting the climax as an aleatory event, far too unstable to be a template for anything. That the world is finally saved is represented as an outcome so contingent that it might as well have been achieved by a capricious breeze blowing one way rather than another.

We can call the dynamic Jemisin puts at the center of her climax the kinship problem. People care about themselves, of course, and most care about their immediate family members—children, mothers, fathers, siblings. The problem arises when these near-universal proclivities clash with longer and larger perspectives that focus not on the immediate and the close, but on issues concerning the health and welfare of larger groups, from communities to regions to nations to planet. As Dipesh Chakrabarty has pointed out, humans have not evolved to think in these terms; the larger the scope, the longer the timeline, and the more complex the feedback and feedforward cycles linking events at scale to the closeness of kin, the more remote global concerns are apt to seem, the more easily eclipsed by what is in the foreground.
Perhaps the most significant challenge facing the posthumanities today is how to forge mediating mechanisms that link the local with the global, kin with planetary catastrophe. This is the genius of Jemisin’s *Broken Earth* trilogy and also its most significant limitation; she puts the two, kin and broken planet, into juxtaposition, but finally forges no links connecting them other than kinship itself. In her depiction of the Syl Anagist society, she vividly portrays the disastrous arrogance of a technologically advanced civilization that fails to understand or respect the rights of others, from the tuners to Father Earth, but the few blueprints she offers for how societies might achieve more just, sustainable, and respectful outcomes are all swept away by the fierce requirements for survival in a Season.

Perhaps it is unfair to ask a storyteller to solve our problems; after all, her job is to create compelling narratives, not save the world. Latour, by contrast, explicitly sets out to diagnose our contemporary condition and offer viable alternatives. Putting Jemisin alongside Latour reveals that his flirtation with the idea of an intentional planet does not solve the kinship problem but rather exacerbates it. When Jemisin suggests Father Earth is angry because his only child the Moon was stolen, she projects human desires and intentions onto a rock with a molten core, thus investing it with the stakes characteristic of living entities. In Latour’s hands, a similar metaphoric investment in Gaia is used to agitate for a global war between the Gaia’s defenders, the earthbound, and “humans,” in a binary dialectic that assumes the struggle is a zero-sum game. Surely this is not the best solution we can imagine!

To discover other pathways and imagine different futures, let us return to where Latour began, with the Anthropocene. From there we may interrogate its assumptions and forge a framework that can provide resources for a more sustainable, just and livable world.

**9. The Anthropocene and Its Discontents**

Even as the term “Anthropocene” proliferates through the culture, including (or especially) in the posthumanities, its use has evoked forceful criticism, not only from geologists but also from many cultural critics (Moore, 2017). The essential objection is that it lumps all of humanity together as an undifferentiated mass, as if all were equally responsible for planetary despoliation. Heather Da-
vis and Etienne Turpin in their introduction to *Art in the Anthropocene* summarize the case succinctly: “The Anthropocene is not simply the result of activities undertaken by the species *Homo sapiens*; instead, these effects derive from a particular nexus of epistemic, technological, social and political economic coalescences figured in the contemporary reality of petrocapitalism” (7). Further, as T. J. Demos argues in *Against the Anthropocene*, the Anthropocene’s globalizing rhetoric makes it “easy to justify further technological interventions in the earth’s systems via geoengineering, as if the causes of climate disruption can be its solutions. In such narratives as these, anthropos serves to distract attention from the economic class that has long benefitted from the financial system responsible for catastrophic environmental change” (47). The term he and many others prefer is capitalocene, which, as he points out, has the advantage of naming the primary driver of environmental devastation.

Why do capitalistic enterprises, and the humans who profit from them, continue to pursue environmentally toxic projects when common sense would recognize that if the planet’s critical zone is imperiled, all will suffer, including the capitalists? One way to understand this conundrum is through the kinship problem. Capitalists may believe that they and theirs will be insulated because they have accumulated the resources successfully to survive, or they may even agree that indeed all will be affected, but that they will fare better than most because they have the wherewithal to do so. Alternatively, they may not care much about future generations, figuring they will extract what they can for as long as they can, and devil take the hindmost—the kinship problem configured in the present tense, so to speak.

In the face of kinship’s powerful dynamics, what mediating mechanisms might be efficacious? Ironically, the novel coronavirus pandemic, notwithstanding its gruesome death toll around the world, may be one such instance. On the one hand, it will certainly exacerbate the kinship problem, now expanded to include entire regions and even nations such as the Trump administration’s policies of “America First.” On the other hand, as long as hot spots exist anywhere around the globe, flare-ups are possible; no country can be successful in entirely insulating itself, as the phenomenon of community transmission witnesses. This may provide an opportunity for collective responses across existing boundaries, something likely to happen with the advent of a coronavirus vaccine.

Short of a pandemic, conceptual frameworks that make it possible to con-
ceive of individual as well as collective responsibility may be helpful. True, Latour’s concept “waves of action” has the advantage of emphasizing interconnections, but it does so at the expense of erasing individual actors and therefore opportunities for actors to take responsibility. A different path can be opened by creating frameworks that invite solidarity among all life forms by recognizing the special qualities of living organisms that makes them different from material processes. As I have argued at length elsewhere (2017), all organisms take in information from their environments, process it in species-specific ways, and as a result perform actions that enhance their survival potential. These can be as simple as a tree moving its leaves to maximize exposure to sun, or as complex as humans inventing artificial intelligences to increase their cognitive reach. Both of these, and all living organisms in between, share specific qualities unique to life-forms (and now also technical media): they process information, make interpretations, and perform actions that have meaning within their contexts. In brief, they are cognitive entities.

“Choice” would be too grand a term to describe the upshot of the interpretive activities that living organisms perform, too laden with a terminological history connecting it with free will and specifically human thinking. Nevertheless, a framework emphasizing cognition, interpretation, and embodied meanings within contexts provides the basis for seeing all lifeforms as capable of seeking one set of pathways rather than another to enhance their chances of survival, from the direction of root growth for a plant to making environmentally friendly decisions for humans. Such a framework makes clear what is special about living organisms, what they have in common that is not shared by material processes: the ability to make choices/selections/interpretations and thereby create context-specific and species-specific meanings for themselves and others.

In addition to creating a common basis for thinking about living organisms, this framework also has the advantage of emphasizing the open-ended nature of crafting interpretations and creating meanings. It provides an opening for understanding how and why humans have special responsibilities to the biosphere and the material processes that nourish and sustain it. This way of looking at the world suggests that the pernicious aspects of kinship dynamics might be mitigated by expanding the notion of kin to all living creatures, as Donna Haraway has suggested in other contexts (2016).

Does this mean that the cognitive framework can solve our problems and
meet the Grand Challenges? Of course not, but it at least opens different pathways and provides new opportunities for seeking alliances and building coalitions among both humans and nonhumans. In other words, it’s a start toward a positive posthuman future—and that’s not a trivial thing.

Notes

1 I was not fortunate enough to be in these audiences, so my suggestion is only a speculation. I did, however, hear Latour when he spoke on similar themes at Uppsala University in October 2019, and then the skepticism in the audience toward the idea of an intentional planet was very visible.

2 Among the lowest points of the so-called Science Wars was the publication of Gross and Levitt’s Higher Superstition (1997) and the Alan Sokol hoax (see Editors of Lingua Franca, 2000).

3 I find this aspect of Latour’s argument convincing, but see Malm (2020) for a vigorous counter-argument.

4 See Malm (2015) and Moore (2017) for why capital, and not other fossil-burning systems such as the Soviet Union, should be held responsible.