NEW FOR WHOM?

A MATERIALIST ECOFEMINIST ANALYSIS OF

THE NEW ENVIRONMENTAL PARADIGM SCALE

by

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ABSTRACT

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A Materialist Ecofeminist Analysis of the
New Environmental/Ecological Paradigm Scale

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The New Environmental Paradigm (NEP) scale was developed by Riley Dunlap and Kent Van Liere in 1978 to measure what the authors saw as an increasingly accepted environmental paradigm. Women, Indigenous peoples, global South peoples, and subsistence farmers perceive environmental issues differently than are outlined in the NEP. I analyzed the NEP scale using a materialist ecofeminist framework, which is informed by the knowledge of women, Indigenous peoples, global South peoples, and subsistence farmers. First, I examined publications of three authors who contributed to the theoretical framework of the original NEP scale; these works displayed significant biases. Then, I individually analyzed the twelve questions of the original NEP scale. Of the twelve questions, four are adequate for measuring environmental worldview for women, Indigenous peoples, global South peoples, and subsistence farmers, while eight are not adequate. Thus, the original NEP scale was found to be an unreliable indicator of environmental worldview for the majority of the global population. The NEP scale is not an adequate universal measure of environmental worldview.

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Acknowledgements

An ecofeminist is anybody who carries out ecofeminist activities. That is, the term applies to a man or woman whose political actions support the premise that the domination of nature and domination of women are interconnected.

- Ariel Salleh (2017, p. 162)

I dedicate my work to my children, Ezra Michael and Casimir Isandro Nettle, who taught me everything I know about sustaining life.

I acknowledge Kathleen Saul, who has provided professional guidance, genuine care, and thoughtfulness in her approach to academic guidance. I sincerely appreciate her head and her heart.

I acknowledge my husband-to-soon-be, Christopher, who provided helpful recommendations regarding the historical and philosophical aspects of my research. How many can say their spouse came with a library of knowledge (and a literal library) attached? He also comforted me while I cried into pillows and cared for the kids on many occasions while I researched and wrote for hours. I love him for the way in which he has made visible the invisible labor of mothering by doing this labor himself. Men, take note.

I acknowledge Lawrence Jenkins, who is a true partner in ecofeminist praxis. Through his expert knowledge on agriculture and food systems – the way in which he links food security to abolition; the many quiet years in solitude and reflection while caring for plants; his lived knowledge of food, freedom, and the carceral state; his commitment to educating himself and others; and his wholehearted investment in liberation – he has taught me more than a textbook could. May he, and all prisoners, be free.

Introduction

An environmental movement had been simmering in the United States for decades. Along with the Civil Rights movement of the 1960s, a growing awareness of environmental hazards and injustices inspired both activists and the general public. The Clean Air Act passed in 1963, the Water Quality Act in 1965, the National Environmental Policy Act in 1972, the Clean Water Act in 1972, and the Endangered Species Act in 1973. In 1970, the same year that national Earth Day was celebrated, President Nixon established the Environmental Protection Agency (EPA). The EPA banned the use of Dichloro-diphenyl-trichloroethane (DDT) in 1972, a decade after Rachel Carson produced the prominent book *Silent Spring* (1962). Ecofeminist theory began to take root, with French feminist activist Françoise d'Eaubonne employing the term *ecofeminism* in her 1974 book *Le Féminisme ou la Mort* (1974). In 1978, working class mother Lois Gibbs formed the Love Canal Parents Movement. The group gathered to protest the toxic waste affecting the local public school and neighborhood; families had unknowingly moved to neighborhoods built on top of an industrial chemical dumpsite and suffered health problems as a consequence. This movement inspired the EPA's Superfund legislation the next year.

Within this historical context, environmental sociologist Riley Dunlap and his research assistant Kent Van Liere developed the New Environmental Paradigm (NEP) scale (Dunlap & Van Liere, 1978). The NEP is synonymously considered a scale, tool, and measurement of environmental worldview. Dunlap and Van Liere created the NEP to measure a pro-environmental worldview which they claimed had originated in scientific academia then assimilated by the general public (Dunlap, 2008). The NEP worldview

acknowledged limits to growth, the need for a steady-state economy and a human-nature balance, and anti-anthropocentrism (1978). The authors contrasted NEP with principles of the Dominant Social Paradigm (DSP), a concept they adapted from the work of Pirages and Ehrlich (1974). The DSP was characterized by such principles as belief in material abundance, economic progress, devotion to growth and prosperity, faith in science and technology, lassez-faire economics, and a view of nature as inherently wild and in need of control (Dunlap & Van Liere, 1978).

Over the last four decades, the NEP has become the most commonly used quantitative tool for measuring environmental attitudes in scholarly research (Hawcroft & Milfont, 2010). The NEP has been used to measure environmental attitudes very broadly – in the United States and internationally, in global South nations, among politicians, and with children, college students, and teachers. The original (Dunlap & Van Liere, 1978) and revised (Dunlap et al., 2000) versions of the NEP scale have been cited over 5,000 times (Sparks et al., 2020).

Because of its popularity, the NEP has been subject to a variety of critiques: the scale does not accurately reflect complex environmental attitudes that have changed over time (Lalonde & Jackson, 2002), it does not predict environmental behaviors (Scott & Willits, 1994), the scale is not unidimensional (Albrecht et al., 1982; Noe & Snow, 1990), a unidimensional scale cannot be considered a paradigm (Grendstad, 1999a), and support for the scale may differ according to place and/or time (ibid). More recently, Bernstein and Szuster indicated that the NEP presents environmental worldview as static rather than as existing within an evolving historical context, and that the construct validity of the scale is in question (2019).

Chatterjee suggested that in the global South, the NEP is not an accurate tool for measuring environmental concern (2008). There is a wide variance of worldviews within the global South, with diverse conceptions of dominant ideology and environmentalism that are culturally and geographically relevant (ibid). The NEP cannot be assumed to be universally relevant. In response to Chatterjee's critique, Dunlap stated "definitive evidence is not yet available" (Dunlap, 2008, p. 12).

In their research on the NEP in a Mexican community, Corral-Verdugo and Armendáriz called for a more extensive study of NEP factors and environmental beliefs in "developing society" (2000, p. 26). They found that some societies see that human-centered needs can be met while maintaining nature's balance, and that the NEP is too dualistic to represent this viewpoint (ibid). In their study of undergraduate college students in the U.S., Mexico, and Brazil, Bechtel et al. found that Brazilian students simultaneously endorsed natural balance, limits to growth, *and* human exemptionalism (Bechtel et al., 1999). Because human exemptionalism is presented by Dunlap et al. as incompatible with the NEP (2000), the scores of these students could not accurately reflect whether their views were sufficiently pro-environmental. Among the Brazilian students pro-environmental and supposedly anti-environmental views were entirely compatible.

Considering the extensive use of the NEP scale and the aforementioned critiques, it is worthwhile to investigate of the relevancy of the NEP within societies outside of the global North. In this thesis, I examine the relevancy of the NEP scale to women, Indigenous peoples, global South peoples including internal colonies, and subsistence

farmers. I examine the theoretical foundations of the NEP and questions of the original NEP using a materialist ecofeminist framework.

Research Question and Hypothesis

Prior to this project, it has been undetermined if – considering the perspective of women, Indigenous peoples, global South peoples including internal colonies, and subsistence farmers – the NEP can be recommended as an accurate tool for measuring environmental worldview. Therefore, I seek to answer the question: Is the New Environmental Paradigm scale an adequate tool for measuring the environmental worldview of women, Indigenous peoples, global South peoples including internal colonies, and subsistence farmers?

26.7% of the world's population earn a living principally through agriculture, with 84% of farms smaller than 2 hectares in size (Global Agriculture, 2018). 5% of the world's population is Indigenous (Amnesty International, 2019), and 49.6% of the world's population is female (World Bank, 2019). 13.4% of the U.S. population is Black; 1.5% is American Indian, Alaska Native, Native Hawaiian, or Pacific Islander; 5.9% is Asian, 2.8% is two or more races, and 18.5% is Hispanic or Latino (United States Census Bureau, 2021b); and 50.8% are female (United States Census Bureau, 2021a). Thus, this research question explores the relevancy of the NEP for the *majority of people*, within the United States and globally.

Within the global North, the NEP scale might be more applicable because it arises from the ideological framework of the global North. The scale may not be applicable outside of this context due to a fundamental difference in both material conditions and

worldview between communities of the global North and global South, internal colonies including women, and Indigenous communities. Because materialist ecofeminism is based upon the historical context and knowledge of women, Indigenous and global South peoples including internally colonized peoples, and subsistence farmers – it is an appropriate framework for investigating this question, as argued below.

Overview of Chapters

The NEP was an important academic progression in environmental sociology, and some would argue it was even revolutionary. It defined the way that we investigate the human/nature paradigm. In this work, I explore the criticism that the NEP is relevant only to the global North. First, I explain ecofeminism, and clarify the perspective of materialist ecofeminism. I include a description of postcolonial ecofeminism, which is fundamental to materialist ecofeminism. I then provide an overview of the NEP, including the short NEP and revised NEP versions. Next, I examine foundational theory of the NEP using influential texts and authors provided by Dunlap (2008) – by studying those particular authors and works. Then, I systematically examine the questions from the original NEP scale. Finally, I offer a recommendation regarding the use of the NEP scale in quantitative research.

Positionality

Women must be willing to be powerful.

- Petra Kelly (1997, p. 114)

Feminist researchers recognize that positionality is an important aspect of the research process, to be acknowledged and integrated into scientific work (Jafar, 2018). The acknowledgment of positionality provides context and boundary for the work and does not detract from a work's integrity (ibid). The construction of my position statement is especially fueled by an anonymous male faculty's statement, "I don't care if you do a position statement," with the wave of a hand. I do care, because exploring the positionality of oft-cited research is foundational to feminist research and to this thesis.

My personal experience with place-based care and life-giving labor prepares me for the analysis of this thesis in a special way. Ecofeminist Vandana Shiva declares that "women are experts in the life-giving economy" (2017, p. xvi). Women have fought for their nurturing, emotional, caregiving, and life-sustaining knowledge to be recognized as legitimate knowledge; it is an ongoing struggle – particularly in academia. I posit that my unique personal knowledge, forged from my experiences as a woman, is legitimate knowledge and is to be regarded as such. This knowledge is not a collection of random occurrences or unassociated bits of information; it is an integrated and informed analysis of the world.

First, I credit the Indigenous peoples of the Pacific Northwest, my midwives, and my doulas for my place-based knowledge of plants. Specifically, I credit Indigenous peoples because all knowledge of native flora and fauna – anywhere in the world – derives from Indigenous knowledge. Specifically, I credit my midwives and doulas

because they continue an ancient tradition of medicinal wisdom which the patriarchal medical institution tried – and failed – to destroy. I can tell you which plants outside of my house will calm the burn of the stinging nettle, *Urtica dioica*; rub the rough sporous underside of a sword fern, *Polystichum munitum*, on the welts as soon as possible. Alternatively, you can mash up the stem of jewelweed, *Impatiens capensis*, and place it on the rash. If you have allergies or inflammation, I can make you the tea of *Urtica dioica* leaves. I love the Nettle so much that it is my son's middle name. If you are pregnant, I can prepare you raspberry leaf tea, *Rubus idaeus*, to strengthen your uterus. I can make a tincture or a honey syrup of elderberry, *Sambucus*, to help boost your immunity.[1] This knowledge has been gained *because I am a woman* and I have interest in supporting the health of my family and friends. Traditional herbal knowledge has been the legacy of women since before the advent of modern medicine (Federici, 2004; Ehrenreich & English, 2010).

I have given birth outside of the hospital twice – once in a bathtub and once on the edge of a bed – both times with the support of caring midwives and doulas and community members.[2] I have raised my children in sometimes adverse conditions – having survived homelessness, poverty, single parenting, and domestic violence. These conditions were a result of being a woman and the associated gendered oppression. Women, by the millions, navigate these conditions every year (National Coalition Against Domestic Violence, 2020). Again, surviving these instances is not random or

[1] Of course it must be said - this information is not medical advice, and I do not recommend the use of herbal remedies without the advice of your medical care provider.

[2] This statement is not a judgment of birthing people who do choose to or must give birth in a hospital, but a statement of my experience. Birth is birth; and all births are valid.

unimportant, but a legitimate foundation of knowledge regarding the conditions of women under capitalist patriarchy.

I have delivered food to activists who resisted the construction of the Cherry Port Coal Terminal in the morning as they were leaving jail, baby in tow; shushed my infant in courtrooms to show support to environmental activists; attended a forest defense convergence down logging trails with my infant on my back; volunteered at a summer camp for sustainability for youth with my child; filled jars with elderberry syrup and capsules with black walnut powder for Standing Rock activists; prepared meals for Indigenous birth-workers; let fellow mothers and babies sleep next to me in a one-bedroom apartment as they were escaping domestic violence; filed a report in the police department lobby with a woman and her infant after her child's father gave her a black eye. Never have I experienced the glory of front-line environmental activism – the kind that would end up on the front of a news source. Because of my condition as a woman and mother I have always opted for the nurturing and domestic labor that is the background, and backbone, of environmental movements. I couldn't put these scattered pieces on a resume, but they are connected to knowledge and purpose, and they are productive labor.

I can de-escalate an angry and disoriented person on the street; connect a person in crisis to the appropriate resources; assist individuals in navigating the medical system; provide extensive knowledge of the mental health system; and support a person in psychological crisis. I can change a diaper in fifteen seconds on the hood of a car and prepare dinner with a baby in a sling. My body still attempts to produce milk if a nearby

infant cries vehemently enough.[3] All of this skill and knowledge is nurturing, connecting, and life-sustaining, and all of my skills have been developed *because I am a woman*.

Women are constantly required to prove that their labor is productive labor and that their knowledge is legitimate knowledge. It is necessary to list individual pieces of my life to show that I am well qualified to comment upon the position of women in this world; I am well positioned to analyze the way in which women are subjugated by patriarchal institutions, are made invisible in the community and home, are equated to nature and exploited as nature, are seen and treated as bodies, are laboring overtime in the workplace and in the home, are surviving oppression by men on the street and in the home, are perpetually made invisible and inadequate, are the working class of the working class, and are equipped with the tools to address environmental devastation.

I am conducting this analysis through the framework of materialist ecofeminism because through my expert understanding on the condition of women and through extensive research on the subject of materialist ecofeminism, I consider this framework to be the most correct way through which to view this particular research. As Angela Davis, a Black communist, scholar, professor, and activist said, "radical simply means 'grasping things at the root'" (Davis, 2009). It is through a materialist ecofeminist analysis that I attempt to grasp the root of my research question.

[3] The ability to produce milk is not biologically inherent to all women nor is it a precursor to being a woman. I declare this because I am opposed to trans-misogyny and to the belief that biology determines gender. Transgender women cannot give birth or produce milk but are women. Some transgender men produce milk and give birth.

Chapter One: Materialist Ecofeminism

The term *ecofeminism* arose synchronously on different continents in the 1970s (Salleh, 2017, p. 38). Its appearance in literature is attributed to Françoise d' Eaubonne's 1974 book, *Le Féminisme Ou La Mort*, in which she clarifies women's essential role in advancing ecological revolution. Synthesizing ecology and feminism, ecofeminists examine the relationship between gender and ecology during this period of ecological crisis, recognizing that gender and ecology are inexorably linked. To address ecological exploitation is to address gendered exploitation. The liberation of nature depends upon the liberation of women and vice versa (Gaard, 1997). Ecofeminists are united with the political goal to end the exploitation of nature and women and divided by their ideas of correct theory and praxis.

As a global majority, living at the "bottom of a hierarchy of oppressions, inhabiting the contradictory space where women and Nature meet," (Shiva, 2017, p. xx) women are in a unique and powerful position to address the global ecological crises of our times - including mass poverty linked to global capitalist development, ecological mass destruction, and climate change. Women have historically been tasked with the nurturing and longevity of their community and children. Thus, they have focused on providing food, care, and a healthy environment for future generations. Traditional Indigenous modes of

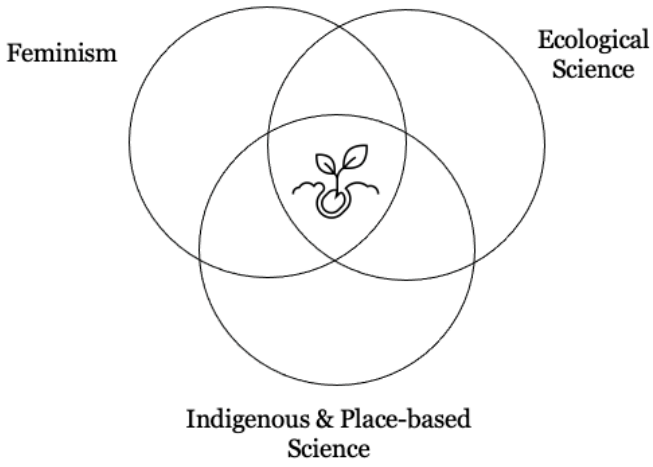

Figure 1. Ecofeminism is a combination of feminism, ecological science, and Indigenous or place-based science. Adapted from Warren (1997).

thinking also align with values of caretaking and reciprocity (Kimmerer, 2013).

Ecofeminism identifies the traditional knowledge of women, Indigenous peoples, and subsistence farmers as scientific. The global majority of women, Indigenous peoples, and subsistence farmers are actually scientists of the land, more equipped than anyone to answer questions about solutions to ecological destruction. Their knowledge is formed through life-sustaining relationships among these particular communities and nature. Western scientists have been cautious to accept traditional lived ecological knowledge of women, Indigenous communities, and subsistence farmers as scientific (Kimmerer, 2013). Shiva counters the exclusion of women's lived knowledge in science:

> Not only are women experts in the life-giving economy. They are experts in ecological science through their daily participation in, and management of natural processes that provide sustenance. Their expertise is rooted in experience, not abstract and reductive disciplines disconnected from the web of life (Shiva, 2017, p. xvi).

The concepts of respecting land and nature and preserving biodiversity did not suddenly appear in 1872 when the first national park, Yellowstone, was established, or when Aldo Leopold published *A Sand County Almanac* (1949), or when Earth Day was established in 1970. Subsistence economies have prevailed over the majority of human history, orchestrated by women's expert knowledge for over forty centuries (Curtin, 1997). Indigenous peoples of the North Americas have practiced subsistence agriculture since *at least* 2100 B.C (Dunbar-Ortiz, 2014). In describing the 1970's onward Chipko movement in India, in which Indigenous peasant farmers have protested the privatization and exploitation of their community forests, Shiva said the movement is "the expression of an old social consciousness in a new context" (Shiva & Bandyopadhyay, 1986, p. 137).

Under capitalism and some forms of socialism, women have been equated to nature and their reproductive and restorative labor has been treated as a "natural" condition of womanhood (Mies, 2014d). Women's labor has been expected, exploited, and treated as a non-productive non-labor. Simultaneously, women are praised for fulfilling these "womanly" social roles as capitalist production depends upon their continuous free labor. Women struggle with the contradiction that they are exploited laborers who are treated as though their labor is either a natural extension of who they are or that it is non-productive. The global majority of women labor to fulfill life – through reciprocal and sustainable relationships with their communities and nature. Women struggle to sustain life *on their own terms* in a non-exploitative manner.

In present societies encompassing both the global North and South, there exists binary power of men over women/nature which must be rejected. This is one of the most fundamental concepts of ecofeminism. Oppression over women and nature, and over *women as nature*, exists in every patriarchal society in some form. Indigenous communities and subsistence farmers are similarly oppressed *as nature*, which is why subsistence and Indigenous knowledge is an integral part of an ecofeminist understanding. The next section will cover the particular ecofeminist frameworks of cultural, materialist, and postcolonial ecofeminism. This will help to describe how different philosophies of ecofeminism apply to this thesis.

Frameworks of Ecofeminism

Neither feminism nor ecofeminism constitutes one absolute framework. Different epistemologies of feminism include but aren't limited to liberal, radical, socialist,

Marxist, standpoint, intersectional, cultural, postmodern, transnational, queer, Black, and postcolonial feminisms. These feminisms all address gendered oppression within society. Feminists may center theory and practice in one central epistemology or in several. Different understandings of feminism complement, challenge, and contradict one another.

Similarly, diverse branches of ecofeminism include perspectives from every branch of feminism. Ecofeminism has converged and diverged with overarching trends in feminism and environmentalism and has co-evolved with these disciplines. The critique that ecofeminism is basically incoherent (Biehl, 1991) can be attributed to the philosophical differences between certain branches of ecofeminism which are in fact, very different from one another.

Carlassare argued that cultural and material ecofeminists, despite their differences, can effectively work together toward common political goals (1999). This is likely true, and it's also important to clarify which perspectives are incompatible. I will use materialist ecofeminism in this analysis. In order to explain what materialist ecofeminism is and is not, I will first differentiate between two primary fields of ecofeminism: cultural and materialist ecofeminism.

Cultural Ecofeminism

Cultural ecofeminism is synonymously known as spiritual or radical ecofeminism. Women are biologically closer to nature, cultural ecofeminists posit. They reference the carrying capacity of both women and nature, using symbols such as the womb or earth mother to illustrate this connection. Ironically, the characterizations that nature is inherently feminine and that women are biologically closer to nature have helped to

justify the subjugation of both nature and women (Biehl, 1991). However, cultural ecofeminists uphold this perceived women-nature connection as special – they focus on *reclaiming* the connection between women and nature (Longenecker, 1997). Because they believe women are intrinsically connected to nature, cultural ecofeminists believe women can better understand and resolve ecological problems.

Cultural ecofeminism has been criticized by social ecofeminists (Warren, 2001), materialist ecofeminists (Mies & Shiva, 2014a), and social ecologists (Biehl, 1991). Cultural ecofeminism relies on *essentialism*, in that it suggests women's connection to nature is biological and is common to all women. Thus, cultural ecofeminists support the patriarchal viewpoint that women are biological beings. They assume there is an "essence" of women that can be universally defined. Biehl called this understanding *psycho-biological ecofeminism*, and stated that it "retain(s) the patriarchal stereotypes of what men expect women to be" (Biehl, 1991, p. 15).

Through biological essentialism, cultural ecofeminism prioritizes the perspectives of cisgender women and erases the perspectives of transgender, intersex, and gender non-conforming peoples. Though most women are cisgender and do have reproductive organs associated with cisgender women (vagina, vulva, uterus, etc.), their experience of oppression is not due to their "nature," but due to the way in which formal institutions – governments; courts, laws, policies, and police; bosses; schools and teachers; churches and pastors, and informal relationships – coaches, parents, husbands, boys on the playground at recess, women complicit in sexism – are structured toward the domination of girls, women, and other feminized identities. Similarly, transgender, intersex, and gender non-conforming individuals are oppressed not due to an "essence" but due to

structural oppression. While materialist ecofeminism admittedly does not center the specific conditions of transgender, intersex, and gender non-conforming peoples, I recognize that the gendered struggle of people within the LGBTQ+ community is often common with that of cisgender women (yet is also frequently more pervasive). Ultimately, it is not correct to base any feminist analysis solely on the experiences of cisgender women.

Cultural ecofeminism prioritizes an idealist (non-material) viewpoint. Cultural ecofeminism relies upon solutions to ecological and gendered oppression that are individualistic by nature; founded upon the idea that individuals can first change thoughts, viewpoints, and values after which the material conditions of women will change. Alternatively, social ecofeminists argue that it is within historical social conditions that the meaning of womanhood is created and altered; there is no universal essence of womanhood, only that which is socially constructed (Warren, 2001). One must examine the social conditions that shape the exploitation of women and nature. Materialist ecofeminists propose that the conditions of women/nature are situated within a social-economic structure, and that solutions to economic and gendered oppression are similarly situated within a social-economic structure. In the next section, I examine key understandings of materialist ecofeminism.

Materialist Ecofeminism

Materialist ecofeminism addresses the ecology/gender question through materialism rather than idealism – the difference between materialism and idealism will be described in the section titled *Materialism*. Materialist ecofeminists examine how

material forms of domination, especially the system of capitalist imperialism, create ecological and gendered exploitation. They see ecological feminism as incompatible with the capitalist system. They use *dialectical materialism* to explore the history of gendered environmental oppression. Here, I describe certain key understandings of materialist ecofeminism that are relevant to this thesis: the subsistence perspective; opposition to capitalism; opposition to private property; the sexual division of labor; a feminist, ecological, socialist, and postcolonial movement; and overdevelopment/underdevelopment.

Key Understandings of Materialist Ecofeminism

The Subsistence Perspective

Subsistence work occurs outside of the marketplace and involves meeting the direct needs of a community without using or producing excess; it is sustainable and reciprocal work. Women are subsistence workers through their nurturing, sexual, and reproductive labor which is characterized as non-productive. Globally, women are also disproportionately responsible for subsistence activities such as collecting water, harvesting food and fodder, hunting, cooking, cleaning, pregnancy, raising children, educating, caretaking, medicine, and emotional labor. Salleh estimates that women shoulder two thirds of labor, with a considerable amount of their labor consisting of unwaged subsistence activities (2017, p. 225). The subsistence perspective describes an alternate way of living from the capitalist ethic of commodity production. It is a way of life that focuses on meeting one's material needs through reciprocal relationships with one another and the earth, without excess. Under capitalist patriarchy exists a rhetoric of

economic development by any means, which threatens to sever women from means of subsistence. Mies described this concept further:

> We understood quite early on that capitalist patriarchy will go on with its destruction of life as long as people believe that ever more money will bring a better life. The first requirement for a new perspective is that people give up their faith in money. The second is a new definition of the goal of the economy. The word 'economy' comes from the Greek word *oikonomia*, knowledge about the household. The goal of the *oikonomia* was not the accumulation of money but the satisfaction of the basic needs of all members of the household. This is what subsistence means (Mies, 2014c, xxiii).

To reiterate, subsistence work *satisfies the basic needs of the community*. The materialist ecofeminist understanding of subsistence does not imply that women should *only* have time for subsistence activities; the point of a subsistence lifestyle is a focus on small, decentralized and locally controlled communities which meet the needs of their community without using or producing excess. To materialist ecofeminists, the subsistence lifestyle is an alternative vision for the future, one that can conceivably be implemented by all people in the global North and South. However, materialist ecofeminists posit that the implementation of universal subsistence would require the end of the capitalist system and the formation of a new subsistence economy based on "ancient wisdom" (Mies & Shiva, 2014a).

Opposition to Capitalism

A subsistence lifestyle cannot survive alongside or within capitalism. Even communities which would opt out of the global economy are forced to participate or to fight against infringement on their sovereignty as private corporations or global entities seek to privatize their land, develop industrial agriculture, build mega-dams, create

human-free wilderness preserves, incriminate their culture & religion, affect their food sources, etc. In this contradiction, either a capitalist or subsistence economy will ultimately prevail, and the human species will fail or flourish accordingly (Salleh, 2017). Federici advised against historical pessimism on this matter, as "capitalism so deeply threatens the reproduction of our life that our revolt against it cannot be tamed, but will resurface again and again on humanity's agenda until it has been ended" (Federici, 2014, xii). In other words, a system which so blatantly relies upon social and environmental imbalance is bound to end; and those living a subsistence lifestyle provide an optimistic blueprint for another system.

Materialist ecofeminists charge the capitalist system as being in direct contradiction to ecological and gendered liberation. A capitalist economy relies upon continuous market expansion (Mies, 2014d); the destruction of the commons and the expansion of private property (Federici, 2004); the monopoly of private property by the ruling class (Engels, 1942); a state monopoly on violence (Lenin, 2004); state protection for the property of the ruling class by military, police, law, and imprisonment (Engels, 1942); the monopoly and control of medical knowledge (Ehrenreich & English, 2010); the control of women's sexuality (Federici, 2020); and a collection of permanent colonies (Luxemburg, 1913). This is not a fully comprehensive or exhaustive list, but an example of principles that are congruent with capitalism and incompatible with materialist ecofeminism. Federici stated,

> only with the advent of capitalism has the use of violence as an economic force been universalized and intensified beyond that exercised in any previous system…the formation of a world-system has enabled capitalism to externalize exploitation, multiply its colonial divisions, and accelerate its destruction of the planet's natural wealth (Federici, 2014, p. x).

Materialist ecofeminists posit that the capitalist system is in contradiction to a global subsistence economy which would ensure future life for all species.

Opposition to Private Property

Materialist ecofeminists oppose private property in favor of local/communal ownership of commons based on egalitarian principles. Private property is integral to capitalism, and the advent of private property has been key to the exploitation of women, subsistence farmers, and Indigenous peoples (Federici, 2004; Mies, 2014c). To illustrate some of the ways in which this is evident, one can look to the European enclosure acts during the transition from feudalism to capitalism. Prior to the mass appropriation of former commons in Europe during the transition from feudalism to capitalism, and then later during colonization, peasant and Indigenous communities held common lands which supported a subsistence lifestyle. Privatization of the commons directly resulted in the exploitation of Indigenous peoples, women, and land (Mies, 2014d).

During the period of transition from feudalism to pre-industrial capitalism in the16th century, commons, or communal land, were essential for peasant farmers. They "survived only because they had access to meadows in which to keep cows, or woods in which to gather timber, wild berries, and herbs, or quarries, fish-ponds, and open spaces in which to meet" (Federici, 2004, p. 71). For peasant women, with less social power and the virtual inability to own land, the commons were particularly imperative for their "subsistence, autonomy, and sociality" (ibid, p. 71). The balanced subsistence economy required no landowners, no landlords, no wage workers, and no market consumers. However, a flourishing non-privatized commons could impede capitalist growth – which

requires a non-exhaustive supply of land and raw materials, workers, consumers, and women to birth and raise workers and consumers (Mies, 2014b). Commons reduced available private property, limited the exploitation of raw materials, kept potential workers from seeking waged work (as their survival needs were already met), limited consumers (for the same reason), and allowed women's reproductive and sexual decisions to remain separate from the market system. In order for the capitalist class to extend its reach, they would need to abolish the commons.

It was during this period of time that European women were targeted in the "first European genocide" – the witch hunt. Between the 16th and 18th centuries, *hundreds of thousands of women* in Europe were subjected to public ostracizing, torture, and public death by hanging or fire (Ben-Yehuda, 1980; Federici, 2004). A conviction required no proof of wrongdoing – only an accusation or confession that one practiced witchcraft – a confession often procured after extensive torture. Women were targeted and murdered by the European state en masse in order to advance the process of capitalism.

> The witch-hunt deepened the divisions between women and men, teaching men to fear the power of women, and destroyed a universe of practices, beliefs, and social subjects whose existence was incompatible with the capitalist work discipline. (Federici, 2004, p. 165).

During this transition to capitalism, women fought to preserve traditional medicine and midwifery after women's herbal and reproductive practices were criminalized[4] (Ehrenreich & English, 2010), to maintain the right to common property

[4] In Europe, the medical establishment began to hire only male doctors who worked from principles of mechanistic science and took control of women's medical treatment. Traditional women's medicine and midwifery became illegal and female practitioners ran the risk of being accused and convicted of witchcraft (Ehrenreich & English, 2010).

after commons were enclosed (Federici, 2004), and to preserve even the basic right to congregate and speak to one another (ibid). By resisting the privatization of the commons, the destruction of their traditional medical knowledge, and the practice of witch-hunting, European women during this time defended their right to a life of subsistence.

However, women's interests were in direct contradiction to that of the rising market class and the bourgeoisie. Capital imperialism required permanent expansion and colonization (Luxemburg, 1913), which necessitated the physical destruction and cultural rejection of the commons. The struggle for common land continues to this day as women struggle to reclaim the commons; their physical bodies; and their economic, reproductive, and sexual agency. Key to women's persecution during the transition from feudalism to capitalism and onward is the sexual division of labor.

Sexual Division of Labor

Materialist ecofeminists extend their analysis of the sexual division of labor beyond the concept that men and women simply fulfill different tasks within society in a functional manner. Rather, they posit that women's labor is "naturalized" (equated to nature) and treated as non-labor. Their labor is treated simultaneously as women's duty and an extension of their biological inclinations (Shiva, 2014c). Under the sexual division of labor, women are required to provide unpaid domestic services like cooking, cleaning, and homemaking, reproductive services such as sex, pregnancy, childbirth, nursing, educating, and childrearing. In addition, many women are part of the waged workforce

and provide financial contributions to their households, with some serving as the main financial providers within their home (Mies, 2014d; Shiva, 2017).

Within capitalist and even socialist societies, the economy has become divided into a "collectivized modern state sector and a 'subsidiary' private sector" (Mies, 2014b, p. 202). The subsidiary sector is generally based upon the principles of a nuclear family and is founded upon the unpaid work of women as housewives and mothers. Women form the *proletariat of the proletariat*, or the working class of the working class (Salleh, 2017). While proletarian men face subjugation at the worksite by their boss, women face subjugation by fathers, husbands, or male relatives *in addition to* subjugation at the waged worksite. Women thus are the invisible workers of the home (Engels, 1942).

The unpaid labor of women, especially as mothers and housewives, is fundamental to the expansion of capital. Women must reproduce the human species and raise future workers, soldiers, and consumers for capitalism to flourish. Additionally, women perform reproductive and nurturing labor without wages, protections, or comprehensive benefits. The expansion of a capitalist economy would fail miserably without the unpaid labor of global women.

Shiva suggested that despite the exploitation inherent in sexual division of labor, women's life-giving labor has prepared them for ecological praxis. Because women are experts in life-giving labor, they are better prepared to lead an ecological future. She asked,

> Why do women lead ecology movements against deforestation and water pollution, against toxic and nuclear hazards? It is not due to any so-called inborn feminine 'essentialism'. It is a necessity that is learned through the sexual division of labour, as women are left to look after sustenance – providing food and water, health and care. When it comes to the regenerative economy, women are the experts – albeit unacknowledged as

> such…When an anti-nature, ecologically blind economic paradigm leads to the disappearance of forests and water, or spreads disease because of poisoned air and soil, it is women who waken society to the threat to life and survival. (Shiva, 2014b, p. xvi).

It can be seen that women are highly productive laborers in what is considered the non-economy, and this work makes clear to them the necessity for a subsistence lifestyle in order to secure life for future generations.

Finally, the sexual division of labor has created the conditions for women's bodies to become a site of violence. Under capitalism, women are defined *as bodies* and their sexual and reproductive labor is a social expectation. Federici explained, "…regardless of what other labors we had to perform, *procreation and sexual service to men have always been expected of us and often forced upon us"* (Federici, 2020, p. 23; S.F. emphasis). In addition to performing waged labor or even in some cases chattel slave labor, women have been expected to provide sexual and reproductive labor for free. This labor has been demanded and defended by the capitalist state:

> Always, state and capital have tried to determine who is allowed to reproduce and who is not. This is why we simultaneously have restrictions on the right to abort and the criminalization of pregnancy (Federici, 2020, p. 16).

The reproductive behaviors of women has been of the utmost concern for the ruling class, with population expansion or control at the forefront of government policy depending on prevailing pressure from governments and the bourgeoisie (Mies, 2014d). For example, U.S. policies and prevailing medical norms have simultaneously encouraged the reproduction of middle-class white women while enacting programs of forced sterilization upon poor white, Native American, Black, and Latinx women –

including immigrants and prisoners (Ross & Solinger, 2017). Materialist ecofeminists affirm the principles of reproductive justice, which include:

1. The right *not* to have a child,
2. The right to *have* a child, and
3. The right to *parent* children in safe and healthy environments (ibid, p. 65).

Women's sexuality has also been a site of violence and control by the state and enacted through law, police, marriage, and commerce. Through the *housewifization* of women, or the social creation of women as housewives, the labor and activities of women were considered non-productive domestic duties (Mies, 2014d). Through housewifization the family was separated from the community and the seed of the nuclear family was planted. In this domestic role, women were to belong to the private sphere; they were removed from economic and political activity and tasked with the unpaid sexual servitude of their husbands, the birthing and raising of children, and additional domestic labor.

During this historical period, women's sexual behavior became limited to the monogamous marriage – lest women risk being ostracized, accused of witchcraft, accused of prostitution, and even arrested (Karras, 1996; Federici, 2004). In some English municipalities, prostitution was legal but heavily managed by the church and state. For example, prostitutes could legally work but were forced to live outside the town limits, to wear identifying clothing when they went to town, and were forbidden to maintain personal intimate relationships as they were to remain "common" to all men (Karras, 1996).

Women, especially those most economically exploited, may turn to sex work to survive. In a transgender, socialist, and feminist analysis of sex work, former sex worker Esparanza Fonseca described this predicament:

> Under capitalism, workers are forced to sell the only commodity they have, namely their labor-power, in order to survive. Those of us cut out from the formal economy, unable to sell our labor-power, are forced to sell the only thing we have left: our bodies (Fonseca, 2020).

Even in the marketplace, sex work tends to be considered non-productive non-labor. Women as sex workers and men as buyers act out a power struggle *over the woman's body* (ibid). In this way, women experience an embodied violence because *their body is the commodity*. Similarly, poor women's bodies are commodified in surrogacy markets where once again, the power struggle for labor rights plays out not in a workplace but *over women's bodies* (Mies, 2014c). The surrogacy market has expanded particularly in India, where limited regulations and labor rights for surrogate mothers helps buyers (parents) in the global North to be assured there will be minimal complications with the market transaction – the birth, delivery, and retrieval of the child (Rudrappa, 2015).

It can be seen that the sexual division of labor influences the way in which women are seen as bodies and their reproductive, sexual, and nurturing labor is treated as non-productive non-labor. Due to the way in which women have been tasked with reproductive, caregiving, and nurturing roles through the sexual division of labor - women are best prepared to provide solutions for the global ecological crisis we face. Materialist ecofeminists suggest restructuring the global economy to emphasize local,

communal autonomy and a subsistence lifestyle through a form of decentralized socialism.

A Feminist, Ecological, Socialist, and Postcolonial Movement

> *A dialectical ecofeminism asks not What political vision is true for all time? But Which way of knowing is most helpful in a time that cries out for affirmation of life?*
>
> - Ariel Salleh (2017, p. 283)

Materialist ecofeminists are sometimes called socialist ecofeminists (Warren, 2001). Generally, they propose a decentralized socialism based on "globally institutionalized local rights" (Shiva, 1998, p. 235). Shiva stated the necessity for providing full information to and obtaining prior informed consent by any community whose environment will be affected by a larger global decision. This practice circumvents the problem of global aid institutions such as the World Bank or IMF who work with national governments to make decisions *for* local communities – not having consulted with Indigenous or place-based peoples who are directly impacted by said decisions. Finally, it is not enough to have a local communal subsistence economy – there must be egalitarian membership within the community. Federici stated that the local community must "control its means of subsistence and all members [must] have equal access…" (2004, p. 24).

Salleh called for a unification of feminist, socialist, environmental, and postcolonial struggles. She posited that all facets are necessary. Along with Shiva, she advocated for a type of decentralized socialism based on local, communal control of land and a universal adherence to a subsistence lifestyle. In Salleh's view:

> Ecofeminism… carries forward four revolutions in one. Ecofeminist politics is a feminism in as much as it offers an uncompromising critique of capitalist patriarchal culture from a womanist perspective; it is a socialism because it honours the wretched of the earth; it is an ecology because it reintegrates humanity with nature; it is a postcolonial discourse because it focuses on deconstructing eurocentric domination. (Salleh, 2017, pp. 282-283).

Next, I explain the contradiction of overdevelopment/underdevelopment, by which governments of the global North deplete resources in the global South and leave global South communities unable to practice a subsistence lifestyle.

Overdevelopment/Underdevelopment

Rather than describe the global North/South relationship as developed/undeveloped or developed/developing, Mies uses the terms *overdeveloped/underdeveloped* (Mies, 2014d). To describe overdevelopment/underdevelopment as a fundamental contradiction between the global North/South is to address the dialectical way in which the overdevelopment of the global North systematically causes the underdevelopment of the global South, while neither level of development is sustainable (Mies, 2014d). That is, the prosperity of the North necessarily requires the permanent exploitation of the South (Shiva, 2014a).

Regarding the terms *developed/undeveloped* and *developed/underdeveloped*, there is an implication that the global South should materially and ideologically seek to reach the development of the global North – to reach a certain level of ideal development. However, the development of the global South based on global North standards is neither possible nor desirable (Fanon, 1963; Shiva, 2014a). Mies explained how the "myth of catching-up development" serves the interests of the global North:

> Catching-up development is not possible for all. In my opinion, the powers that dominate today's world economy are aware of this, the managers of the transnational corporations, the World Bank, the IMF, the banks and governments of the club of the rich countries; and in fact they do not really want this universalization, because it would end their growth model. Tacitly, they accept that the colonial structure of the so-called market economy is maintained worldwide. This structure, however, is masked by such euphemisms as 'North-South relations,' 'sustainable development,' 'threshold-countries' and so on which suggest that all poor countries can and will reach the same living standard as that of the affluent countries (Mies, 2014d, p. 60).

Decades prior to Mies' overdevelopment/underdevelopment analysis, psychiatrist-turned-anticolonial-revolutionary author Frantz Fanon published one of the most well-known texts on decolonization, *The Wretched of the Earth* (Fanon, 1963). In this publication he condemned colonial overdevelopment:

> European opulence is literally scandalous, for it has been founded on slavery, it has been nourished with the blood of slaves and it comes directly from the soil and from the subsoil of that underdeveloped world. The well-being and the progress of Europe have been built up with the sweat and the dead bodies of [Africans, Arabs, Indians, and Asians][5]. We have decided not to overlook this any longer (p. 96).

Overdevelopment leads to vast inequalities within and outside of global North countries; it produces a lifestyle that is impossible for all to achieve and which disrupts ecosystem balance. Overdevelopment requires ongoing and violent occupation of the global South. Powhatan-Renapé and Lenape author Jack D. Forbes referred to behaviors of exploitation as a spiritual disease called *wétiko*, and considered behaviors associated with overdevelopment (exploitation, imperialism, terrorism, greed) to be not symbolically

[5] In the 1963 text, Fanon used dated terminology to describe these categories of race. I have chosen to omit the original language. It is worth noting that Fanon was French West Indian, a pan-Africanist and a Marxist – he wrote from the position as such.

but *literally and materially* a form of cannibalism because *overdevelopment requires the consumption of human beings* (Forbes, 2008; my emphasis).

Salleh posited that a combination of ecological, feminist, *postcolonial*, and socialist praxis will guide the way to an ecologically balanced future (2017). Ecological, feminist, and socialist understandings have been previously described; thus, and understanding of postcolonial ecofeminism completes the understanding of materialist ecofeminism.

Postcolonial Ecofeminism

Materialist ecofeminism is rooted in postcolonial feminism, in that it derives many of its foundational ideas through a postcolonial analysis. As a result, it highlights the role of Indigenous knowledge in ecofeminist theory. Postcolonial ecofeminism provides a framework to integrate an understanding of colonialism, feminism, and ecology. Materialist ecofeminism affirms the importance of "[prioritizing] the interests and initiatives of the most exploited or threatened women" (Giacomini, 2014, p. 99). Postcolonial feminism focuses on the effects of imperialism and colonialism on colonized or formerly colonized communities, especially as this pertains to women. Postcolonial ecofeminism, then, merges postcolonial feminism with ecological feminism; it affirms that colonial ideology causes the destruction of both colonized peoples and the environment. In other words, "environmental oppression occurs because of the same colonial and imperial ideology that oppresses humans" (Jabeen, 2016, p. 6). Rosa Luxemburg elaborated on this point in *The Accumulation of Capital* (1913):

> …early industrial development in Western Europe necessitated permanent occupation of the local 'natural economy.' According to Luxemburg,

> colonialism is a constant necessary condition for capitalist growth. Without colonies, capital accumulation would grind to a halt (Shiva, 2014b, p. 171).

Materialist ecofeminists agree that colonization is a necessary component to capitalism and is an inherent factor of ecological destruction. Thus, the context of colonialism as it relates to ecology and feminism must be examined. Next, I will define the global South and internal colonies as they relate to postcolonial ecofeminism.

Global South

In this thesis, I define the global South as an economic relationship of power. The global South is a collective of people who experience economic exploitation by the ruling classes in the global North through capitalist globalization (Mahler, 2017). In this sense, the global South is not bound by geography per se*; the global South is defined by a relationship of material power* – with the global North materially exploiting the people, nature, and cultures of the global South. Thus, the inquiry of the global North/South focuses foremost on a relationship of economic exploitation.

Generally, the term *global South* has been used refer to economically underdeveloped nation-states. The World Bank identifies the global South as poor to middle-income countries, measured by gross domestic product (GDP). It would certainly be less ambiguous to define the global South by country perimeters and GDP. However, Shiva explained that the GDP measures only market activities, whether they are "productive, unproductive, or destructive," and thus does not fully measure economic costs or growth (Shiva, 2014b, p. 71). The GDP does not adequately measure the destruction of functional ecosystems for short-term market benefit *or* non-market labor,

focusing only on the profits of extractive activities. Therefore, the true cost of the activity is not reflected.

It must be said that global South societies are diverse. There is no universalized global South. Culture and economy, politics, and pockets of wealth and poverty differ drastically across locales. However, the global North/South relationship maintains a class characteristic – that is, people in the global North exploit people, animals, and earth in the global South for economic gain[6]. Global South societies contend with political and economic pressures from the global North. These pressures include sanctions, embargoes, and economic stipulations that perpetuate a relationship of power and control by the North over the South.

The global North/global South relationship is not simply a characteristic division between certain nations. The divide extends between and beyond borders, as there is a "tendency to develop pockets of extreme wealth and vast swathes of poverty simultaneously on local, national and global levels" (Mukherjee, 2010, p. 33). In the global South, there are relationships within the nation that mimic that of the colonizer and colonized, flowing from the global North to the global South, and also flowing from the bourgeoisie of global South nations to the proletariat of those same nations.

Instead of using the GDP to define the global North/South, materialist ecofeminists use a dialectical perspective to examine the market development of a society and its ongoing relationship with capitalist imperialism. Dialectical analysis can be used to interrogate the ways in which forces of colonization have impacted material conditions

[6] As in the overdevelopment/underdevelopment argument, the ruling class require the working class in order to exist. Materialist ecofeminists essentially argue for a classless, egalitarian society (Salleh, 2017).

in the global South. After all, “material conditions of the (post)colonized, men and women, are the direct outcome of their status as colonized” (Jabeen, 2016, p. 10). That is to say, economic precarity with the global South was created by the global North for the explicit purpose of global North expansion.[7]

The colonization process disturbs communities and cultures, both materially *and* psychologically. Jean-Paul Sartre described the way in which colonization aims to destroy the minds and culture of colonized peoples:

> Violence in the colonies does not only have for its aim the keeping of these enslaved men at arm's length; it seeks to dehumanize them. Everything will be done to wipe out their traditions, to substitute our language for theirs and to destroy their culture without giving them ours (Sartre, 1963, p. 15).

The borders of the global South include oppressed nations within the global North (Mahler, 2017). An exploited community within the global North may represent an *internal colony*. These colonies include nations, such as federally recognized Indigenous tribes in the United States. They also include nations which are *not* recognized, such as non-federally recognized Indigenous tribes. Additionally, they can be a people subjugated within the global North but not defined as a nation per se, such as the Black community within the United States, and as some ecofeminists argue, women.

[7] This concept was previously described as overdevelopment/underdevelopment in the key understandings of materialist ecofeminism

Internal Colonies

In the United States, 574 federally recognized Indian Nations constitute internal colonies, in addition to 400 non-federally recognized Indigenous tribes (Advisory Council on Historic Preservation, 2018). The latter can also be considered internal colonies even though the nations are not considered sovereign nations by the U.S. government. Additionally, Black communities within the United States experience a similar subjugation as people of the global South. This subjugation has been due to "political, cultural, and biological consequences of racial oppression that shaped the black population as descendants of African captives" (Karolczyk, 2014, p. 2). Practical and theoretical work on internal colonies in the mid-20th century focused on the experiences of Black communities (Haywood, 1948; Cruse, 1962; X, 1963; *The 12 Point Program of RAM,* 1964; Williams, 1966; Blauner, 1969).

Women also constitute an internal colony, according to Mies (2014c). I previously cited Rosa Luxemburg, who posited that capitalism requires a collection of permanent colonies (1913). Capitalism relies on the sexual division of labor via the permanent occupation of women's bodies. In elaboration of this concept, Mies stated that capitalism cannot be sustained without this permanent colonial process that includes internal colonies:

> …the prevailing world market system, oriented towards unending growth and profit, cannot be maintained unless it can exploit external and internal colonies: nature, women, and other people…(Mies, 2014d, p. 62).

That is to say, the exploitation of women as bodies is a phenomenon not disconnected from the capitalist market system – the sexual and reproductive exploitation of women is *necessary to the capitalist system.*

Mies referred to women as the "last colony," because even in advanced socialist societies – which to materialist ecofeminists should be more egalitarian in both principle and practice - women still contend with the colonization of their bodies and lives. The ritual colonization of women's bodies is a key factor in the making of women into internal colonies[8]. Women struggle to overcome the sexual division of labor in both capitalist and socialist societies. Mies explained:

> A feminist strategy for liberation cannot but aim...at an end of all exploitation of women by men, of nature by man, of colonies by colonizers, of one class by the other. As long as exploitation of one of these remains the precondition for the advance (development, evolution, progress, humanization, etc.) of one section of people, feminists cannot speak of liberation or 'socialism' (Mies, 2014b, p. 77).[9]

The global North has simultaneously robbed the global South of natural resources while treating women as natural resources (Mies & Shiva, 2014a). Ecofeminists have shown that the exploitation of earth and the exploitation of women are connected and fundamental to the process of colonization. However, rather than end these conditions, global North governments and their allies (i.e., The World Bank) have blamed impoverished women for worldwide poverty and starvation (Mies, 2014d). Pregnancy and birth by poor women of the global

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[8] The colonization of people with reproductive bodies, who are usually but not only cisgender women, ebbs and intensifies according to the demands of the capitalist system. I will refer to the group of people who are able to reproduce as women generally, as I know of no shortened term to denote any person with reproductive carrying capacity. However, keep in mind this group is not limited to women only and includes transgender, intersex, and gender non-conforming peoples.

[9] I argue that Mies is too general in her description of "one class by the other," and the relationship is more specific to ending the exploitation of the proletariat by the bourgeoisie.

South, especially Asian, African, and Latin American women, continues to be seen as an epidemic requiring global North intervention (Mies, 2014b; Ross & Solinger, 2017; Federici, 2020). In this way the global North has institutionalized the subjugation of women's bodies while upholding a monopoly on capitalist expansion. Regardless of national independence, global South women especially remain colonized.

Key understandings of ecofeminism and postcolonial ecofeminism have been described. In the next section I describe principles of materialism including, most importantly, dialectical materialism. This will complete the explanation of a materialist ecofeminist framework.

Materialism

> *The entire history of philosophy is written into a history of the struggle between materialism and idealism.*
>
> - Wang Nanshi & Xie Yongkang (2011, p. 85)

Idealism is the default mode of analysis in global North society because "the theoretical basis of our education and culture" is rooted in idealism. Any analysis that is not explicitly materialist is either fully idealist or a mixture of materialist and idealist (Politzer, 1976, p. 51). For this reason, it is important to understand the differences between idealism and materialism; depending on the philosophy utilized, one will arrive to fundamentally different solutions to matters of exploitation.

Materialism is the opposite of idealism. Idealism proposes that reality forms in the consciousness/mind. Idealists theorize that ideas and mental concepts inform changes in

material conditions. Alternatively, materialists posit that material conditions inform changes in consciousness. Therefore, to affect a change in ideology, one must focus on changing material conditions. In other words, "materialism, not spiritualism, is the driving force of social change" (Merchant, 1990, in Carlassare, 1999, p. 93). Marxist ecologist John Bellamy Foster explained the philosophy of materialism:

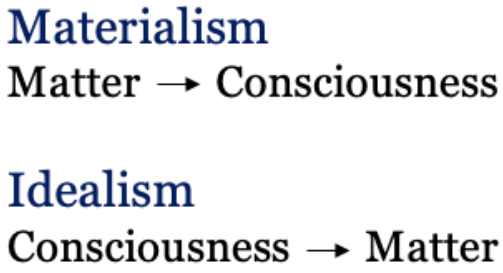

Figure 2. Materialism & Idealism

> In its most general sense materialism claims that the origins and development of whatever exists is dependent on nature and 'matter,' that is, a level of physical reality that is independent of and prior to thought (Foster, 2000, p. 2).

Due to its non-scientific use in popular culture and everyday language, it is common for materialism to be loosely interpreted to mean something like "consumerism," or a fixation on money and possessions (think of the famous song "Material Girl" by Madonna). Likewise, idealism can be interpreted to mean something like working toward a moral purpose or ideal. For clarification's purpose, neither of these interpretations of materialism or idealism are related to the philosophical definitions. *Dialectical materialism*, described next, is the form utilized by materialist ecofeminists.

Dialectical Materialism

> *No man ever steps in the same river twice, for it's not the same river and he's not the same man.*
>
> – Heraclitus, 6th century BC

I describe in detail the principles of dialectical materialism, because the modern sciences tend to present education based at least partially on metaphysical, mechanical principles. In the global North, we do not tend to examine these principles as being metaphysical – but accept them as facts. For example, we tend to examine items in a static state. When we see a basket sitting on a table, for instance, we tend to view it as an object that is only characterized by the properties we immediately perceive in that moment, rather than as being the product of a historical process that involves both dialectical change (the process of growth and transformation that created willow twigs) and mechanical change (the human intervention of collecting the twigs and creating a basket). When dialectical materialism is discussed, it cannot be taken for granted that the reader understands a dialectical method; the principles must be explored.

Karl Marx and Friedrich Engels elaborated and systemized dialectical materialism into a coherent unitary theory. The general principles of dialectics are as follows (adapted from Politzer, 1976):

> 1. Dialectical change - All of reality is in constant change. We study things in their motion and change, rather than from a static viewpoint. Nothing is final; everything has a past and future. We examine things in the process of their history and the trajectory of their future.
>
> 2. Reciprocal action - The world is a "complex of processes" (ibid, p. 99) which never ends. All processes are related to one another. One cannot consider science, nature, and society as separate, unrelated, and static but must view these as processes which interact with one another constantly. Additionally, these processes form a philosophical *spiral*, wherein a

process may return in a circular pattern to its beginning but "do not return to the point of departure; they come back a bit above, on another level" (p. 103). So, history does not repeat itself, as goes the old adage, but moves forward in a constant, spiraling motion.

3. Contradiction - Everything contains its opposite within itself. Dialectical materialism affirms the *struggle* of opposites, as opposed to idealism which recognizes the *unity* of opposites (Merchant, 1980). It is through the struggle of contradictions, or a thing and its opposite within, that change occurs. An example is the contradiction experienced by women in their life-affirming labor activities. Nurturing labor provided by women allows the flourishing of the human species, yet women's labor is also exploited by men and the capitalist class as a form of servitude. To protect the future of life on earth, women struggle with the contradiction that their labor is exploited under capitalist patriarchy *and* that life-affirming labor is required to ensure ecosystem survival. The ecofeminist struggle embodies this particular contradiction.

4. Law of progress by leaps – Abrupt leaps in history, such as war, upheaval, and revolution, are not accidents but are predictable necessities in the course of history. In other words, "changes are not gradual indefinitely…at a certain moment change becomes abrupt" (Politzer, 1976, p. 120). It is at this point of abrupt change that a quantitative change becomes qualitative. In the example that Politzer provides, water can change *quantitively* from 1 °C to 99 °C, but at either 0 °C or 100 °C, water will change *qualitatively* into ice or steam, respectively. The same can be said for the gradual change of social history, because as the principle of reciprocal action explains – science, nature, and society act according to these scientific principles.

Materialist ecofeminism combines dialectical materialism with ecological feminism –focusing on the praxis of the global majority of women, of Indigenous peoples, and of subsistence and peasant farmers. According to materialist ecofeminists, through a careful application of dialectical materialism one can fundamentally understand and respond to global ecological problems.

In this chapter, I defined materialist ecofeminism, including the ways in which it diverges from cultural ecofeminism and converges with postcolonial ecofeminism. Key understandings of materialist ecofeminism were covered,

including the subsistence perspective; opposition to capitalism; opposition to private property; the sexual division of labor; a feminist, ecological, socialist, and postcolonial movement; and overdevelopment/underdevelopment. I defined the global South including internal colonies, and specified women as an internal colony. Finally, I explained dialectical materialism, which is utilized by materialist ecofeminists in their analyses. In the next chapter, I introduce the New Environmental Paradigm (NEP) scale so that it may ultimately be analyzed through a materialist ecofeminist framework.

Chapter Two: The New Environmental/Ecological Paradigm Scale

When Dunlap and his research assistant Van Liere first published the New Environmental Paradigm (NEP) scale in 1978, they did not know their survey instrument would be used to measure pro-environmental attitudes in hundreds of research projects over the ensuing decades (Dunlap & Van Liere, 1978; Dunlap, 2008). Globally, the NEP scale has become the most widely used tool to measure a pro-environmental worldview. The implications of its worldwide use are enormous; this scale is generally accepted within social science research and has become a standard quantitative tool. In their critique of the NEP scale, Berstein and Szuster posit that the scale has an "outsized role" which "cannot be understated" (2019, p. 75). That is to say, the NEP has been utilized in many more circumstances than might be appropriate based on the original context of the research.

Dunlap and Van Liere created the NEP during a time of global environmental movements, which arose as a consequence of the contradiction global capitalist expansion and the natural limits to resource use and extraction. That is, a sizeable segment of the global North population began to see that humans inhabited the same limited earth (Dunlap and Van Liere called it "spaceship earth") as all other species, with a future trajectory in common (Dunlap, 1980). Dunlap and Van Liere attempted to measure respondents' agreement with a growing environmental paradigm. They identified three pro-environmental facets which they called limits to growth, a balance of nature, and anti-anthropocentrism.

Original Scale: New Environmental Paradigm Scale

The NEP began as a 12-item scale utilizing a 4-point Likert scale (

Table 1), initially designed as a unidimensional scale intended to measure the singular "pro-environmental worldview". Eight of the questions were considered pro-environmental, and four as anti-environmental. The eight pro-NEP questions addressed three facets of NEP worldview - limits to growth, balance of nature, and anti-anthropocentrism. The four anti-NEP questions addressed only anthropocentrism. Dunlap et al. said the singular focus on anthropocentrism was a "serious flaw" (Dunlap et al., 2000, p. 431).

An ongoing debate has arisen concerning the scale's dimensionality (Dunlap, 2008). Dunlap and Van Liere originally proposed that the scale was unidimensional based on principal factor analysis (1978). However, some studies have found the scale to be multidimensional, with the facets constituting separate dimensions, rather than a unidimensional scale with multiple facets (Albrecht et al., 1982; Geller & Lasley, 1985; Noe & Snow, 1990; Nooney et al., 2003). Grendstad (1999) questioned the accuracy of measuring something as complex as a paradigm with a unidimensional scale. Dunlap eventually suggested that researchers use the revised NEP and conduct data analysis to determine the dimensionality on a case-by-case basis (2008).

Dunlap and Van Liere compared pro-ecological NEP to anti-environmental perspectives of the Dominant Social Paradigm (DSP). The concept of the DSP originated

from Dunlap's study of Pirages and Ehrlich's publication *Ark II*, which indicated that the DSP in most industrial countries emphasizes:

> a belief in progress, faith in the steady increase of material affluence…belief in the necessity and goodness of growth…a strong faith in the efficacy of science and technology (as opposed to religion) to solve problems; and a view of Nature as something to be subdued by mankind (Pirages & Ehrlich, 1974, p. 44).

The NEP produces only one score; in other words, it does not measure adherence to the NEP and DSP separately. Responses that indicate adherence to the NEP increase the score, while responses that indicate adherence to the DSP lower the score. In Dunlap and Van Liere's study, the NEP and DSP are treated as separate exclusive paradigms.

Various studies compare NEP to the Human Exemption Paradigm (HEP) rather than the DSP (Adeola, 1996; Bechtel et al., 1999; Corral-Verdugo & Armendáriz, 2000; Bechtel et al., 2006; Chatterjee, 2008). The HEP addresses the aspect of human exemptionalism, or specifically the way in which humans are considered separate from and above nature (Catton & Dunlap, 1980b).

Table 1. Questions and Likert scale from the original NEP.

Questions from the original NEP scale (Dunlap and Van Liere, 1978)	**Facet**
1. We are approaching the limit of the number of people the earth can support.	1. Limits to growth
2. The balance of nature is very delicate and easily upset.	2. Balance of nature
3. Humans have the right to modify the natural environment to suit their needs.*	3. Anthropocentrism
4. Mankind was created to rule over the rest of nature.*	4. Anthropocentrism
5. When humans interfere with nature it often produces disastrous consequences.	5. Balance of nature
6. Plants and animals exist primarily to be used by humans.*	6. Anthropocentrism
7. To maintain a healthy economy we will have to develop a "steady-state" economy where industrial growth is controlled.	7. Limits to growth
8. Humans must live in harmony with nature in order to survive.	8. Balance of nature
9. The earth is like a spaceship with only limited room and resources.	9. Limits to growth
10. Humans need not adapt to the natural environment because they can remake it to suit their needs.*	10. Balance of nature
11. There are limits to growth beyond which our industrialized society cannot expand.	11. Limits to growth
12. Mankind is severely abusing the environment.	12. Anti-anthropocentrism

Likert scale from the original NEP scale (Dunlap and Van Liere, 1978)			
Strongly Agree 4	Mildly Agree 3	Mildly Disagree 2	Strongly Disagree 1

*reverse coded

Short NEP 6-item scale

The NEP scale has evolved through a series of iterations since its initial development. In 1980, Dunlap created an alternate 6-item scale he called the *Short NEP Scale*. He intended for the scale to measure balance of nature, limits to growth, and anti-anthropocentrism (Continental Group, 1982). The Short NEP scale was used in a number of studies throughout the 80s and early 90s (Arcury et al., 1986; J. C. Pierce et al., 1987; J. Pierce et al., 1992).

The shortened version of the NEP was originally developed because a marketing firm stated they would not include the entire NEP scale in their survey. Subsequently, John Pierce, a colleague of Dunlap's, asked to use the scale but stated he "felt he would not have space for all 12 items" (Dunlap, 2008, p. 8). Pierce et al. stated in their research that "this subset of the larger NEP scale is substantively representative of the original 12-item index" (Pierce et al., 1987, p. 59). It is unclear, however, how Pierce et al. concluded that a 6-item reworked scale could effectively represent the same concepts as the original 12-item scale. In Pierce et al.'s study, the Cronbach's alpha of the sample populations ranged from $\alpha = .62$ to $\alpha = .71$ as compared to the Cronbach's alpha of Dunlap and Van Liere's original scale, $\alpha = .81$, indicating that the shortened scale used by Pierce et al. was less reliable than the original scale.

Different variations of a shortened NEP scale have been used in many studies. Dunlap did not publish an official iteration of the short NEP scale. The lack of official short NEP scale for reference may have contributed to the arbitrary use of some questions of the NEP according to the researchers' preferences. Through its shortened use, the scale has been treated as a set of survey questions that can be used, added to, and omitted

interchangeably, rather than as a uniform scale. The construct validity and internal consistency of these alternative scales remain in question, especially due to their inconsistent use and a lack of one specific, defined, and validated short NEP scale.

The questions used in Pierce et al. (1987) are not always the same questions included in other studies using a 6-item scale, with researchers seeming to include and discard questions as they see fit, as well as to change wording as they deem appropriate. The 6-item scale used by Pierce et al. (1987) contained some questions which were worded in a substantially different manner from the original scale (Table 2). For example, "humans have the right to modify the natural environment to suit their needs" and/or "when humans interfere with nature it often produces disastrous consequences" became "modifying the environment for human use seldom causes serious problems[10]." In this case, Pierce et al. developed reverse-coded questions which could alter the fundamental accuracy of the scale as compared to the original. Additionally, the Likert scale included an extra point to indicate neutrality, no opinion or undecided – which is markedly different from the original scale.

[10] In this example, it is difficult to identify exactly which original questions have been used or combined to form questions from the Short NEP, because of the degree to which Pierce et al. altered the scale.

Table 2. Questions and Likert scale from the 6-item Short-NEP scale

Questions from the 6-item "Short NEP" scale used by Pierce et al. (1987)				**Facet**
1. The balance of nature is very delicate and easily upset by human activities.				1. Balance of nature
2. The earth is like a spaceship with only limited room and resources.				2. Limits to growth
3. Plants and animals do *not* exist primarily to be used by humans.				3. Anti-anthropocentrism
4. Modifying the environment for human use seldom causes serious problems.*				4. Balance of nature
5. There are no limits to growth for nations like the United States (Japan).*				5. Limits to growth
6. Mankind was created to rule over the rest of nature.*				6. Anthropocentrism
Likert scale from the 6-item "Short NEP" scale used by Pierce et al. (1987)				
Strongly Agree 5	Mildly Agree 4	Neutral, Undecided, or No Opinion 3	Mildly Disagree 2	Strongly Disagree 1

*reverse coded

Revised scale: New Ecological Paradigm scale

A revised 15-item scale by Dunlap et al., published in 2000, served multiple purposes. First, Dunlap et al. expanded the number of pro-NEP facets, adding the rejection of human exemptionalism[11] and the possibility of an eco-crisis (

[11] Human exemptionalism is the belief that humans are exempt from the rules of nature.

Table *3*). The authors also sought to resolve certain persistent critiques that the original scale was unbalanced in its measurement of pro-NEP (8 total questions with three facets) and anti-NEP (four total questions addressing only anthropocentrism) items by balancing the number and facets of pro-NEP and anti-NEP items (Dunlap et. al, 2000). Additionally, Dunlap et al. updated certain terminology, changing *environmental* to *ecological* and *man*kind to *human*kind. Finally, the 4-point Likert scale was updated to a 5-point Likert scale, with an additional middle point of "Unsure" added to reduce instances of nonresponse (Dunlap et al., 2000).

By revising *environmental* to *ecological*, the scale ceased to be known as the "New Environmental Paradigm" scale and became the "New Ecological Paradigm" scale. Dunlap et al. stated that *ecological* referred to a broad, systemic view whereas *environmental* was "narrower, more specific, and less systemic" (2000, p. 432). Since this change, some researchers have adopted the *ecological* terminology while other researchers continue to use the *environmental* terminology (Hawcroft & Milfont, 2010). Confusingly, the terminology does not consistently indicate whether the original or revised scale was used in in a post-revision study. In their meta-analysis completed a decade after the revised scale, Hawcroft and Milfont used the title of the original scale, "New Environmental Paradigm," so as to avoid confusion within the body of research (2010). It is unclear whether the change in terminology alone has impacted the results of the NEP in any instances.

Table 3. Questions and Likert scale from the revised NEP.

Questions from the revised NEP scale (Dunlap and Van Liere, 1978)	**Facet**
1. We are approaching the limit of the number of people the earth can support.	1. Limits to growth
2. Humans have the right to modify the natural environment to suit their needs.*	2. Anthropocentrism
3. When humans interfere with nature it often produces disastrous consequences.	3. Balance of nature
4. Human ingenuity will ensure that we do NOT make the Earth unlivable.*	4. Human exemptionalism
5. Humans are severely abusing the environment.	5. Eco-crisis
6. The earth has plenty of natural resources if we just learn how to develop them.*	6. Limits to growth
7. Plants and animals have as much right as humans to exist.	7. Anti-anthropocentrism
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.*	8. Balance of nature
9. Despite our special abilities, humans are still subject to the laws of nature.	9. Human exemptionalism
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.*	10. Eco-crisis
11. The earth is like a spaceship with very limited room and resources.	11. Limits to growth
12. Humans were meant to rule over the rest of nature.*	12. Anthropocentrism
13. The balance of nature is very delicate and easily upset.	13. Balance of nature
14. Humans will eventually learn enough about how nature works to be able to control it.*	14. Human exemptionalism
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	15. Eco-crisis

Likert scale from the revised NEP scale (Dunlap et al., 2000)				
Strongly Agree 5	Mildly Agree 4	Unsure 3	Mildly Disagree 2	Strongly Disagree 1

*reverse coded

Variations in the use of the NEP

The NEP scale has been used inconsistently across hundreds of studies. In their meta-analysis, Hawcroft and Milfont found that researchers differed regarding the number of scale items (questions) they used, ranging from 5 questions to the entire 15-item revised scale. Researchers also differed on the number of points used on the Likert scale, ranging from 4 to 10, but the majority of studies used the 5-item Likert scale. These variations significantly affected NEP scores (Hawcroft and Milfont, 2010).

It is difficult to accurately compare results of different studies, as there is a widespread phenomenon of researchers treating the scale as a set of questions to be used at convenience rather than a scale. This is a persistent problem, as Dunlap et al. have indicated that deleting any of the questions from the revised scale lowers its degree of internal reliability (Dunlap et al., 2000). At a certain point, the study might become simply a set of survey questions rather than a cohesive scale. This contradicts the intent of the tool, which was created to represent a unidimensional *paradigm*.

Demographic Variables and Correlations

In their initial 1978 study, Dunlap and Van Liere found the NEP statistically significantly correlated to three variables for the general population sample ($n = 806$), education ($r = .11$, $p < .001$), age ($r = -.09$, $p < .01$), and ideology ($r = .22$, $p < .001$). That is, as education level increases so does the NEP score, as age increases NEP scores decrease, and liberals are more likely than conservatives to align with the NEP (Dunlap & Van Liere, 1978). A group of surveyed environmentalists strongly agreed with the NEP, which Dunlap and Van Liere cited as evidence of the scale's predictive validity.

Since the original scale was published, additional co-variates have been measured. In a 6-study meta-analysis, Zelezny et al. found a slight gendered effect on NEP environmental attitudes and pro-environmental behavior, in which women scored higher (r =.07) (2000). They theorized that women are more environmentally oriented because they are socialized to care for the needs of others, and this attitude of care extends to the environment. Interestingly, in their study across 14 countries including Argentina, Canada, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Mexico, Panama, Paraguay, Peru, Spain, the United States, and Venezuela, Zelezny et al. found significant gendered differences in NEP scores *only* in the United States.

By the publication of the revised NEP scale in 2000, significantly correlated variables, all $p < .05$, included age (r =-.11), education (r =.10), political party (r =.22), occupational sector (r =.13), income (r =-.10), and past residence (r =.08) (Dunlap et al., 2000). Ultimately, Dunlap et al. found political liberalism (r =.32) to be the *only* variable both substantially and significantly correlated with endorsement of the NEP.

The NEP: An idealist approach

Dunlap et al. approached question of environmental worldview through the philosophy of idealism. Although they did not explicitly state that they adhered to idealism, they indicated that a pro-environmental worldview begins in the consciousness and disseminates into the larger society through shared ideology. For example, Dunlap stated that he expected an ecological worldview to spread more quickly in the United States than it had:

> I was naively assuming that societal paradigms would change in response to perceived changes in reality as much as scientific paradigms change

> (albeit slowly and begrudgingly at times) in response to new evidence (Dunlap, 2008, pp. 13-14).

Dunlap presumed that social acceptance of the NEP was influenced by two factors: cutbacks to environmental education, and the proliferation of conservative political propaganda against environmental regulations (2008). In Dunlap's analysis, a change in consciousness (education/propaganda) would precede another change in consciousness (environmental worldview). As discussed previously, this is an idealist analysis: Dunlap presumed worldview to be influenced primarily by ideology rather than material conditions. Dunlap did not analyze the structures of economy, colonization, and human-land relationship that influence environmental worldview. It is beyond the scope of this project to argue whether idealism is a correct or incorrect way to view environmental issues; it is sufficient to state it is not congruent with a materialist ecofeminist analysis.

NEP in the Global South

The NEP may not be appropriate for use with global South communities. Most studies that use the NEP have been conducted in the United States (Hawcroft & Milfont, 2010), or in Europe (Smith & Coleman, 2014). Only a limited number of studies focus on environmental attitudes in the global South (Corral-Verdugo & Armendáriz, 2000). In their respective studies of environmental views in Nigeria and India, Adeola (1996) and Chatterjee (2008) posited that the NEP did not capture the cultural, geographic, and/or religious context within certain global South communities.

Within the United States and Europe, respondents tend to view the NEP and DSP as mutually exclusive – a respondent cannot be both pro-NEP and pro-DSP (Bechtel et

al., 1999). Alternatively, within NEP studies completed in Mexico, Peru, and Brazil, respondents saw certain facets of the NEP and DSP or HEP as compatible (Bechtel et al., 1999; Corral-Verdugo & Armendáriz, 2000; Bechtel et al., 2006). Bechtel et al. suggested that the NEP/DSP were not mutually exclusive within Latin America (1997). Chatterjee (2008) determined that in India, there were important differences between dominant traditional and cultural ideologies of the United States which could affect the accuracy of the NEP. Cultural and regional differences regarding the dominant social paradigm in India prevent a universal characterization of a DSP in India (ibid).

In a study on environmentalism in Nigeria, Adeola proposed a link between environmentalism and colonization of the global South (1996). He referred to the NEP as "old wine in a new bottle" because Indigenous communities of many cultures, such as the Yorubas, Ibos, Hausas of Nigeria and Native Americans of North America, have long practiced principles of the NEP (ibid, p. 630). Beginning with and because of European colonization and resource exploitation by the global North, traditional pro-environmental views of Indigenous cultures have been eroded. Adeola explained:

> Colonialism as a form of imperialism involves a direct formal political control of nation states or territory. It gives the colonial power a monopoly over natural resources, including lands, wildlife, minerals, cash crop agriculture, and labor available in the colonized region. The perception of the environment as an outside force or wilderness to be attacked, conquered, and tamed underlies most forms of colonialism. Most of the cultural practices that enhanced ecological equilibrium for several generations prior to colonization were discarded, as these were considered primitive by the Europeans (Adeola, 1996, p. 624).

Colonization and the associated processes of exploitation can be seen as a precursor to the degradation of longstanding environmental paradigms within Indigenous cultures. Resource exploitation of the global South by the global

North was, and continues to be, directly inflicted to procure resources necessary for global North industrial growth (Rodney, 1983; Mies, 2014d). Adeola provided a crucial perspective absent from most of the NEP literature: forms of Indigenous environmentalism existed prior to colonization and continue to exist, though traditional Indigenous views may be at times fragmented or lost due to pressures of colonialism.

In global South societies which are economically exploited by the global North, communities tend to rely on subsistence economy via local resources. For example, Chatterjee explained that "sheer poverty" in Indian communities forced community members to adopt environmentally-friendly behaviors such as recycling (2008, p. 8). In this example, recycling is material necessity for certain Indian peoples; their views are not paradigmatically separated and counterpoised against the DSP. That is, individuals engaging in pro-ecological behaviors may not be doing so out of adherence to an altruistic environmentalism, but rather because they are committed to maintaining their livelihood. In this case, environmentalism is not an abstract and altruistic philosophy, nor is it removed from peoples' daily lives. It is simply the way they live. The NEP may not accurately characterize the worldview of people whose existence is tied immediately and materially to nature.

Methodology

> *Facts are shaped by those who collect them and again by the intentions of those who use them.*
>
> - Booth et al. (2016, p. 135)

A feminist methodology questions existing theoretical and political frameworks and creates a framework for an entirely new critique of society (Mies, 2014d). It is not enough to add the question of gender to existing political and theoretical frameworks, as though widely accepted theoretical assumptions about society are correct but only missing the perspective of women. Feminism questions the validity of existing frameworks and proposes a new framework altogether, created from the ground up.

No researcher can be fully removed from their work as an objective and passive observer of researched phenomenon. It is necessary to reveal and reduce biases through the examination of situated factors that direct the outcome of a body of research (Miner-Rubino et al., 2007). Unfortunately, the authors of the New Environmental/Ecological Paradigm (NEP) barely began this task. Juxtaposed against certain feminist traditional and ecological knowledges, some NEP principles do not withstand critical examination. In this thesis, I systematically examined potential biases of the Dunlap et al., three researchers and their works which inspired the original NEP, and the questions within the original NEP scale.

Feminist researchers focus especially on (1) the development of research questions, and (2) the interpretation of findings (Miner-Rubino et al., 2007). They examine the theoretical basis from which researchers work, the implicit and explicit assumptions made during the research process, and the way in which these assumptions

impact the research. The accuracy and quality of research depends upon understanding research formation and analysis, minimizing or clearly defining implicit assumptions, and striving to be clear and forthcoming about one's positionality.

Interpretation of NEP Facets

Utilizing a materialist ecofeminist analysis, I probed the theoretical assumptions made in the development of the NEP scale. I critically reviewed the literature of the authors which Dunlap (2008) stated have especially influenced his thinking. I examined Paul Ehrlich's *The Population Bomb* (1968), which elaborated on a population-based limits-to-growth viewpoint. I reviewed John Muir's outlook on *pristine wilderness* by examining his legacy regarding the Sierra Club and his publication *My First Summer in the Sierra* (1911). Finally I analyzed Garrett Hardin's *Tragedy of the Commons* (1968) and *Lifeboat Ethics: The Case Against Helping the Poor* (1974), and the way in which his class position informed his analysis.

Interpretation of NEP Questions

I systematically examined each question in the original NEP using a materialist ecofeminist framework using principles of ecofeminist methodology, described next. The original NEP scale was the main focus of this research because all versions of the scale are based upon this foundational scale.

Due to research constraints, analysis of the revised NEP scale was outside the scope of this project. I posit, however, that a thorough analysis of the foundational contributing works as well as the original NEP scale is sufficient to address the thesis

question. All research was conducted with the thesis question in mind – Is the New Environmental Paradigm scale an adequate tool for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers?

Ecofeminist Methodology

Ecofeminism, "a new term for an ancient wisdom" (Shiva & Mies, 2014, p. 13) existed before its methodology became academic. The theory of ecofeminism arose from feminists who participated in a dialectical struggle involving the questions of gender and ecology. From this struggle they formed theory, and from an informed theory they calculated future struggle (struggle-theory-struggle, and so on). Feminist theory is an ongoing dialectical process conducted by feminists who participate in the development of theory and the application of theory – by struggling to eliminate gendered and ecological exploitation. I utilized a feminist framework adapted from Mies (2014a), which builds upon the following principles:

> 1. *Conscious partiality* replaces impartial, value-free research. The researcher views themself and the researched subjects in the context of a social whole. The researcher sees themself through a partial identification with the research subjects. This process eliminates the researcher as spectator and allows expansive change between the researcher and researched.
>
> 2. A *view from below* replaces a view from above. That is to say, the researcher accepts that the researched is the expert while the researcher is a recipient and interpreter, rather than the arbiter, of knowledge. Through praxis, a researcher will view those they work alongside as "sister-or-brother sociologists" (2014a, p. 40)
>
> 3. Gendered praxis (theory and practice) supersedes a spectator knowledge.

4. Changing the status quo is a part of the scientific process. From a dialectical materialist perspective, Mao Tse-Tung said, "if you want to know the taste of a pear, you must change the pear by eating it yourself" (Tse-Tung, 1937). From an ecofeminist perspective, the researcher will understand by participating in the scientific process; in Tse-Tung's case he referred to the scientific process of socialist revolution. Crisis and change breed social consciousness and "the creativity of science depends on [research] being rooted in social processes" (Mies, 2014a, p. 41).

5. Research becomes a process of conscientization.[12] Exploited populations are the experts on knowledge of their particular conditions. A researcher may learn from a population and may provide a framework through which the population may come to understandings and active solutions that are particular to their conditions. Researchers must provide their tools to the people of study for their critique, use, and transformation.

6. Conscientization includes the study of (women's) individual and social history. As noted in principle 3, ecofeminism is firmly rooted in a commitment to understanding gendered struggle. Research without this perspective is incomplete. Additionally, conscientization applies to the researcher, who will allow their consciousness to be shaped through their integration of principle 2, the acceptance that they are the recipient rather than the arbiter of knowledge.

7. Researchers collectivize the experiences of women (including transgender women), transgender men, and gender non-conforming peoples. Mies originally presented this principle as a collectivization of *women's* experiences. Scholars of ecofeminism and reproductive justice suggest evolving toward a feminist understanding that disrupts the standard binary analysis of sex (Gaard, 1997) (Ross & Solinger, 2017). This requires a collectivized understanding of gendered exploitation and liberation that includes people outside the generally accepted category of women.

Additionally, I applied a materialist critique to the work, focusing on *dialectical materialism.* The principles of dialectical materialism include dialectical change,

[12] Conscientization is the development of a critical analysis of one's conditions by those who are experiencing oppression. Conscientization is the process of examining the dynamics of power, control, and oppression within the population of study by members of the population *and* materially committing oneself to liberation. "When I realise [sic] that I am oppressed, I also know I can liberate myself if I transform the concrete situation where I find myself oppressed" (Freire, 1974, p. 25).

reciprocal action, contradiction, and law of progress by leaps (Politzer, 1976), I discussed above.

Chapter 3: Theoretical Contributions to the NEP

...in order to know what is really being measured, it is essential to know in more detail who is doing the measuring"

- Anisa J. N. Jafar (2018, p. 324)

Using the NEP, Dunlap et al. sought to discover how people interpret environmental issues at a time when the dominant social paradigm seemed to be in flux (1978). Their approach was idealist in nature, in that it approached the question of environmental problems from a non-material basis. That is, the authors looked at worldview devoid from material context.

It was not only the authors of the NEP who lacked a materialist perspective when analyzing the human-ecology relationship; Foster posited that environmental sociology as a field has lacked a materialist, historical, and dialectical analysis (2000). Environmental sociologists have not adequately examined the origin of classical social theory in order to dissect and alter theory. Because of this lack of materialist, historical, and dialectical analysis,

> there is a tendency to turn endlessly in circles, so that the analysis stops where it started, no more equipped at the end then at the outset to deal with the real problems of environment and society. Numerous studies have been written on anthropocentrism vs. ecocentrism...the dualistic perspective perpetuated here tends to block any genuine development of knowledge or meaningful practice (Foster, 2000, p. 18).

Following Foster's suggestion to re-examine what feminist researchers call the *context of discovery*, or the way in which a theory is developed, I examine major theoretical influences in Dunlap and Van Liere's development of the NEP. In this way,

we can more clearly understand how Dunlap et al. came to define the parameters of the NEP.

Analyzing the theoretical framework of the NEP is made easier by Dunlap's publication, *The New Environmental Paradigm scale: From marginality to worldwide use* (2008); he specifically defined authors and writings that inspired the development of the NEP. Dunlap cited *Ark II: Social Response to Environmental Imperatives* by Pirages and Ehrlich (1974), which assisted him in defining the DSP. Dunlap stated that he was also inspired by authors Barry Commoner (1971), Paul Ehrlich, and Garrett Hardin (1968). The Club of Rome's publication *Limits to Growth* informed the facet by the same name (Meadows et al., 1972). Dunlap mentioned John Muir's conservationism (1911) and Aldo Leopold's land ethic.

In this section, I examine *The Population Bomb* by Paul Ehrlich (1968), arguably the most influential publication by this co-author of *Ark II*. I then critique the idea of *pristine wilderness* by examining John Muir's involvement with the Sierra Club and his publication *My First Summer in the Sierra* (1911). Finally, I review the *Tragedy of the Commons* (1968) and *Lifeboat Ethics: The Case Against Helping the Poor* (1974) by Garett Hardin.

Paul Ehrlich's Population Bomb

Paul Ehrlich, a co-author of *Ark II* (Pirages & Ehrlich, 1974) and a prominent environmentalist author of the 1970s, promoted population control, especially for the global South. His stance on population control was made abundantly clear through his work *The Population Bomb* (1968). He posited that an expanding population, especially

in what he called UDCs (undeveloped countries), was the greatest global environmental threat facing humanity.

Ehrlich demanded immediate policies to curb birth rates everywhere, with the global North acting as an example for the global South. He saw population growth as especially out-of-control in the global South due to high reproductive rates. He was severe with his demands, even suggesting that contraceptives should be placed in the public water supply with the antidote supplied only be the government when certain peoples would be allowed to procreate.

Ehrlich suggested that the United States selectively provide aid to governments which limited population growth. In *The Population Bomb*, Ehrlich suggested the identification of countries deemed noncompliant with population control in order to cut humanitarian aid. Wealthy countries such as the United States should refuse to provide food aid to countries which would not meet population targets, he proclaimed. This policy could accelerate the country's death rate, thereby "naturally" limiting population growth. He categorized countries by how successful he felt they could be at achieving global North-adjacent development.

> Some [nations] will undergo the transition to self-sufficiency without drastic aid from us….Libya is probably such a country…Some nations…may become self-sufficient if we give them help…Pakistan, at least West Pakistan, may be such a country…Finally there is the last tragic category – those countries that are so far behind in the population-food game that there is no hope that our food aid will see them through to self-sufficiency…India is probably in this category. If it is, then under the triage system *she* should receive no more food (Ehrlich, 1968, pp. 159-160; my emphasis).

Population control policies like those described have led to the exploitation of global South women through embodied violence, with the woman's body as the site of

exploitation (Mies, 2014b; Shiva, 2014c; Ross & Solinger, 2017). Recall the concept of the sexual division of labor, where a woman's struggle for labor rights occurs *over her body* (Mies, 2014c; Fonseca, 2020). Global South women have been used as pharmaceutical testing sites for birth control methods like the IUD and Depo-Provera, such as in Bangladesh and India (Mies, 2014c; Rudrappa, 2015; Federici, 2020). Additionally, poor, Indigenous, and global South women have been systematic victims of coerced or forced sterilization programs (Ross & Solinger, 2017). The World Bank and other global aid agencies have required population control in order for global South countries to access international aid. To achieve family planning quotas, governments have focused on coercing the most oppressed women to accept sterilization. Mies described the way in which the Vulnerable Group Feeding Programme targeted poor women in Bangladesh:

> The family planning authorities issue certificates to women who undergo sterilization, on which it is written, 'She can be given food under government relief.' Without such a certificate a woman gets none. Old women, women already sterilized, and widows are not entitled to food relief (Mies, 2014a, p. 191).

An immediate population control policy, whether enacted in 1968 or today, would allow for the genocidal effects of colonization to take permanent effect in the global population. If population growth were to be immediately limited, the future demographic of the population would approximately represent the demographics of the current population. When the growth of populations which have been decimated by genocide is limited in the future, proportionate populations would be therefore permanently limited. This type of xenophobic population control has a premise in the United States, as evidenced by the Immigration Act of 1924 (The Johnson-Reed Act) which enacted a

national origins quota. The quota system allowed new immigrants in proportion to their current U.S. population. This system favored Nordic immigrants of northern and Western Europe, and disfavored immigrants of south and Eastern Europe (Greenwood & Ward, 2015). In addition, the Immigration Act essentially constructed a white American race wherein European descended immigrants acquired "a racial identity based on whiteness that was presumed to be unchangeable" (Ngai, 1999, p.70). The quota system limited or almost completely excluded Asian immigrants and was a tool of xenophobic population repression against non-European immigrants including Japanese, Chinese, Mexican, and Filipino immigrants (ibid). In the United States, where a population of 15 million Indigenous peoples was forcibly reduced to less than 3 million at present (Dunbar-Ortiz, 2014), the genocidal consequences of an immediate, universal population policy are glaring.

Lifeboat ethics

The rhetoric for cutting non-compliant people, communities, and nations from aid reflects something called "lifeboat ethics." Ehrlich's contribution to lifeboat ethics was made clear with his own use of the metaphor. In describing the United States' responsibility for limiting global population growth, Ehrlich said:

> …we are…just one country on an ever-shrinking planet. It is obvious that we cannot exist unaffected by the fate of our fellows on the other end of the good ship Earth. If their end of the ship sinks, we shall at the very least have to put up with the spectacle of their drowning and listen to their screams…Will they starve gracefully, without rocking the boat? Or will they attempt to overwhelm us in order to get what they consider to be their fair share? (Ehrlich, 1968, pp. 132-133).

Ehrlich appeared to think that global North peoples should be less concerned about global well-being and more concerned about the displacement of global North people by global South people on a metaphorical sinking ship. Ehrlich implied that the citizens of the global North deserve their spot on the ship based on the privileges they had already accumulated. Lifeboat ethics is popular rhetoric among eco-fascists such as deep ecologist author Pentti Linkola, who stated famously:

> What to do when a ship carrying a hundred passengers has suddenly capsized, and only one lifeboat is available for ten people in the water? When the lifeboat is full, those who *hate life* will try to pull more people onto it, thus drowning everyone. Those who *love and respect life* will instead grab an axe and sever the hands clinging to the gunwales (Linkoli, 2009, pp. 130-131; my emphasis).

Linkola not only supported population control with equal fervor as Ehrlich; he advocated for targeted population control through warfare, gas chambers, and bacteriological and chemical attacks. Lifeboat ethics have been a great inspiration to anti-immigrant and white nationalist fascists who believe in racial segregation, anti-immigration policy, white supremacy, eugenics, and even targeted genocide (Sparrow, 2019). Both Ehrlich and Linkola promoted environmental rehabilitation through human death, whether through Linkola's method of wide-scale murder or Ehrlich's more passive suggestions, such as ending the government's "preoccupation with the problems and diseases of middle age" through defunding medical research meant to extend life (Ehrlich, 1968, p. 91). Linkola declared the poor should be maimed and killed; Ehrlich insinuated the poor should simply be allowed to drown.

Ehrlich criticized the political and scientific emphasis on the reduction of death rates through medical intervention. He supported the passive acceptance, rather than reduction, of death rates. He criticized biomedical research including cancer and circulatory system diseases and stated that organ transplant is a "completely insignificant" and would become a "historical curiosity" if the government and medical community doesn't change their focus to prohibiting birth rates (1968, p. 91). Without a foremost emphasis on population control, he thought lengthening the average lifespan would be detrimental to the environment. He wrote:

> That reduction of the death rate in a population will lead to disaster if the birth rate remains controlled is not recognized (One of the most important roles of sex education must be to impress on everyone that death control in the absence of birth control is self-defeating, to say the least)" (1968, pp. 91-92).

This fascist and bourgeois politic demanded the sacrifice of the poor for the well-being of the rich. Environmental devastation – including water and air pollution, water shortage, pesticide and chemical exposure, industrial pollution, lead poisoning, and climate disasters – disproportionately affect already oppressed communities including poor, working class, Indigenous, and global South people; this truth is a central feature to the critical theory of environmental justice (Pellow, 2018). The environmental problems which Ehrlich suggested to be solved through the sacrifice of the poor are already most adversely affecting those he considered disposable.

Gender

Ehrlich advocated for fetal sex-selection, stating it would reduce population growth because people would be able to have sons rather than reproducing multiple times in order to finally produce a son. He said, "…if a simple method could be found to guarantee that first-born children were males, the population control problems in many areas would be somewhat eased" (p. 139). Sex-selection practices became popular soon after *The Population Bomb* was published, with devastating consequences in China and India. In China, there became a phenomenon of "missing girls," with males far outnumbering females in China – a result of male preference, a one-child population control policy (which ended in 2015), and sex selective abortion (Li, 2007). In the late 1970s in India, amniocentesis and abortion became an accepted method of cancelling the pregnancy of a female fetus, accessible even to poor families (Mies, 2014d). Sex-selective abortion has been practiced in India since that time, resulting in lower female births and an imbalanced sex ratio in the Indian population (Jha et al., 2006). Mies dispelled the myth that the epidemic of sex-selective abortion is a consequence of semi-feudal or backwards characteristics of undeveloped societies; rather, the epidemic of sex-selective abortions and the exploitation of girls and women is a consequence of "capital-patriarchal civilization itself" (Mies, 2014d, p. 162).

It is also worth noting the gendered way in which Ehrlich discussed the issue of land productivity. He referred to "virgin lands" in Kazakhstan as "a harlot in disguise" (1968, p. 97) because the land seemed arable but did not produce an adequate food supply. He then stated that "in the tropics…being seduced by virgin lands is most dangerous" (p. 98). He was referring to the temptation to

believe that the clearing Amazon forests could supply agricultural land for the population of Brazil. He did not say why he chose to metaphorically exoticize and sexualize foreign lands. He linked a land's virginity to its fertility, and in his feminized view of earth referred to "her" as a "harlot" if she didn't produce ample offspring. His association of land to women – unexploited foreign land simultaneously the exotic virgin and seductress, unproductive land the harlot – reflects a deeper pathology of sexism.

Ultimately, Ehrlich's drastic assertions in *The Population Bomb*, along with Malthusian population theory upon which they were based, were incorrect. Yet, the first question of the NEP relies upon the rhetoric put forth in *The Population Bomb*: overpopulation, caused disproportionately by global South women, is the cause of ecological destruction. To disagree, according to Dunlap et al., is anti-environmental (Dunlap & Van Liere, 1978; Dunlap et al., 2000). This will be explored further in the analysis of the original NEP questions.

John Muir's pristine wilderness

John Muir, co-founder of the Sierra Club, has been heralded as a champion of environmentalism for his conservation efforts. His writings on wilderness and conservation helped to inspire the preservation of the Yosemite Valley and Sequoia National Park. He is often quoted and well-loved in the environmental community even today.

However, Muir's personal and political thinking reveal something other than a persistent, childlike love for nature. In a statement released by the Sierra Club in 2020, a

more sinister history is revealed: Muir perpetuated racist stereotypes against Indigenous and Black peoples, ignored and excluded original Indigenous inhabitants from wildlife preservation plans, and maintained relations with overt white supremacists – one of whom, Henry Fairfield Osborn, helped to found the American Eugenics Society (Brune, 2020).

Muir's disdain for Indigenous peoples was made evident in his famous writing *My First Summer in the Sierra* (1911). His descriptions of Indigenous peoples during his Sierra wanderings ranged from indifference to condescension to disgust. He described an Indigenous guide to be so silent it was "as if he belonged to another species" (p. 10). He reserved especially descriptive language for an Indigenous woman who arrived at his camp wearing "calico rags, far from clean." Muir lamented that she did not arrive "clad in fur, or cloth women of shreddy grass or bark…she might then have seemed a rightful part of the wilderness; like a good wolf at least, or a bear" (p. 59). Here, again, Muir referred to an Indigenous person as another species and criticized that she did not fit into Muir's concept of wilderness. Later, he described Indigenous peoples as "half-happy savages" whose access to clean air and water "go far to cover and cure the grossness of their lives" (p. 206). Finally, he described a feeling of "desperate revulsion" after interacting with a "degraded" group of Indigenous people who had inquired if Muir had any whiskey or tobacco (p. 219).

Worse than simply perpetuating ideological stereotypes, Muir advocated for the expropriation of Indigenous peoples from their traditional land. The "Yosemite" that John Muir found was already known as Ahwahnee (big mouth) by the Ahwahneechee people who resided there. In promoting the "preservation" of spaces that required preservation

only due to the violent onslaught of settler colonialism, Muir advocated for a pristine, human-free wilderness – wilderness that had recently become human-free due to violent colonization (Brune, 2020).

This *pristine wilderness* myth has caused great harm to women especially in the global South; under the guise of preservation, governments have appropriated land that had formerly been used as subsistence commons. Historically, wilderness movements have displaced Indigenous peoples from their homes (DeLuca & Demo, 2001). For example, the removal of Indigenous peoples has been so violent in certain tribes in India that, to village members, the forest department has become synonymous with corruption and violence against women. The rape of women by forest personnel in India has been reported as a regular occurrence (Roy, 2014). Arundhati Roy further explained the abuse of power by the Forest Service in India:

> The perennial problem, the real bane of people's lives, was the biggest landlord of all, the Forest Department. Every morning forest officials, even the most junior of them, would appear in villages like a bad dream, preventing people from ploughing their fields, grazing their cattle, collecting firewood, plucking leaves, picking fruit—from *living*. They brought elephants to overrun fields and scattered babool seeds to destroy the soil as they passed by. People would be beaten, arrested, humiliated, their crops destroyed. Of course, from the Forest Department's point of view, these were illegal people engaged in unconstitutional activity, and the department was only implementing the Rule of Law (Roy, 2014, p. 58).

The trope of a wilderness devoid of humans also ties into ideas of Malthusian population control. Unrestricted breeding by global South women is characterized as a threat to pristine wilderness, as an expanding population needs more land upon which to live. As Brower said in the foreword to *The Population Bomb* (Ehrlich, 1968),

> Whatever resources the wilderness still held would not sustain him in his old habits of growing and reaching without limits. Wilderness could, however, provide answers for questions he had not yet learned how to ask. He could predict that the day of creation was not over, that there would be wiser men, and they would thank him for leaving the source of those answers. Wilderness would remain part of his geography of hope…and could, merely because wilderness endured on the planet, prevent man's world from becoming a cage (p. 14).

In this passage, Brower likened nature to a virgin, claiming that "wise men" would preserve untouched wilderness from which future men could derive mystical answers to some unknown question. The population explosion, perpetuated by global South women, would become a "cage" to men by prohibiting him from accessing virgin lands. According to Brower, the roles of perpetrator (global South women) and oppressed (man) have been reversed.

Pristine wilderness is a colonial myth and expropriating Indigenous peoples from their traditional land is a colonial act. A wilderness segregated from the human species requires the violent and persistent expropriation of Indigenous peoples from their land and the systematic control of women, especially global South women, that their reproductive activities conform to the demands of Brower's "wiser" men.

The Tragedy of the Privatization of the Commons

Freedom in a commons brings ruin to all.

- Garrett Hardin (1968, p. 1244)

In 1968, Garrett Hardin wrote his famous piece *Tragedy of the Commons*. In it, he theorized that communal landholding would lead to environmental demise or "tragedy."

Without state management and ideally the expansion of private property, he said, common land and resources would inevitably be exploited by greedy individuals seeking to maximize gains for themselves.

Hardin illustrated the tragedy of the commons by using the herdsman as a symbol. Because each man is an individual, rational actor seeking to benefit himself foremost, each man will try to maximize the number of animals in his herd. Common resources will be destroyed by overgrazing and overuse as each man fends for himself. Therefore, Hardin advocated for private property, claiming that individuals would be motivated to maintain the quality and productivity of their land if any gains or losses were theirs alone to benefit from or to bear. As a secondary measure, if private property was hard to delineate (such as in open waters or air), Hardin advocated for regulation via laws and taxes.

Capitalism as the system of tragedy

The tragedy-of-the-commons argument is non-dialectical and ahistorical. It is non-dialectical because it assumes that the individual's propensity to exploit common resources is due to *human nature* rather than a product of the overarching system in which humans live. The argument is ahistorical because it describes the behavior of rational actors who value individual benefit over common goods as if this behavior remains consistent across history and space. There are certain economic systems which promote and even require individual selfishness in order for actors to survive. However, using dialectical thinking, it can be understood that all systems change and eventually

end. Only in certain contexts and under certain conditions do humans act foremost as individuals. One can look to history to see this is true.

Prior to capitalism, subsistence economies based on communal ownership persisted without tragedy. O'odham/Chicano/Anglo author and Indigenous leader Dennis Martinez attributed a longstanding, sustainable relationship with the land in Indigenous cultures as due to an ethical-economic model based on responsibility and reciprocity. Martinez explained:

> Indigenous regulatory authority and responsible use of the commons avoided Garrett Hardin's (1968) well-known and quite misunderstood "tragedy of the commons." This kind of local responsibility with oversight during hard times and the experience of knowledge specialists generally was the key to Indigenous environmental sustainability, and sets the Indigenous ethical-economic model apart from the dominant modern capitalist model and its irresponsible winner-take-all "free market" – the true tragedy of the commons that was once mistakenly blamed on regulated collective harvesting practices (Martinez, 2018, pp. 163-164).

Martinez cited neoliberal capitalism as the material basis for the tragedy of the commons; communal Indigenous lands have been seized and privatized. Prior to the mass appropriation of commons in Europe and later throughout the global South, peasant and Indigenous were able to practice a long-term subsistence lifestyle. Privatization of the commons directly resulted in the exploitation of Indigenous peoples, women, and land.

In another example, the implementation of private property in Nigeria has devastated Indigenous populations which formerly relied on communal ownership and a subsistence lifestyle. The advent of private property in Nigeria has displaced over 150 million people, to pave way for state rather than community control of land use and resource extraction (Adeola, 1996).

A Settler Economy

A growing population coupled with limited resources, Hardin posited, caused the tragedy of the commons. He stated that the tragedy does not occur in "frontier conditions," but is problematic with denser populations or with more limited resources. In other words, he blamed population and resources, but not the overarching economic system, as the key factor of the tragedy. Supposedly, the tragedy of the commons would not occur unless a particular threshold of population or a limitation on natural resources was reached.

In illustrating the concept, Hardin stated that "a hundred and fifty years ago a plainsman could kill an American bison, cut out only the tongue for his dinner, and discard the rest of the animal. He was not in any important sense being wasteful" (p. 1245). Yet the frontiersman was, indeed, causing devastation to the bison population by reducing its numbers and long-term ability to survive. Because the economic model of capitalism does not acknowledge the intrinsic value of life, any life, the settler could negate his influence on the bison population.

Martinez suggested that the Indigenous ethical-economic model regulated community behavior to enable long-term survival over generations (Martinez, 2018). As opposed to the capitalist ethic of exploiting resources for individual gain, Indigenous norms did not allow for such a profane act as cutting the tongue from a bison and leaving the body to decay. The "Original Compact" which guided the Indigenous ethical-economic model is described further:

> Animals would offer their lives to humans provided that humans would take care of the plants and animals by asking for permission to harvest – leaving gifts in exchange for lives taken, not taking more than is needed, showing respect for their bodily remains after they were killed and

> butchered for food, and not failing to regularly care for their habitats and relations. (Martinez, 2018, p. 140).

If population were a key factor in the tragedy of the commons, as Hardin asserted, then why had the 15 million Indigenous people living in what became the United States (Dunbar-Ortiz, 2014) not wiped out the bison population already? In the Americas, Indigenous peoples have survived for over 20,000 years while living in relative balance with the ecosystem (Nelson & Shilling, 2018).

As a biologist and ecologist, Hardin must have seen the clear connection between the frontiersman's actions and consequences. The settlers who casually slaughtered bison were causing harm even when it appeared the effect of their actions were negligible. Chickasaw author and environmentalist Linda Hogan described this cognitive dissonance, which would allow Hardin to deny the impact of settler-colonial bison slaughter, as "a continuation of the mental distancing and chaos of mind that allowed killers not to feel about what they had done, the slaughter of bison, Indian horses, even the massacres of people" (Hogan, 2018, pp. 201-202). Indeed, it seems that Hardin required a great amount of this "chaos of mind" to defend not only the violent acts of his settler-colonial ancestors, but also his rhetoric that demanded the withholding of assistance to the poor.

The case against helping the poor

Hardin was a "lifeboater" who advocated for cutting off resources to the poor, and even went so far as to publish the article *Lifeboat ethics: The case against helping the poor* (1974). In this article, Hardin took issue with the "spaceship earth" metaphor, which is central to the NEP, stating that the earth should be seen as a "lifeboat" rather than a

"spaceship." Hardin did not believe every person deserves an equal share; rather, he believed that poor countries should be cut off from humanitarian support to face "dog eat dog" consequences that would limit their population growth (Hardin, 1968). Like eco-fascist Linkola, and like population-control fanatic Ehrlich, Hardin supported forced poverty via the refusal of welfare or humanitarian aid. He especially noted this approach as a tactic to limit "overbreeding," stating:

> *If* each human family were dependent only on its own resources; *if* the children of improvident parents starved to death; *if*, thus, overbreeding brought its own "punishment" to the germ line – *then* there would be no public interest in controlling the breeding of families (Hardin, 1968, p. 1246; GH emphasis).

Hardin blamed the welfare state for eliminating the negative feedback loop described above which would limit the "overbreeding" poor.

Global vs. local

Ecological destruction is an economic and colonial problem, characterized by the exploitative removal of resources from the global South to the global North. It is not poverty or population which causes ecological devastation, Shiva posited, but the "globalization of the local" (Shiva, 1998, p. 232). Recall the materialist ecofeminist proposal for decentralized, locally controlled and egalitarian communities.

Shiva and Hardin both expressed disdain for global aid programs, but for fundamentally different reasons. Hardin disparaged humanitarian aid and what he called the "World Food Bank" based on the idea that suffering countries should "learn the hard way," and that suffering and death would lead to reductions in

population (Hardin, 1974, p. 43). Shiva charged that the World Bank and IMF globalized environmental problems and solutions, appropriated language regarding underdevelopment, developed debt burdens in poor countries, and removed power from local subjugated communities in the name of creating "global" solutions (Shiva, 1998). To Hardin, the global South deserved to suffer while the global North deserved to reap continuous privileges. To Shiva, the end of ecological and social suffering requires decoupling the North and South – wherein the South no longer serves the economic interests of the North under the veil of development. Shiva described the consequences of globalized environmental solutions within the capitalist system:

> The G-7 can demand a forest convention that imposes international obligations on the Third World to plant trees. But the Third World cannot demand that the industrialized countries reduce the use of fossil fuels and energy. The "global" has been so structured, that the North (as the globalized local) has all rights and no responsibility, and the South has no rights, but all responsibility. "Global ecology" at this level becomes a moralization of immorality. It is devoid of any ethics for planetary living; and based on concepts not of universal brotherhood but of universal bullying" (Shiva, 1998, p. 234).

Hardin presented an every-man-for-himself solution to environmental devastation, with the global North continuing its occupation of the South. "We are all the descendants of thieves," Hardin said, as if everyone had descended from settler-colonial ancestors and therefore addressing inequality is a moot point (1974, p. 126). This statement betrays Hardin's tacit denial of oppression; if we were all simply thieves, there would be no need to examine the violent implications of settler-colonial patriarchy. He erased the ancestors of enslaved peoples and the ongoing economic legacy of slavery and the history of

Indigenous peoples. He erased the linked exploitation of women and nature. He erased the class nature of exploitation. Who has stolen from whom?

Alternatively, Shiva called for de-centralized, local community control of resources, and the democratization of international interests; she said:

> the roots of the ecological crisis at the institutional level lie in the alienation of the rights of local communities to actively participate in environmental decisions. The reversal of ecological decline involves strengthening local rights" (Shiva, 1998, p. 235).

Because both Hardin and Shiva wished to de-link the North-South economies, their argument could appear similar. With some basic material interrogation, it can be seen that they fervently disagree.

Conclusion: Theoretical Contributions

In this analysis of three key contributors to the formation of the NEP, I found each to promote anti-environmental sentiment in opposition to key materialist ecofeminist understandings.

In his publication *The Population Bomb* (Ehrlich, 1968), Paul Ehrlich described population control targets which have materially reinforced exploitation specific to global South women. He supported *lifeboat ethics* which are characterized by the abandonment of poor and exploited peoples, especially global South women. His ideas align with eco-fascist rhetoric which blames global South women for the degradation of natural resources.

John Muir supported a *pristine wilderness* which requires the removal of Indigenous people from their traditional homes. He openly disliked Indigenous peoples,

as evidenced in his publication *My First Summer in the Sierra* (Muir, 1911). The concept of *pristine wilderness* is determined to be a colonial myth which requires the displacement of Indigenous peoples and the ostracizing of women, especially global South women who are seen as overbreeding and infringing on man's right to enjoy human-free nature.

Garret Hardin displayed a distrust in human nature, characterizing humans as essentially greedy. In *The Tragedy of the Commons* (1968), his ideas directly contradict the materialist ecofeminist opposition to private property. He conflated characteristics of capitalism and colonization with a general *human nature*. Additionally, he made clear his disgust for the poor in *Lifeboat Ethics: The Case Against Helping the Poor* (1974). Like Ehrlich, he used eco-fascist talking points which encourage the continued subjugation of the poor.

As Dunlap said himself – Ehrlich, Muir, and Hardin contributed to the theoretical development of the NEP scale (Dunlap, 2008). After a thorough analysis of selected works by each author through a materialist ecofeminist framework, I do not recommend *any* of their environmental analyses as an appropriate framework for the quantitative analysis of environmental worldview. In the next chapter, I systematically analyze each question of the original NEP scale. I determine which questions are and are not adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers – the global majority of people.

Chapter 4: Analysis of Questions from the New Environmental Paradigm (NEP)

This analysis of the original NEP questions systematically clarifies which questions may be appropriate for the majority of people – women, Indigenous, and global South peoples including internal colonies, and subsistence farmers. This analysis will help to explain how and why certain questions are inappropriate for the measurement of environmental worldview. Each question of the original NEP is examined through a materialist ecofeminist framework, with emphasis on the key understandings of materialist ecofeminism previously described.

It is important to examine the original NEP questions; the original NEP has been used in hundreds of studies to provide measurement of pro-environmental worldview. Thus, the fundamental implications of the original questions are relevant to present research, even though the use of certain questions has been altered in the revised NEP scale.

Twenty-two years passed between the publication of the original and revised editions of the NEP – enough time that the authors identified ideas or terminology that were inappropriate or outdated. Tables 4-7 show changes in the scale between the original NEP and revised NEP. Three total facets of the original NEP scale included anti-anthropocentrism, limits to growth, and balance of nature. In the revised NEP scale, Dunlap et al. added the facets of human exemptionalism and limits to growth. It is beyond the scope of this project to additionally analyze the questions of the revised NEP scale; however, a note on human exemptionalism is added to the end of the analysis.

Table *4* and

Table *5* show questions which were removed or altered in the revised NEP. For example, Dunlap et al. revised what they considered sexist terminology by changing *man*kind to *human*kind (2000). However, this superficial change affected only terminology, rather than structural sexism inherent within the questions themselves. In other words, Dunlap et al. sought to eliminate outdated sexist terminology, but ideas remained which were fundamentally sexist. This concept will be explored further in the analysis of individual questions. Five questions from the original NEP were included in the revised NEP (

Table *6*). Seven questions were added (Table 7).

Three total facets of the original NEP scale included anti-anthropocentrism, limits to growth, and balance of nature. In the revised NEP scale, Dunlap et al. added the facets of human exemptionalism and limits to growth. It is beyond the scope of this project to additionally analyze the questions of the revised NEP scale; however, a note on human exemptionalism is added to the end of the analysis.

Table 4. Questions of the original NEP; removed in the revised NEP

Questions removed in the Revised NEP	**Facet**
1. To maintain a healthy economy we will have to develop a "steady-state" economy where industrial growth is controlled.	1. Limits to growth
2. Humans must live in harmony with nature in order to survive.	2. Balance of nature
3. Humans need not adapt to the natural environment because they can remake it to suit their needs.*	3. Balance of nature
4. There are limits to growth beyond which our industrialized society cannot expand.	4. Limits to growth

*reverse coded

Table 5. Questions of the original NEP; altered in the revised NEP

Questions altered in the Revised NEP	**Facet**
1. Mankind was created to rule over the rest of nature.* *revised to* Humans were meant to rule over the rest of nature.*	1. Anthropocentrism
2. Mankind is severely abusing the environment. r*evised to* Humans are severely abusing the environment.	2. Anti-Anthropocentrism *revised to* Eco-crisis
3. Plants and animals exist primarily to be used by humans.* *revised to* Plants and animals have as much right as humans to exist.	3. Anti-Anthropocentrism

*reverse coded

Table 6. Questions included in the revised NEP; present in the original NEP

Questions included in the Revised NEP	**Facet**
1. We are approaching the limit of the number of people the earth can support.	1. Limits to growth
2. The balance of nature is very delicate and easily upset.	2. Balance of nature
3. Humans have the right to modify the natural environment to suit their needs.*	3. Anthropocentrism
4. When humans interfere with nature it often produces disastrous consequences.	4. Balance of nature
5. The earth is like a spaceship with only limited room and resources.	5. Limits to growth

*reverse coded

Table 7. Questions added to the revised NEP; not present in the original NEP

Questions added to the Revised NEP	**Facet**
1. Human ingenuity will ensure that we do NOT make the Earth unlivable.*	1. Human exemptionalism
2. The earth has plenty of natural resources if we just learn how to develop them.*	2. Limits to growth
3. The balance of nature is strong enough to cope with the impacts of modern industrial nations.*	3. Balance of nature
4. Despite our special abilities, humans are still subject to the laws of nature.	4. Human exemptionalism
5. The so-called "ecological crisis" facing humankind has been greatly exaggerated.*	5. Eco-crisis
6. Humans will eventually learn enough about how nature works to be able to control it.*	6. Human exemptionalism
7. If things continue on their present course, we will soon experience a major ecological catastrophe.	7. Eco-crisis

*reverse coded

1. We are approaching the limit of the number of people the earth can support.

> *Imbalances in the consumption of resources in different regions of the world need to be addressed in any environmental attitude scale that seeks to investigate current concerns.*
>
> - Roxanne Lalonde & Edgar L. Jackson (2002, p. 35)

Environmentalists who influenced the NEP asserted that population growth is very important or the most important factor of humanitarian and environmental problems (Hardin, 1968; Ehrlich, 1968; Meadows et al., 1972). Such researchers either explicitly or covertly blamed global starvation and environmental exploitation on women who were, they posited, reproducing the human population beyond the carrying capacity of the earth.

Such ideas originate from Thomas Malthus, an 18th century British economist; Malthus wrote *An Essay on the Principle of Population* (1798), in which he asserted that humans could not sustain a growing population at a certain point; agriculture would not be able to meet the needs of the population. People would live under conditions of increased poverty, famine, and war due to a shortage of food. His theory is known as Malthusian Theory of Population.

Malthusian theory, which underlines this survey question, has been criticized for the ways in which it has led to subjugation of women who become targets for population control efforts– especially in the global South. Recall the concept of the sexual division of labor. Malthusian theory was a tool for creating and perpetuating a sexual division of labor that led directly to the exploitation of women as reproductive and sexual bodies. Mies explained Malthus' position further:

> Malthus…saw clearly that capitalism needed a different kind of woman. The poor should curb their sexual 'instincts' because otherwise they would breed too many poor for the scarce food supply. On the other hand, they should not use contraceptives…because that would make them lazy because he saw a close connection between sexual abstinence and readiness to work (Mies, 2014d. p. 104).

From its inception, Malthusian population theory has been shaped by classist and misogynist sentiment. Malthus objected to public welfare and claimed economic support would encourage the poor classes to breed (Sparrow, 2019). Malthus represented the interests of the developing bourgeoisie who shaped the sexual division of labor; with Malthusian theory as arsenal, the bourgeoisie implemented pressure toward the *housewifization* of women, which was previously described (Mies, 2014d). In their role as housewife and mother, it was poor women's duty to keep the population at a correct

level. Otherwise, it was their fault when the economy faltered for lack of workers and soldiers, or alternatively when famine, poverty, and war arose allegedly due to overpopulation.

Women have long been coerced into abiding by reproductive laws which benefit the ruling class. For example, in 16th century France, the developing capitalist state required population growth to fulfill the demand for wage laborers. To pressure women to reproduce, Jean Bodin – a political theorist, economist, and consultant to the French government – demanded a police presence that would enforce the interrogation of accused witches and practicing midwives (Mies & Shiva, 2014b). His goal was to eliminate contraception and abortion, and to force women to birth and raise an expanded proletarian workforce. He advised practices of torture and burning of accused witches, and the charge of murder against anyone preventing conception or birth (Mies, 2014d).

In another example, enslaved Black women in the Caribbean were made to abide by reproductive practices which were beneficial to the ruling class, and which changed according to economic conditions. From the mid-17th to early 18th-century, colonial planters and slave-owners in the Caribbean depended upon Black women to produce children who would then increase the owner's wealth through their labor or market value. However, after the sugar revolution from 1760 to 1800, enslaved women were dissuaded from marriage and childbirth because "it was cheaper to purchase than to breed" (Mies, 2014d, p. 91). The time that a woman would devote to pregnancy and caring for an infant was seen as costly and disruptive to production. It can be seen that enslaved women were pressured to abide by whatever reproductive behavior would be most economically beneficial for the colonizing class.

Malthusian Theory and Reproductive Justice

Malthusian population theory, and this survey question rooted in Malthusian theory, directly contradicts the principles of reproductive justice. Reproductive justice is a concept developed by women of color who posited that the "right to choose" abortion centered the experience of white women and did not consider the needs of more marginalized women and communities. In addition to abortion access, reproductive justice advocates demand the right to have and raise children in a healthy environment. The latter two rights are especially pertinent for communities which had been targeted for forced sterilization or the removal of children, such as poor, BIPOC, immigrant, and incarcerated communities (Ross & Solinger, 2017). Recall that reproductive justice includes the right *not* to have a child, the right to *have* a child, and the right to *parent* children in safe and healthy environments (ibid, p. 65).

Since the first U.S. sterilization law was passed in Indiana in 1907, forced sterilization policies have focused on permanently eliminating the reproductive capacity of targeted groups of people in the United States. Poor women of all ethnicities have been targeted for forced sterilization. Generally excluding the white middle and upper-classes, women have been selectively characterized as unfit for reproduction and have been – through means of sterilization, poverty, criminalization, and economic and social ostracization – targeted and subjugated by the state for population control (ibid).

Malthusian environmentalists deny the principles of reproductive justice, under the premise that the irresponsible reproductive behaviors of women constitute a threat leading to famine, war, and poverty. Women are blamed for the ills of humanity.

Alternatively, Shiva explained the structural and economic root of environmental damage as extractivism, militarism, and police violence initiated by the capitalist system:

> Environmental damage is often explained as an effect of 'over-population.' But it is corporate extractivism and the militarism that supports it which lay forests bare, poison water and displace refugee populations, whose desperation is then targeted by police (Shiva, 2017, p. 7).

This NEP question, with its Malthusian premise, is at odds with principles of reproductive justice. Materialist ecofeminists blame exploitation, militarism, and capitalist overproduction – not population – as key factors in global environmental devastation (Salleh, 2017; Shiva, 2017). A hyper-focus on overpopulation leads to material solutions which inevitably require the policing of women as bodies. A focus on the organization of production leads to material solutions that require the re-appropriation of resources by Indigenous and local communities and the end of surplus profit production. This question is not adequate for measuring the worldview of women, Indigenous peoples, global South peoples, and subsistence farmers – the majority of people.

2. The balance of nature is very delicate and easily upset.

In Dunlap et al.'s conception of the NEP, a respondent agreeing with this statement would be deemed anti-environmental. This question presents nature as universally fragile, relies upon a feminized view of nature that perpetuates the damsel-in-distress stereotype, and relies upon a nature/culture dualism – nature is seen as a fragile thing victimized by humans but also in need of human intervention. Finally, the question perpetuates the *pristine wilderness* narrative.

Via Indigenous ways of knowing, nature is not seen as universally fragile. Some species are resilient and proliferate easily, while others require physical and cultural protection. Some information about fragile or sacred plant species may be kept from those outside of a designated group or tribe (Kimmerer, 2018). The fragility of nature can be tied to the *political organization of society* rather than to an inherent *universal fragility* of nature.

Prior to colonization, the Syilx-speaking peoples of Colville-Okanogan relied upon a political system of autonomous local government which enabled the balanced regeneration of nature (Armstrong, 2018). According to Armstrong, this mode of political organization was fundamentally opposed to imperialism and was necessary to preserve the balance of nature; she stated "local autonomy is an absolute requirement for successful management to ensure full regeneration of local resources" (ibid, p. 105). This model of political organization is analogous to the model of local government supported by ecofeminists (Salleh, 2017).

Humans can be seen as more fragile than other species. Most animal and plant species are older than humans; humans are evolutionarily one of the newest beings on earth, the "younger brothers of creation" (Kimmerer, 2013, p. 9). In their longevity, other species have persevered through global changes in a way that humans have not. In one meme, a social media user remarked "dinosaurs literally got taken out on the same planet we walk on today and people still think we're invincible. Ur [sic] not better than a stegosaurus." Their comment is silly, but it stands – humans are evolutionarily less prepared for environmental crises than older species.

The language of this NEP question invokes the damsel-in-distress stereotype – a degraded nature waits for human intervention and protection. Kheel explained that some environmental philosophers have sought a theory which can serve as an overarching solution to environmental degradation – namely through characterizing nature as a living, female, fragile mother (1993). This viewpoint can be seen as an extension of the objectification of nature/women, as "protection objectifies just as much as predation" (Hoagland, 1989, p. 31).

This NEP question also perpetuates a nature/culture dualism, with human as perpetrator and savior and nature as victim. Plumwood stated that nature/culture dualism is "incompatible with any form of ecological consciousness" (2012, p. 85). Kheel asked if environmental saviorism is "another conqueror in a new disguise" (1993, p. 243). In short, characterizing nature as both separate from culture and as a living female being in distress has not resulted in lasting, meaningful changes to structural environmental degradation. Kheel explained further:

> the image of the earth as a living being is insufficient in and of itself to bring a halt to the current destruction of the natural world. The attempt by many ecophilosophers [sic] to graft a new image onto our current conception of nature fails to challenge the underlying structures and attitudes that have produced the image they seek to supplant. The underlying tendencies toward aggression that exist under patriarchy are thus left intact (Kheel, 1993, p. 251).

This NEP question also perpetuates the *pristine wilderness* narrative championed by John Muir. If nature is very delicate and easily upset, it is logical to believe that removing humans from designated wilderness is an appropriate response to environmental degradation. As discussed previously, pristine wilderness is a colonial myth that has led to the displacement of native peoples from their traditional lands.

A respondent could see nature as fundamentally resilient or could view this NEP question with a level of nuance that would lead to a neutral response – such as the belief that some aspects of nature are resilient while others are fragile and require protection. One could also decline to agree with the question due to its use of feminized savior-victim symbolism. For these reasons, the question is not adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers – the global majority of people.

3. Humans have the right to modify the natural environment to suit their needs.*

This NEP question indicates a person with a pro-environmental attitude believes that humans *do not* have the right to modify the natural environment to suit their needs. However, the question does not clarify *why* the environment could be modified – whether for market, industrial, or ecological purposes, for example.

Since humans walked the earth, they have modified the natural environment. Humans are an integral part of the ecosystem; Indigenous communities have always fulfilled a functional role within place-based ecosystems (Nelson & Shilling, 2018). This isn't to say that every Indigenous community adheres to the same ecological principles or that Indigenous culture is monolithic, but to claim that Indigenous traditional ecological knowledge (TEK) provides a basis for understanding and engaging in a functioning ecosystem (McGregor, 2018). The point here is not to universalize Indigenous relations with the environment across all tribes past and present, but to point to an overarching historical truth – Indigenous peoples have always been part of the ecosystem.

This NEP question denies the human-nature relationship and adheres to the incorrect idea that nature should be free from any human interference. Curtin explained the way in which a superficial human/nature separation perpetuates a false view of the nature/culture relationship in two ways (Curtin, 1997, pp. 89-90):

1. It is claimed "that nature ought to be preserved museumlike [sic], free from human interaction…. [which] has caused some Third World countries to remove Indigenous people from their traditional lands to create American-style national parks."

2. It is claimed "that nature is only here for human manipulation and consumption."

Curtin stated that "both are forms of the myth that man lives apart from nature" (ibid, p. 90). It can be seen that this NEP question aligns with the first claim, which is that wild nature should be free from human interaction. This rhetoric is a continuation of the *pristine wilderness* myth.

This NEP question is an erasure of the mutual relationship between Indigenous peoples and ecosystem. For this reason, it is inaccurate for measuring the environmental worldview of peoples who have sustained reciprocal human-nature relationships. This question is inadequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers.

4. Mankind was created to rule over the rest of nature.*

Generally, materialist ecofeminist thought aligns with the reverse of this statement, rejecting humankind's rule over nature. Dunlap and Van Liere posit that human domination over nature is opposed to an environmental view. Ecofeminists further the understanding in their explanation that human domination stems from patriarchy and

takes the form of men exploiting women and nature (Salleh, 2017); they explain this human-over-nature mindset of domination as a *consequence* of patriarchy:

> The patriarchy, with its hierarchical viewpoint that sees some persons as more deserving and better than others, must surely have deluded itself to now become godlike, endowing itself with such mighty powers (Plant, 1997, p. 125).

In other words, a mindset of domination over nature did not arrive out of random human arrogance but has been a systemic consequence of centuries of patriarchal rule. Agreement with the question doesn't necessarily indicate that the respondent rejects systems of power which ultimately result in human domination over nature.

Domination over nature is part of the same structure that creates the conditions of exploitation, structural sexism and colonization. McGregor succinctly summarizes the ecofeminist position:

> Ecofeminists reject Western industrial society's conceptual framework premised on the separation of humans *from* nature, and the domination of nature *by* humans. They argue that the domination of nature is connected to the domination of women by men and the colonization of nonwhites, both of which ecofeminists see as supported by what they call an "oppressive conceptual framework. (McGregor, 2018, p. 110; J.M emphasis).

In the global North, the overarching narrative indicates that humans are separate from and above other species – especially due to their special consciousness. Plumwood explained:

> …our dominant story…holds that humans are different from and higher than other animals, are made out of mind-stuff…we are victors and never victims, experiencing triumph but never tragedy (2012, p. 13).

It is an *idealist* belief that human existence is defined by the human mind. With this belief, one could consider other species, such as plants or food animals, to be mind-less or soul-less. Alternatively, through materialist thinking one can observe that all species share a commonality of existing within a body (or at least a cell boundary); of being limited by that body; and of being equally a part of life, death, decay, and renewal as all other species.

This NEP question requires only a brief analysis because it aligns well with ecofeminist thinking. However, Dunlap and Van Liere do not convey the patriarchal capitalist structure from which, in materialist ecofeminist thinking, human-over-nature domination originates. Nevertheless, the question can be considered accurate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers.

5. When humans interfere with nature it often produces disastrous consequences.

Interference with nature is a subjective concept which can be interpreted differently based on one's cultural perspective. *Modification of the environment* is too vague a concept to accurately depict environmental view. Additionally, the term *disastrous* adds an especially subjective element to the question. TEK provides examples of the way in which humans positively interact with environments. The field of restoration ecology provides another example of positive ways in which humans "interfere" with nature.

Researchers Smith and Coleman suggested that this NEP question is anthropocentric in that it does not recognize the interdependence among all species

(2014).Traditional Ecological Knowledge (TEK) recognizes human/nature interdependence and holds that humans can interact with nature based on an *ethics of respect* (McGregor, 2018). In other words, it is possible to respectfully "interfere" with nature. In *Braiding Sweetgrass*, Kimmerer described her surprise that upon inquiry, very few of the 200 students in her General Ecology university course could imagine a positive relationship between nature/people. Yet Kimmerer, a member of the Citizen Potawatomi Nation, explained that human and non-human (animal, plant) relationships can be founded in reciprocity.

> I was stunned. How is it possible that in twenty years of education they cannot think of any beneficial relationships between people and the environment? Perhaps the negative examples they see every day—brownfields, factory farms, suburban sprawl—truncated their ability to see some good between humans and the earth. As the land becomes impoverished, so too does the scope of their vision. When we talked about this after class, I realized that they could not even imagine what beneficial relations between their species and others might look like. (Kimmerer, 2013, p. 6).

Kimmerers' students had not been accustomed to viewing nature/human relationship in a positive manner. Yet through Indigenous knowledge, Kimmerer had learned since childhood that the relationship between nature and humans is reciprocal.

The field of restoration ecology additionally provides an example of positive relationship between people and plant/animal species. Restoration ecology requires human intervention in nature. Ecologists disagree whether ecological restoration should require limited human management once completed, or whether ongoing management is necessary or desirable (Hertog & Turnhout,

2018). Ultimately, however, restoration ecology requires some level of temporary or ongoing human "interference" with nature.

Indigenous practices have contributed to balanced ecology for several millennia, the interruption of which has resulted in ecosystem damage (Senos et al., 2006). It is crucial that Indigenous peoples direct and/or significantly inform ecological restoration because *Indigenous knowledge and culture are part of place-based ecology*. Senos et al. argue that ecological restoration includes sustaining the *economies* and *cultures* of Indigenous and local peoples (ibid). This is congruent with materialist ecofeminism, which promotes local, place-based, autonomous economies which are rooted in Indigenous and women's knowledge (Shiva, 1998; Salleh, 2017). Culture and nature are linked, and the mutual restoration of both is integral to a functioning ecosystem (Plumwood, 2012). Hertog and Turnhouse described how restoration ecology promotes a dissolution of the nature/culture binary:

> …restoration involves a blurring of boundaries between ecocentric and biocentric values, between ethics and pragmatism, and between nature and culture (2018, p. 1221).

It can be seen that Dunlap and Van Liere in some manner reflect the mindset of Kimmerer's students, who could not imagine a positive relationship between humans and environment. In this NEP question, interference with nature is explained only in the context of disaster. Truthfully, humans have been shaping nature for a very long time. This NEP question is not adequate for measuring the

environmental worldview of women, Indigenous peoples, global South peoples, or subsistence farmers – the world's majority of people.

6. Plants and animals exist primarily to be used by humans.*

There is nuance regarding the way in which a respondent could simultaneously answer this NEP question to indicate a pro-environmental view *and* hold anti-environmental views. I will examine this nuance through an interrogation of humans within trophic ecology.[13]

Ontological Veganism and the Food Chain

Whether plants and animals exist primarily to be used by humans can be examined through an ecofeminist analysis of the food chain. Ecofeminists posit that humans are as much a part of the food chain as non-humans; humans can be seen as physically and morally equal to other species, including both plants and animals (Plumwood, 2012). Vegetarians, in particular, evoke sympathy for the suffering of animals by declining to use them as food (Gaard, 2002). It is through sympathy that humans are able to envision their own suffering in the suffering of animals. In this way it would be easy for a person practicing vegetarianism to reject this reverse-coded question. However, this "ontological veganism" (to be described), is insufficient in its conception of the food chain.

[13] Aka the food chain

Humans are not special or exempt from predation any more than other species. In an astonishing account of her survival of a saltwater crocodile attack, during which she survived three death rolls (a tactic used by crocodiles to twist their prey's bodies while simultaneously drowning them), ecofeminist Val Plumwood described her deep and embodied realization that humans are in fact, part of the food chain. This profound and life-changing moment in which she looked into the "beautiful, gold-flecked eyes of the crocodile" that then attempted to kill her – led to a deep understanding of an ecological embodiment of mutual and respectful use of all food sources, animals and plants included (2012, p. 10). Plumwood acknowledged that humans, plants, and animals are all simultaneously food and more-than-food. She said "we come to see predation as something we do to others, the inferior ones, but which is never done to us" (Plumwood, 2012, p. 13). When humans see themselves as both predator and prey, they can honor the life in all species.

According to Plumwood, ontological veganism[14] promotes a nature/culture binary which is antithetical to ecology (2012). The assertion that no animal should be used for meat denies trophic ecology – the simple fact that we all eat and are eaten. Even if we avoid dying by a large predator attack, which will be true for most of us, we will be consumed in a process of decomposition after our passing. Ontological veganism places people and animals in the category of

[14] Ontological veganism is a veganism that absolutely opposes the use and eating of animals that are considered ethical subjects (Plumwood, 2012).

culture while placing plants in the category of nature. Additionally, it moralizes predation and denies the right of predators to maintain their need for predation. Predators are then ostracized as an exception to the rule and *outside of culture*, separate from the rest of animals (ibid).

Interestingly, this ostracizing of predators is mimicked in the language of colonization. Indigenous peoples are associated with nature in the nature/culture binary, and similarly viewed as the exception to the cultural rule. There is no evidence of an Indigenous community that has historically survived upon a strictly vegan diet (Plumwood, 2012). Ontological veganism places Indigenous traditions in the characterization of *other* and within the realm of *nature*, as the practice of predation would be considered unethical and outside the realm of *culture*. This is the same nature/culture dualism which has been used to justify the colonization process – Indigenous peoples are characterized as other, as nature, and as outside of the realm of culture. Plumwood described her position further:

> In a good human life we must gain our food in such a way as to acknowledge our kinship with those whom we make our food, which does not forget the more than food that every one of us is, and which positions us reciprocally as food for others" (2012, p. 91).

Plumwood did not condemn the practice of vegetarianism or veganism and was in fact a vegetarian herself – even before she became prey to the crocodile. She condemned a universalizing and moral veganism that regards certain species as superior to others. She suggested instead an "ecological animalism" which denounces the treatment of animals as meat commodities, affirms the soul within

all beings, accepts the necessity of predation within an ecosystem, and acknowledges humans as both predator and prey in the food chain.

Chief Luther Standing Bear of the Lakota tribe said the following of animals:

> The animal had rights—the right of man's protection, the right to live, the right to multiply, the right to freedom, and the right to man's indebtedness— and in recognition of these rights the Lakota never enslaved the animal, and spared all life that was not needed for food and clothing (Standing Bear, 1933, p. 149).

Here, Standing Bear described some of the same values suggested later by Plumwood; he regarded animals as having rights, only to be used for food and clothing as necessary. Certainly, he affirmed both the soul in animal beings and the necessity of predation. Indigenous traditions also recognize plants as having spirits and the ability to communicate.

Plants as kin

In addition to animals, plants are recognized by Indigenous peoples as kin. Some view plants as communicative and with spirit. Ruby Modesto, a Cahuilla and Morongo doctor, explained:

> You can talk to the plants. You really can…I mean be sincere. Be humble. The plants are like friends. Some of them have powerful spirits (Modesto, as cited in Mount, 1979, p. 35).

Kimmerer clarified the Indigenous idea of *reciprocity* between humans and plants and explained the human-plant relationship. Humans are seen as students of older, wiser plants who "know how to make food and medicine from light and water, and then they

give it away" (2013, p. 10). Kimmerer critiqued the way in which plants are compared to animals to judge their ability to communicate, assumed to be deaf and mute, soul-less species. But, she said, "pollen has been carried reliably on the wind for eons, communicated by males to receptive females…if the wind can be trusted with that fecund responsibility, why not with messages?" (ibid, p. 19). To Kimmerer, all members of a healthy ecosystem communicate with one another and live by a principle of reciprocity – each species consumes, and each species provides.

Ultimately, an ecofeminist perspective aligns with the rejection of this reverse-coded question. However, there is nuance not considered by Dunlap and Van Liere. Other questions could potentially serve as a balance to the incompleteness of this question. Because a respondent could agree with this question, but still hold anti-Indigenous colonial narratives and a belief in the nature/culture binary, I highly recommend those biases be accounted for in other potential questions of a functional scale. This NEP question can be adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers – if used alongside questions which address the colonial and binary, and therefore anti-ecological, narrative.

7. To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled.[15]

A steady-state economy is a form of capitalist economy which strictly limits the growth of economy and population to a certain determined level. Herman Daly, an economist who popularized the idea of a steady-state economy, described it as such:

> A steady-state economy is defined by constant stocks of physical wealth (artifacts) and a constant population, each maintained at some chosen, desirable level by a low rate of throughput – i.e., by low birth rates equal to low death rates and by low physical production rates equal to low physical depreciation rates, so that longevity of people and durability of physical stocks are high. (Daly, 1974, p. 15).

An attractive point of the steady-state economy model is the acknowledgment that an economic model which relies on permanent growth is unsustainable. Additionally, Daly acknowledged that all countries cannot achieve the exorbitant consumption modeled by an economic system of eternal growth (ibid). Thus, he emphasized the underlying principles of the overdevelopment/underdevelopment contradiction. That is, the global South cannot achieve the "myth of catching-up development" (Mies, 2014e).

Indigenous teachings can be said to align with the premise of limited economic growth. Kimmerer described "contentment" and "emptiness" as a necessary component of a sustainable economy:

> In a consumer society, contentment is a radical proposition. Recognizing abundance rather than scarcity undermines an economy that thrives by creating unmet desires…the economy needs emptiness (Kimmerer, 2013, p. 111).

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[15] Dunlap et al. removed this question from the revised NEP; they did not give a reason for the removal (Dunlap et al., 2000).

In his steady-state economy model, Daly may not propose contentment on an individual basis, as he focuses on macro-economic rather than psychological principles; however, in practice, a steady-state economy would require a sense of individual contentment.

The steady-state model is based upon principles of private property. As previously described, private property has led to the exploitation of women, Indigenous peoples, subsistence farmers, and land. Daly explained that his proposed model "builds on the existing institutions of private property and the price system and is thus fundamentally conservative" (Daly, 1974, p. 19). The materialist ecofeminist opposition to private property has been explained in the key understandings of ecofeminism and in the analysis of *The Tragedy of the Commons* (Hardin, 1968).

The steady-state economy also relies on limited population growth. Exploitation associated with Malthusian population-control policies, like implementing a stable birth and death rate in society, have previously been described. Recall the principles of reproductive justice (Ross & Solinger, 2017), the eco-fascist rhetoric that accompanies called for stabilizing the birth-death rate (Ehrlich, 1968; Linkola, 2009), and the decades of reproductive and sexual exploitation experienced by women in justification of population control.

The push for economic de-growth, fundamental to a steady-state economy model, "explicitly aim[s] to create a new social movement *within the main society"* (Fotopoulos, 2007, p. 1; my emphasis). In other words, the steady-state economy is fundamentally a solution of *reform* which focuses primarily on limiting economic growth. The initial

question posited by Dunlap and Van Liere, especially the use of the word *maintain*, implies that the current capitalist economy is fundamentally healthy and needs only restrictions on its growth.

Materialist ecofeminists iterate the need for an anti-capitalist structure which remedies the exploitative sexual division of labor and implements local, decentralized, and co-operative economies. Because a steady-state economy relies on *reforms* to the existing global market structure, rather than the *revolutionary* creation of a distinctly feminist, decentralized, and co-operative market structure (Crabtree, 2006), it is an incomplete solution from a materialist ecofeminist perspective.

Ecofeminists call not only for a new economic structure, but also for policies which remedy the sexual division of labor. For example, without adequate economic policy, a co-operative market structure – an economic solution which extends far beyond the steady-state economy – would perpetuate the sexual division of labor. In her study on ecofeminist housing and urban design, Louise Crabtree pointed out:

> A call for decentralised, locally based co-operative frameworks for much service provision in the absence of concurrent policy to structurally support such ventures and the work involved in these, potentially translates into an addition to the double day of primary carers (largely women) and opens these realms up to neoliberal agendas of outsourcing and privatisation (see MacGregor 2004). Focusing on the household alone as the site for the ecological, social and economic restoration of the city has been seen as a form of "environmental privatization" (Sandilands 1993 in MacGregor 2003:84), while corporate and governmental bodies remain untouchable (Crabtree, 2006, p. 718).

One solution to the sexual division of labor, posited by Angela Davis in *Women, Race, and Class*, involves the automation and industrialization of housework. This would be considered a centralized socialist response (Davis, 1983). Federici, who contributed to

the Wages for Housework campaign, alternatively posited that women should be fully compensated for domestic labor through wages (Toupin, 2018).

I illustrate the pervasiveness of the sexual division of labor in a completely restructured economic system to show that economic solutions posited by materialist ecofeminists extend beyond the idea of a steady-state economy. Based on this view, a steady-state economy is an insufficient solution to gendered environmental exploitation. In the materialist ecofeminist view, there is no such "healthy economy" to "maintain." The question is narrow and proposes reforms of de-growth to the capitalist system – reforms which, from a materialist ecofeminist perspective, do not solve the fundamental contradictions of capitalism. Thus, this NEP question is not adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers – the global majority of people.

8. Humans must live in harmony with nature in order to survive.

> *An Urban Indian belongs to the city, and cities belong to the earth. Everything here is formed in relation to every other living and nonliving thing from the earth. All our relations. The process that brings anything to its current form – chemical, synthetic, technological, or otherwise – doesn't make the product not a product of the living earth.*
>
> - Tommy Orange (2018, p. 11)

Harmony with nature is a vague concept which perpetuates a binary nature/culture narrative and can contribute to environmental pseudo-solutions. Firstly, the respondent must conceptualize *nature*. An ecofeminist would posit that nature does not

have completely defined characteristics which are separated by the opposite characteristics of *culture*. The nature/culture binary has been discussed as antithetical to ecology (Plumwood, 2012). The quote by Tommy Orange illustrates the idea that *everything on earth is part of earth*; it is a poetic example of the way in which one Indigenous perspective is not rooted in the nature/culture binary.

Because *harmony with nature* is vague and *does not have a material meaning*, it could be defined in several contradictory ways. *Harmony with nature* can be seen as an insincere catchphrase used to superficially imply change. *Harmony with nature* could be associated with the exploitation of the environment, women, and Indigenous peoples – through the *pristine wilderness* narrative and its associated land seizure, displacement, and destruction of subsistence life. *Harmony with nature* could also mean living in a manner that is respectful and reciprocal between species, which would be aligned with materialist ecofeminist values.

Mies described the way in which the destruction of the environment has been supported by the rhetoric of environmental preservation. Capitalistic processes which rely upon the destruction of the environment are coupled with programs of protection to erase apparent ecosystem damage, to create a false aesthetic solution that pleases the average person, and to ultimately maintain a system of capitalistic exploitation. Mies explained the "White Man's project," which includes the protection of nature, is…

> …based on warfare against Nature. The aim is not to create a new and peaceful and harmonious relationship with Nature, but to maintain the beautiful image of nature, a metaphorical nature, not nature as a subject. Man-Nature harmony intrinsic to this aim can only be achieved by an aesthetic voyeuristic simulation of Nature. But these simulations do not change the antagonistic relationship between Man and Nature…(Mies, 2014d, p. 155).

To create a reciprocal human-nature relationship, solutions of piecemeal preservation or green capitalism must end and be replaced with a truly reciprocal economic system. Without this deeper material change, *harmony with nature* becomes not just a superficial bandage on a global problem but a dangerous idea – it obscures the true destructive nature of the capitalist system which exploits nature and prevents more meaningful solutions. Martinez described how the capitalist "green" economic model, as opposed to the Indigenous ethical-economic model, proposes faulty environmental solutions which do not ultimately work:

> The problem with [neoliberal capitalism's] so-called solutions to environmental degradation, especially climate destabilization and global warming via "green" capital investments and innovative technology, is that it runs head-on into a significant conundrum: The framing of their solutions to sustainability problems involves the very economic forces and belief systems that have caused the problems in the first place (Martinez, 2018, p. 141).

These pseudo-solutions could easily be attached to the argument that green capitalism is more harmonious than environmental inaction. As a result, the phrase *harmony with nature* can be seen as a bumper sticker of sorts. It sounds nice, it seems inarguable and apolitical, and yet it offers nothing tangible.

This NEP question is vague, contains a lack of definition regarding what *nature* means, and relies on stereotypes of environmentalism. A respondent could conceptualize this NEP question in such contradictory ways that it cannot be used to adequately measure environmental worldview. A more accurate question might

refer to reciprocity between species or living in a manner that allows the regeneration of all species. This NEP question is not adequate for measuring environmental worldview for women, Indigenous peoples, global South peoples, or subsistence farmers - the global majority of people.

9. The earth is like a spaceship with only limited room and resources.

The spaceship earth metaphor, popularized by Buckminster Fuller in his 1969 publication *Operating Manual for Spaceship Earth* (Fuller, 2008), helped to conceptualize the earth as a limited environment within which humans must act in cooperation with one another. In this view, if humans work in harmony and share limited resources, all might survive the voyage and sustain the earth-as-spaceship.

The metaphor *spaceship earth* was popularized in the 1960s when the United States and the Soviet Union were in a "space race"; the historical man-moon-landing was achieved by the United States on July 20, 1969. Just prior to this event in 1968, astronaut William Anders snapped the famous photo "Earthrise" from a spaceship orbiting the moon, helping to solidify the image of the earth as its own spaceship (Figure 3).

Figure 3. Earthrise (Anders, 1968)

The spaceship earth metaphor embodies the principles of resource preservation, equitable sharing, and limits to growth. The analogy can be used to encourage the restriction of the excessive use of natural resources, and to remind humans that we are all affected by the decisions of one another. In this way the metaphor is evocative of a collaborative, pro-environmental attitude.

The metaphor, however, is also limited by multiple factors: space travel is anthropocentric and implies human control, space travel is affected by divisions of class and race, and space travel can be seen as anti-ecological in that it is not connected to earthly rhythms.

The earth-as-spaceship metaphor is anthropocentric in that it implies the human creation and total human control of the environment (Smith & Coleman, 2014). A spaceship is created and controlled by humans and depends upon humans to function. This manmade environment is unlike actual earth—it is usually sterile and technologically advanced. The metaphor illustrates an assumption that humans have the ability to define limits within the system, ignoring the control that nature ultimately has over the course of our "voyage." Humans did not create the container and limitations of earth, even with technological advances.

Interestingly, this question uses the symbolism of modern technology in the form of space travel to implicate pro-environmental views. Elsewhere in the scale, interference with nature – which is required by modern technology such as space travel – is posited as anti-environmental (e.g., when humans interfere with nature it often produces disastrous consequences). In the revised scale, an added question is even more antithetical to this NEP question (i.e., Humans will eventually learn enough about how nature works to be able to control it). This spaceship earth metaphor could easily appear at odds with pro-environmental views to a respondent, especially one suspicious of the technological industry.

Spaceship earth can be analyzed dialectically by examining contradictions of class and race. Space exploration is characterized by a similar dialectical struggle which

characterizes the principle of overdevelopment/underdevelopment. In the following section, I discuss the implications of race and class in early space exploration, focusing especially on Black communities in the United States as an internal colony.

Race and Class Politics of Space Exploration

In considering the applicability of the spaceship metaphor, implications of space exploration on class and race come to mind. Is the spaceship a neutral icon representing a communal and limited earth, or is there are more specific race/class connotations? And if there is, in fact, limited room for human passengers on the spaceship – does this logic lead to the lifeboat ethics of Ehrlich (1968) and Hardin (1974)?

Not long before the original NEP was published (1978), space exploration was in fact, heavily laden with contradictions regarding race and class. Recall the materialist ecofeminist understanding of overdevelopment/underdevelopment. Overdevelopment of the North necessarily requires the underdevelopment of the South (Mies, 2014d). In the context of space exploration, the upward mobility of the white middle class of the United States necessarily required the underdevelopment of poor Black communities in the United States. Martin Luther King, Jr. commented on the contradictions of space exploration and the economic conditions of poor U.S. communities:

> Today our exploration of space is engaging not only our enthusiasm but our patriotism. ... No such fervor or exhilaration attends the war on poverty. ... Without denying the value of scientific endeavor, there is a striking absurdity in committing billions to reach the moon where no people live, while only a fraction of that amount is appropriated to service the densely populated slums. If these strange views persist, in a few years we can be assured that when we set a man on the moon, with an adequate telescope he will be able to see the slums on earth with their intensified congestion, decay and turbulence. On what scale of values is this a program of progress? (King, 2010, p. 91).

The way in which the “progress” of space exploration was viewed by some members of the U.S. Black community during a time marred by economic and racial conflict can be viewed through the spoken word poetry of Gil Scott-Heron in his famous poem *Whitey on the Moon* (Scott-Heron, 1970). The poem began:

> A rat done bit my sister Nell.
> (with Whitey on the moon)
> Her face and arms began to swell.
> (and Whitey's on the moon)
>
> I can't pay no doctor bill.
> (but Whitey's on the moon)
> Ten years from now I'll be payin' still.
> (while Whitey's on the moon)
>
> The man jus' upped my rent las' night.
> ('cause Whitey's on the moon)
> No hot water, no toilets, no lights.
> (but Whitey's on the moon)...

Scott-Heron’s poem, in its entirety, illustrated a Black working-class perspective. Upward white mobility and national “progress”, in the case of space technology, was coupled with the underdevelopment of U.S. slums which created classed, racialized, and gendered consequences. Loyd stated in this context, “reaching the moon began to look less like a virtuous American project than a white American project that furthered Black economic exploitation and abandonment” (Loyd, 2015, p. 43). She posited that the “space race” simultaneously produced upward mobility for white subjects while solidifying the entrapment of “an immobilized, unfree population confined to a knowable, tactical domestic space” (ibid, p. 45).

Loyd’s dialectical analysis aligns with Mies’ analysis of overdevelopment/underdevelopment (Mies, 2014d). The United States called for national

unity in the spirit of national progress for the purpose of space exploration. Meanwhile, the U.S. government waged resistance against Civil Rights movements for economic, racial, and gendered equality. Black and poor peoples were propagandized to unify for national progress while their material needs were abandoned. Loyd stated:

> As a sublime symbol of progress, exploration, and national purpose, the moon represented a material symbol of upward mobility and possibility for the nation...This spectacle...built material spaces of the economically buoyant Sunbelt-Gunbelt and fostered confinement of Black central city spaces and dislocation of residents from industries being developed elsewhere" (Loyd, 2015, pp. 51-52).

This overdevelopment, underdevelopment contradiction can be viewed more generally in the global South as local communities are encouraged to uphold a spirit of national unity and sacrifice local economic or environmental needs for the sake of national progress. One example was the Narmada Bachao Andolan movement against mega-dam projects on the Narmada River in the 1980s. Local communities in India were encouraged, for the sake of national interest, to agree to relocate from and allow the total destruction of traditional lands.

> This [belief in national interest] is the attitude with which each community made way for large dams in post-independent India. It was only during the 1980s when the different 'local' interests met each other nationwide, they realized that what was being projected as the 'national interest' were the electoral and economic interests of a handful of politicians financed by a handful of contractors and industrialists who benefit from the construction of all dams such as Tehri and the Narmada Valley project (Shiva & Mies, 2014, p. 10).

Through this realization Indigenous peoples and subsistence farmers, including women, developed a common resistance against large-scale dam projects that ultimately did cause the displacement of thousands of Indigenous peoples. The government promised

monetary compensation or land-for-land swaps, but farmers found they were relocated to infertile land, lacked access to water, or failed to receive adequate funds to get reestablished in a new location (Center for Energy and Environmental Policy, 2013).

Ungrounded in Space

Finally, a spaceship is a moveable entity not grounded in the rhythms of the Earth. It is a unit for exploration of the unknown outside of our world. If humans are on a spaceship, they can conceivably find another place to disembark with more resources to exploit. From a Western colonizer's point of view, the spaceship becomes a kind of purgatorial voyage from one place to another – as opposed to the Indigenous view that our life is a gift grounded in Earth and in the present moment or lifespan (Kimmerer, 2013). In other words, Kimmerer explained that in her Indigenous view, one does not look to paradise (heaven) in the next world but sees it rooted in the Earth during this lifetime. It may be more pertinent to refer to the limited *carrying capacity* of earth (Lalonde & Jackson, 2002) rather than to refer to an abstract and dated metaphor "spaceship earth" – which takes on different meanings according to cultural context.

Given the above considerations, it can be understood that certain global South populations, including those internally colonized, would not identify with the abstract notion of earth-as-spaceship, nor associate this metaphor with ecology. Yet a respondent could still retain a pro-environmental worldview while rejecting this NEP question. Therefore, the question is culturally inappropriate and not adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers.

10. Humans need not adapt to the natural environment because they can remake it to suit their needs.*

> *...we human beings are not in charge of the world, but are subject to the same forces as all of the rest of life.*
>
> - Robin Wall Kimmerer (2013, p. 112)
> -

Environmental view can be measured through this reverse-coded question, which then indicates that humans *do* need to adapt to the natural environment since humans are subject to the same ecological laws as other species.

Indigenous ethics maintain a kin-centric model which relies upon "cultural land-care practices that provide protection, sustenance, and well-being for the people" (Martinez, 2018, p. 140). In this ethical-economic model, Indigenous peoples practiced reciprocity with other species and land – ensuring long-term sustainable survival for their communities.

Ecofeminists similarly maintain that humans should participate in a *life-giving economy*, an economy in which the global majority of women, Indigenous peoples, and subsistence farmers are already experts (Salleh, 2017). Because these groups of people provide examples of how to live in a nurturing, regenerative, and life-giving manner, they provide a blueprint for an ecological future which relies on reciprocity and adaptation, and not control over, the local environment.

Because adapting to and living in reciprocity with the environment is central to a subsistence lifestyle, this NEP question can be considered adequate for measuring the

environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers.

11. There are limits to growth beyond which our industrialized society cannot expand.

Ultimately, we do live in a finite universe and there are limits beyond which industrialized society cannot grow. Limits to growth has always been an Indigenous value. Indigenous communities recognize the importance of living within the means of an ecosystem and seeing nature as finite. The Indigenous ethical-economic model, described by Martinez, requires "maintaining surplus biodiversity with limits always in mind and with people and resources always in balance" (Martinez, 2018, p. 169). Indigenous land-use practices were designed not only to maintain ecosystem balance, but to "*increase the availability of useful resources"* (ibid, p. 168; D.M. emphasis). In other words, Indigenous land-use was designed to increase the productivity of land without interrupting the stable regeneration of nonliving and living beings.

The basic idea of limits to growth is correct, but the analysis of limits to growth on which the NEP is founded is flawed. This premise of this NEP question originated from a 1972 report *The Limits to Growth* (Meadows et al., 1972, as cited in Catton & Dunlap, 1980). In the report, Meadows et al. explored multiple facets of growth through systems theory and models of exponential growth. The authors generated feedback loops to describe interlocking global systems that affect one another: food production, pollution, industrial production, the growth of capital, and population growth. The

analysis of and solutions to these limitations were based on false premises – such as the need for industrialized agriculture and the emphasis on population growth over production. These inaccurate premises have contributed to the exploitation of women, Indigenous peoples, and subsistence farmers. In the next sections, I briefly describe how assertions by Meadows et al. were flawed.

Must global food supplies be industrialized?

One problem with *Limits to Growth* includes a lack of imagination regarding actions or options outside of the prevailing systems. For example, via the "law of increasing costs," Meadows et al. determined that global costs of agricultural production would rise due to an increased need for farm equipment, chemical fertilizer, and pesticides. However, it is misleading to assume that increased food yields required these specific forms of intervention, when, in many cases, organic farming methods have been shown to be more productive and sustainable than chemical-based industrial farming (Martinez, 2018).

In the example of food production, it is not necessarily true that increased food production requires the growth of capital. Of course, *industrial agriculture* requires the growth of capital. However, subsistence agriculture existed well before the advent of capital. To assume food production will inevitably require the growth of capital is to assume that the food system will always be industrialized under the organization of capitalism. From a dialectical mode of thinking this is false; the capitalist economic system had a beginning and will have an end; the possibilities of food production sans

capital growth are extensive when the limitations of a capitalist economy are removed (Shiva, 2016).

Limits to Growth, Population Control, and Women

Limits to Growth relies on a model of neoclassical economics – the supply and demand curve – to examine population growth. Due to the simplicity of their model, Meadows et al. were unprepared to examine the ways in which patterns of North-South exploitation affect birth and death rates. The authors considered three factors regarding a population's birth rate: maximum biological birth rate, birth control effectiveness, and desired birth rate. This is a simplified view of supply and demand, treats women and children as though they are market commodities, and ignores the extensive ways in which oppressed women are systematically targeted for population control and had been so long before 1972.

The reproductive choices of women under economic coercion can rarely be described by a supply/demand curve or as fundamentally choice-driven, even if all reproductive choices are apparently or legally available. Meadows et al. described a free world wherein each woman had access to birth control, the choice as to how and when they use it, and the option to birth as few or as many children as they chose. However, the birth rate is influenced by political factors and is rarely, except for a privileged and middle-to-upper-class few, wholly influenced by desire (Mies, 2014c; Ross & Solinger, 2017). Poor families may have more children as a means of economic security, when their possible livelihood has been disrupted by extraction and exploitation (Shiva, 1998). Some may have opted for sterilization due to the pressures of economic security.

Sociologist Rudrappa met with surrogate mothers in Bangalore, India who had been sterilized for economic reasons, even though some wanted more of their own children. These mothers, usually former or intermittent garment workers, produced surrogate children for parents in the global North for a payment of approximately $4000-$5000 USD after a successful birth (2015). Some mothers lamented the baby they would never meet, would hold quiet birthday commemorations for the surrogate child, or would dream of how the baby would have fit in with their family. These mothers' decisions *could* be described as pure choice, but the definition would be oblivious to these mothers' material conditions.

Furthermore, Meadows et al. characterized women and children in "traditional society" (apparently a synonym for underdeveloped society) as uneducated and barely clothed and fed. "The mother," they say, "is generally uneducated and assigns no value to her time" (1972, p. 116). It is apparent that the authors considered unpaid domestic and nurturing as non-productive non-labor – as an extension of the natural proclivities of women and therefore of no value. This rhetoric falls in line with the capitalist patriarchal erasure of women's (re)productive labor. The authors characterized women in the global South as unrestricted producers of impoverished children but not as contributors to society at large.

From a materialist ecofeminist understanding, problems of growth stem less from population growth per se and more-so from the concept of overdevelopment/underdevelopment (Mies, 2014d). The subsistence economy can be universally emulated in order to restrict excessive growth. Meadows et al. suggested industrial development as a solution to over-population; however, this solution is a

contradiction to itself. Magdoff and Foster describe how a problem of unsustainable growth has been fundamentally perpetuated by global North living standards.

> It is clear that there are biosphere limits, and that the planet cannot support the seven billion people already alive (not to mention the nine billion projected for midcentury or the ten billion projected for the end of the century) at what is known as a Western, "middle-class" standard of living… The primary problem is an ancient one and lies not with those who do not have enough for a decent standard of living, but rather with those for whom there is never enough. Epicurus said that there is no such thing as "enough to someone for whom enough is little." A global social system organized on the basis of "enough is little" is bound eventually to destroy everything around it and itself as well (Magdoff & Foster, 2011, pp. 28-29).

In principle, there are limits to growth beyond which industrial society cannot expand. Therefore, in a straightforward manner, this NEP question can be seen to represent a pro-environmental view. However, respondents who agree with misogynistic population control policies and eco-fascist rhetoric could easily agree with this principle. The subjugation of women is fundamentally anti-ecological. The premise of this NEP question is politically fraught.

However, it seems likely that respondents would treat the question as a standalone statement and *not* associate the stated political controversies to the question. While the initial understanding which led to the creation of this NEP question is flawed, the question is adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers.

12. Mankind is severely abusing the environment.

In the revised NEP, Dunlap et al. changed the terminology of this NEP question from *mankind* to *humankind*. However, the problem with this NEP question did not lie in

use of the word “mankind,” as if the authors realized women, too, abuse the environment. This NEP question is too generalized; it does not point to specific origins of environmental abuse and it condenses all peoples and societies into one category as abusive.

Abuse of the environment has different origins, depending on who is asked. To Forbes, the origin of exploitation, imperialism, and terrorism is Wétiko, a spiritual disease characterized by cannibalism (Forbes, 2008). Kimmerer described this same disease, called Windigo, as a monster who stalks and kills its prey but whose hunger and greed is never satisfied (Kimmerer, 2018). Those that live by the principles of Wétiko or Windigo are spreading the diseases that causes environmental abuse.

To materialist ecofeminists, the abuse of the environment has its roots in capitalist patriarchy. Capitalism is a system of perpetual hunger – the capitalist eats but is never satisfied – he/she always wants more profit. To satisfy the hunger, the economy must never stop growing, regardless of the species or ecosystems lost. As has been discussed, the principal fuel of the capitalist’s fire are natural resources and colonized peoples, including women. In this way, capitalist patriarchy can be seen as a symptom or cause of Wétiko/Windigo described by Forbes and Kimmerer. While materialist ecofeminists describe the root cause of exploitation as both class-based and gendered, and Forbes and Kimmerer describe it as spiritual – the commonality is that it is not *human nature* which creates environmental devastation. There is a specific source of exploitation, whether it be systemic or spiritual – but exploitation is not *human nature*.

It is not a universal belief that human nature is exploitative, nor is it a belief supported by materialist ecofeminists. Recall the way in which Hardin characterized the

tragedy of the commons as rooted in human nature (1968). He claimed that humans are driven by self-interest and greed. This NEP question hints at the assumption that humans unanimously cause environmental abuse regardless of class, race, gender, and other demographic factors.

Yet to materialist ecofeminists, global environmental destruction has a clear cause, and it is *not* rooted in the human psyche. If it were true that humans in general caused environmental destruction, one would expect the responsibility for that destruction to be carried more-or-less equally between individuals or even nations. But for example, using greenhouse gas emissions as a measure, a single industry is responsible for the majority of pollution:

> The fossil fuel industry has doubled its contribution to global warming by emitting as much greenhouse gas in 28 years as in the 237 years between 1988 and the birth of the industrial revolution. Since 1988, more than half of global industrial GHGs can be traced to just 25 corporate and state producers (Griffin, 2017).

The abuse of the environment, then, is not caused by humans in general but is a consequence of a capitalist patriarchy which depends upon the colonization of women, Indigenous, and global South peoples. Mies described this concept in 1991; since then, the concentration of greenhouse gas polluters has only intensified to encompass fewer and richer parties:

> Apart from exhausting scarce resources and exploiting colonies, the industrial growth model also produces ever-increasing mountains of waste, of toxic garbage, it destroys the ozone-layer and is responsible for the greenhouse effect. Not only does one-quarter of the world's population consume 75 per cent of the world's energy but also produces 80 per cent of the CO_2 emissions. (Mies, 2014a, p. 252).

In summation, exploitation of the environment is rooted in the material organization of society which allows for the conditions of the sexual division of labor and the contradiction of overdevelopment/underdevelopment (Mies, 2014c). Because this NEP question homogenizes human responsibility for environmental destruction without accurately identifying the source, this NEP question is not adequate for measuring the worldview of women, Indigenous peoples, global South peoples, and internal colonies.

A Note on Human Exemptionalism

As previously mentioned, Dunlap et al. added human exemptionalism, characterized by placing humans separate and above nature, as a facet to the revised NEP scale (2000). Here I briefly examine Dunlap et al.'s approach to this facet.

Catton and Dunlap described the origin of human exemptionalism as a fundamentally Western idea (Catton & Dunlap, 1980b). Ironically, they analyzed the facet of human exemptionalism through the colonizer's viewpoint – by erasing Indigenous communities from history. In their description of European colonization of the "New World", they stated:

> At the time Columbus embarked on the voyage that was to reveal the availability of new lands, there were about 24 acres of Europe per European. Soon afterward, however, with new continents to settle and exploit, there were suddenly some 120 acres of land per European" (Webb, 1952, as cited in Catton & Dunlap, 1980, p. 16).

Catton and Dunlap declined to mention any of the millions of Indigenous inhabitants; prior to European settler-colonization there were 15 million Indigenous people living in what was to become the U.S. (Dunbar-Ortiz, 2014). Through Catton and Dunlap, the process of colonization has been convoluted and mystified. They

acknowledged a continent to exploit but did not mention its inhabitants. The land was "suddenly" available to settlers shortly after "discovery." Indigenous peoples were associated with nature and oppressed as/with nature. Indigenous peoples were characterized as so much as a part of nature that they became non-human, simply an extension of nature, and therefore invisible.

It can be seen that Catton and Dunlap's analysis of human exemptionalism is rooted in the colonizer's viewpoint. The authors simultaneously universalized the conditions of being human and erased Indigenous peoples completely. This erasure, and thus their conception of human exemptionalism, is fundamentally anti-ecological.

Conclusion: Analysis of Questions from the Original NEP

Through a comprehensive analysis of Dunlap and Van Liere's original NEP scale (1978), I have determined that the majority of these questions are inappropriate as indicators of a global environmental worldview. This finding is especially pertinent when considering the worldview global South communities, including internal colonies.

Table 8 illustrates specifically which original NEP questions are and are not recommended as adequate for measuring environmental worldview. For the purpose of measuring the worldview of women, Indigenous peoples, global South peoples including internal colonies, and subsistence farmers, four of the twelve original NEP questions are determined as adequate while eight of the twelve original NEP questions are determined not adequate.

Members of internal colonies and global South communities cannot be extracted from surveys of the general population in any location, including the global North. This is especially true when considering that internal colonies include women (Mies, 2014c). The original NEP scale is not an adequate sociological tool for its intended purpose – to quantitatively measure the degree to which a respondent holds a pro- environmental worldview.

It is beyond the scope of my thesis to recommend replacement scale for measuring environmental worldview. Based on the determination that worldview is culturally specific, the quantitative measurement of environmental worldview may be more accurate if developed by or with representatives of the population which is intended for measure. It is unlikely that a quantitative scale of this kind can be universally applied; accurate measurement of environmental worldview requires specific considerations per the measured population. I recommend that any scale for this purpose be developed using the principles discussed in the *Ecofeminist Methodology* section, including conscious partiality, a view from below, gendered praxis to supersede a spectator knowledge, changing the status quo as part of the scientific process, research as conscientization including the study of women's individual and social history, and research including a

collectivization of the experiences of gendered oppression including women's experiences.

> *Though this new feminist approach to doing research was widely criticized, it also inspired many women to follow this new paradigm. They saw it as true liberation from the fetters of meaningless and sterile accumulation of irrelevant knowledge…I found that the potential of this new methodology was not just to help women and other oppressed groups to become aware of the causes of their helplessness and despair but also to be able to overcome this situation. Moreover, it gave all who were involved in this action research process a wider and deeper and, hence, a more comprehensive understanding of reality, an understanding traditional research can never achieve.*
>
> - Maria Mies (2007, p. 665)

Table 8. Is the New Environmental Paradigm scale an adequate tool for measuring the environmental worldview of women, Indigenous peoples, global South peoples, and subsistence farmers?

Questions from the original NEP scale (Dunlap and Van Liere, 1978)	**Adequate/Not Adequate**
1. We are approaching the limit of the number of people the earth can support.	1. Not adequate
2. The balance of nature is very delicate and easily upset.	2. Not adequate
3. Humans have the right to modify the natural environment to suit their needs.*	3. Not adequate
4. Mankind was created to rule over the rest of nature.*	4. Adequate
5. When humans interfere with nature it often produces disastrous consequences.	5. Not adequate
6. Plants and animals exist primarily to be used by humans.*	6. Adequate
7. To maintain a healthy economy we will have to develop a "steady-state" economy where industrial growth is controlled.	7. Not adequate
8. Humans must live in harmony with nature in order to survive.	8. Not adequate
9. The earth is like a spaceship with only limited room and resources.	9. Not adequate
10. Humans need not adapt to the natural environment because they can remake it to suit their needs.*	10. Adequate
11. There are limits to growth beyond which our industrialized society cannot expand.	11. Adequate
12. Mankind is severely abusing the environment.	12. Not adequate

*reverse coded

Summary

In this thesis, I systematically examined the NEP scale through a materialist ecofeminist framework. In Chapter 1, I defined materialist ecofeminist framework, focusing especially on these key understandings of materialist ecofeminism: the subsistence perspective; opposition to capitalism; opposition to private property; the sexual division of labor; a feminist, ecological, socialist, and postcolonial movement; and overdevelopment/underdevelopment. I described postcolonial ecofeminism, including the

global South and internal colonies. Finally, I described materialism and more specifically, dialectical materialism.

In Chapter 2, I introduced the NEP scale. I described the original scale (Dunlap & Van Liere, 1978), the short 6-item scale – which was not officially published by Dunlap et. al but was used by multiple authors in the 1980s and 1990s (Arcury et al., 1986; J. C. Pierce et al., 1987; J. Pierce et al., 1992), and the revised NEP scale (Dunlap et al., 2000). I included tables of each scale which listed the questions, identified which questions were reverse-coded, listed the associated facets, and displayed the Likert-scale.

In Chapter 3, I analyzed three theoretical contributions to the NEP scale: Paul Ehrlich's *Population Bomb* (1968), John Muir's concept of pristine wilderness and his conceptual biases as examined in *My First Summer in the Sierra* (Muir, 1911), and Garrett Hardin's *Lifeboat Ethics* (1974) and *Tragedy of the Commons.* (1968). I found each of these publications to promote anti-environmental concepts and do not recommend any of the authors' frameworks as appropriate for building an understanding of environmental worldview.

In Chapter 4, I systematically analyzed all twelve questions from the original NEP scale (Dunlap and Van Liere, 1978). I recommend four questions and do not recommend eight questions as adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples including internal colonies, and subsistence farmers (

Table 8).

Conclusion

Based on this systematic materialist ecofeminist analysis, the NEP scale was found to be developed using information that is not adequate for measuring the environmental worldview of women, Indigenous peoples, global South peoples, subsistence farmers, and internal colonies – the global majority of people. From the twelve questions listed in the original NEP scale, a total of four are determined adequate, while eight are determined not adequate. These recommendations specifically consider the materialist ecofeminist perspective, which integrates the perspectives of women, Indigenous peoples, and subsistence farmers – especially in the global South.

The implications of the findings are potentially far-reaching. The NEP scale has been cited in scholarly research thousands of times (Sparks et al., 2020). If the foundational theory of the scale is flawed, and two-thirds of the questions in the scale are not recommended as accurate indicators of environmental worldview, it is strongly recommended that a more accurate tool is utilized in future research to measure environmental worldview. It is beyond the scope of this research to suggest an appropriate scale – whether this tool exists or needs to be created.

To my knowledge, the NEP scale has not previously undergone a rigorous feminist or ecofeminist critique. It is made clear that through a materialist ecofeminist framework that the scale is flawed to an unacceptable degree. I recommend that any similar future scale be developed carefully using relevant feminist methodology. It is also possible that a similar scale should have multiple iterations which are developed in a

culturally-specific manner depending on the population of study. It may also be pertinent that members of the studied population lead the development of the scale that is utilized to measure their worldview. This practice would take into account principles of ecofeminist research discussed in *Ecofeminist Methodology*. Through feminist and ecofeminist methodology, sociologists have the opportunity to develop more materially accurate and culturally-specific measures of environmental worldview.

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