Trust and the Science Question in Ecofeminism

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I. Introduction

The relationship that any environmental movement has to science is bound to be fraught with an inherent tension. On the one hand, it is the "progress" of mainstream science that has allowed the development of the technologies that now endanger the Earth. On the other hand, in today's technocratic society, it is by making a scientific case for the danger that is presented by a particular environmental phenomenon that the public is persuaded of the importance of change to mitigated the damages already done and prevent new disasters. For the feminist environmental movement in particular, the question of how to integrate scientific knowing and ecological action is particularly weighted, since feminist epistemology has revealed many ways in which conventional science is deeply indebted to traditional, masculinist ways of thinking about the world. Nevertheless, ecofeminists also want to avail themselves of the best knowledge about the interactions of certain environmental phenomena before making any pronouncement about what is to be done, and this often means consulting the literature on scientific ecology and environmental science in addition to the indigenous knowledge of affected persons or an ideological critique of the motives of the participants in the debate.

In the case of anthropogenic climate change, we know about its occurrence only partially through the ways that it has begun to impact people throughout the world. Though its effects are already being felt by many, still, due to the non-local nature of the effects of greenhouse gas emissions, our primary means of understanding the causes of

climate change and its impact on our future has been scientific climate modeling. In situations like these, what ecofeminists most need is a science that they can trust. However, trust in science should not be given out too easily, and scientists themselves are often eager to shirk off the hard work of building up the trust of society as a whole. Instead they presuppose that their position in society as designated knowers should give them an instant credibility which they do not have to defend to the public.

In this paper, I will raise the science question in relation to the work of Vandana Shiva by using the recent Climatic Research Unit email hacking incident as an illustration of the dangers of complacency by climate scientists toward the trust of the public. I will analyze the role of trust in the incident using the framework of Annette Baier and argue that its breach is, as Shiva would suggest, the result of scientists internalizing the logic dominance that underlies androcentrism and anthropocentrism.

II. Science and maldevelopment

In *Staying Alive*, Vandana Shiva explains the role of science in what is commonly called "development" and what she calls "maldevelopment." The mainstream claims that development is a process which promotes the well-being of all persons. Shiva claims that in fact the process of development does just the opposite; it results in the oppression of both women and nature because of the logic of capitalism. She writes, "Commercial capitalism is based on specialized commodity production. Uniformity in production, and the uni-functional use of natural resources is thus required."[1] Because capitalism requires uniformity, it enlists the power of the state in order to promote the hegemony of the particular kind of technological enterprise best suited to producing uniform results, namely reductionist science. She claims that, "Stripped of the power the state invests it with, reductionism can be seen to be cognitively weak and ineffective in responding to problems posed by nature."[2]

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1. *Staying Alive*, p. 23.
2. *Ibid*., p. 25.

The reason that reductionist science is ineffective as a means of knowing about the world is that it reduces the ontological richness of the world into a single material basis. The spiritual aspect of nature is denied in order to allow for its domination by mankind, just as the alternative knowledge systems of women are denied in order to allow for the domination of women by men. In the West, the Baconian revolution in science meant that "nature was no longer Mother Nature, but a female nature, conquered by an aggressive masculine mind."[3] Since the properties of nature as a living mother are denied, the exploitation of nature is rationalized. The same process rationalizes the exploitation of women by denying them full humanity. The process of "developing" the global south is the process by which the global south comes to internalize this western viewpoint. It is the ongoing colonization of the mind. Over time, mainstream science becomes the only valid means of knowing about the world, and as a result, other kinds of traditional knowledge, particularly those of women and marginalized groups, are destroyed. Shiva writes,

> The 'development' of Africa by western experts is the primary cause for the destruction of Africa; the 'development' of Brazil by transnational banks and corporations is the primary cause for the destruction of the richness of Amazonian rainforests, the highest expression of life. Natives of Africa and Amazonia had survived over centuries with their ecologically evolved, indigenous knowledge systems. What local people had conserved through history, western experts and knowledge destroyed in a few decades, a few years even.[4]

This destruction is driven by economic expansion. Just as the rich spiritual ontology of indigenous peoples is reduced to a single materialist ontology, so too all values are reduced to monetary value. National growth is only thought about in terms of the accumulation of capital. As GNP growth becomes the only measure of the wealth of the people, the result is greater suffering, since GNP itself is becoming "a measure of how real wealth—the wealth of nature and that produced by women for sustaining life—is rapidly decreasing."[5] The natural resources of a nation are not counted as wealth until

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[3.] *Ibid*., p. 17.
[4.] *Ibid*., p. 25–6.

they are exploited and offered up to the global marketplace—which destroys their real value to indigenous communities.

Mainstream science is a product of the university system which in turn is a product of the state. Thus, it is inevitably enlisted in the process by which monetary value becomes the only value. As a result, science is corrupted and

> in order to assume the only status of being the only legitimate mode of knowledge, rationally superior to alternative modes of knowing, reductionist science resorts *to the suppression and falsification of facts* and thus commits violence against science itself.[6]

In other words, the faults and lacunae of scientific understanding are suppressed in order to better homogenize socially situated knowers into the global knowledge system. To escape this process, Shiva explains that,

> Socially, the world of scientific experiments and beliefs has to be extended beyond the so-called experts and specialists into the world of all those who have been systematically excluded from it—women, peasants, tribals. The verification and validation model of a scientific system would then be validation in practice, where practice and experimentation is real-life activity in society and nature.[7]

Hence we see that Shiva is not opposed to "science" but opposed to masculinist mainstream science which is the servant of maldevelopment. In its place, she proposes we harness the "ethno-science" of indigenous knowers around the world.

But what about climate science? Where should it be classified? Is it an emerging field of ethno-science that resists the logic of maldevelopment? Or is it just another tool by which states perpetuate the domination of nature and women? To answer these questions, let us explore the issues of trust involved in the recent Climate Research Unit email hacking incident.

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5. *Ibid*., p. 7.
6. *Ibid*., p. 26.
7. *Ibid*., p. 36.

III. Climate Research Unit email hacking incident

On November 17, 2009, computer hackers broke into the server of a climate change awareness advocacy website called RealClimate.org and uploaded a file containing thousands of purported emails. The owners of the site quickly realized that their site had been defaced and fix the problem, but the file uploaded to their server soon began reappearing on other servers around the world.[8] The New York Times describes the incident:

> The e-mail messages, attributed to prominent American and British climate researchers, include discussions of scientific data and whether it should be released, exchanges about how best to combat the arguments of skeptics, and casual comments—in some cases derisive—about specific people known for their skeptical views. Drafts of scientific papers and a photo collage that portrays climate skeptics on an ice floe were also among the hacked data, some of which dates back 13 years.[9]

Researchers associated with the Climate Research Unit at the University of East Anglia, a well-respected leader in the field of climate change research, acknowledged their authorship of the leaked emails and an investigation was launched into how the emails had been stolen from a server at the university. Regardless of the facts of the data theft, the contents of the email lead to a heated reaction on the internet from both skeptics of climate change and climate change prevention advocates with each side taking those contents as primarily showing the correctness of their cause.

Among the most damning comments by the researchers were those of Phil Jones, who in discussing the details of a particular historical temperature study remarked on a "trick" that he learned from fellow researcher Michael Mann to "hide the decline" in average temperatures seen in tree rings—wording seized on by climate change skeptics. For whatever reason, since 1960 thermometers have directly recorded a rise in temperatures, but tree rings, which had been tracking the rise in temperatures up until that point, ceased to follow the directly measured trend, which casts doubt on the accuracy of their record of previous global temperatures. In order to make the temperature chart present

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8. Real climate.
9. Revkin.

a unified picture of temperature trends, the researchers put together a hybrid chart that begins with data from tree rings and ends with data from direct measurement, so that the post-1960 decline is "hidden." Nevertheless, the unreliability of recent tree ring data was never a secret among top researchers.

In another email seized on by climate change skeptics, Kevin Trenberth remarked on the slow progress of his research by stating, "The fact is that we can't account for the lack of warming at the moment and it is a travesty that we can't." Of course, it is natural in the scientific process that there will be anomalies that we cannot yet explain and that scientists will struggle through their frustration until an explanation is reached. Skeptics however charge that emails like this show that the result of Trenberth's research was foreordained. Trenberth already knew that anthropogenic climate change was the "right" answer, and he was going to continue to bend both the theory and the data until the two could be made to seem to fit together.

In addition to these cases of the appearance of scientific impropriety, climate skeptics were also angered to see the supposedly objective and neutral scientists acting as policy advocates and deriding their critics as "idiots." Papers that were seen as harming the cause of preventing climate change were rejected, and the general tenor of the scientists was that of comrades-in-arms, resisting a sea of climate change deniers in a noble struggle.

On top of all of this, when the emails were revealed and concerned bloggers requested the original raw data of the researchers in order to verify that previously published findings can be replicated independently, it was discovered that in some cases the raw data had long since been discarded and only preprocessed data remained. In other cases, the raw data remained but it was not under the control of the researchers, but of private corporations with their own proprietary interests in keeping the data to themselves.

Of course, nothing in these emails changes the reality of the global situation. The impact of climate change is already being felt around the world as changing weather patterns make many traditional ways of life unviable,[10] and whatever the misdeeds of certain scientists, no real doubt has been cast on the link between these climate changes and the massive influx of greenhouse gases into the atmosphere, primarily from human sources. Indeed, for feminist epistemologists and other philosophers of science who have studied the actual practice of the scientific method rather than its idealized form, nothing revealed in these emails should serve as a shock. It is hardly surprising to learn that particular groups of scientists argue more on the basis of sociological jockeying for position and influence than on the basis of a disinterested contemplation of the truth as it presents itself in unambiguous experimental data. It is precisely the contention of ecofeminists like Shiva that for all the successes of science in enabling the technology behind airplanes and antibiotics, nevertheless ideology pervades both its research interests and its products. Still, the impact of these emails on the larger public was undoubtedly negative, and the leaks were clearly timed so as to cause maximum embarrassment to the organizers of the United Nations Climate Change Conference of 2009 in Copenhagen. The email leaks will serve as just one more tool for climate change deniers to delay any action to prevent further degradation of the atmosphere.

What lessons, if any, should ecofeminists who rely on scientific researchers in order to draw conclusions about the dangers of global climate change take from this incident? Is this just another illustration of Shiva's claim that "reductionist science resorts to the suppression and falsification of facts and thus commits violence against science itself"? If so how can we trust anything that climate scientists claim? Before we explore possible

[10.] Examples of this are too numerous to list, but to give one, according to Sarah Wachter's "Pastoralism Unraveling in Mongolia" climate change is leading to a series of negative feedback loops in which the Mongolian soil is eroded by overgrazing of sheep whose wool is valued by the global market. For further examples, consult page A3 of your local newspaper.

responses by ecofeminists, it is helpful to examine the exact mode in which these scientists contravened the public's trust.

IV. Email contents as a breach of trust

The biggest problem with the contents of the stolen emails is that they reveal a shocking complacency by the scientists towards the trustworthiness of their results. Though the scientists never go so far as to outright fabricate data or falsify results, they nevertheless evinced an unwavering belief that their rightness about the fact of global climate change gives them the discretionary right to shape the form in which whatever information they uncovered reaches the public. In other words, they considered themselves guardians of the public's interest and have no qualms about employing the equivalent of a "noble lie" when necessary to direct the attention of the public in right way for the higher good.

Annette Baier in her 1986 article "Trust and Antitrust" explains many of the relevant properties of trust which also underlie this case. First, trust is to be distinguished from mere reliance. A prisoner may eat the food given by a torturing guard because there is no choice, but this is a situation of mere reliance, not trust. The prisoner cannot take for granted the food will not be poisoned or laced with psychoactive drugs, and prisoners who comes to trust their guards too readily are acting wrongly. A prisoner who suffers harm at the hands of the guard may be disappointed but this disappointment of desires or even expectations cannot be called a betrayal of trust. Trust goes beyond bare reliance to a "reliance on others' competence and willingness to look after, rather than harm, things one cares about which are entrusted to their care."[11] In most cases in life, we exercise this trusting reliance unconsciously and without any specifically delimited expectations of what we trust the trusted person to do. Because of its open ended nature, trusting someone always involves an element of discretion that must be exercised by the trusted party:

[11.] Baier, p. 259.

> Suppose I look quickly around me before proceeding into the dark street or library stacks where my business takes me, judge the few people I discern there to be nondangerous, and so go ahead. We can say that my bodily safety, and perhaps my pocketbook, are the goods I am allowing these people to be in a position to threaten. I trust them, it seems, merely to leave me alone. But this is not quite right, for should a piece of falling masonry or toppling books threaten to fall on my head, and one of these persons leap into action and shove me out of this danger, I would regard that as rather more than less than I had trusted these strangers to do—a case for gratitude, not for an assault charge, despite the sudden, unceremonious, possibly painful or even injurious nature of my close encounter with my rescuer.[12]

On the other hand, consider a similar case where a stranger with perfectly good intentions suddenly prevents our smoking a cigarette by soaking us with water, eating an unhealthy food by snatching it from us, or walking obliviously down a dark alley by giving us a fright to teach us a lesson about being more aware. In these situations, the trusted party has exceeded the bounds of the trust relationship in spite of acting out of good intentions and with the interests of the trusting party in mind. Thus, reliance by the trusting and good will by the trusted are not enough to constitute a properly functioning trust relationship by themselves. Trust relationships are mediated by socially acceptable roles unspoken and understandings. Indeed, under certain circumstances we might even grudgingly forgive such uncouth interventions if they came from an intimately trusted party, like a spouse or a parent. But without a deeper connection to the trusted party, such behaviors are gross violations of trust.

Looking at the case of the emails, there appears to be a disagreement between the scientists and the broader public about whether their advocacy work was a well-intended, acceptable use of discretionary power, or a dangerous breach of trust that was at the very least demonstrative of hubris and perhaps even indicative of a sinister conspiracy. Even after the revelation of the emails, there is no consensus about whether finding a "trick" in climate science means finding a laudably clever solution or just tricking the public into think that one has. The existence of these different interpretations for the same events is understandable because for the most part, the structure of trust

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12. *Ibid*., p. 237.

relations in everyday life is not explicitly codified. Situations with explicitly delimited boundaries of acceptable behavior like contractual relationships or promises can be seen as situations of reliance in which other social mechanisms like approbation, censure, and monetary incentives take the place of trust. Unfortunately, due to male bias, many philosophers have concentrated unrealistically on the "social contract" as the basis of society, and so hoped to build a society in which formal mechanisms can take the place of trust in our relations with others. Along these lines, we might try to think of how to remove trust as a component of scientific inquiry by formally enumerating non-discretionary powers for scientists. However, what we see in practice is that trust is an ineliminable component of human interaction. It arises because for many of the things we most care about, such as the health and well-being of ourselves and our families, there is no way to obtain them in a free society apart from trusting the well-meaningness of others. The difficulty is that trust has an inherent vulnerability—both from too much well-intentioned action as well as from too little.

This scandal highlights the many ways in which the public must trust scientists to act on their behalf. Because we care about the environment and the world, we want to know how human activities will impact its inhabitability in the future. However, very few of us have the training needed to collect and interpret data about temperatures or greenhouse gas concentration levels. Indeed, few of us even have the resources to evaluate already presented data in order to discern who among the many competing voices in the climate debate has the correct interpretation of the existing data. We are forced by necessity to rely on climate scientists to do this job for us. But can we, or ought we, to trust them?

Baier proposes a test for evaluating the moral decency of a trust relationship, "that its continuation need not rely on successful threats held over the trusted, or on her successful cover-up of breaches of trust."[13] More generally, she explains that, "A trust

[13] *Ibid*., p. 255.

relationship is morally bad to the extent that either party relies on qualities in the other which would be weakened by the knowledge that the other relies on them."[14] In other words, a good trust relationship is one which could survive the publicizing of the mechanisms which underlie the perpetuation of the relationship. One does not feel betrayed to learn that a police officer has a cash incentive to serve the public in addition to a sense of good will, but one would be devastated to learn one's spouse was accepting payments to remain in the marriage. Conversely, one is gratified to learn of the erotic attachment of a spouse to one's body but revolted to learn of the same motivation driving a police officer. What sorts of motivations are acceptable or unacceptable for the maintenance of a trust relationship depends on the social construction of that relation.

Returning to the particular example of the email breach, we see from the public reaction to the emails that publicity has been a noticeable decrease in public trust in climate science. To a degree then, the scientists were relying on the privacy of their email accounts in order to maintain public trust in their results, which means that the trust was morally inadequate.

As Baier points out, anytime trust is brought into question, it suffers even if it passes the test. In some cases,

> it may well be that the attempt to apply [the test of trust] will ensure its failing the test. Trust is a fragile plant, which may not endure inspection of its roots, even when they were, before the inspection, quite healthy. […] But to trust one's trust and one's distrust enough to refrain from applying moral tests until prompted by some distrust is to take a very risky bet on the justice, if not the "civilization," of the system of trust one inhabits. We may have to trade off civilization for justice, unless we can trust not only our trust but, even more vitally, our distrust.[15]

In the case of climate science, it was thought by the general public that the scientific process of peer review and so forth brought with them a sufficient level distrust to serve as the justification of an overall trust in the results of the process. Indeed, in spite of this incident, it is still the case that the results of climate science as a whole can be relied on,

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14. *Ibid*., p. 255–6.
15. *Ibid*., 260.

even if climate scientists themselves are untrustworthy. Shiva provides us a framework for seeing how this can be the case.

V. A science we can trust?

Shiva herself is a trained physicist. As such, she is not afraid to call on the findings of climate science when explaining what is happening to the world and what needs to be done about it. In *Soil Not Oil*, she writes,

> Before the industrial revolution, there were 580 billion tons of carbon in the atmosphere. Today there are 750 billion tons. That accumulation, the result of burning fossil fuels, is causing the climate-change crisis. Humanity needs to solve this problem if we are to survive.[16]

Similarly, in *Earth Democracy*, she writes,

> one part of the international community cannot destabilize the climate, enclose the atmospheric commons, or ignore the rights of other species and other countries by creating 36 percent of the world's CO_2 pollution.[17]

In these works, Shiva is making particular claims (580 billion tons, 36%) about what is happening to the world, and these claims are not of the kind justifiable apart from the results of mainstream climate science. A negative interpretation of these claims is that she is being self-serving. When a scientific claim supports her anti-development agenda, she cites it. When it does not, she rejects it as a product of the patriarchy. Such an interpretation misunderstands Shiva's work, however. Her problem with science is not that it gets the facts wrong, although it is wrong much more often than mainstream supporters are willing to admit. The problem with science is that it is asking the wrong questions. Mainstream science is just one ethno-science among many, and like all other ethno-sciences, mainstream science is specific to the needs of its creators. While Bacon himself explicitly acknowledges as much, contemporary scientists have learned to hide themselves behind the cloak of universal objectivity in order to exclude alternative knowledges which might interfere with dominant interests. Thus, when an interest is

16. *Soil Not Oil* excerpt, p. 22.
17. *Earth Democracy*, p. 8.

important to the dominant social group, science can be expected to get the answer "right" in the narrow sense that it will select an answer that does not harm those interests. When an interest is important to a marginal community, the means that people use to understand the problem will be dismissed out of hand as non-scientific. Thus, it is not impossible for institutional climate science to produce facts about global climate change, but we must be able to see what interests those facts are produced in order to serve.

The interests that climate science serves are not the interests of the world as a whole. They are the interests of the western world in continuing to emit carbon and other greenhouse gases and continuing the development of the non-western world. As Shiva writes in *Soil Not Oil*,

> In Earth Democracy, solutions will not come from the corporations and governments that have raped the planet and destroyed peoples' lives. Solutions are coming from those who know how to live lightly, who have never had an oil addiction, who do not define the good life as "shop till you drop," but rather define it as looking after the living earth and their living community.[18]

When we look at the United Nations Framework Convention on Climate Change meetings at Kyoto or Copenhagen, what we see is that these meetings are designed to produce treaties that disrupt the western consumerist lifestyle as little as possible. Any economic changes incurred by such treaties are considered to be solely a cost and not a benefit. Climate scientists, in turn, work to produce results that are faithful to the needs of economic development by describing exactly how many parts per million of CO_2 will lead to "acceptable" levels of warming. Examined from the perspective of these interests, we see that the climate scientists involved in the email scandal were perhaps acting all too well like other mainstream scientists in taking it upon themselves to decide where the boundaries of that trust relationship lie. They exerted their discretion ultimately in the service of the logic of domination, which is the ultimate mechanism of

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[18] *Soil Not Oil* excerpt, p. 22.

their epistemic and social authority. In other words, their betrayal of the public's trust came about because the scientists were aware that it is not the public which the scientists were serving but the global system which at once enshrines them as uniquely privileged knowers and marginalizes everyone and everything exploited by capital.

Some accuse Shiva of having too romantic a view of the ability of other ethno-sciences to resist the logic of domination. For example, Meera Nanda in *Prophets Facing Backward* finds that one effect of Shiva's attacks on science has been to enable the rise of Hindu nationalist groups like the BJP in India,

> The problem, as I see it, was that in India, scientific or instrumental rationality hardly constituted the hegemonic or dominant position which was crowding out other aspects of a humane society. Quite the contrary: even the most rational and instrumental goals of modernization were constantly compromising with romantic and paternalistic notions of "village community" inherited from Gandhism.[19]

On Nanda's view, resistance to the logic of domination has to come from the universality of reason in mainstream science, since otherwise promotion of ethno-sciences will result in the promotion of the patriarchal culture in which they emerged. Nanda's criticism, however, seems to claim that ethno-sciences will never be able to overcome their historical connection to oppression, but mainstream science will be able to overcome its historical connection to oppression effortlessly. A more encompassing view will show that the overcoming of oppression has to begin by renouncing the marginalization of people's lives. Mainstream science is deeply committed to the marginalization of non-scientific ways of knowing and thus non-scientific knowers. Shiva, however, is trying to show us that it is possible for us to embrace ethno-science and give up our unhealthy trust of science without thereby having to marginalize all prior products of mainstream scientific investigation. There is a basic imbalance of power in any trust relationship between scientists and the public. While an imbalance of power is not per se harmful to a trust relation (there is an imbalance of power in the trust relationship of a mother and a

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[19.] Nanda, p. 223.

baby), when such imbalances are self-entrenching and self-reinforcing, then they become untrustworthy. Thus ecofeminists are obliged to combat the hegemony of science, both to undo the marginalization of women and other groups, and to construct new sciences, which when shorn of their unhealthy entanglement in the development system, will be more trustworthy.

The conclusion of this inquiry is that while ecofeminists are for the moment forced to rely on climate science to enter the public debate about the global climate crisis, trust cannot be extended unconditionally toward climate science, since the motive of climate scientists (maintaining the current economic system) is not a shared motive. In spite of this, Shiva is optimistic that there can be change, writing that "Renewable carbon and biodiversity redefine progress. They redefine development. They redefine 'developed,' 'developing,' and 'underdeveloped.'"[20] In other words, she is hopeful that the opening created by awareness of the global climate crisis will allow ecofeminists to redefine the meaning of technological progress, so that we no longer think about progress in terms of greater ability to master and control nature, but we think of it in terms of greater ability to coexist with nature. She writes that, "We need to change our mind before we can change our world. This cultural transition is at the heart of making an energy transition to an age beyond oil."[21]

For science, change will take the form of including those who had been systematically excluded from its acknowledged practice in order to create a system which is really about validation in practice. This process will become particularly acutely needed as climate change impacts the lives of more and more marginalized people around the world, whose stories will only be heard if we listen to the message of decolonialism. In this sense, the email scandal creates as much of an opportunity as a crisis. What concerned ecofeminists must do is to use this crisis to reinforce their otherwise too subtle

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[20.] *Soil Not Oil* excerpt, p. 23.
[21.] *Ibid*.

message that science can be untrustworthy *even when its results are correct*. The danger of the scandal is that the general public uses it as an excuse to dismiss concerns about climate change and to embrace do-nothing skepticism. Equally dangerous for the public, however, would be to continue to increase our reliance on mainstream science without examining what are the conditions that make that reliance possible—conditions that when exposed would show public trust in science to be misplaced. The future of ecofeminism lies in activism designed to encourage the public and scientists to plot a course between these two hazards.

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