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The Death of Nature and the Rebirth of Gaia: Organicism, the Mechanical Philosophy, and Feminized Nature

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Introduction

The year 2016 has been a tumultuous one for women, marginalized peoples, and the environment. The meager sentence for Brock Turner, the slew of racially-driven instances of police brutality, and the Dakota Access Pipeline have resulted in fears about the reversal of whatever purported feminist, racial, or environmental progress has been made over the past few decades. President-elect Donald Trump has only heightened these fears. Between Trump's accounts of sexual assault, promises to deport Mexicans and Muslims, and appointment of a top climate-change denier as head of the EPA,¹ minoritized, marginalized, and progressive people are very concerned about the future. Although the president-elect's words and actions accompany a history of political polarization and desires to protect American nationalism and white identity, Trump's rhetoric reflects a broader tradition in the history of Western science and society, one of associating women with nature and non-white races with impurity. These associations have historically stemmed from the domination of women, non-whites, and the environment by a white, capitalist, and patriarchal system. The focus of this paper will be on the historical, scientific, and social association between women and nature, which has led to the use of metaphorical views of nature like mother earth rhetoric and the Gaia Hypothesis. By understanding how views of nature have interacted and been shaped by social circumstances, we

¹ Coral Davenport and Eric Lipton, "Trump Picks Scott Pruitt, Climate Change Denialist, to Lead E.P.A.," *The New York Times*, December 7, 2016, <http://www.nytimes.com/2016/12/07/us/politics/scott-pruitt-epa-trump.html>.

may better understand the ways in which systems of oppression have come to mutually affect women, marginalized groups, and the environment.²

Activist and scholarly responses to historical and current versions of Trump's rhetoric also provide a lens through which to understand how oppressed people have named and acted against exploitation and domination. In response to the Dakota Access Pipeline, for example, a prominent women's rights group, One Billion Rising, writes,

“Violence against women has deep historical roots in the destruction of Mother Earth and those who are tasked with her protection....We are witnessing a rise of movements to end racism, violence, and environmental rape, the people who have protected Mother Earth, unnoticed for decades have come together in tribal unity to protest the Dakota Access Pipeline....The people are there to protect Mother Earth from being raped and destroyed....We must honor, respect and love our Mother for giving us life, land, each other, and ourselves.”³

This statement reflects what Ellen Cronon Rose has called ‘mother earth rhetoric,’⁴ which occurs when individuals personify the planet using she/her/hers pronouns and names like Mother Earth or Mother Nature. As this quote from One Billion Rising shows, mother earth rhetoric aims to evoke in individuals compassion for the earth and anger at the earth's destruction. The quote's

² Within this paper, I will write in reference to the gender binary because the sources I use largely ignore non-binary genders. A similar study of the effect of these issues on individuals outside of the gender binary would benefit scholarship on the feminist critiques of science.

³ Jessica Montoya, “Rising In Solidarity Against the Exploitation of Mother Earth by the Dakota Access Pipeline,” *One Billion Rising Revolution*, September 6, 2016, <http://www.onebillionrising.org/37522/37522/>.

⁴ Ellen Cronan Rose, “The Good Mother: From Gaia to Gilead,” *Frontiers: A Journal of Women Studies* 12, no. 1 (1991): 91.

description of “Mother Earth” being raped, in the passive voice and by no one actor in particular, results in additional anger and disgust at environmental degradation: not only is our mother being destroyed, but she’s being *raped*.

As the quote also shows, racism, violence, and “environmental rape,” are related phenomena. Projects that unite these issues typically fall under the umbrella of ecofeminism. Ecofeminism emerged in the 1970s with the unification of the feminist and environmental movements.⁵ Ecofeminism holds that “Western thought constructs hierarchical systems defined by dualisms, reinforced by an economic system based on profits rather than needs [capitalism],”⁶ which results in a link between “the domination of women [and] the domination of nature.”⁷ Because of the link between these types of domination, some ecofeminists argue against the feminization of nature on the grounds that feminizing nature unproductively perpetuates systems of patriarchal and capitalist oppression.⁸

Other ecofeminists have embraced the new-age, pagan spirituality and earth-worship that often accompanies mother earth rhetoric, but at the cost of essentialism. For these ecofeminists, “ecofeminism assumes that women have a spiritual, caring and nurturing relationship with the

⁵ Carolyn Merchant, *Earthcare: Women and the Environment* (New York: Routledge, 1996), 5.

⁶ Gwyn Kirk, “Ecofeminism and Environmental Justice: Bridges across Gender, Race, and Class,” *Frontiers: A Journal of Women Studies* 18, no. 2 (1997): 6.

⁷ Carolyn Merchant, “The Scientific Revolution and The Death of Nature,” *Isis* 97, no. 3 (2006): 514.

⁸ While the One Billion Rising quote acknowledges the connectedness of racial oppression to women’s and environmental oppression, some critique ecofeminism on the grounds that ecofeminist analyses too often ignore race and class. For example, see Kirk, “Ecofeminism and Environmental Justice.” Because the sources I use fall largely into the ecofeminist tradition of ignoring race and class, race will not be a main focus in this analysis. However, race will be an essential component of future research on this topic (see Kosek, “Purity and Pollution: Racial Degradation and Environmental Anxieties,” in *Liberation Ecologies: Environment, Development, Social Movements*, 2nd ed, edited by Richard Peet and Michael Watts, 125-165. (New York: Routledge, 2004)).

environment.”⁹ Scholars often critique this branch of ecofeminism as essentialist, arguing that these ecofeminists see “that there are typical or essential, or fixed and unchanging, womanly interactions with nature that can define once and for all what ‘women’s standpoints’ are.”¹⁰ The One Billion Rising quote reflects this variety of ecofeminism because of the mother earth rhetoric the author uses.

The ideological conflicts between these two branches of ecofeminism underlie this study. While associating nature with women may be empowering for the second branch of ecofeminism, the first branch argues ardently against the feminization of nature, even against ubiquitous metaphors like Mother Earth. While both branches see the parallel structures of oppression that subordinate woman to man and nature to humans, each branch has a different solution in mind. For the first branch, the solution to environmental and women’s issues resides in the acknowledgement of these parallel structures of oppression and the separation of feminine metaphors from nature. The second branch sees feminization of nature as a movement toward the reclamation of both woman and nature.

I use Carolyn Merchant’s *The Death of Nature: Women, Ecology, and the Scientific Revolution* (1980) and *Earthcare: Women and the Environment* (1996) to trace how these two branches of ecofeminism respond to different political and environmental needs, namely women’s liberation and environmental restoration. In *The Death of Nature*, Merchant outlines the historical conflation of women and nature. Merchant identifies two distinct types of feminization of nature: first, an image Mother Earth, and second, an image of a sexual witch.

⁹ Bronwyn James, “Is Ecofeminism Relevant?,” *Agenda*, no. 29 (1996): 8.

¹⁰ Sandra Harding, “Women’s Standpoints on Nature: What Makes Them Possible?,” *Osiris* 12 (1997): 199.

Merchant associates these different views of feminine nature with the period before and after the Scientific Revolution. With the Scientific Revolution, Merchant argues, came a shift from organic worldviews to mechanical ones. The mechanical philosophy led to a mechanistic universe, which resulted in an end to mother earth rhetoric among Western scientists. Although one of Merchant's main theses establishes the gender and environmental exploitation that has occurred from the historical association of women and nature, Merchant also uses James Lovelock's Gaia Theory to feminize the earth. Merchant constitutes a useful case study for understanding how and to what ends the two branches of ecofeminism conflict: can Merchant argue that feminizing the earth is destructive to women and nature while simultaneously calling upon us to save Gaia, the organic and interdependent "Earth Mother"?

If the mechanical philosophy brought an end to "mother earth" ideologies among Western scientists, and if views that conflate women with nature have been deemed as sources of sexist and environmental oppression, then why and from where have organic views of nature re-emerged among ecofeminist scholars since the mid-twentieth century? I argue that, by analyzing Carolyn Merchant's changing use of Gaia Theory in *The Death of Nature: Women, Ecology and the Scientific Revolution* (1980) and *Earthcare: Women and the Environment* (1996), we may garner a better understanding of how and to what ends feminized nature has been used to promote particular views of the relationship between humans and nature. This understanding is especially relevant in a social and academic climate that criticizes the conflation of women and nature while simultaneously making claims about the interconnectedness of the two. I ultimately argue that mother earth rhetoric has re-emerged as an activist strategy to resist what Merchant has labeled the "sanction of the domination of nature" caused by mechanical worldviews. I end by questioning the efficacy and implications of this environmental and feminist strategy.

The Gaia Hypothesis

Throughout the development of modern Western science, the earth has been conceptualized in terms of metaphors: from clocks and corpuscles to machines and organisms, natural philosophers and their scientist successors have likened the earth to smaller, more easily understandable concepts. While useful learning tools, these metaphors influence what we observe in nature. The mechanical philosophy led natural philosophers to see nature like clockwork, and arguments for intelligent design inserted into nature purposeful parts. Social circumstances determine what metaphors we see in nature. Charles Darwin, in Industrial and capitalist England, for example, saw competition among individuals as the driving evolutionary force in nature. Peter Kropotkin, Russian communist in pre-revolution Russia, saw mutual aid—cooperation—as the mechanism for evolution. If these context-dependent metaphors could shape science to such a great extent, then how profoundly has the metaphor of feminized nature, which, according to Carolyn Merchant, is almost universal historically and geographically, affected Western science and society?

A more recent metaphor for the earth emerged from a scientific revival of Mother Earth ideologies in 1979 with James Lovelock's Gaia Hypothesis. The Gaia Hypothesis was first introduced in 1969¹¹ but gained attention only after James Lovelock's 1979 *Gaia: A New Look at Life on Earth*. Lovelock and colleague Lynn Margulis "defined Gaia as a complex entity involving the Earth's biosphere, atmosphere, oceans, and soil; the totality constituting a feedback or cybernetic system which seeks an optimal physical and chemical environment for life on this planet."¹² Like Darwin's and Kropotkin's metaphors of competition and cooperation, Gaia also

¹¹ Donald Worster, *Nature's Economy: A History of Ecological Ideas*, 2nd ed (Cambridge: Cambridge University Press, 1994), 381.

¹² James Lovelock, *Gaia: A New Look at Life On Earth* (Oxford: Oxford University Press, 1979), 11.

had implications beyond science. As historian Donald Worster writes, “She [Gaia] was ancient, she was female, she was the Earth Mother, and she held our destiny in her hands.”¹³

Lovelock was inspired by his neighbor, William Golding, author of *Lord of the Flies*, to name the scientific hypothesis after Gaia, “the name of the Greek goddess of *gē*, or earth, whose root appears in the words geology and geography.”¹⁴ Although Lovelock did not literally conceive of the planet as equivalent to a human, “[the name] Gaia suggested that life collectively had the attributes of a person.”¹⁵ In spite of Lovelock’s scientific aims for the Gaia Hypothesis, Lovelock uses she/her/hers pronouns when referring to the hypothesis: “Gaia has remained a hypothesis but, like other useful hypotheses, she has already proved her theoretical value, if not her existence, by giving rise to experimental questions and answers which were profitable exercises in themselves.”¹⁶ Although in this quote Lovelock is referring to a scientific hypothesis, one not unlike evolutionary theory or gravity, the values behind the hypothesis influence Lovelock to write as if the hypothesis were female.¹⁷

The scientific world in which Lovelock’s hypothesis emerged was a world characterized by a separation of values and science. While historians of science recognize that all science is value-laden, the goals of the scientific enterprise in the twentieth century primarily revolved around objectivity and a rejection of normative claims. This shift “occurred in the twentieth century [and had] been prompted by the realization that there [was] no simple equation linking

¹³ Worster, *Nature’s Economy*, 378-379.

¹⁴ *Ibid.*, 380.

¹⁵ *Ibid.*, 380.

¹⁶ Lovelock, *Gaia*, 11.

¹⁷ As a thought experiment, imagine Darwin writing about evolution or Newton writing about gravity with he/him/his pronouns to refer to the phenomena.

science to social benefit.”¹⁸ Especially after World War I and World War II, the “twentieth century had its crisis of faith, with the loss of that confidence that in the Enlightenment had been placed in science as the key to solving all human problems.”¹⁹ Values had led science and society astray, so Lovelock’s scientific era was not one in which normativity prevailed.

While Gaia was accepted and used among environmentalists, who were more inclined to accept value-laden science, scientists largely rejected Gaia on the grounds that the hypothesis wasn’t scientific enough, even with Lovelock’s esteem as a practicing scientist. One such scientist was George Williams, who wrote that the idea of a homeostatic planet—Gaia—cannot work. Williams gives examples that range from a discussion of thermodynamics to trees at Yellowstone seeking individual sunlight to phytoplankton productivity.²⁰ Worster notes that “For many scientists, the notion of Gaia was profoundly wrongheaded,” but also that “its creator was emphatically a distinguished scientist who was proposing a hypothesis supported by considerable evidence. Thus, Gaia became eventually the most widely discussed metaphor in the Age of Ecology[.]”²¹ The discussion at the focus of this analysis is the influence gender ideology had on perceptions of the Gaia Hypothesis.

Understanding how gender ideology affects humans’ relationship with nature is an important, and, until Merchant’s work, relatively ignored area of environmental history and the history of science. The impact of gender ideology on other areas of biology, however, is not new.

¹⁸ John Hedley Brooke, *Science and Religion: Some Historical Perspectives* (Cambridge: Cambridge University Press, 1991), 338.

¹⁹ *Ibid.*, 338.

²⁰ George C. Williams, “Gaia, Nature Worship and Biocentric Fallacies,” *The Quarterly Review of Biology* 67, no. 4 (1992): 482.

²¹ Donald Worster, *Nature’s Economy*, 379.

As Judith Lorber discusses, prior to the eighteenth century and because of religious beliefs, Western scientists thought that there was only one sex, just manifested differently in women than in men. The changing social positions of women following the eighteenth century—from religiously ordained to naturally and scientifically produced—changed the way biologists thought about categories of sex. As science overtook religion as the authority to justify social positions, the biological differences between men and women became a product of science—two sexes instead of one.²² This instance emphasizes the role metaphors play in shaping our scientific understanding of the world.

Metaphors not only shape our understanding of the world, but they can also shape how we interact with our environment. As Sally Wyatt discusses, Gaia Theory’s anthropomorphism affected how the theory was used. Wyatt notes that although Lovelock saw the earth as alive “not in the way a sentient goddess is alive in possessing purpose and foresight but more in the way a tree is alive,”²³ Lovelock knew what was at stake in anthropomorphizing the planet: not only did other scientists not take him seriously because of his use of metaphor, but Lovelock’s depiction of the earth as an alive, self-regulating system enabled industrialists to disregard environmental policies, claiming that Gaia would regulate herself. What Wyatt’s analysis of Gaia Theory lacks is consideration of the gendered nature of Lovelock’s metaphor. Earth—Gaia—wasn’t just *alive*, but *she*, a female earth, was alive.

Intertwined with the personification of Gaia were questions of gender relations and human-environment interactions. Lovelock writes, “If Gaia exists, the relationship between her

²² Judith Lorber, “Believing Is Seeing: Biology as Ideology,” *Gender & Society* 7, no. 4 (1993): 568-69.

²³ Sally Wyatt, “Danger! Metaphors at Work in Economics, Geophysiology, and the Internet,” *Science, Technology, & Human Values* 29, no. 2 (April 1, 2004): 248.

and man, a dominant animal species in the complex living system, and the possibly shifting balance of power between them, are questions of obvious importance.”²⁴ By feminizing nature via Gaia theory, Lovelock engages in the longstanding Western tradition of feminizing nature, one whose account has been most thoroughly told by historian of science Carolyn Merchant.

Merchant and *The Death of Nature*

In *The Death of Nature*, Carolyn Merchant set out to provide an historical account of the ways in which Westerners—particularly Western scientists—have regarded nature as female. Views of nature as a nurturing mother transitioned into ones of a sexual witch with the rise of the mechanical philosophy following the scientific revolution. Merchant extends this description to argue that the rise of the mechanistic views of the universe ultimately sanctioned the domination and exploitation of nature. Since the underlying theme of *The Death of Nature* is to acknowledge the problems associated with historical accounts of nature as female, one might assume that Merchant’s main goal is to denounce the use of feminine descriptions of nature. These descriptions, however, are not Merchant’s main target.

While Merchant notes that “it is important to recognize the normative import of descriptive statements about nature,”²⁵ the normative imports she focuses on are less related to descriptive statements about nature as *female* and are more related to descriptive statements about nature as *organic*. The mechanistic worldview, not necessarily feminized nature, is that with which Merchant takes issue. To understand why, we must first outline Merchant’s

²⁴ Lovelock, *Gaia*, 12.

²⁵ Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution*, 2d ed (New York: Harper One, 1990), 4.

descriptions of female nature under an organic worldview and those under a mechanical worldview.

Merchant argues that “central to the organic theory was the identification of nature, especially the earth, with a nurturing mother: a kindly beneficent female who provided for the needs of mankind in an ordered, planned universe.”²⁶ The mechanical view, however, consisted of “nature as disorder” and

“called forth an important modern idea, that of power over nature....An organically oriented mentality in which female principles played an important role was undermined and replaced by a mechanically oriented mentality that either eliminated or used female principles in an exploitative manner. As Western culture became increasingly mechanized in the 1600s, the female earth and virgin earth spirit were subdued by the machine.”²⁷

With the expansion of the mechanical worldview, Merchant argues, came a decrease in the viability of an organic model of the universe: “While the organic framework was for many centuries sufficiently integrative to override commercial development and technological innovation, the acceleration of such changes throughout western Europe during the sixteenth and seventeenth centuries began to undermine the organic unity of the cosmos and society.”²⁸ In undermining this unity, the mechanical worldview gave way to new morally acceptable ways to treat the planet.

Merchant saw the values associated with each worldview as more important than the worldviews alone. Merchant writes that “we cannot accept a framework of explanation and yet reject its associated value judgments, because the connections to the values associated with the

²⁶ Ibid., 2.

²⁷ Merchant, *The Death of Nature*, 2.

²⁸ Ibid., 5.

structure are not fortuitous.”²⁹ For Merchant, returning to an organic view of nature, which values interdependence between humans and the planet, is paramount to solving the ecological crisis, since the ecological crisis was created by the values of exploitation and domination that have prevailed under the reigning mechanistic worldview. In order to understand why Merchant’s analysis aims at re-establishing an organic worldview, we must first understand the world in which Merchant wrote *The Death of Nature*: a Western world that was just starting to realize the environmental trouble that had begun.

Environmental and Historical Context: 1970s

The Death of Nature emerged shortly after the beginning of what Donald Worster has called the “Age of Ecology.”³⁰ The 1970s gave rise to America’s first Earth Day and works like Rachel Carson’s *Silent Spring*. The Age of Ecology thus “expressed a grim hopefulness that ecological science would offer nothing less than a blueprint for planetary survival.”³¹ In spite of growing concern for the environment, however, “there was no consensus on how bad the environmental crisis was, or even whether there was a crisis at all.”³²

The 1970s followed three decades of environmental domination and subsequent uncertainty, namely the atomic bomb and expansion of pesticide use. Because scientists didn’t widely recognize the hazardous effects of atomic testing until 1958,³³ and because reports of pesticide poisoning were confined until 1960,³⁴ legislation to curb the environmental effects of

²⁹ Ibid., 5.

³⁰ Donald Worster, *Nature’s Economy*, 358.

³¹ Ibid., 340.

³² Ibid., 358.

³³ Ibid., 346.

³⁴ Linda Nash, “The Fruits of Ill-Health: Pesticides and Workers’ Bodies in Post-World War II California,” *Osiris* 19 (2004): 206.

both radioactivity and toxins did not emerge until the 1960s: the first clean water act was passed in 1960, the first clean air act in 1963, and the United States Environmental Protection Agency was established in 1969.

Ecofeminism emerged in the 1970s, and Merchant points to ecofeminist Charlene Spretnak as having first associated Gaia with ecofeminism. “Nature and women,” Merchant writes, “could be liberated through the recognition of Gaia as both the earth and the female aspect of the godhead coupled with the removal of patriarchal constrictions of ‘women as Other and men as godlike and inherently superior.’”³⁵ Merchant writes that “Yet, however unifying, Gaia is also a problematical image for both environmentalists and feminists. Its message carries cultural baggage that undercuts its inspirational power. If Gaia is a self-regulating homeostatic system, then ‘she’ can correct problems caused by humans or even find humans expendable.”³⁶ As Merchant’s preface to the 1990 edition of *The Death of Nature* shows, humans and the environment could not rely on Gaia regulating “herself.”

Merchant’s Preface to the 1990 Edition of *The Death of Nature*

With the release of the 1990 edition of *The Death of Nature*, Merchant realized that environmental problems would only get worse if people did not heed her warnings of mechanistic worldviews. The short essay she wrote to preface the new edition contains an increasingly urgent tone, one that makes use of the Gaia Hypothesis to anthropomorphize and feminize the planet.

Merchant writes, “Ozone depletion, carbon dioxide buildup, chlorofluorocarbon emissions, and acid rain upset the respiration and clog the pores and lungs of the ancient Earth Mother,

³⁵ Merchant, *Earthcare*, 4.

³⁶ Merchant, *Earthcare*, 4.

rechristened “Gaia,” by atmospheric chemist James Lovelock....Tropical rainforests and northern old-growth forests disappear at alarming rates as lumberers shear Gaia of her tresses.”³⁷ Merchant then declares that a “new partnership between humans and the earth is urgently needed.”³⁸ By calling upon mother earth rhetoric and Lovelock’s Gaia, and by giving Gaia “tresses,” Merchant returns to a feminized version of the earth that was associated with an organic worldview. However, when Merchant writes about pollutants as “[upsetting] the respiration” and “[clogging] the pores,” and “[shearing] the tresses” of Gaia, she also returns to interactions between humans and nature that are reminiscent of the domination of nature sanctioned by the mechanical philosophy.

What is one to make of Merchant’s feminization of nature? In the preface, Merchant writes that “celebrations of the connection between women and nature contain an inherent contradiction” and goes on to question these connections: “If women overtly identify with nature and both are devalued in modern Western culture, don’t such efforts work against women’s prospects for their own liberation? Is not the conflation of woman and nature a form of essentialism?”³⁹ These questions may be asked of Merchant’s description of Gaia and “her” degradation on the previous page. If the planet is overtly a woman (Gaia) and both are devalued in Western culture, don’t such efforts work against Merchant’s thesis? Is not Merchant’s conflation of nature with a woman, Gaia, who breathes and has pores and tresses, a form of essentialism? Merchant ends this paragraph by stating that “Such actions seem to cement existing forms of oppression against both women and nature, rather than liberating either.”⁴⁰

³⁷ Merchant, *The Death of Nature*, xv.

³⁸ *Ibid.*, xv.

³⁹ *Ibid.*, xvi.

⁴⁰ *Ibid.*, xvi.

Indeed, such actions do seem to cement existing forms of oppression. So why, then, does Merchant feminize nature?

Ironically, or perhaps strategically on Merchant's part, we can find out the answer to this question by using Merchant's own methods, which are at the bottom of the next paragraph in the preface. She writes, "The historian must ask, 'How have people historically conceptualized nature?' 'How have they behaved in relationship to that construction?' 'What historical evidence supports a particular interpretation?'"⁴¹ These questions guide my own interpretation of Merchant's use of Gaia Theory.

First, how has Merchant historically conceptualized nature, and what evidence supports this interpretation? In the original text of *The Death of Nature*, Merchant does not use she/her pronouns when talking about the Earth. Gaia is not listed in the book's index, and Merchant explicitly states that

"both [nature and women] need to be liberated from the anthropomorphic and stereotypic labels that degrade the serious underlying issues. The weather forecaster who tells us what Mother Nature has in store for us this weekend and legal systems that treat a woman's sexuality as her husband's property are equally guilty of perpetuating a system repressive to both women and nature."⁴²

From these examples, Merchant has historically opposed feminizing nature.

However, as the examples from Merchant's preface to the 1990 edition of *The Death of Nature* show, Merchant began to feminize nature. To return to Merchant's second question ('How have they behaved in relationship to that construction?'), how has Merchant behaved in the 1990 preface in relationship to the construction that she has historically established, the idea

⁴¹ Ibid., xvi.

⁴² Ibid., xxi.

that nature construed as female is oppressive to both nature and females? Merchant's historical context illuminates how and why her words become contradictory. At the original publication of *The Death of Nature*, environmentalism in the United States was gaining momentum and awareness—there was hope for a better future. In contrast, by the end of the 1980s, several catastrophic environmental events had occurred, and, as Donald Worster shows, people had less confidence in the ability of science to solve the world's environmental problems. So what about an increasingly worse environmental state led Merchant to do the opposite of what she had originally called to do?

The answer to this question perhaps lies in Merchant's argument about organic versus mechanistic worldviews. The core of the environmental crisis, for Merchant, is the mechanical worldview that sanctions humans' domination of nature. The science that created the environmental crisis, one rooted in mechanistic worldviews through which humans came to attempt to control nature, was the same science Merchant was expected to rely upon for the planet's salvation. Merchant's rejection of mechanistic worldviews by appealing to an organic vision of nature as seen through Gaia speaks to the ways in which Merchant saw modern science as incapable of solving the problems science caused.

Merchant's attention to science also reflects shifting ideas about the capabilities of science during the Age of Ecology, one focused on chaos and disorder. As Donald Worster writes,

“Chaos was evil, Gaia was good. Without ever quite acknowledging its parentage, modern science had been in a sense the offspring of Gaia, growing up with a strong, unquestioned faith in the benevolent rule of law and order in the universe. Acting on that

faith, scientists had seen themselves as discoverers of the ‘laws of nature.’ Now, however, they began to wonder whether they had been wrong.”⁴³

Merchant’s reference to Gaia in the midst of environmental uncertainty emphasizes the role that an organically-minded science plays in Merchant’s vision for a better solution to the increasingly destructive environmental crisis.

Environmental and Historical Context: 1980-90s

As Merchant’s *The Death of Nature* reached its decade anniversary, environmental conditions had gotten more dire. In 1984, an American corporation’s inadequate regulations resulted in the release of forty tons of toxic gas over the city of Bhopal, India, killing as many as 10,000 people in the span of a few days.⁴⁴ The world population grew to five billion by 1985 and was predicted to double every forty years.⁴⁵ The meltdown at Chernobyl happened in 1986,⁴⁶ and an estimated 12.2 to 14.2 million hectares of tropical land were deforested by the end of the 1980s.⁴⁷ By 1987, the Montreal Protocol was signed to mitigate the effects of chlorofluorocarbons on the ozone, and in 1989 11 million gallons of oil were accidentally dumped into Prince William Sound in Alaska.⁴⁸ As Worster grimly writes, “An age that began expecting much of science eventually settled for much less: Give us if you can some reliable

⁴³ Donald Worster, *Nature’s Economy*, 407.

⁴⁴ Kim Fortun, “From Bhopal to the Informing of Environmentalism: Risk Communication in Historical Perspective,” *Osiris*, 2004, 287.

⁴⁵ Donald Worster, *Nature’s Economy*, 388.

⁴⁶ Powell “1980s” 30

⁴⁷ Alan Grainger, “Rates of Deforestation in the Humid Tropics: Estimates and Measurements,” *The Geographical Journal* 159, no. 1 (1993): 33.

⁴⁸ Devin Powell, “1980s,” *Science News* 181, no. 6 (2012): 30–31.

indication at least of the constraints within which we must live.”⁴⁹ Still, the 90s did not get much better: in 1995, the Intergovernmental Panel on Climate Change (IPCC) found “evidence of a discernable human influence on climate,”⁵⁰ so the environmental problems of the 1970s and 1980s continued as Merchant wrote *Earthcare*.

Merchant and Gaia in *Earthcare*

Merchant published *Earthcare: Women and the Environment* in 1996, six years after she wrote the preface to *The Death of Nature*. The content of *Earthcare* provides an interesting contrast to but extension of Merchant’s use of Gaia in the preface to *The Death of Nature*. Although Merchant still argues that the conflation of women and nature is problematic for both women and nature, she continues to anthropomorphize the Earth through Gaia, despite having written, as we saw previously, that “If Gaia is a self-regulating homeostatic system, then ‘she’ can correct problems caused by humans or even find humans expendable.”⁵¹ The ‘she’ in quotation marks indicates that the use of she/her pronouns when talking about Gaia is unacceptable, despite Merchant herself having committed the act.

To introduce the book, Merchant writes, “Earthcare responds to a growing perception in the late twentieth century that the planet has seen better days. Taking care of the earth, however, is a human concern, not just a women’s issue.” Merchant then questions, “Why then a book that links women with the environment and an ethic of earthcare? Does not such a connection essentialize women as planetary caretakers and green cleaners? Does it not keep women in their place as caretakers of the earth’s household—the *oikos*, or Greek word meaning the human

⁴⁹ Donald Worster, *Nature’s Economy*, 341.

⁵⁰ Powell, “1980s,” 31.

⁵¹ Merchant, *Earthcare*, 4, quotation in original.

home?”⁵² Just as in *The Death of Nature*, Merchant acknowledges that associating women with nature has negative effects for both.

To answer the questions she raises, Merchant writes, “*Earthcare* explores the many aspects of the association of women with nature in Western culture and their roles in the contemporary environmental movement. It looks at the age-old connections between women and nature, symbols of nature as female, and women’s practices and daily interactions with the earth.”⁵³ Merchant goes on to explicitly state, “*The complexity of these symbols and practices over time precludes any simple essentialism that women’s nature is to nurture.*”⁵⁴

I find Merchant’s argument against her own essentialism unsatisfying. Although the symbols and practices to which Merchant refers may be complex and dynamic, Merchant offers little explanation for her own participation in the tradition. Perhaps, again, in spite of serious challenges, Merchant’s goal of rejecting the feminization of nature is subordinate to her goal of returning to an organic worldview, given the link she has drawn between the mechanistic worldview and the oppression of women and nature. Since Merchant believes the values of interdependence associated with an organic worldview are values necessary to sustainability, then problems with feminized nature might be less important than doing what might save the planet. Why, though, does she still focus on nature as female if her argument is mainly about organic versus mechanistic worldviews?

Merchant even begins to address issues related to capitalism and globalization, issues that, at first glance, have little to do with the conflation of *women and the environment*, as the book’s title implies. Why not focus on attacking the environmental problems that result from humans’ attempts to control nature? Merchant describes how these attempts to control nature

⁵² Ibid., xv.

⁵³ Ibid., xv.

⁵⁴ Ibid., xv-xvi, italics mine.

conflict with sustainable practices: “The emphasis placed by many environmental groups on ‘overpopulation’ in the South and ‘overconsumption’ in the North neglects the crucial role of production that underlies and unites both causes of degradation. Instead, reduction of production for profit and its reorientation toward fulfillment of basic needs and human security would go a long way towards creating sustainable livelihoods and stabilizing population.”⁵⁵ Here, Merchant implies that care, a typically feminine trait, is necessary to overturning the production-based, masculine attitude toward people and the environment that currently causes environmental problems. By alluding to feminine traits, Merchant engages in the essentialism and rhetoric of “planetary caretakers and green cleaners” that she had previously argued against.

In her last paragraph, Merchant continues to essentialize women and nature, arguing that “If the goals of economic production were reoriented toward the reproduction of human and nonhuman life (rather than the reverse as is presently the case), many of the problems that promote exponential population growth, unlimited economic expansion, and environmental degradation would wither away. Such an ecological revolution could realize the goals of the Global Forum’s *Planeta Fêmea*⁵⁶ by implementing a partnership ethic of earthcare and a movement toward a sustainable world for the new millennium.”

But Merchant still begins the book with critiques of appeals to Gaia:

“Gaia, the Greek deity who brought forth the earth from chaos (or the void), symbolizes for both the feminist and environmental movements a potentially powerful force for change. Ecofeminism in its various forms—liberal, cultural, social, and socialist—envisions ways to save the planet and achieve social justice, while environmentalism enlists Gaia as a symbol for a scientific theory that sees the planet as a living organism.

⁵⁵ Merchant, *Earthcare*, 224.

⁵⁶ Female planet

Both approaches have problematic aspects, however, implying that women and nature are both super-green-cleaners who will take care of environmental problems,”⁵⁷ while Merchant ends the book with calls for reunification of humans and Gaia: “Perhaps ‘the gaping void, chaos,’ Gaia, ‘the ancient earth-mother,’ and their offspring, ‘the world and the human race’ could once again be reunited.”⁵⁸ Although Merchant’s intentions may revolve around reverting to a worldview that promoted interdependence rather than exploitation between humans and nature, feminizing the planet through the Gaia hypothesis undoubtedly goes against the very cautions Merchant establishes.

Modern Ecofeminism

In spite of Merchant’s warnings and the foundations of ecofeminism in general—that the oppression of women and nature are related—a number of ecofeminists also engage in similar feminization of the planet using the Gaia Hypothesis. In “Building a New Dream with Gaia,” for example, Hilary Rose forges connections between the environment and women by introducing Gaia Theory as “a metaphor for the necessary political space required by and for the socioecosystem.”⁵⁹ Rose writes of Gaia demanding suffrage: “Whereas first-wave feminism fought for the vote for women at the opening of the century, at its close, Gaia too demands a vote.”⁶⁰ Geologist Marcia Bjornerud argues that the Gaia Hypothesis inverts traditional power structures of rank and hierarchy in science through its rejection of traditional ideas about gender and agency. Bjornerud writes that “Gaia liberates the biosphere from the passive, adaptive role to

⁵⁷ Ibid., xvi.

⁵⁸ Ibid., 224.

⁵⁹ Hilary Rose, “Building a New Dream with Gaia?,” *Signs* 25, no. 4 (2000): 1126.

⁶⁰ Ibid., 1126.

which it has been relegated” and that “Gaia accords [power] to cooperation and symbiosis as forces in evolution.”⁶¹ Another ecofeminist, Anderlini-D’Onofrio, argues against the claim of traditional feminists that men and women are equal by stating that ecofeminism “affirms that women have something quite unique and special to offer to the world precisely because we are not like men.”⁶² Anderlini-D’Onofrio uses the interconnectedness that the Gaia hypothesis posits to support this claim and, in doing so, concludes that seeing that “the sacred is in the earth rather than in an abstract religious realm”⁶³ leads to better environmental practices.

Unlike Merchant, these scholars employ feminized nature not necessarily in hopes of returning to an organic worldview, but instead for reasons of empowerment. Rose alludes to suffrage; Bjornerud argues that the Gaia hypothesis inverts existing structures of power; and Anderlini-D’Onofrio sees earthly interconnectedness in Gaia. Reclaiming what has historically been used to oppress is one strategy toward redemption and redefining hierarchies. Similar reclamations have recently been made with the word “bitch.”⁶⁴ However, in the case of feminized nature, what this reclamation ignores is the essentialism associated with conflating women and nature.

One of the main critiques of ecofeminism revolves around this type of essentialism. Merchant’s *The Death of Nature* has been critiqued as being “marred by ethnocentrism and by an

⁶¹ Marcia Bjornerud, “Gaia: Gender and Scientific Representations of the Earth,” *NWSA Journal* 9, no. 3 (1997): 98-99.

⁶² Serena Anderlini-D’Onofrio, “The Gaia Hypothesis and Ecofeminism: Culture, Reason, and Symbiosis,” *disClosure: A Journal of Social Theory* 13, no. 1 (2004): 71.

⁶³ *Ibid.*, 86.

⁶⁴ Elizabeth McGeachy Mills, review of *The Bitch Is Back: Wicked Women in Literature*, by Sarah Appleton Aguiar, *Tulsa Studies in Women’s Literature* 21, no. 1 (2002): 140-141.

essentialist identification of women with nature.”⁶⁵ Critiques of ecofeminism more broadly also concern the foundation of ecofeminist claims: that since the oppression of women and the earth are related, the earth and the earth’s struggles are knowable to women. As Sandilands writes, thinking that when “nature is not female, is not human mother or sister (or, for that matter, Gaia)...also reinforces the idea that struggles for nature by women must be made through some representation of identity—identity in the sense of sameness.”⁶⁶ In spite of empowering aims, the feminization of nature ultimately reinforces essentialist ideology, which in turn reinforces the domination of both women and nature.

The Naturalistic Fallacy and Critiques of Gaia in Ecofeminism

Surprisingly, based on Merchant’s arguments about the “normative import of descriptive statements about nature,”⁶⁷ few ecofeminist scholars critique Merchant’s use of the Gaia Hypothesis. One such scholar is Ellen Cronan Rose, who, in the article “The Good Mother: From Gaia to Gilead,” outlines Lovelock’s Gaia Hypothesis in order to do close literary analysis of popular representations of the hypothesis. The source on which Rose focuses the most is Michael Tobais’s 1990 novel, *Voice of the Planet*, and its subsequent miniseries on TBS, both of which popularized Gaia Theory. In both accounts, Gaia is the “voice of the planet”⁶⁸ to which the title refers. Rose’s close reading of *Voice of the Planet* reveals the extent to which narratives of “mother earth” prevail in and shape modern environmental concerns. Rose argues that both

⁶⁵ Charis Thompson, “Back to Nature?: Resurrecting Ecofeminism after Poststructuralist and Third-Wave Feminisms,” *Isis* 97, no. 3 (September 2006): 505.

⁶⁶ Catriona Sandilands, “Wild Democracy: Ecofeminism, Politics, and the Desire Beyond,” *Frontiers: A Journal of Women Studies* 18, no. 2 (1997): 135, doi:10.2307/3346970.

⁶⁷ Merchant, *The Death of Nature*, 4.

⁶⁸ Rose, “The Good Mother,” 84.

Lovelock's and Tobias's depictions of Gaia reflect "male anxiety about maternal power," which Rose also relates to broader critiques of mother earth rhetoric.⁶⁹

As a response to mother earth rhetoric taken up by feminists, Rose ultimately argues that "In a culture that, despite the women's movement, is still fundamentally patriarchal, for feminists to construct (or at least construe) nature as mother and goddess virtually *invites* the at best ambivalent, at worst misogynistic rhetoric manifested in a book like *Voice of the Planet*."⁷⁰ Rose's acknowledgement of the structures that currently exist is essential to understanding why the essentialist ecofeminist strategies in which Merchant and others engage are ineffective. Even if we do view nature as a mother who should be cared for, we have no reason to assume that our existing patriarchal, capitalist structures would care. Moreover, we have good reason, like the actions of president-elect Trump, to assume that this kind of rhetoric would encourage the powers in place to treat both women and the environment poorly: if male capitalists don't respect women or nature, then how would describing nature as a woman change the powerful men's actions?

We would expect, though, that other ecofeminists would take issue with Merchant's use of feminized nature. Why, then, have so few ecofeminist scholars openly addressed this aspect of Merchant's work? To answer this question we must return to the fundamentals of ecofeminism. Felicia E. Kruse writes that "ecofeminist analysis allows us to understand how justifications for exploiting nature frequently depend upon masculinist world views that, in the name of culture building, devalue women precisely in their association with nature."⁷¹ Kruse explains how this association of women with nature is established: through the idea that women's reproductive

⁶⁹ Ibid., 86. By "male anxiety about maternal power," Rose refers to a type of mother-son relationship in which the mother has the power to control and chastise the son.

⁷⁰ Ibid., 86, emphasis in original.

⁷¹ Kruse, "An Ordinal Context for Ecofeminism," 16.

cycles bring them closer to nature, through ideas about women being neuropsychologically predisposed “to perceive *connectedness* in life,” and through “nature feminists [inferring] that women’s personal experience of communion with nature, rooted in their ontological proximity to nature, allows them to attain an ecological consciousness more readily than men.”⁷² Associating women with nature in this way helps neither women nor nature.

The connections that underlie Kruse’s and other ecofeminists’ essentialism stem from what historians and philosophers of science call the naturalistic fallacy. The naturalistic fallacy undermines relationships people make between what *is* in nature and how, based on what *is*, we *ought* to act.⁷³ Peter Kropotkin, for example, saw cooperation *exist* in nature, which led him to argue that humans *should* have a cooperative political system. In the case of these essentialist ecofeminist claims, what *is* in nature is the intimate relationship between women and nature based on women’s biology. Based on this relationship, ecofeminists claim that humans *ought* to treat women and nature with respect and interdependence.

The same logic applies to Merchant’s argument about organic versus mechanistic worldviews: if the world *is* organic, then humans and the environment *should* be interdependent. If the world *is* mechanistic, then humans *should* use the earth as people would use a machine. Since Merchant thinks that to solve the current environmental crisis humans *should* see that the earth *is* organic, Merchant implements the naturalistic fallacy for a particular purpose: to save the planet. But because Merchant simultaneously uses the naturalistic fallacy to argue that we must return to a particular feminized view of nature, Mother Earth and Gaia, then her argument returns to the essentialism faced by other ecofeminists.

⁷² Ibid., 18.

⁷³ Lorraine Daston, “The Naturalistic Fallacy Is Modern,” *Isis* 105, no. 3 (2014): 581.

In spite of the discipline's goal of deconstructing the hierarchy that roots the oppression of women and the environment in the same patriarchal, capitalist system, ecofeminism continues to draw supposed connections between nature and women based on what *is* in the world and how the world *should* be. Ecofeminism must break from these connections, like Ellen Cronan Rose has, to see the ways in which the conflation of women with nature, as Merchant argues but subsequently ignores, produces the structural oppression of both. How are we to achieve gender equality or environmental sustainability if women and nature are both associated and devalued?

Implications for STS and Popular Activism

Just as historians today root their studies of Newtonian physics in the mechanistic worldview that Newtonian physicists had, so too should historians of science recognize the role feminized nature has played in the development of Western ecology and ecofeminist theory. As scientific institutions attempt to diversify the students they train and the faculty they hire, understanding the role sexism plays in ecological ideology is crucial to inclusion. Further, understanding how and why people devoted to rectifying gender inequality persistently feminize nature enables us to make choices that more appropriately fit desired outcomes.

What was at stake for Merchant was the environment. The environment was in an increasingly tumultuous state as she wrote *The Death of Nature*, the preface to its second edition, and *Earthcare*. Merchant's feminization of nature—perhaps consciously, perhaps not—resulted from a greater desire to solve environmental problems than to address the normative imports that accompany feminine descriptions of nature. The environment was more urgent, and an organic worldview is what Merchant saw as the solution. One way to achieve an organic worldview, it seems, was to re-feminize nature in the way humans had historically feminized the world in

organic settings: as Mother Earth. However, we must question to what extent these tradeoffs are worth jeopardizing other areas of power and inequality. Merchant's approach might have helped save the planet, for example, but would it have reverted human women to beings associated with reproduction and nature?

Importantly, these issues aren't solely topics in academic journals. Problems that women and nature have historically faced have, despite Merchant's best efforts, continued to worsen. To return to the discourse surrounding the Dakota Access Pipeline, we might now ask whether phrases like "mother earth" and "environmental rape" are appropriate and helpful in dismantling or shifting the existing power structures that have led to the destruction of indigenous land and to the disregard for indigenous people. Does talking about environmental degradation as rape devalue the actual rape of individuals that results from power and patriarchy? Is talking about "mother earth" an effective way to convince misogynists that humans should be more aware of finite planetary resources? What is the goal of these movements, and, more broadly, what is the goal of ecofeminism?

In this paper, I've focused mainly on the components most relevant to the ecofeminism of the late twentieth century, namely women and the environment. First, looking more thoroughly at the work of other ecofeminists would be useful to see if what they hold as at stake takes precedence over opposition to feminized nature. Next, I've left out an important and related discussion of the role of racial disparities in access to and perception of natural spaces. Especially because, in the West, environmental degradation and pollution are associated with impurity, and because Western environmentalism defines conservation as pure and untouched,⁷⁴

⁷⁴ See Kosek, "Purity and Pollution: Racial Degradation and Environmental Anxieties," in *Liberation Ecologies: Environment, Development, Social Movements*, 2nd ed, edited by Richard Peet and Michael Watts, 125-165. (New York: Routledge, 2004).

studying the ways in which racial differences coincide with gender differences in descriptions of natural spaces would also be beneficial.

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