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Note from the Editor

John Lupinacci
Washington State University

Welcome to the *Green Theory & Praxis Journal* Volume 7 Issue 1! As a member of the GTPJ team and editor of the journal I would like to extend my thanks to all those who volunteer and contribute to the ongoing scholarship of this journal. It is an honor to engage with such a passionate and prolific group of activist-scholars.

GTPJ is a journal dedicated to the dissemination of the voices of those who are working on diverse fronts to radically transform, respond to, and reframe the dominant systems working to undermine social justice and sustainability. So it is with great appreciation and respect that we at GTPJ review and publish the work of scholar-activists whose work complements, inspires, and challenges current perceptions of scholarship on environmental issues. In this issue we are excited to publish the articles, essays, and reviews from 2013 that challenge the current paradigm of the field and inspire us to continue to ask questions that break the silences cast by what currently constitutes how we bring theory to practice in all of our work.

Across the diverse voices in this issue is a shared theme that we ought to have a great concern with the deep cultural roots of the industrialized Western culture within which we are living and enacting violence every day. Critically exposing the colonial curriculum of zoos through the use of fiction, engaging us in a continued dialogue on understanding and examining the complexity of Anarchism and Ecowomanism, linking environmental degradation and labor exploitation through Marxism, offering an EcoJustice look at STEM, and presenting a truly inspiring and challenging essay that calls into examination Deep Green Resistance—this issue will surely push boundaries and blur borders.

It is my deepest hopes that all of the authors' work in this issue challenges us all to engage in and embrace solidarity among our differences. So read with an open mind and with the reassurance that sometimes radical love requires us to self-examine and engage in the dialogical process of respect and solidarity. This is much easier said than done, especially from positions of privilege and within long standing structures like academic institutions. As a crucial part of maintaining a system of oppression, these positions and structures offer—although sometimes only small glimpses—the opportunity to learn to respond to and resist the boots on the necks of the suffering....or in many cases to recognize that we, the ones enacting a human-supremacist worldview, are all too often the ones wearing the boots.

So as this issue releases, the time seems as good as any to declare that it is essential that we, as humble students of the world's diverse movements join in solidarity toward liberation for all.

Embracing My Escape from the Zoo: A (Sometimes) True Account of My Curricular Inquiry

Jason Michael Lukasik
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Abstract: The following is an excerpt from a larger work that utilizes fiction as a method of inquiry into the colonial curriculum of zoos. Reflecting on the author's work as an educator at a large urban zoo, this piece weaves together literature and experience, examining the meaning of colonial curricula found in zoos, how we experience such curricula, and the vehicles through which we can engage a scholarly (and accessible) conversation about the topic. Fiction was chosen as a medium as it directly mediates the nature of the subject studied here – zoos are, themselves, a work of fiction. They narrate the lives of animals, as well as the relationships we humans (as visitors) have with them and the places, both wild and captive, in which they live. The following narrative is offered up as an entrée into these complex relationships, raising questions and meditating possibilities to understand the fiction of zoos and the way such institutions act on our educational consciousness.

By telling stories, you objectify your own experience. You separate it from yourself. You pin down certain truths. You make up others. You start sometimes with an incident that truly happened... and you carry it forward by inventing incidents that did not in fact occur but that nonetheless help to clarify and explain.

- Tim O'Brien (1990, p. 71)

I sat in the twilight, gazing out over the lake. Sitting next to me was a large black bear, his back slightly hunched as he sat there dangling large back paws into the cool black water. On my other side sat a small and gentle man, a curriculum scholar, who was likely just as imagined as the bear. He wore wire-framed glasses and an earth-toned tweed jacket to match. He sported a neatly trimmed moustache. I was on vacation, at a summer retreat in the great northern, a small cottage on a still lake, loons in the distance wailing. While relaxation was my intent, I could not escape my memories or my thoughts. And so I sat, talking with Sam, the bear, and Silas, the curricularist, about the zoo.

Our conversations happen continuously, as I reflect on my work (and theirs), and the meaning of our shared inquiry. Their voices are given meaning through my experiences had while working as an educator at the zoo, and have been articulated through the literature that I have engaged while pursuing my studies on the subject. Silas gives me insight into the meaning of my curricular journey, and my critique of the neocolonial forms of representation in zoos and beyond. Sam helps me to understand the meaning of being 'caged,' what it means to be a being enclosed by walls (and meaning, and knowledge). But this is too simple an explanation for characters that have come to exist continually in my work and my thoughts.

Sam and Silas were born out of my thinking about the zoo, but it can be equally said that my scholarship was born out of them. Such a relationship is revealed through a reflection on my *currere*, looking back on where I have come from to better understand where I am going (Pinar & Grumet, 1976). To understand how I came to know Sam and Silas, and how they have helped me to articulate a critique of the zoo, requires that we first look back upon how I learned to

embrace my own escape from a zoo.

* * * * *

It was unseasonably pleasant for an early February morning in Chicago, the day when I was fired. There was a cool, but gentle breeze coming off Lake Michigan and the sun shone bright, save the occasional puffy cloud that meandered overhead, causing the frigid air of winter to retreat for the time being. I walked past the Lion yard and Adelor, the male, his large stringy mane embracing his majestic face, watched me. It was not a look of predation, that look he may get in his eye when a young child wanders back and forth in front of his cage. He watched me as I carried some of my office belongings in a plain cardboard box – personal files, some books, a desk lamp. It was, at first, a passing glance, and then a sad stare. I was the envy of the animals that February morning. I was, essentially, locked out of the zoo.

My day had begun ninety minutes earlier. Typical of any day, I arrived to my office, coffee in hand, to a handful of voice mail messages and emails: notices of new meetings, communication from former students, an eco-justice organization returning a call I had placed to them about partnering with my program. I make plans with my teaching assistant to meet about our curriculum for the upcoming program.

The curriculum to which I refer is for a program that was designed to help urban high school youth connect with nature and environmental science. The zoo was, in many ways, an appropriate venue at which to host a program like this. I was intrigued by the prospect of the museum as a site of learning (Dierking & Falk, 2000). Educational work in museums is well documented. Often, museums are noted as being an underutilized resource for educative experience, and literature supporting museum education has been focused on documenting how a museum might be utilized for both formal and informal educative purposes. Lisa Roberts (1997) suggests that museums educate by following the visitor, by acknowledging that “visitors use museums in ways that are personally significant to them” (p. 132) and Alan Gartenhaus (1997) has written about how museums might be seen as places that can expand creative thinking. I valued the prospect of teaching in a zoo. Nevertheless, zoos are immersed in conflict. Zoo histories have discussed the harsh realities from which the modern day zoological institution has emerged. Less interested, though, in the historiography of zoos, my intellectual interests were honed elsewhere.

My academic turn toward curriculum studies was one of both practicality and scholarship. The program I ran at the zoo allowed for creative use of curriculum – I had no standardized tests for which my students had to prepare – and so I was charged with the task of providing a meaningful experience for my students. I saw the zoo as my classroom. I came to understand curriculum by Schubert’s (1986, 2008a) discussion of the field through the question “what is worthwhile?” Given my work at the zoo, I was also interested in curriculum that exists in an “out-of-school” context (Schubert, 1981, 2008a). I was pleased with this opportunity to experiment, in curricular practice, the ideas I was learning in my studies.

No doubt Dewey (1902) had an influence over me, namely his discussion of the relationship between child, curriculum and society. I viewed my work with students in the context in which I taught – students who were “at risk” (read: black, Latino, poor), in a large urban area, learning in a zoological park.

Of particular interest to me was the concept of the integrated curriculum. “Integration,” writes L.T. Hopkins (1937), is “continuous, intelligent, interactive adjusting” (p. 1). He maintains that “interaction is a social process” and that “each individual is socially built” (p. 9). Working towards integration in my curriculum required that I, as a teacher, facilitated a non-static curriculum, one that reflected the fluid interests of each student and the changing milieu in which we were situated. Integration of the curriculum meant more than combining various

subject areas. I had to consider the relationships among disciplines of knowledge, my students' lived experiences, as well as the context in which we worked. My approach, too, was informed by the foundational work of Ralph Tyler (1949). His work further developed Dewey's (1938) concept of experience, namely that experiences are unique to the student fostering different outcomes and perspectives, depending on the student's own location. We should interpret the work of Tyler beyond his basic curricular categories of purposes, learning experiences, planning, and assessment. "Left behind," in most analyses, says Schubert (2008a), is Tyler's "careful attention to context and nuance in student lives" (p. 406).

I had also been influenced by Schwab's critique of the "moribund" nature of curriculum development in the late 1960s. Schwab's work was about disposition and approach. He saw curriculum as "deliberative; mediated by the commonplaces of education: students, teachers, subject matter, and milieu" (Schultz, 2007, p. 20). He did not refute the categories of curriculum and instruction put forward by Tyler. Instead, he challenged the relationship to knowledge that had developed as a result of the disconnect between research and practice. The educator, then, must develop an eclectic repertoire, informed by both practice and theory, to respond to the situation lived by the individual students and teacher (Schwab, 1976).

As a teacher, I had hoped to locate myself as a "student of my students" (Freire, 1970; Ayers, 1992), to create a space in the zoo where my students might pursue their own curiosities. Instead of forcing connections between the topics of environmental conservation and my students' lives, I thought it was more important to listen to their interests and let them guide me toward the topics they might find meaningful. By "seeing the student," I might be able to "engage the whole person" (Ayers, 2001, p. 32) and provide an experience that extended beyond the gates of the zoo. This calls for me to engage in a pedagogical understanding as described by Van Manen (1991, p. 86). I had envisioned an opportunity for the high school students at the zoo, who came from a variety of backgrounds and knowledges, who came for different reasons and with different purposes, to explore ideas and their own understandings of culture, society, and identity.

* * * * *

"How is your work coming along?" asked Silas. He was sitting beside me on the dock. We watched as the wind died down at the water slowly turned completely still, like a large sheet of glass.

"It is coming," I responded, "just not as fast as I would like." I was trying to write about my work at the zoo, and my abrupt ending. But I didn't want to write a report on the teaching I did, what worked or didn't work, some traditional academic paper. I was interested in the nuance, the subtle relationships and meanings that underpinned my experiences at the zoo.

"The more I dig, Silas," I continued, "the more I realize I need to delve into and tell."

"Pondering our experiences is no easy task," said Silas. "It takes much of the energy we can muster, and then some, to fully engage ourselves in our memories, experiences, learnings and meanings."

"I have spent so much time thinking about zoos as colonial institutions, but I wonder if there is something more to my work."

Silas looked at me, intently, "How do you mean?"

"It is like," the words were hard to find, "it is like a metaphor, zoos are a metaphor for other things," I started finding the words, "studying zoos lead me to consider other legacies of colonialism. I mean, don't you find it ironic that we deconstruct zoos, a colonial institution, in the comfort of academia, what could be argued another colonial institution?"

"Write into those contradictions," Silas immediately responded. "The contradictions are the meat of your work. It is what we do in curriculum studies."

"How will I know when to stop, when I have journeyed enough?" I asked, innocently.

“When you at last feel free,” Silas said as he looked out at the lake, “though that is a task easier professed than experienced. Freedom often leads to fate, and that is the contradiction we all must struggle through.”

* * * * *

On the day that I was fired, I wish I could tell you that I was thinking about my students. I wasn't. My work at the zoo turned toward critical discourse. I became engaged in discussions (sometimes heated) questioning the zoo's mission of conservation education, I emerged as an outspoken critic of zoo practices, and I had also begun to organize my department with the hopes of unionizing. Perhaps I had become too cavalier, caught up in the context. I had intended to practice what I taught for – naming injustices, learning about them, seeking to change them. I knew that my quest would lead to my being fired – I would be the fifth person in two years to be terminated from my department (although not all for overt political cause). I left my office, not long after arriving for the day, a single legal pad under my arm, to appear in a meeting in the administration building. As indicated in the email I received one day earlier alerting me to the meeting, I was to meet with both the director of human resources and the vice president. I had a good idea that I was walking to my last meeting at Lincoln Park Zoo, so I took the long way.

I walked through the bird house, an historic building that had had its interior renovated in the 1980s, fitting naturalistic exhibits within the shell of a structure reminiscent of the zoo's old days. Notable was the free flight area at the end of the building, where, if one is so lucky, a majestic bird from the jungles of South American may buzz your head as it sweeps over you. I remembered this place as a teenager. My imagination and the exhibit would combine into a magical and exotic place that was as far from the concrete jungle of Chicago as one could get. I stepped into the free flight area and I was once again transported to my imaginary, I could feel the excitement of a lush rainforest, standing upon an old wooden bridge that spans a small riverway, the sounds of wilderness all around. At once, I become an explorer and a native.¹

Generally, zoos have reflected the eras in which they have existed, as well as the dominant beliefs about natural relations, politics, and human history. Many societies have exhibited animals, all for different reasons (Crocke, 1997, p. 129). The early zoos were visual tales of the exploits of global travel and exploration (Malamud, 1998). Many of these zoos were simply private collections of exotic species collected by naturalists while others were princely estates that exhibited representations of the conquered lands of the empire (Crocke, 1997, p. 137).

The colonial menageries of the eighteenth and early nineteenth century would eventually become public zoological gardens in the late 19th century. Informed with a scientific narrative, the early public zoos shifted their focus to educating visitors, while at the same time, entertaining them. These early modern zoos “showcased the optimism, power, and ambitions of the new bourgeois elite, just as the princely menageries showcased the optimism, power and ambitions of an older aristocracy” (Rothfels, 2002, p. 37). Zoos began to de-emphasize the imperial relationships over animals, exhibiting them in more naturalistic settings. Carl Hagenbeck, a notorious animal capturer turned zoo entrepreneur, was the first to display animals in naturalistic environments in the 1870s, replacing barred cells with moats, rock formations, and trees (Hancocks, 2001, p. 64). The model for the modern zoo begun by Hagenbeck took some time to catch on, but now it is commonplace to find animals in zoos without visible cages, instead separated from the visitor by moat, glass, or other barrier. Some zoo histories suggest that the development by Hagenbeck was a revolutionary response to the criticism that zoos were inhumane, providing a much more ideal situation in which to exhibit the animal. However, zoo historian Nigel Rothfels (2002) suggests that the real legacy of Carl Hagenbeck is found in the *representation* of the animal: “Beginning with Hagenbeck...[zoos] began... to renarrate the

captive lives of animals” (p. 199). The visitor to the modern zoo is able to maintain an “omnipresent eye” (Willinsky, 1998, p. 57) on the collection, an architectural remnant of the colonial design of zoos.

My students worked at the zoo as interpreters of these exhibits to the public. Students from marginalized backgrounds assuming a post of authority – they helped to narrate the exhibits to the public. As I remember one of my students, Annette, commenting to me after her school-teacher visited while she was working, “now I get to tell her what is right and wrong.” My students found empowerment through the interpretation of a colonial exhibit to zoo patrons. The complexities of studying the neocolonial were often revealed through reflections on conversations with my students. The zoo constructed an authoritative text on the animals, revealing a carefully designed history of representation of the “other.” In the modern day, these very same institutions seek a place where marginalized students are given the opportunity to share in the colonial dream – to be empowered at the expense of another creature. Perhaps this irony is what Bhabba (1994) meant when he noted that “the look of surveillance returns as the displacing gaze of the disciplined” (p. 127). As my students sought to know about the animals in the zoo, the complex and contradictory nature of our cultural locations within society, and our human locations within the biosphere, were becoming visible.

* * * * *

I left the warmth of the tropical rainforest and continued my walk to the meeting. I strolled past the Small Mammal and Reptile house. I recall working here when the building opened. I was 17 at the time, and I was an educator interpreting the exhibits to zoo visitors. I would not be stretching the truth by suggesting that I grew up at the zoo. From childhood visits (the 11 Lincoln bus brought my mom, my sister, and me right to the door) to my working there through high school and college, the zoo was the backdrop for many of my transformations from youth to adulthood. I grew up surrounded, as many children were, by literary references to animals. I recall the film interpretation of Dr. Doolittle, where I learned that it was okay to believe, as many children do, that I could talk with the animals. I recall the play Harvey, about the pooka that was only visible to the main character, Elwood P. Dowd. Even now, I turn to literature that incorporates animals into their narratives. Despite my disagreement with its portrayal of zoos, *The Life of Pi* (Martel, 2001) brings to life the possibility found in speaking with animals. Ishmael (Quinn, 1992) speaks of wisdom found in the voice of a lone gorilla, warning the human race of its devastating practices. Peter Singer (1975/2002), in his call for animal liberation, argues that animals are sentient beings. Jeffery Moussaieff-Masson and Susan McCarthy (1995) have helped us to consider the emotional lives of animals, authoring a widely read book, *When Elephants Weep*, that raised awareness among the general public about being wary of locking animals behind cages, even if it is *for their own good*. As my view of zoos became enriched through my readings, the zoo at which I worked was also going through its own change. I watched as older buildings at the zoo were demolished and new, expensive naturalistic exhibits took their place. I was witnessing an institutional transformation, a shift to the modern *immersion* zoo exhibit.

Early zoo collections were organized and represented taxonomically, exhibiting animals based on their biological groupings according to the Linnaean nomenclature system. This system sought to universalize the categorization of the world’s living organisms, re-naming them in the dominant language of Latin and drawing upon Western lenses to place the animals into categories (Willinsky, 1998, p. 33).

Categories narrate the differences among individuals. It is upon these differences that zoos have historically sorted and divided the world represented through this narrative. Modern zoos have shifted to geographical collections, so it is not uncommon to find animal exhibits named for the ecosystem it represents -- Australian dry lands, the African rainforest, the African

savannah. The geographical ordering of animals derives from the colonial organizing of exotic and far-reaching places, and the representation of animals in this way often draws upon the exotic imagery and themes of the colonial imaginary.

This new exhibit design is very much a legacy of the changes Hagenbeck brought to the zoo world. “The goal of the immersion exhibit,” says Rothfels (2003), “was and is to create a convincing verisimilitude” (p. 201). In the creation of a ‘better nature,’ the zoo animal is also created. Animal identity, argues Rothfels (2002), “is constrained by the mediated nature of their presence in our historical record” (p. 5). The animals that we see in a zoo, or even for that matter, in the wild, are “inextricably bound by particular human contexts and interpretations.” Just as the zoo manufactures the exhibits that contain the animals, they, too, manufacture the narrative we come to accept as being truth for the animal. It is a mimic of the animal in the wild, fashioned as we would like to understand it.

I opened the doors to the new African exhibit that had just opened one year earlier. It was a very expensive building, complete with faux waterfalls, living plants to create the illusion you are meandering through the jungle. You happen upon a bird, a hippo, a giraffe. The exhibit is designed to make you feel as if you were in Africa. Suppose you have never been to Africa. How do you know it feels right? You wind along a path, you pass by a straw hut – an interpretive sign about the *people of the rainforest*. Conjuring up images of the “heart of darkness” this exotic place reifies the colonial narratives upon which we have come to know the continent of Africa, the jungles of Asia, the Amazon – as *other*.

What if the narrative we tell in zoos is wrong? When we walk through the zoo, we encounter other life forms that are set aside from us. The difference is articulated through our acknowledgement that these are objects to be observed and explained, through a particular narrative of how things came to be. We are not animals, simply because we are not in cages. And when people are in cages, such as the exhibition of Ota Benga, an African pygmy on display at the St. Louis World’s Fair in 1904 (Burnham, 1993, p. 185) or in any prison, we come to define these individuals by their animalistic tendencies, their primitive nature, their inability to act civilized. “The savage is nature in the shape of a man, an object lesson in the natural order” (Willinsky, 1998 p. 110) Identity as that “which we are not” (Hall, 1996) has defined the relationship that we have to those in the cage, exhibited before us. These relationships have been troubled in some arenas, for example the performance critique of Coco Fusco and Guillermo Lopez-Pena who exhibited themselves as “Indoamericans” in several museums and town squares across the globe. The purpose of their performance was to critique the problematic historical (and contemporary) practice of exhibiting humans in natural history museums. Despite many people understanding the critique, to the surprise of both Fusco and Pena, some spectators thought the critique was an authentic exhibit (Argueta, Fusco, & Heredia, 1993). We should not be surprised, then, that many people who come to the zoo, save young children who make honest and just observations, do not think twice about the predicament of enclosing animals in a cage. Nor are they aware of the history of exhibiting humans, in much the same way we exhibit animals (and humans) today.

* * * * *

I suppose it begins innocently enough.

“Jason,” begins Tasha, one of my students, “don’t you think it is wrong to lock animals up?”

My immediate response was academic, “Well, I think it is definitely problematic.”

Tasha raised her eyebrows in disappointment. “I mean, look at the animals, don’t you think that it’s wrong that they live their lives in cages?”

Another student, Anthony, interjected, “But we are keeping these animals safe, they get to

live because it's too dangerous in the wild."

"What do you mean Anthony?" I asked.

"Well," Anthony paused, "it's like this. We keep them alive since things are messed up in the wild. Then we can learn more about them and try to fix things. And people get to know them, too. People like learning about animals."

Tasha frowned, "It still doesn't make it right."

The subject was unavoidable. The glance of an animal enclosed by an artificial surrounding is enough to provoke both wonder and regret. It is as if the animals speak through their eyes, and when they look back at you, you know better. For my students, the question usually emerged a few weeks into the program. After the initial excitement found in working at the zoo began to wane, my students began to make more astute observations of their surroundings. I wanted to encourage these observations for I believed that the dilemmas provided greater opportunities for learning.

I encouraged students to write from the animal perspective. We took the case of the Snow Leopard, an endangered large cat that lives in the mountains of Afghanistan and the Himalayas. Students worked in small groups to research the various aspects of the snow leopards life, including the biology of the animal, the ecology (where it lived and what the environment was like), and socio-political issues impacting its livelihood. Students found a BBC report concerned with increased poaching of snow leopards in Afghanistan, shortly after the US invasion prompted a fall of the Taliban regime. The students also learned that the snow leopards live in very particular areas at high altitudes and are highly endangered from poaching and habitat fragmentation with numbers in the wild ranging from 4 – 7,000 (Kirby, 2003).

After spending some time outside the exhibit housing the zoo's lone, aged snow leopard, they wrote letters to humanity from the perspective of the leopard. The letters were impassioned, thoughtful, and provocative. And while zoos have moved away from the personification of animals, toward more scientific narratives, the desire to listen to what an animal might say was all too compelling.

* * * *

"What are we conserving?" I asked the director of my department.

"What do you mean?" he responded, "We conserve habitats, and we are working to develop conservation education programs that help foster a conservation attitude in visitors who come to the zoo."

"I know all that. But what exactly are we conserving, here in this zoo, with animals on display?"

My disposition to my work at the zoo had become more critical as I read the work of Chet Bowers (2001, 2003). Bowers has been the primary voice in curriculum to question the ecological implications of educational work. Bowers (2003) has questioned the way we have come to understand conservation in contemporary society. He asks, "what do we want to conserve?" (p. 1), pointing to a taken for granted assumptions of the so-called *liberals* and *conservatives* in today's political arena. Echoing the work of Wendell Berry, Bowers has also questioned the term *progress*, viewing it as a perpetuation of the myth that "the future will be an improvement over the disappointments of daily life" (p. 2). His critiques of globalization, unchecked economic growth, and unquestioned faith in technological improvements build from his earlier work (list) that questioned the influence of Cartesian thought in the pedagogical approach taken by many teachers – including those who wish to teach toward the 'ecological.' David Orr (1999) has cautioned us about the ecological ramifications of unquestioned assumptions about education, that our purposes in education satisfy the demands of industry and continued economic growth and neglect the demands of the planet (p. 27).

"I just think that while we may be teaching visitors about zoo conservation efforts and

steps they can take to control their ecological impact, we may also be teaching values and assumptions that aren't very good," I sat forward in my chair, leaning into the conversation.

"What do you mean, exactly?" my director asked.

"For instance, we talk about conservation efforts that the zoo makes. And these efforts are notable. However, we situate ourselves as the 'good guys' while we also keep animals against their will in small enclosures."

"So should we simply set them free? Would that make things better?"

"No, it's not just the animals in cages. Its deeper than that. I guess..." I struggled to articulate my thoughts. "I guess my concern is that we don't grab the issues and really put them out there. We don't really pursue justice, ecological or human. Here we are, selling cheap sweatshop made crap in our gift shop, and we fail to talk about how over-consumption is a real ecological threat. We celebrate our strictly scientific perspective on animals, and talk about our 'progress,' yet we seem to become more and more removed from nature."

"Certainly, there are some negative attributes of zoos. But we can make it worthwhile by making our programming as meaningful as we are able within the limitations of the zoo."

"Are we really making it meaningful? It seems to me like we just are playing it safe. Meanwhile, things aren't improving, and the animals are still in cages!" The room was silent. I felt enclosed - as if the tense air were compressing against me.

"Well, you can't just rush into these things. We need to be mindful of the different opinions out there. Yours is not the only one."

"We seem to be mindful of some opinions. But we are never mindful of the critical ones. I don't know, this work does not feel very fulfilling right now."

I became more aware of the hidden curriculum at the zoo. I was not comfortable simply acknowledging the dilemma that zoos help animals by imprisoning them. I wanted to talk about them with visitors, to encourage discussions about the contradictions that were glaringly apparent. The 300 lb. gorilla in the room was literally a 300 lb. gorilla, in a cage. I would find, though, that the issues ran much deeper. They were issues of epistemology and ideology. They ran at the heart of what we humans think to be good, necessary, and prudent. It was an issue of curriculum and education – what is worthwhile. Aldo Leopold (1949) questioned that lack of ecological teaching in educational institutions, observing that we do not seem to incorporate the ecological in any of our lessons. Even now, as environmental institutions avoid the hard conversations about colonialism and the tenuous relationship between technological and economic growth and the plight of natural resources, if “education does not teach us these things, what is education for?” (p. 210).

* * * * *

During the summer of 2002, my students and I learned of Luna, the orca whale. We would regularly read local newspapers and surf the internet for international news. Luna was an orca that had become separated from his family and took up residence in Nootka Sound, a small natural harbor in northwestern Canada. These waters run adjacent to First Nations land belonging to the Mowachaht/Muchalaht First Nation. Feeling that it was unnatural for Luna to live alone, away from other orcas, and for fear that he may be injured by motorized boats in the harbor, the Canadian government planned to capture Luna in an attempt to reunite him with his family. They knew of the general area where his family was located, but reunification attempts like this are risky, because if Luna decides not to join the other whales, the government would place him in captivity.

Believing Luna to be the reincarnation of their recently deceased chief, Ambrose Maquinna, the Mowachaht/Muchalaht people protested his removal.

Luna reportedly enjoyed rubbing his nose against the side of boats and was not afraid to

approach people. While the waters were primarily adjacent to First Nations Land, there was also recreational boating in the area, jeopardizing Luna's safety. The First Nations tribe protested the capture of their 'chief' and, during an unsuccessful attempt to capture Luna by the Canadian government, the Mowachaht/Muchalaht people paddled war canoes and led Luna into their waters. They vowed to never let the government capture Luna.

My students were enthralled with the story. We followed the news coverage and read into the history of the whale in Nootka Sound. A debate ensued: who was right in their approach to Luna? Of course, the Canadian scientists knew a great deal about whales. However, it was what they didn't know that struck me. They didn't know about the First Nations peoples' connection to orcas because they did not believe in it. Science provides deep and complex understanding of our natural surroundings. Yet we must remember that these understandings are constructions, complete with values and assumptions.

My students were generally divided on the issue. Several thought that the tribe's interest should be respected, but felt that the health of the whale was better served by the scientific narrative. Other students passionately disagreed.

"How can we be sure that Luna will be safe with the scientists?"

"It is not right to infringe on the beliefs of others."

Still other responses were much more complex.

"I know the scientists mean well, but what if they are wrong in their beliefs?"

"Sure, the Indians may be making that story up, but if they take care of Luna, the whale is safe. Isn't that what the scientists are worried about anyway?"

Luna, the whale, provided for me an opportunity to question the narratives we make for the world around us. When narratives contradict one another, we are able to see the power relations that underlie those narratives. The story of Luna reveals the particular way we see the dominant Western narrative of science as it relates to other, marginalized knowledges about the world in which we live.

For Said (1994), the construction of the Orient came as part of a "willed human work" (p. 15) that rendered the Oriental subject an objectified project of knowledge.

To have such knowledge of such a thing is to dominate it, to have authority over it. (p. 32)

The construct of the division between the East and the West was organized out of a "growing systematic knowledge in Europe about the Orient" and "exploited by the developing sciences of ethnology, comparative anatomy, philology, and history" (p. 40). In much the same way, I had come to realize that teaching at the zoo forced me to consider my own relationship to knowledge systems. What knowledges would I privilege in making curricular choices? What does it mean to develop an attitude of conservation – what exactly did I hope for my students to conserve? What is the meaning of teaching ecological responsibility while maintaining a colonial collection of animals, as part of our created image of what nature is and should be? What do I say when an animal looks back at me, or when a student asks the question, "Is this really a good thing?"

* * * * *

While growing up, I was comforted by reading non-fiction. Perhaps I appreciated the solace found in traditional science, knowing something to be true, or at least observable and likely true. Maybe it was my attempt to grasp at reality in an unreal world. My family was (and continue to be) in the performing arts, and so I grew up surrounded by fictions, performances, and make-believe. I valued artistic expression, but as a youth in a world of uncertainty, I longed for something certain. I readily embraced scientific narratives, and sought out certainty. Yet, I lived

a life of tension, pulled between the forces of creativity and imagination, and the more certain and static.

Over time, however, the masks of fact began to peel from all things I looked at. I read a piece by Somekawa and Smith (1988) that questioned the fixed nature of history. The article argues that the telling of history is *theorized*, and therefore historical “facts” are inventions. The easy and problematic labels of fiction and non-fiction had become less certain in my mind. But subsequent readings in cultural studies that utilized post/neo-colonial and postmodern lenses developed for me an academic foundation from which to consider the ways in which multiple knowledges act on the stories we tell about self, other, and situation. As Tillman (1991) said: “I distrust words and stories and yet probably they are what I value most” (p. 103)

As a teacher, I came to embrace Maxine Greene’s (2000) notion that “I am forever on the way,” in a process of continually developing and becoming. I came to view myself as an unfinished novel or play, one that is continually written in dialogue with the world around me. Bakhtin (1982) argued that the novel is comprised of multiple voices in dialogue, true to life and circumstance. My critical sensibilities emerged from my return to the arts and imagination. “Imagination” says Greene (2000), “permits us to give credence to alternative possibilities” (p. 3). I am able, through my imaginative spirit to consider alternatives upon my critiques. I struggle with the dilemma that Patti Lather (1991) raised when she discussed her desire to both welcome possibility and reject meta-narratives as encouraged through postmodern thought, while also working *towards something* defined through critical analysis.

As my critical stance toward the zoo developed, I came to acknowledge the *fiction of zoos*. Zoos, as institutions, tell a story about our world. It is an inconvenient story that, like any other story, fails to capture the numerous utterances that make up parts of its whole. Yet, it is a compelling story; it becomes difficult to see it any other way. If we may render the brutal colonial history of zoos as “objects of our experience, to encounter them against the background of our lived lives,” we may encourage a move “toward conception of a better world” where creativity is celebrated and the ability to see beyond patriarchal institutions becomes a reality (Greene, 2000).

I took a good look at the zoo which surrounded me: I noticed the Colobus Monkey, swinging wildly, animated, interpreted only by a few signs identifying its range and diet, an animal with abundant energy closeted within an archaic steel cage. I thought of the education department library, where children’s books that provided anthropomorphic narratives were stripped, for fear they would provide “misinformation” about the animal collection. Instead, only books that spoke of animal facts, or told the story of a human (who is also anthropomorphized²) which may then involve animals tangentially, were included in the collection. How is the film “Babe” or Orwell’s “Animal Farm” any less an authoritative narrative of animals than the zoo? Are there not things that can be learned through experiencing such narratives? And what justice is served by avoiding those narratives?

I recall the opening of the North American wildlife exhibit, when I wanted to invite the participation of the American Indian Center, to create a space in the zoo where they could provide interpretations of their choice of animal collections that have historical and spiritual significance in their cultures, only to have the zoo administrators want them to “do a dance” for the opening, maintaining an authoritative narrative over the collection. I think of the poems I would write in my mind as I walked through the collection, making note of the smells, the sounds, the feelings, the emotions, knowing full well that such an activity was not a welcome complement to the dominant scientifically driven narrative of the zoo. I did not question the value of the many contributions of conservation science to the lives of animals and articulations on global ecological issues. What I did question was the rejection of other narratives, of

imaginative possibilities. Why not imagine an animal talking back to us? I had done this with my students, encouraging them to render the animals able to talk to us – which first requires that we *listen* to the animals, to be open to what they might say. If the zoo wants to teach toward conservation, it requires that visitors build an understanding of empathy – for other people of the world, for other animals of the world, for the earth herself. I remember Maxine Greene (2000):

the extent to which we grasp another's world depends on our existing ability to make poetic use of our imagination, to bring into being the 'as if' worlds created by writers, painters, sculptors, filmmakers, choreographers, and composers, and to be in some manner a participant in artists' worlds reaching far back and ahead of time. (p. 4)

I am held within an institution that makes as its mission both conservation and education. What exactly are we conserving? What exactly are we teaching? It was the asking of these two questions that preceded my meeting with the administration. But it was the asking of these two questions that have given me the opportunity to escape the traditional narrative of the zoo, to escape what we have come to accept as *reality*, and to embrace that which we do not know, but we may imagine to be true.

* * * * *

"You look troubled," said Sam the bear.

"I am, Sam. I just," I hesitated to find the words, "I just don't know ... how to meaningfully challenge the zoo I study, and the zoo I find myself a part of."

"What zoo are you a part of?" Sam asked, curious as he had only known a zoo for an animal.

"Well it is not a zoo in the traditional sense, but I find myself caged in any place I have worked. As a teacher in a school, as an educator at a zoo, as a professor in a university, they have all caged me: my creativity, my desire to see things differently and to engage in those conversations that enable me to do so."

"I see," Sam said. He looked out at the water, and up to the millions of stars that pepper the sky above. "Do you know what we bears see when we look to the stars?"

"No," I responded. Sam had a way of being a grounded philosopher.

"We see millions of other places we could be, other lights we could know, but we are here where we are. It is good to know that there are other ways, no matter how far away they may seem. But we walk where we walk. We do not choose this. But we can choose how we live where we walk. Have you tried biting?"

"When humans bite it does not go well, as they might call me animalistic..."

"As if that would be a bad thing," snipped Sam with a snarl and a curl of his lip. "But what," he continued, "if you tried to bite back at those things that enclose you? You are caged, too, my friend, much as I was in the zoo. You need to escape, though it will not be as simple as climbing out of an exhibit, for your cage is not so easy to see."

"I need to escape my cage, yes," I said. "But how do I see my cage? And what do I do when I find it?"

Sam paused, and looked back to the stars. "You will know what to do," he growled. "Just look to the stars, and let possibility guide your way."

* * * * *

It was almost time for my meeting. I could see the administrative building across the way. I stood on a bridge, looking out over a pond. In the distance, reaching far above the treetops of the park, I could see the city skyline: a humble reminder of the large urban landscape in which this naturalistic oasis is situated.

Jailed by the concrete cells of city living, Chicagoans looking to escape the artificial realities of urban life seek out the zoo. Just as animals are constructed through the narrative of

the zoo, so too are visitors. When zoos represent a constructed nature, how does this impact the nature of the relationship they develop? How authentic can such a relationship be with the land, when the land is represented through the lens of an historically colonial institution? Or, when the land is viewed through a colonized perspective? When people come to the zoo, what do they see? Willinsky has discussed the danger of “exhibitionary pedagogy.” Not only do we learn a narrative about the subjects being exhibited, we also learn about the nature of exhibition itself. What meaning might be learned from a zoo, and its exhibited nature?

I stand outside the gates of the zoo, looking back in upon my time there, the institution of which I used to play a part, the institution whose internal tensions I still feel as my own. My gaze fixed upon the colonial constructions that are so readily adopted through narratives about people, land, and animals; my gaze reveals my own reflection in the water below, where I sit next to Silas and Sam. In my mind, I live the crisis of representation. It is found within the subject of my inquiry – the zoo – as an institutional practice I seek to critique. It also emerges through my process of inquiry – my creative representation of the issue - a contradiction through which I struggle. And in my escape from the Lincoln Park Zoo, I so too attempt to escape the neocolonial trappings of our modern day institutions, out of a colonial past we emerge beguiled. Perhaps through dialogue and reflection, we may be able to “read ourselves within and against how we have been written” (Willinsky, 1998, p. 264). My escape from the zoo is an authorship over the colonial consciousness through which I continue to struggle. These are the waters I tread.

** ** *

Notes

¹ Bhabha (2004) questions the defined roles of colonizer and colonized, suggesting a dependent relationship between the two. His theory of *hybridity* suggests that the while the colonized are defined by the colonizer, the colonizer, too, is defined by the colonized, resulting in a complex dialectical relationship, similar to the relationship between the “oppressor” and the “oppressed,” articulated by Freire (1970).

² I must give credit to Dory Lightfoot for raising this interesting point with me. Often the argument is made against anthropomorphism of animals, but we do not object to the anthropomorphism of humans in narrative fiction.

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Natural Anarchism and Ecowomanism: Crafting Coalition-Based Ecological Praxis

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Abstract: Anarchism and womanism are two seemingly disparate ideologies, yet despite their differences both frameworks for positive social change are concerned with issues pertaining to the natural environment. Ecological currents within these respective rubrics overlap in their response to environmental destruction and commitment global sustainability for planetary well-being. This overlap is especially apparent upon considering natural anarchism, an emerging body of ecoanarchist literature concerned with restoring balance between human life and nonhuman nature. This article demonstrates that despite significant differences between anarchist and womanist philosophies, natural anarchism and ecowomanism share conceptual and practical similarities for addressing ecological degradation and remedying uneven relationships between humans and non-human life. The parity I outline here may guide global citizens to “combine even potentially contradictory positions in a zigzagging pattern of mixed strategies” and confront the destruction of our world (Braidotti, 2006, p. 134). No doubt environmental crisis must be actively resisted from all sides.

Nomadic politics is a complex and multi-layered approach that does not pursue right lines or straight paths, but combines even potentially contradictory positions in a zigzagging pattern of mixed strategies. The ultimate political aim of this strategy is twofold: firstly to create both concepts and values that break from the established norm and do not reproduce it. Secondly, to produce dynamic transversal interaction or movement among the heterogeneous and diverse sites and strategies. Conceptual and ethical creativity is the key term here.

-Rosi Braidotti, *Transpositions: On Nomadic Ethics*

Introduction

Anarchism and womanism are two seemingly disparate ideologies. Anarchism is a multitudinous collection of ideas, arguments, theories and calls to action that reject imposed authority, hierarchy, and domination. There is no singular anarchist position on political, social, or environmental issues, but anarchist thought does maintain a unity of purpose. Anarchists seek to “establish a decentralized and self-regulating society consisting of a federation of voluntary associations of free and equal individuals. The ultimate goal of anarchy is to create a free society which allows all human beings to realize their full potential” (Marshall, 2010, p. 3). As a political tradition, anarchism highlights the corrupting nature of power and rejects the State and its government in favor of communities based on sharing resources, caring for one another, and improving the collective lives of all.

Womanism, on the other hand, is a world view or:

a social change perspective rooted in Black women's and other women of color's everyday experiences and everyday methods of problem solving in everyday spaces, extended to the problem of ending all forms of oppression for all people, restoring

balance between people and the environment/nature, and reconciling human life with the spiritual dimension. (Phillips, 2006, p. xx)

More than a theory or an ideology, womanism is an overall perspective from which one sees and interprets the world; it is an all-encompassing spiritual movement for positive social change.

Regardless of their obvious differences both anarchist and womanist frameworks for positive social change are concerned with issues pertaining to the natural environment. Indeed, ecoanarchist and ecowomanist currents within these respective frameworks often overlap in their response to ecological destruction and commitment global sustainability. This overlap is especially apparent when considering natural anarchism, an emerging body of ecoanarchist literature concerned with restoring balance between human life and nonhuman nature.

In this article I demonstrate that despite significant differences between anarchist and womanist philosophies, natural anarchism and ecowomanism share conceptual and practical similarities for addressing ecological degradation and remedying uneven relationships between humans and non-human life. The parity I outline here may guide global citizens who “combine even potentially contradictory positions in a zigzagging pattern of mixed strategies” to confront the destruction of our world (Braidotti, 2006, p. 134). No doubt environmental crisis must be actively resisted from all sides. As Winona LaDuke (1999) reminds us

Ecosystems are collapsing, species are going extinct, the polar icecaps are melting, and nuclear bombings and accidents have contaminated the land . . . The writing is on the wall, in bold letters. There is no easy answer, and even scientists themselves seem to recognize the necessity of finding new strategies and understandings [for remedying ecological crisis]. (p. 197)

To this end I place natural anarchism and ecowomanism in dialogue with one another. I do so by outlining the ways in which natural anarchism and ecowomanism engage four concepts underlying their respective ecological frameworks: nondualism, interconnectedness, nonviolence, and respect for nonhuman animals. Highlighting the intersections between these two seemingly disparate worldviews is my own contribution to the development of new strategies and understandings for halting ecological degradation and healing the planet.

Nondualism

There is a rich history of environmental concern within anarchist political philosophy. Peter Kropotkin, one of the most influential Western anarchist philosophers of the late nineteenth century, was a geographer who devoted much of his energy to outlining the ecological basis for free communes (Purchase, 1997, p. 62). Kropotkin’s ecologically oriented anarchism inspired twentieth century manifestations including social ecology, anarcho-primitivism, bioregionalism, animal rights, and deep ecology (Hall, 2011, p. 379). Environmental scholars and activists have criticized each of these strains of ecoanarchism for a variety of reasons. For example, ecofeminist Val Plumwood rejects social ecology for its rootedness in Enlightenment humanism arguing that social ecology “maintains the traditional role of reason as the basis of human difference and identity and the chief justification of human superiority over nature” (Plumwood, 1993, p. 15). Feminist environmental philosophers often point to hierarchical taxonomic orderings of the natural world as central to the ongoing human project of dominating nature. As a philosophical project, social ecology does little to address hierarchies based on the elevation of rational human consciousness over other ways of knowing and being in the world (Plumwood, 1993, p. 44; Warren, 2000, p. 23).

Additional critiques of ecoanarchism address anarcho-primitivism. Anarcho-primitivists tend to identify civilization and the idea of progress as the root of all ecological problems; they romanticize a pre-civilized past, and call for the “re-wilding” of society (Smith, 2007, p. 472). While social ecologists like Murray Bookchin criticize anarcho-primitivists for being anti-Enlightenment, antirational, and quasi-religious, others have argued that “wildness as an exemplary principle is not focused on the construction of ecological relationships that form the bedrock of an environmental culture” (Hall, 2011, p. 382). Put differently, wildness is not a sufficient framework for understanding interconnectedness, or the self-in-relation to nature, and therefore cannot undergird effective environmental politics grounded in universal egalitarianism. Neither social ecology nor anarcho-primitivism solves the problem of uneven, nonhierarchical relationships between humans and nonhuman nature.

Natural anarchism is part of an emergent body of ecoanarchist literature that maintains the rejection of state power, the abolition of private property, and other major tenets of anarchist thought. However, natural anarchism differs from more visible ecoanarchist theory in that it moves beyond human/nature, civilization/wildness dualisms. Posited in the writings of Patricia Jones, natural anarchism takes a radically liberatory approach to understanding ecology and human relationships to nonhuman nature. Recognizing that the rearrangement of power relations simply among humans will not curb ecological crisis, natural anarchists view “plants and nonhuman animals as allies in a shared struggle for peace and freedom for everybody” (Jones, 2009, p. 236). In fact, animals and plants are model natural anarchists as they resist socially constructed governments and refuse human imposed borders through their migrations and various forms of self-governance. Flattening out the human/nonhuman hierarchy, Jones asserts that environmentalists must refuse human constructions of consciousness and purpose that inherently favor human life. Bias toward human faculties facilitates ignorance of the ways in which awareness and intention might be realized in nonhuman beings.

Similarly, disrupting the normalized human/nonhuman nature hierarchy is central to ecowomanist philosophy. Ecowomanism is a womanist approach to ecological issues or “a social change perspective based on a holistic perception of creation encompassing humans and all living organisms plus the nonliving environment and the spirit world” (Phillips, 2010, p. 8). Layli Maparyan (2010) notes that the term ecowomanism is nearly redundant because womanism always already prioritizes the natural environment: “womanist concerns with healing, justice, and other modalities of transformation apply just as much to the natural environment as they do to people and society (not to mention the self)” (p. 278). Nevertheless, the term ecowomanism highlights environmental social change praxis occurring under a womanist rubric. Natural anarchism and ecowomanism demonstrate parity in that both ecological ideologies recognize humans—in relationship to nonhuman nature—as situated within a vast ecological framework. Maparyan writes:

[H]uman beings are “part of nature.” We are not separate from the rest of creation . . . [W]e are not “a species apart” or designed to exercise dominion as domination. Our optimal state is harmony with and embeddedness within the rest of nature, that is, the ecosystem. (p. 37)

Both natural anarchism and ecowomanism challenge the notion that humans are inherently separate from and superior to nonhuman nature. Because ecological crisis is rooted in humans’ sense of dominion over nature, resisting hierarchical dualisms differentiating humans from nonhuman nature is key to curbing environmental degradation and generating a sustainable ecological framework for future generations.

The rejection of dualisms is integral to Shamara Shantu Riley’s Afrocentric

ecowomanism. Riley contends that the all-encompassing Western dualistic worldview is the cause of modern ecological destruction. With dualistic thinking humans, nonhuman nature, ideas, and spirit are categorized as different and intrinsically opposed to each other. Riley observes that womanism and ecology possess similar theoretical approaches in that both recognize all parts of an ecosystem, or matrix, as having equal value. Womanist social change considers the equality of all races, genders, and sexual preferences for a just society. Ecology claims that without each element in the ecosystem the biosphere as a whole cannot function properly for planetary well-being. Consequently, Riley asserts that womanist liberation politics are useless if people are required to live on a planet that cannot support the liberated lives of all. It is equally useless, she argues, to save the planet without disrupting oppressive social relations that marginalize people around the world. Thus, “[i]f the planet as a whole is to survive, we must all begin to see ourselves as interconnected with nonhuman nature and with one another” (Riley, 2003, p. 400). If dualistic worldviews connoting separation are the problem, placing value on the interconnectedness of all things, living and nonliving, provides at least a partial answer to ecological crisis and social oppression.

Interconnectedness

Layli Maparyan (2012) echoes Riley’s holistic perspective for understanding the inextricable interconnectedness of social and ecological oppressions. She writes

[D]isease at the physical level is assumed to be interconnected with (if not caused by) imbalance and disequilibrium at emotional, mental, and spiritual levels, and to also manifest outward socially and environmentally . . . [T]he implication here is that all social and environmental problems, as well as all individual human problems, are simply macrocosmic and microcosmic, or systemic, resonances of the same thing. (p. 54)

Natural anarchism functions from within a similar appreciation of the intersection of oppressions and the radical interconnection of all things. This is expressed in natural anarchists’ acknowledgment that all forms of oppression from sexism and speciesism to racism and environmental exploitation are symptoms of the same problem (Jones, 2009, p. 321). Patrice Jones writes

At the heart of the problem is alienation, separation, disassociation. In order to “own” a piece of land, you must first alienate yourself from it, psychologically tearing yourself out of the seamless fabric of your ecosystem in order to lay claim to part of it . . . Estrangement is both cause and consequence of the problem. We are cut off from the earth, other animals, each other, and ourselves. Those disconnections, in turn, allow us to do terrible things to the earth, other animals, each other, and ourselves. These actions increase the estrangement, and the cycle of violation and separation continues. (p. 322)

For both ecowomanists and natural anarchists actions that disrupt nondualist interconnectedness, or what Jones refers to as “the web of relationships that is the basis of all life,” are the root causes of both environmental degradation and human suffering (p. 237). Both natural anarchism and ecowomanism assert that environmentalists committed to “saving the world” must accept the inextricable, nonhierarchical connections between all that lives so that they may intercede at the source of all forms of oppression: violent separation from self, others, and the Earth.

Despite the philosophical parity outlined here, natural anarchism and ecowomanism

maintain significant differences particularly in terms of recommended action for positive social change. This divergence is characterized by ecowomanism's emphasis on spiritualized activism, or social change that is informed by spiritual or faith principles. For example, Riley (2003) contends that African cosmology offers a solution for transcending philosophical dualism and the human/nonhuman nature hierarchy responsible for environmental degradation and other various forms of social injustice. "In utilizing spiritual concepts to move beyond dualism," she writes, "precolonial African cultures, with their both/and perspectives, are useful forms of knowledge for Afrocentric ecowomanists to envision patterns toward interdependence of human and nonhuman nature" (p. 407). Riley explains that traditional West African cultures view all things as being alive on varying levels of existence. She invokes the Nyam concept, which is rooted in numerous West African languages, to illustrate the West African spiritual belief that all life possesses enduring power and energy. Accordingly, "all forms of life are deemed to possess certain rights, which cannot be violated at will" (p. 407). As such, many ecowomanists assert that Afrocentric spirituality offers a framework for humans to see the ways in which the Earth is not merely a source for human survival, but intrinsically valuable in itself. Unlike mainstream Western religions, Afrocentric world views demonstrate a pattern of living in harmony with the rest of nature, rather than seeking to disconnect from it. Elevating West African spiritual concepts socially might work to transform relationships between humans and nonhuman nature, which could also partially halt environmental exploitation and generate interconnectedness strategies for sustainability. If dominant society begins to explicitly honor and respect nonhuman nature as having intrinsic rather than instrumental value then it will no doubt become difficult to continue exploiting the Earth's natural resources. Disrupting dualisms also challenges systemic hierarchies grounded in difference and pushes eco-activists to reconcile rampant social, political, and economic inequality worldwide.

In a similar manner, Maparyan (2012) invokes womanist spiritual activism for addressing ecological crisis. According to Maparyan spiritual activism is "social or ecological transformational activity rooted in a spiritual belief system or set of spiritual practices or activities" (55). She asserts that spirituality undergirds womanism entirely, and that womanist social and ecological transformation methodology rests on a belief in the invisible, spiritual world and some active, communicative relationship with that world. For Maparyan, interconnectedness extends beyond human-nonhuman connectivity to incorporate the cosmos and cosmic realm. She notes, "womanist spiritual practices may be received passively, trained or taught interactively, developed over a course of intensive study, transmitted directly by spiritual teachers and guides, or simply made up when a womanist is so moved" (55). Thus, spirituality is not rigid or dogmatic, and spiritual activism can and does take a variety of forms.

Womanist spiritual activism may include nurturance, or the spirit of care-taking. Womanist nurturance does not imply power differentials between caretakers and those receiving care but implies a "humanizing hierarchy" that recognizes the unique knowledge, resources, or skill caretakers have to offer those who are in their care (p. 47). Maparyan asserts that because of the ways in which humans have damaged the ecosystem human efforts at repair are morally mandated; we must nurture the Earth back to health using our unique knowledge and resources. Ecowomanist spiritual activism provides a litany of practical application for ecological nurturance ranging from obtaining maximum use from the things we must consume to respecting animals and plants as sentient, volitional creatures.

While natural anarchism is not explicitly "spiritphobic" little is written about the role of spirituality in natural anarchist eco-thought and activism. Jones does note that many anarchist eco-activists—particularly feminists—embrace atheism due to an inability to reconcile the power differentials justified by what she calls "patriarchal 'faiths'" with a commitment to freedom for all (p. 332). But religion and spirituality should not be conflated as they are not interchangeable

concepts, and some ecoanarchist currents embrace a form of spirituality that might be understood as similar to womanist spirituality. For example, many anarcho-primitivists support “mystical” aspects of deep ecological consciousness and draw inspiration from Tao Te Ching, Wicca, and other sources of spirituality to inform and enact environmental praxis (Carter, 2010, p. 470). And revolutionary environmentalists “adopt spiritual outlooks and see nature as sacred” (Best and Nocella, 2006, p. 20). However, ecological anarchist currents, including natural anarchism, do not place spirituality at the center of ecological thought and activism in quite the same way womanism does. Natural anarchists highlight liberation as an undergirding principle not directly associated with any particular cosmology or spiritual framework. And while spirituality is not completely eschewed, it is not a foundational component of natural anarchist worldview.

Nonviolence

Just as spirituality informs ecowomanist activism, a commitment to liberation guides natural anarchist eco-activism. For natural anarchists nondualist relationality extends beyond the human. Therefore, liberation is not hyper-individual isolation or separation, but connection with each other and with nonhuman nature. Importantly, liberation does not mean freedom from all forms of constraint, but freedom from unjust or unnatural restraint. From this perspective, liberation should never be sought through violent means, and restraint may at times be in order to prevent or halt violent action. This notion of liberation influences natural anarchism’s nonviolent ideological underpinnings. Liberation is understood to be the restoration of relationships, and violence does nothing but further sever connectivity.

Jones defines violence as some violation by means of actual or threatened physical force. Thus, violence requires the existence and use of both violation and force. Natural anarchists do not overwhelmingly dismiss force as a component of eco-activist strategy and cite that “force is necessary when material problems require a physical solution that will not otherwise be forthcoming” (Jones, 2009, p. 325). For natural anarchists forceful eco-activism might take the form of elephants uprooting a field of genetically modified crops or baboons trashing the newly built homes that displaced their families (p. 239). Force might be humans breaking into science labs to rescue rabbits from those who would exploit them (p. 328). According to Jones, force must be properly contextualized in order for it to be warranted. Eco-anarchist strategies that are construed as violent in the mainstream media are often framed as forceful but not violent by ecoanarchists themselves. Jones applies this need for contextualization to the question of property damage, and contends that in order to define property damage as violence we must ask “[w]hat objects will be damaged? For what purpose? Using what kind of force? Will any living being be injured in any way?” (p. 324). Natural anarchist ideology mostly does not recognize property destruction itself as a form of violence. Jones continues:

If the only potential “injury” is to “property rights,” then I would argue that the act is not violent. Property rights are suspect within a worldview that holds that neither land nor animals are object to be owned. In many instances, property rights are themselves violence or, at minimum, the result of past violence. The creation of “property” generally involves a process wherein land or animals are forcibly enclosed or wherein people or animals are alienated from the products of their labor. These are inherently violent processes, since they involve actual or threatened use of force to cause injury. Moreover, continuing violence is often needed to maintain property. From electrified fences around lakes to armed guards at grocery stores, the violence implicit in property is hidden in plain view every day. [original emphasis] (Jones, 2009, p. 324-325)

Many natural anarchists justify force in the context of escalating environmental degradation, but violence in the sense of harm to other persons including nonhuman persons must always be avoided. Jones asserts that upsetting oppositional dualisms, working in the community, and building stronger relationships between humans and nonhuman nature will assist natural anarchists in understanding the difference between force and violence. Grounding eco-activism in a form of liberation that is relational and interconnected is crucial for maintaining nonviolent praxis for positive ecological and social change.

Ecowomanist philosophy is inherently nonviolent. Ecowomanists (and womanists more generally) believe that everyone and everything in the material and spiritual world is connected: “Each individual being is interrelated with all that exists on multiple levels and in multiple ways, ranging from economics and ecology to language, social systems, and energy” (Keating, 2013, p. 11). Thus, because violence exists in the world it must therefore live within all people and not just those who act violently. Maparyan (2012) explains, “all violent action begins with a violent thoughtform fueled by a violent emotion, brought into material expression through an identifiable set of contextually facilitative factors” or circumstances. It is the responsibility of all to intervene into the circumstances that foster violent thoughtforms. Ecowomanists seek to “change hearts and minds” anywhere and everywhere, and halt violence “through love-based technologies of social transformation” (p. 193). For both ecowomanists and natural anarchists violence obstructs overarching goals toward love-based communities on one hand and universal liberation on the other. Each philosophy contends that violence is counterproductive, intrinsically wrong, and should never inform environmental strategy.

To recapitulate, ecowomanism highlights a specifically nonviolent spiritual activism, and natural anarchism purports a form of liberation to be achieved through nonviolent means. Importantly, liberation defined according to a natural anarchism rubric is not rooted in anthropocentric frameworks, and it is not limited to humans. Additionally, and in contrast to libertarian anarchism, natural anarchism does not understand liberation as freedom from others. Jones posits that liberation is connection, and “true freedom can only be found in the context of healthy relationships with each other and our enveloping ecosystems” (Jones, 2009, p. 244). Furthermore, natural anarchism does not purport that humans have the superior ability to liberate nature or even the duty to do so. Nor does natural anarchism conceptualize nonhuman nature as being powerless or nonagential. On the contrary, natural anarchist ideology proposes that humans have much to learn about liberation from nonhuman nature in general and animals and plants in particular.

Respect for Nonhuman Animals

In terms of resisting coercive power, animals and plants are themselves natural anarchists. patrice jones notes that, to our knowledge, nonhuman nature does not require the signing of treaties in order to organize itself into complex communities. Nonhuman animals do not draft constitutions to assure one another of their cooperation in complex collective activities. Flying over arbitrary socially constructed borders

birds and other “outlaws” routinely disregard the authorities and boundaries established by [human] people while working cooperatively with one another to pursue their own purpose in the context of human exploitation and expropriation . . . [“S]uperweeds” creep through fields of genetically modified crops, evolving to thwart each new herbicide in turn . . . If [anarchists] want to bring [their] dreams of pacific anarchism to fruition, [they] need to study anarchism in practice. That means learning from [nonhuman] animals . . . (jones, 2009, p. 236)

Jones affirms that humans have been learning from nonhuman nature since the beginning of time. We have drawn inspiration for plumbing from trees and construction techniques from termites (p. 242). If humans continue to observe the behavior of bees, for example, we may get a practical lesson in the intricacies of non-hierarchical decision-making taking place in bee hives.

According to natural anarchists, humans should not only observe and listen to nonhuman nature in order to conceive alternatives to centralized governments—we have an ethical obligation to consult other species as we work to make another more just world possible. Jones argues that in failing to consult land and nonhuman animals about decisions affecting them natural anarchists reproduce the dualist, hierarchical relations they seek to refute. Plans for more sustainable futures must account for the interests of nonhuman nature. Human natural anarchists can begin to consider nonhuman needs by inviting animal advocates to their planning meetings, and by closely observing what other species as well as the land may be saying through their behavior.

Respect for nonhuman animals is similarly integral to ecowomanist spiritual activism. Many ecowomanists maintain vegan diets and cruelty-free consumption lifestyles as an expression of conscious harmlessness. Conscious harmlessness is a major tenet of ecowomanist healing praxis. Closely aligned with ahimsa, conscious harmlessness is a spiritualized notion of nonviolence and respect for all life (Phillips, 2010). Informed by ahimsa, ecowomanist veganism is the refusal to consume animal-based food and products. Some ecowomanist vegans (as well as vegans more generally) choose not to consume animal products, animal bi-products, and products tested on animals due to the belief that animals have intrinsic value and rights. Some vegans refrain from eating meat and dairy for reasons of health. Others link their practice to philosophical or spiritual beliefs. Finally, many practicing vegans cite political and economic considerations undergirding their lifestyles; they are concerned with issues like factory farming, the destruction of rain forests, global warming, the diversion of natural resources away from indigenous lands and people, hyper-consumption, and worker exploitation. These varying rationales are overlapping and may simultaneously inform an individual's decisions to try veganism. Under the rubric of ecowomanism, veganism—and love and respect for nonhuman animals more generally—“supports both physical and spiritual well-being at both collective and individual levels” (Phillips, 2010, p. 8). Ecowomanist veganism is conceptualized and embraced as a spiritual and ecological positive social change modality rooted in love.

Conclusion: Coalition-Based Ecological Praxis

Mentioned only in passing, Patricia Jones states that natural anarchists “ought to be vegan,” and asserts that many eco-anarchists practice veganism (Jones, 2009, p. 243). Indeed, veganism penetrates the false boundaries distinguishing womanist and anarchist philosophical world views from one another as does their shared nondualist ideology, dedication to interconnectedness, and commitment to nonviolent environmental praxis. Importantly, I do not contend that natural anarchism and ecowomanism are the same idea. Nor do I argue that natural anarchists are unwitting ecowomanists or vice versa. However, I do believe that conceiving ecological thought and action through Rosi Braidotti's theory of nomadic politics allows us to make necessary linkages to recognize parity between these two seemingly disparate praxes. Braidotti (2006) asserts that “[g]iven the complexity and paradoxes of our times, there cannot be only one political frontline or precise strategy [for change]. Multiple positions are needed instead” (p. 134). Furthermore, “conceptual and ethical creativity” are key to “producing dynamic transversal interaction or movement among heterogeneous and diverse sites and strategies” (p. 134). Acknowledging the ways in which natural anarchism and ecowomanism overlap in terms of nondualism, interconnectedness, nonviolence, and respect for nonhuman animals pushes activists

involved in myriad social justice causes to creatively craft new ways of thinking about the environment, about coalition, and about political eco-activism. Applying nomadic politics to ecological issues assists natural anarchism and ecowomanism in existing relationally despite contradiction and encourages activists possessing divergent worldviews to connect with one another and nonhuman nature as we zigzag toward more sustainable futures. Natural anarchism's emphasis on nonhierarchical liberatory self-governance, and ecowomanism's love-based spiritual activism intermingle to converge within nomadic politics. This convergence serves as both bridge and threshold toward crafting coalition-based praxis among eco-activists eagerly generating nuanced understandings and mixed practical strategies for remedying ecological crisis. Let us cross this bridge and hover in this threshold to co-create planetary sustainability mechanisms nurturing generations to come.

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Marx and the Relationship between the Exploitation of Labor and the Degradation of the Environment

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Abstract: With the fall of 20th century communism and the troubles facing liberal democracy in Europe, a reevaluation of Marxist theory may be relevant to our present predicament in politics and the pending ecological crisis. My analysis is primarily concerned with the alienation induced upon the laboring classes under capitalist development. My argument posits that Marx foresaw that alienation would result in not just the alienation of man from man but of man from himself and Nature as well. This trifecta of alienation, I argue, results in the temporal disconnect between humans and Nature, which eventually culminates in the upset of the symbiotic relationship shared between society and the environment.

Capitalism has been at the core of modern development since the late 1700's when Adam Smith first published *The Wealth of Nations*. Over the course of time there have been several theorists willing to critique its workings but none more specifically than Karl Marx. However his insights seem irrelevant to current economic issues because Marxist theory has been thrown to the dustbin of history due to the fall of the Soviet Union and other communist communities around the globe. This paper is an attempt to help resurrect Marx and will argue that as capitalism has sought to perpetually expand, it has done so on the ill-founded basis that resources are infinite. The current ecological crisis has brought with it a need to reevaluate the current economic system. This paper attempts to validate the relevance of Marx to this problem through an examination of his understanding of the symbiotic relationship between labor and the environment. Marxist theory demonstrates that as labor is commoditized, the environment becomes ever more degraded through perpetual materialist consumption and the alienation of the laborer. Only when the means of production are returned in full to the working class and the fruits of their labor become their own will equilibrium in the relationship be reached.

The culmination of capitalism through the full integration of the world economy has resulted in the austerity packages passed by many nation states. This end state of full integration has made labor evermore subservient to capital, which in turn has resulted in the further deterioration of the world environment. Today, Marx is being validated through his understanding of this symbiotic relationship between the laborer and the environment. This newfound validity of Marx, I argue will propel us to retrofit our current economic system based on environmental sustainability through the re-empowering of the working class by reclaiming the means of production and the products they produce, realizing Marx's idea of "From each according to his ability, to each according to his need" (Marx, 1994, p. 321). This I argue is the foundation of Marxist ideals, combining the species-character of man, which is free conscious life activity with enduring sustainability for current and future generations.

Before examining the explicit correlation between the commoditization of labor and environmental degradation, the end goal of Marxism must be examined. That goal is the free conscious life activity and the ability of individuals to self-actualize, intellectually and socially,

which leads to the betterment of society as a whole. This free conscious life activity for Marx demonstrates that freedom is the basis of all human expression. When it is freely picked, it is what animates all aspects of human nature. Marx displays this clearly when he says:

For labor, life activity, and the productive life appear to man at first only as a means to satisfy a need, the need to maintain physical existence. Productive life, however, is species life. It is life-begetting life. In the mode of life activity lies the entire character of a species, its species character; and free conscious activity is the species character of man. (Marx, 1994, p. 63)

This is Marx's constitution. It is this free choice that animates man and is the one determining factor in man's existence that differentiates his species-character from that of animals. This free choice is what leads to our ultimate realization of our purpose in life, our personal identity, development, and environmental consciousness.

This process enters into every aspect of life for Marx, he says, "By degrading free spontaneous activity to the level of a means, alienated labor makes the species-life of a man a means of his physical existence" (Marx, 1994, p. 63). Marx makes it clear, if our free conscious life activity is taken away and the production of our works made alien to us, then we lose our connection with our species-existence. Instead of retaining our human essence we turn to an animalistic function, one that is determined by physical need, which neglects our intellectual and social development. As this animalist nature predominates we lose our connection with the rest of humanity and thus the very essence of our initial animation as humans. In the end, our free choice, which is the basis of all conscious life activity, is not only our connection with ourselves or with other humans but with Nature as well. Once this is lost, man becomes alienated from all aspects of his life, and the human condition begins to deteriorate. Thus freedom is man's creative self-actualization; it is this uncoerced way of living life that leads to the realization of man's actual freedom, the determination of his life-activity leading him towards his ultimate development. This is Marx's most astute claim, without this creative freedom, man cannot live to fulfill his purpose and thus becomes alienated from all aspects of life, eventually destroying what is most vital to our existence, our personal identity and what leads to its definition, our environment.

Marx's labor theory value and that of John Locke's are roughly similar. Where the difference becomes apparent is in the treatment of Nature. Locke, saw Nature's bounty as a gift from God and determined that it was infinite and therefore its existence was there for the pillage by man. In Locke's *Second Treatise of Government* he presents his definition of private property. Locke states:

Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this no body has any right to but himself. The labor of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labor with, and joined to it something that is his own, and thereby makes it his property. It being removed from the common state nature hath placed it in, it hath by his labor something annexed to it, that excludes the common right of other men: for his labor being the unquestionable property of the laborer, no man but he can have a right to what that is once to, at least where there is enough, and as good, left in common for others. (Locke, 1980, p. 19)

As Locke (1980) points out clearly, a man who imbues his labor into Nature has turned it into his

own property (p. 20). This is not all that different from Marx, but Locke, unlike Marx believed that Nature was subservient to man. “God, who hath given the world to men in common, hath also given them reason to make use of it to the best advantage of life and convenience. The earth, and all that is therein, is given to men for the support and comfort of their being.” (Locke, 1980, p. 18). Clearly, Locke did not intend to grant Nature intrinsic value. According to Locke, Nature is only instrumental to man and deserves no other consideration. This valuation by Locke has defined the character of capitalism. Capital accumulation, being the end goal, has legitimated a system where economics becomes paramount to the environment, when in actuality economics must live within the environmental system.

By contrast Marx viewed the relationship between man and Nature as one of reciprocity, although use-value is attributed by the amount of productive labor imbued within a natural asset, Marx understood that Nature was intrinsic in its value to man because without Nature there is no life and no definition to man.

But coats and linen, like every other element of material wealth that is not the spontaneous produce of nature, must invariably owe their existence to a special productive act materials to particular human wants. So far therefore as labor is creator of use-value, is useful labor, it is a necessary condition, independent of all forms of society, for the existence of the human race; it is an eternal nature-imposed necessity, without which there can be no material exchanges between man and nature, and therefor no life. (Marx, 2007, pp. 9-10)

As Marx clearly demonstrates through this passage the difference between his labor theory of value and the one proposed by Locke is his intrinsic valuation of Nature. Man cannot live outside of Nature; he is in fact defined by it. Thus economics, as defined by Marx, can never be larger than Nature itself. This stark contrast between both theories, the belief that Nature itself is intrinsically valuable even without human labor infused within it, grants legitimacy to Marx in the sustainable context and clearly identifies Nature as a self-reliant system creating its own use-values:

The use-values, coat, linen, etc, the bodies of commodities are combinations of two elements – matter and labor. If we take away the useful labor expended upon them, a material substratum is always left, which is furnished by Nature without the help of man. The latter can only work as Nature does, that is by changing the form of matter. Nay more, in this work of changing the form he is constantly helped by natural forces. We see, then, that labor is not the only source of material wealth. (Marx, 2007, p. 10)

According to Marx the regenerative capacities of labor and Nature are one and the same. Nature has value in and of itself, which is separate from its use-value to humans created by labor. For the symbiotic relationship between man and Nature to assume its greatest meaning, the general means of subsistence must be afforded to all while remaining in equilibrium with Nature. The means of subsistence, according to Marx:

Must therefore be sufficient to maintain him in his normal state as a laboring individual. His natural wants, such as food, clothing, fuel, and housing, vary according to the climatic and other physical conditions of his country. On the other hand, the number and extent of his so-called necessary wants, as also the modes of satisfying them are themselves the product of historical development, and depend therefore to a great extent

on the degree of civilization of a country, more particularly on the conditions under which, and consequently on the habits and degree of comfort in which, the class of free laborers has been formed...This increased expenditure demands a larger income. If the labor- power works today, tomorrow he must again be able to repeat the same process in the same conditions as regards to health and strength. (Marx, 2007, pp. 139-40)

This to Marx is vital, as soon as the laborer is not afforded his means of subsistence the human condition begins to deteriorate. As the condition of humanity begins to deteriorate, self-actualization of the individuals is reduced and man no longer represents his species-character. The laboring process of capitalism continually commodifies the labor of man until it effectively undercuts the means of subsistence. Man thus becomes a slave to industry and loses what at first gives him his definition, free conscious life activity.

Marx furthers his argument, which again grants Nature intrinsic value and renders capitalism the agent of alienation of man. In the first passage of *Critique of the Gotha Program* Marx makes evident that labor itself is not the source of all wealth. And for anyone to claim Nature as his own effectively annuls the species character of humans.

Labor is not the source of all wealth. Nature is just as much the source of use-values (and it is surely of such that material wealth consists!) as labor, which itself is only the manifestation of a force of nature, human labor power. The above phrase is to be found in all children's primers and is correct insofar as it is implied that labor is performed with the pertinent objects and instruments. But a socialist programme cannot allow such bourgeois phrases to pass over in silence the conditions that alone give them meaning. And insofar as man from the outset behaves towards nature, the primary source of all instruments and objects of labor, as an owner, treats her as belonging to him, his labor becomes the source of use values, therefore also of wealth. The bourgeois have very good grounds for ascribing supernatural creative power to labor; since precisely from the fact that labor is determined by nature, it follows that the man who possesses no other property than his labor power must, in all conditions of society and culture, be the slave of other men who have made themselves the owners of the material conditions of labor. He can only work with their permission, hence live only with their permission. (Marx, 1994, p. 316)

As Marx persistently demonstrates in the passages above, the difference between his labor theory of value and the one conceptualized by the capitalist and defined by Locke, is that Nature by his account is valuable in and of itself, that even without the labor of man Nature is intrinsically valuable. This form of valuation by Marx makes his thesis relevant when considering the impending environmental crisis and how to reorient our economics to value Nature intrinsically and to associate costs with its destruction. The current modes of capitalist production have always given Nature instrumental value, when in actuality it has always been equally important in the valuation of production. Without Nature man has no definition. Marx makes this explicit, that a relationship between man and Nature must always be held in equilibrium, and if it is not, it becomes unsustainable and results in degradation of the laborer and Nature. The relationship links labor and Nature as one, the exhaustion of the former leads to the collapse of the latter. This definition annuls the premise of the relationship between capitalist and laborer, because labor being an extension of Nature cannot be owned by anyone else other than the laborer himself. The laborer then selling himself to a capitalist for a wage becomes a slave of the bourgeois and forfeits his species-character of free conscious life activity resulting in his complete alienation.

Labor, is a process where both man and Nature participate. Marx makes this evident in *Das Kapital*. As Marx describes the relation of Nature to man, he makes clear that man does not live outside of Nature. Nature is what gives man his definition, it is not as the Bible describes, there for the exploitation of man but rather there to work in concert with man. Marx states: "Thus Nature becomes one of the organs of his activity, one that he annexes to his own bodily organs, adding stature to himself in spite of the Bible" (Marx, 2007, p. 145). This further demonstrates that the foundation of the relationship between man and Nature are inextricably linked, and only exist because of one another. Marx goes on continually refining the relationship that man and Nature share in *Alienated Labor*:

The universality of man appears in practice in the universality, which makes the whole of nature his inorganic body: (1) as a direct means of life, and (2) as the matter, object, and instrument of his life activity. Nature is the inorganic body of man, that is, nature insofar as it is not the human body. Man lives by nature. This means that nature is his body with which he must remain in perpetual process in order not to die. That the physical and spiritual life of man is tied up with nature is another way of saying that nature is linked to itself, for man is a part of nature. (Marx, 1994, p. 63)

In direct opposition of what Locke states in his labor theory of value, man, being part of Nature, must live within it, not outside of it. Capitalism at its core is not defined by the bounds of Nature but rather the continual exploitation of laborers for the sake of perpetual capital accumulation and material consumption. Thus the exploitation of laborers is also directly the exploitation of Nature as Marx demonstrates, because man is part of Nature.

More tellingly Marx takes the modern example of industry and agriculture and demonstrates their destructive effects on both the laborer and Nature:

In agriculture as in manufacture, the transformation of production under the sway of capital, means, at the same time, the martyrdom of the producer; the instrument of labor becomes the means of enslaving, exploiting and impoverishing the laborer; the social combination and organization of labor-processes is turned into an organized mode of crushing out the workman's individual vitality, freedom and independence... In modern agriculture, as in the urban industries, the increased productiveness and quantity of the labor set in motion are bought at the cost of laying waste and consuming disease labor-power itself. Moreover, all progress in capitalistic agriculture is a process in the art, not only of robbing the laborer, but of robbing the soil; all progress in increasing the fertility of the soil for a given time, is a progress towards the ruining the lasting sources of that fertility. The more a country starts its development on the foundation of modern industry, like the United States, for example, the more rapid its destruction. Capitalist production, therefore develops technology, and the combining together of various processes into the social whole, only by sapping the original sources of all wealth – the soil and the laborer. (Marx, 2007, p. 254)

The real question of Marx's critique is not whether man and Nature are intertwined but rather how capitalism takes the original relationship between man and Nature, and transforms it from a sustainable relationship to one of exploitation. Capitalism according to Marx subjugates the labor of man and deadens his initial perceptions of his relations with Nature, construing a laborer who is rather defined by material consumption instead of free conscious life activity. Once that relationship is lost, alienated from man and converted into a process of profit seeking

by a capitalist individual with the only motivation of accruing more profits, then sustainability of the entire system is lost, and man becomes completely alienated from his initial species-character. He is no longer a free conscious being but rather a slave of industry that perpetuates the alienation of man from Nature through the increase in material consumption. This relationship, caused by the monopolization of the means of production by a few capitalist individuals resembles a veil drawn over the eyes of laborers. This veil obstructs the laborers from viewing their relationship with Nature and effectively annuls their perceptions of sustainability.

For capitalism to function properly and effectively alienate man from his species-character, capitalists must swindle capital from the laborers production and wages and reinvest that capital in more natural resources and laborers. There are two types of capital according to Marx, variable capital and constant capital. Variable capital is the capital represented by labor, and because labor reproduces its equivalent and a surplus it becomes variable in nature, the surplus being the capitalist's profits. Constant capital, on the other hand, is represented by raw materials, instruments of labor and auxiliary material and this the capitalist cannot produce profits from because they are mere investments into the labor process (Marx, 2007, p. 166). The combination of both variable and constant capital results in 100 percent of total capital invested. The goal of the capitalist is to accrue the greatest amount of surplus-value, surplus-value is the profit amount made by the capitalist per laborer employed. By doing so the capitalist can redirect this surplus-value into more laborers, which creates more surplus-value meaning more investment in constant capital, purchasing more resources for the creation of more commodities.

There exists an inverse relationship between variable and constant capital. As labor becomes commodified, which results in the reduction of wages and variable capital a greater amount can be dedicated to constant capital. As a greater percentage of the total investment is dedicated to constant capital an increase in resource consumption can be observed. Thus as wages fall and an increase in surplus-value is realized, that surplus-value is reinvested into more resources for the creation of more commodities. Thus this inverse relationship between variable and constant capital results in the commodification of the labor and the degradation of the environment. As Marx (1994) mentions previously "Man lives by nature. This means that nature is his body with which he must remain in perpetual process in order not to die" (p. 63). Nature being finite, this inverse relationship caused by a constant need for greater capital accumulation creates a contradiction in the capitalist system and points to the pending ecological crisis.

The pending ecological crisis can thus be seen through the theory of Marx. Marx's relevance to the current state of affairs is prominent. Marx foresees that as labor, which this paper has argued to have a symbiotic relationship with Nature, becomes commodified and alienated from each individual laborer the means of production begins to live outside of the natural world. Since man is part of Nature and in order to survive must live in equilibrium with Nature, then in essence capitalism and its inefficient valuation of Nature is effectively leading humankind to commit ecological suicide.

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STEM, Meet Ecojustice

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Abstract: In this article, I theorize a meeting between mainstream STEM education and ecojustice education. By considering their main points, I elaborate on how the STEM discourse dangerously contributes to the ecological crisis by conflating science with technology and a resulting myth of progress. I argue for an ecojustice STEM that embraces E.F. Schumacher's "technology with a human face," redefines the role of mathematics, especially as it contributes to human spirituality, and subordinates science to the needs of the biotic community.

Today, the pervasive STEM education lurks in all corners, growing like a cancer throughout all conversations and practices of education across the globe. For the improbably uninitiated, the STEM acronym merges content from among the sciences, technology, engineering and mathematics into one set of urgent educational imperatives. Typically, talk about STEM education relates to matters of economic competitiveness in the global market. As such, it would be easy to prove that STEM education receives the most attention, most money and most concern from policy-makers and parents. This paper embraces the cancer that is STEM education, letting its discourse enter our conversations on how education can address the social and ecological crises. STEM as a discourse provides a set of curricular objectives that is easily matched to the causes of said crises. On the other hand, in what ways can these objectives, albeit in some instances modified, line up with education that disrupts cultural patterns of domination? In what follows, I will argue the ways that this is so. The current fury over STEM education demands such a counter-impetus.

The necessity for a STEM counter-narrative comes with, for example, the urgency felt and expressed by parents over the issue. In my own browsing of parenting websites, I have come across the occasional thread about how to support their child's learning of STEM through "STEM activities" at home. A study sponsored by none other than Microsoft provides more thorough descriptions of this parental concern. Harris Interactive's "STEM Perceptions: Student and Parent Study," financed by Bill Gates' company, reports that 93% of parents of K-12 children believe STEM education should be made a priority. 53% of parents believe this so that the "U.S. remains competitive in the global marketplace" and a full 24% of parents would be "extremely willing to spend extra money helping their children to be successful in their math and science classes" (<http://www.microsoft.com/en-us/news/>). To be sure, the data collection and methods for analysis should be heavily scrutinized in this study, given that Microsoft has a vested interest in promoting the funding for, and other policy initiatives for improving, STEM education. That said, the study does suggest a distinct possibility that STEM education is an issue most parents are aware of, along with its ties to economic competitiveness and job opportunities for their children.

This concern over STEM education comes at a time when adults, both parents and non-parents, are also increasingly concerned over issues related to the ecological crisis. In 2006, Al Gore's *Inconvenient Truth* catapulted the issues of climate change onto media's main-stage. Recent surveys indicate rising concerns over such issues. For example, a 2012 report released by

the Yale Project on Climate Change indicates that "Americans' belief in the reality of global warming has increased by 13 percentage points over the past two and a half years, from 57 percent in January 2010 to 70 percent in September 2012" (Lieserowitz et. al, 2012, p. 3). Because the public concerns over STEM education coincide with an equivalent concern over climate change, I am suggesting we consider how the two might relate to each other, or even be one and the same.

Two additional findings from the Yale Project on Climate Change suggest this possibility. The first is that "Americans increasingly perceive global warming as a threat to themselves (42%, up 13 points since March 2012), their families (46%, up 13 points), and/or people in their communities (48%, up 14 percentage points)" (p. 3). The STEM concern focuses on parents' worry over the well-being of their children, as suggested by the Microsoft study. This is also the case here, with 46% of Americans believing that global warming will endanger their families. When envisioning their children as adults, parents are expecting it difficult for them to both find jobs and survive the polluted earth. In a sense, adults are more readily envisioning a grim future for future generations.

The second relevant point from the study centers on a belief in science and scientists as the solution to environmental destruction. "Three out of four Americans (76%) say they trust climate scientists as a source of information about global warming, making them the most trusted source asked about in the survey. Scientists (who do not specialize in climate) are also trusted by a majority of Americans (67%)." The authors of the study use this finding to suggest how public opinion regarding climate change scientists is shifting. That is, much attention in the media has been given to those who think climate change scientists falsify data to support their claims, and that climate change, as a machination, should not be trusted. The study suggests that this is less and less the case; adults are believing in the process of science and, I argue, are considering how science can address the impending doom that more and more are expecting we will face.

In other words, while it is true that STEM education is framed and almost always talked about with respect to the economy, it is also possible that the public sympathizes so readily with the STEM craze because it somehow might address the ecological crisis. Theories about educational philosophy and the ecological crisis, as put forth by C. A. Bowers (1993) and Rebecca Martucewicz, Jeff Edmundson and John Lupinacci (2011), have much to say about the role of science and other STEM fields in the causes of the ecological crisis, rather than the solutions. I will return to this point later, but for now my point is that the STEM education craze is possibly related to concerns over the ecological crisis. Thus, the following opportunity exists. We can accept the STEM discourse for the possibility that it can address the public perception of ecological crisis. Next, we can appropriate the discourse first by validating it: we can delineate the ways that STEM can address the ecological crisis. However, this must occur simultaneously with knocking STEM down from its pedestal. We must also articulate the roles that science, technology, engineering and mathematics have played in the ecological crisis, and make trouble for the discourse itself, especially as it conflates science with technology in the mythological notion of progress.

Now that I have outlined the motivation for this paper, I will more abruptly juxtapose the framework of mainstream STEM education with the theorizing from ecojustice education. By considering their main points, I will next elaborate on how the STEM discourse dangerously contributes to the ecological crisis by conflating science with technology and a resulting myth of progress. In contrast, I review Schumacher's notion of "technology with a human face" and argue for its place in the STEM counter-narrative, what I call an ecojustice STEM. Finally, I provide examples of how we can re-appropriate the STEM discourse within institutions, especially in K-12 STEM education and STEM teacher education.

Mainstream Stem Education

As I introduced earlier, mainstream STEM education is consistently tied to issues of market economics. Most writings on STEM education begin with a clear articulation of said motivations. A good example of this is the popular book for educators: *STEM the tide: Reforming Science, Technology, Engineering and Math Education in America* by David Drew. The first chapter opens with the following quote from Bill Gates: “When I compare our high schools to what I see when I’m traveling abroad, I am terrified for our workforce of tomorrow” (Drew, 2011, p. 1). First, there is the quote’s source. Bill Gates, as the founder and CEO of the world’s largest Information and Communications Technology corporation, is speaking directly to the workforce related to STEM fields. Second, the quote positions all workers in the global marketplace, thereby indicating STEM’s urgent connection to US economic survival. This is the fear that fuels STEM, a fear that, in part, motivates the parents as indicated in the study from this paper’s introduction.

Drew elaborates and further confirms the framework for STEM in his opening statements. First, “Science, technology, engineering, and mathematics (STEM) education is vital preparation for today’s high-tech information economy. Unfortunately, American students lag their counterparts in most other countries in achievement” (Drew, 2011, p. 1). As with the Gates quote, the fear is presented as an American one, with future adults out-competed by better-STEM-prepared future adults from other countries. The logic behind these concerns fails to consider the ways that corporations, by breaking down legislative blocks for hiring practices, have contributed to such global competition. In other words, it is easy to argue how motivating the American public through fear of economic collapse and joblessness further contributes to the profits of global corporations. Indeed, Drew’s writings confirm these considerations:

The United States (and, indeed, much of the world) is reeling from a severe economic crisis. Most adults define themselves in great part by their work, and suddenly, the form and demands of that work have changed. Simultaneously, Americans have become increasingly concerned about the dire state of education. American high school students consistently rank at or near the bottom in international assessment of educational achievement. With fewer qualified workers domestically, US businesses are hiring more scientists, engineers, and other skilled workers from foreign countries.

The last 20 years have seen a dazzling array of innovations in technology, communications, financial products, and corporate structures, including the Internet, corporate outsourcing to remote locations throughout the world, and open source software platforms. But these innovations pose challenges to the status quo of an older, shrinking industrial economy (Drew, 2001, p. 1).

Further commitments to corporate globalization are expressed in the passage, as well as suggestions that work itself is changing. In listing types of work, Drew prioritizes the financial and information and communications technology industries. This is an important aspect of STEM education, one which I suspect is not conveyed to or understood by the public as well as the crisis itself. For example, should the public be expected to accept the STEM education crisis alongside a faith in the financial industry, given the skepticism resulting from recent crises and taxpayer bailouts?

However, Drew’s framing of the STEM education crisis indicates commitment to such industries. This is largely the case because portrayal of the STEM crisis is created and financed by those corporations with a vested interest in such a STEM education. Tracing back the STEM

crisis to those that support it with real and large dollar amounts indicates these motivations. For example, the STEM Education Coalition brings together educational organizations like the National Science Teachers Association (NSTA) and the National Council of Teachers of Mathematics (NCTM) with corporations Microsoft, Battelle and Time Warner Cable (www.stemedcoalition.org/membership). In particular, the coalition uses its resources to enact legislation in the US Congress that supports STEM education. Examples of federal support of STEM education are easy to locate. One example are the National Science Foundation's (NSF) Robert Noyce Teacher Scholarship Program (www.nsf.gov/funding/pgm_summ.jsp?pims_id=5733). As an organization wholly financed by the federal budget, in this program NSF grants scholarships to future teachers in STEM fields. We are hard-pressed to find equally well-funded federal programs funding for future teachers in non-STEM fields, including high needs staffing areas like special education.

This review of mainstream STEM education indicates its commitment to global industries and multi-national corporations, including the information and communication technology and financial industries. I have suggested that mainstream STEM education glosses over these commitments, where the public typically hear threats of an “ever-changing technology and industry” and jobless futures. I have also highlighted the extent to which the networking of advocacy groups has resulted in both federal funding for STEM education. Taken together, the vague motivations of STEM and these successes opens up opportunity for those who criticize global corporations and seek change. In other words, STEM is at the forefront of education and the place where resources are provided, so how can we use this to our advantage? I now turn to a review of educational philosophies that address the social and ecological crises.

Ecojustice Education

As with my previous review of mainstream STEM education, this review of theorizing on education that addresses the ecological and social crises, also known as ecojustice education, will highlight those specifics that contribute to the meeting of STEM and ecojustice. As I make my way through these considerations, I will begin to sketch an alternative STEM education that embraces the ecojustice perspective. I begin the review by drawing on the relevant ideas of C.A. Bowers especially because he devotes direct attention to science and technology.

Bowers (1993) articulates the lack of attention to matters of the ecological crisis among all major paradigms for education. These include “conservative advocates of social reform” such as E.D. Hirsch and William J. Bennett (p. 35), the liberal “technocrats” emphasis on “competency-based teaching” (p. 74), and the emancipatory liberals who address the “social divisions and inequities” present in modern times (p. 89). Bowers argues that all paradigms fail to address the root cultural problems that contribute to both the social ills that the emancipatory liberals aim to address as well as the ecological crisis that all paradigms explicitly fail to address. The cultural basis for both the social and environmental crises are one and the same, and generally relate to notions of hierarchy, domination and subordination.

Writing on Bowers’ cultural basis of the ecological crisis, Martusewicz, Edmundson and Lupinacci (2011) list several “discourses” that emerge from Western modernist cultures’ “set of hierarchized dualisms” (p. 66). These are individualism, mechanism, progress, rationalism/scientism, commodification, consumerism, anthropocentrism, androcentrism and ethnocentrism (pp. 66-67). All of these can be argued for their relevance to STEM education, and I will elaborate on a few of these in what follows. Individualism “is the assumption that humans are autonomous agents, who are at their best when independent from community and culture, and who are naturally predisposed to the accumulation of goods and materials to satisfy their own needs and wants” (p. 71). Mainstream STEM education, with its commitments to corporate profit as outlined above, supports this discourse because the basis of competition is self-interest.

Instead, the ecojustice STEM would encourage individual decision making that includes impacts on the social community and environment. Note that this type of thinking is based in cultural practices and would not counter scientific or mathematical principles. In other words, such a STEM education would not be un-scientific.

On the other hand, mechanism, or the assertion that “the world and everything in it functions like a machine” (p. 68) is a metaphor that is a bit more entangled with the course of science since the Enlightenment. A major project in science has been the use of this metaphor for explaining causal effects and thick descriptions of the ways things seem to work. It is hard to argue that the use of this metaphor, leading to things like the discovery of antibiotics, is entirely problematic. It also happens to be an essential feature of science. Outright rejection of the mechanistic metaphor in the ecojustice STEM would collapse the educational project by eliminating science. However, the over-use of the metaphor of mechanism, especially by asserting that the world is knowable and describable in these terms, and that every machine functions on its own and separate from others, is the problem. As Martusewicz, Edmundson and Lupinacci (2011) point out, scientists have begun to move outside the metaphor in this way: “Some Western scientists, particularly quantum physicists and ecologists, have stepped outside the limitations of mechanism by emphasizing the interconnections and interdependence of physical and living systems” (p. 69). The ecojustice STEM will realize the uses and limits of mechanism; whenever a scientific description uses the mechanistic metaphor as a means for explaining, the descriptions will be integrated with other, related descriptions.

Mechanism’s issues, particularly its attempts at explaining everything, relates directly to another metaphor, anthropocentrism. Here, humans are “at the center” (p. 74) and, coupled with mechanism, the scientific program asserts that humans can describe and explain all things. More importantly, however, anthropocentrism addresses the consistent quest for human domination over nature. Scientific explanation and description are in the service of domination over nature, or perhaps even stewardship, a notion of human care over nature that still reflects the hierarchized dualism human-nature (p. 74). As with individualism, it would not be un-scientific to reject anthropocentrism. Using science to minimize human impact on the rest of the world would reflect a cultural shift rather than a shift in the scientific process.

Interestingly, modifying the discourse of scientism/rationalism, as it has been described, would not conflict with the scientific process. Instead, scientism is merely a cultural outgrowth of science, in which science, or the rational way of knowing, is perceived to be the only way of knowing the world. The metaphor is neatly expressed by a They Might Be Giants song, geared towards children and on the scientist-approved album “Here Comes Science”, titled “Science is Real.” (They Might Be Giants, 2009). Lyrics from the song include “When I’m seeking knowledge, either simple or abstract, the facts are with science” and “The proof is with science, the truth is with science.” Science is the way of knowing and in mainstream STEM education this metaphor is clearly supported, as indicated in the following discussion of the philosophy of mathematics.

I will return to a few of these discourses and their interruptions of the mainstream STEM, but while on the subject of scientism/rationalism, I need to address the issue of mathematics in STEM education. I assert that mathematics is included in the assemblage to embolden STEM education’s rationalist quality. The discipline of mathematics is most closely associated with objectivity and rationality. It is important to note, however, that pure mathematics, or that mathematics which has no application and exists in an imaginary world, is the only knowledge that can be argued to be fully objective and follow the required axioms of logic. Applied mathematics, mathematical modeling and statistics are all mathematical endeavors that cannot be free from bias or subjectivity. Furthermore, as I outline below, philosophies of mathematics

trouble mathematics' claims to universality and objectivity. This troubling applies to all mathematics, including pure mathematics.

Math is often thought of as the supreme instance of objectivity, of knowing the world objectively and through deduction. This supreme status has received significant pushback, especially by the work of philosophers of mathematics. In fact, argued are two natures of mathematics: mathematics as an objective, value-free knowledge, and mathematics as a social construction. Philosophy of mathematics literature rests primarily on a debate concerning the relationship between humanity and this particular knowledge. The longstanding and most popular epistemological viewpoint for mathematics conveys the Platonic image of objective knowledge. Sometimes referred to as an Absolutist paradigm (Ernest, 2008), this perspective also maintains that all heretofore produced mathematical knowledge began with explicit assumptions to result in logical deductions. More specific varieties of this broad paradigm include Frege and Russell's logicism, Brouwer's intuitionism and Hilbert's formalism. While all three philosophies of mathematics differ in respects regarding what counts as legitimate processes for the creation of mathematical knowledge, they all hold a commitment to mathematics as a knowledge that is objective and value-free.

Hersh (1994) asserts that Wittgenstein was the first to break from this view by acknowledging that "mathematics is something that people do" (p. 14). This kind of thinking transferred work from the philosophy of science, such as Lakatos, Popper and Kuhn, onto the philosophy of mathematics, ultimately leading to a trajectory towards what Ernest (1998) terms the Fallibilist paradigm:

Fallibilism views mathematics as the outcome of social processes. Mathematical knowledge is understood to be fallible and eternally open to revision, both in terms of its proofs and its concepts. Consequently this view embraces as legitimate philosophical concerns the practices of mathematicians, its history and applications, the place of mathematics in human culture, including issues of values and education - in short - it fully admits the human face and basis of mathematics. The fallibilist view does not reject the role of structure or proof in mathematics. Rather it rejects the notion that there is a unique, fixed and permanently enduring hierarchical structure. (p. 3)

In this sense, the fundamental debate regarding the nature of mathematics centers on whether mathematics is objective, pre-existing to humans and known because of our discovering it, or primarily a human social activity, constructed by communities of practice. Embracing the alternative side to the debate will naturally lead to freeing mathematics from the burdens of superiority and objectivity.

In turn, the ecojustice STEM will reject that math or science is objective and the only way of knowing. Viewing the contest within philosophy of mathematics brings to light the concerns over objectivity, at the very heart of rationalism. This does not mean that science and mathematical processes are entirely invalid. As Martucewicz, Edmunson and Lupinacci (2011) suggest "To question the universal nature of science as a way of knowing is not to be 'anti-science.' Rather, we must see science as one way of knowing rather than the only valid one" (p. 70). Therefore, the ecojustice STEM will accept science and mathematics as a type of knowledge suspect to bias just as other knowledge, albeit these suspicions can take on different forms than do the suspicions of other knowledges.

A careful look at the discourses of individualism, anthropocentrism, mechanism, and scientism/rationalism has begun to sketch an ecojustice STEM. In summary it is again interesting to note that the last two of these relate directly to the work of science and mathematics, and the first two do not. Individualism and anthropocentrism are cultural activities that exist outside the

natures of scientific and mathematical processes, and scientism/rationalism and mechanism are very much a part of those processes. The scientific and mathematical program, as it currently proceeds, operates under all four metaphors. This is especially the case with mainstream STEM education, as the corporate interests, individual competition and dominance over nature are clearly established. The ecojustice STEM will outright reject competition and human dominance over nature. It will pull back the tendencies of science to explain everything with the utmost authority.

One other cultural root metaphor, progress (Martucewicz, Edmundson & Lupinacci, 2011, pp. 72-73), is so much a part of mainstream STEM education that I will attend to it in the following section. To conclude the specifics of this section on ecojustice education, I return to describing the primary issues at the heart of ecojustice education with a look at writings from Murray Bookchin. My readings in ecojustice education all point to a major theme, best put by Bookchin, the “dissolution of hierarchy” (Bookchin, 2005). Reviewing the “hierarchized dualisms,” anthropocentrism, androcentrism, etc., seems to address the same cultural problem of domination in a variety of forms. In his own way, Bookchin lists out his understanding of the same concept:

My use of the word *hierarchy* in the subtitle of this work is meant to be provocative. There is a strong theoretical need to contrast hierarchy with the more widespread use of the words class and State; careless use of these terms can produce dangerous simplification of social reality. To use the words hierarchy, class and State interchangeably, as many social theorists do, is insidious and obscurantist. This practice, in the name of a 'classless' or 'libertarian' society, could easily conceal the existence of hierarchical relationships and hierarchical sensibility, both of which--even in the absence of economic exploitation or political coercion--would serve to perpetuate unfreedom.

By hierarchy, I mean the cultural, traditional and psychological systems of obedience and command, not merely the economic and political systems to which the terms class and State most appropriately refer. Accordingly, hierarchy and domination could easily continue to exist in a 'classless' or 'Stateless' society. I refer to the domination of the young by the old, of women by men, of one ethnic group by another, of 'masses' by bureaucrats who profess to speak in their 'higher social interests,' of countryside by town, and in a more subtle psychological sense, of body by mind, of spirit by a shallow instrumental rationality, and of nature by society and technology. Indeed, classless but hierarchical societies exist today (and they existed more covertly in the past); yet people who live in them neither enjoy freedom, nor do they exercise control over their lives” (pp. 67-68).

Just as ecojustice writings point to deeply embedded hierarchies, Bookchin indicates them as well. As the cultural patterns of domination and command are argued to lead to the ecological and social crises that Bowers and other ecojustice writings suggest, Bookchin describes how these patterns, whenever present, inhibit freedom.

To keep this notion of freedom consistent with ecojustice, Bowers (1993) has identified two versions of freedom, one the “guiding metaphor of a culture of progress and environmental exploitation,” and the other, a “new (and ancient) guiding metaphor for a sustainable culture” (p. 167). For the former, freedom is a “choice of ideas and values by the autonomous individual,” and for the latter sustainable culture: “freedom is a restriction of self for sake of others. Self as a

cultural being whose individualized needs and forms of expression are part of a larger mental ecology. Interdependence.” The second understanding of freedom is consistent with Bookchin's dissolution of hierarchy.

The goals of ecojustice STEM include addressing the cultural patterns of hierarchy as they relate to nature and social organization, with freedom and lack of command towards or domination of anything as the ideal. Particularly, these goals address some practices of science, but generally they do not conflict with what is understood to be the mathematical and scientific processes. The biggest trouble with this meeting of STEM and ecojustice comes in the next section. The very heart of the mainstream STEM discourse, its conflating of science with technology and progress, requires careful consideration. While some particulars from ecojustice education can be reconciled, this one requires direct confrontation.

Science, Technology And The Myth Of Progress

STEM education's very assemblage of science with technology and engineering is an example of a major cultural problem that ecojustice has identified. The myth of progress has been clearly addressed by ecojustice education and, as Bowers suggests, conflating scientific and rational processes with technology coexists with the myth of progress that leads to ecologically disastrous consequences. Progress is understood to convey “the idea that certain changes are inevitable and good. Change is improvement. Modernity carries forward the assumption that change moves society forward and makes human society better off. [For example,] when we write histories teaching that despite a few bad turns, things keep getting better every century” (Martusewicz, Edmundson and Lupinacci, 2011, p. 72).

Bowers (1993) has found this cultural myth in science textbooks. He writes the textbook authors' efforts to make the connection “between scientific discoveries and the development of new technologies (computers, genetic engineering, telecommunications, etc.), further strengthened through use of appropriate visual images, further promotes the cultural myth that change is linear and progressive in nature.” Bowers locates the business of attending to “technological progress” by science textbooks as muddying the waters of philosophies of science and technology.

First off, as to be expected, science textbooks present the cultural myth of scientism/rationalism as described in the previous section. Most present “the authority of the scientific mode of thinking” (p. 136); if anything is mentioned of scientific doubts, it is casual, as one textbook quote demonstrates: “one peculiarity of the scientific method is that a hypothesis can never be formally proved but can only be disproved” (p. 138). Second, the authority of science is coupled with its relations to technological innovation. By associating the two, technology carries the authority and rationality put upon science.

Why is the cultural metaphor of progress, especially as it relates to technology, a myth, and, why does it lead to ecological and social crises? The answer to both questions is the same: technological innovation currently implies immediate implementation, with no basis for longterm understanding of its consequences. Part of this is due to the other cultural root metaphors discussed above, such as individualism and androcentrism. As Bowers (p. 1993) suggests, science textbooks do as good a job as any convincing readers of the myth, although “the myth is beginning to unravel as the media present incident after incident of the ecologically disruptive effects of technology (oil spills, toxic wastes, pollution, and so forth” (p. 139).

On a social level, technology also changes cultural and psychological processes in ways that are similarly not anticipated.

The development and introduction into society of each new technology based on scientific knowledge also represents the initial stages of a cultural experiment.

Changes within the culture that would result from the introduction of computers, for example, were not known at the time they were introduced into the work place and the classroom and proclaimed a great leap forward for humanity. We are just now beginning to recognize the unforeseen consequences of this technology in introducing new forms of dehumanization in to the work place and increasing surveillance of people's activities by employers and the state (139-140).

When these catastrophes catch up with us, Bowers suggests that people “are likely to turn on the scientists and technologists with a vengeance that could be Biblical in scale. When the myth of progress ceases to be part of people's natural attitude, the claim that science can be viewed as separate from human concerns (and cultural beliefs) will be likely viewed as basically irresponsible and self-serving” (p. 141).

As with science textbooks, the very discourse of STEM education is quite guilty of proliferating the myth of progress. Associating science with technology, adding a dash of rational, objective, value-free math, comes together as the perfect storm for progress. It is as if they say, “STEM will solve our problems, STEM has delivered us from past troubles, STEM will continue to do so.” However, it is not difficult to point to STEM as the cause of our problems. Bowers discussion of the computer revolution brings to mind Microsoft's interest in STEM education.

The ecojustice STEM must challenge the assemblage of STEM and its associated myth of progress. ecojustice STEM realizes the forces that created it and must reject upfront their cultural myths of progress and rationalism outright. In its ecojustice version, STEM must redefine technology and engineering. First and foremost, they must be divorced from the associations to science and mathematics and redefined. For help with this, I now turn to E.F. Schumacher's “technology with a human face.”

“Technology With A Human Face”

Resonating with Bowers' concerns over technological progress, Schumacher (1973) characterizes the technological crisis as follows:

Suddenly, if not altogether surprisingly, the modern world, shaped by modern technology, finds itself involved in three crises simultaneously. First, human nature revolts against inhuman technological, organisational, and political patterns, which it experiences as suffocating and debilitating; second, the living environment which supports human life aches and groans and gives signs of partial breakdown; and third, it is clear to anyone fully knowledgeable in the subject matter that the inroads being made into the world's non-renewable resources, particularly those of fossil fuels, are such that serious bottlenecks and virtual exhaustion loom ahead in the quite foreseeable future” (p. 147).

In this way, technology has superseded its original definition and “acts like a foreign body” (p. 147). Schumacher calls for a return to technology's purpose. “The primary task of technology, it would seem, is to lighten the burden of work man has to carry in order to stay alive and develop his potential” (p. 148).

Part of Schumacher's vision considers the amount of time spent “engaging in real production,” (p. 149) a phrase describing work that excludes all types of desk work and includes only the work related to what people need for survival. The ways technology has developed, so Schumacher argues, leads to a very minimal amount of engagement in real production, and this

actually diminishes such engagement to practical nonexistence and a lack of social value attributed to it. As a consequence, “Modern technology has deprived man of the kind of work that he enjoys most, creative, useful work with hands and brains, and given him plenty of work of a fragmented kind, most of which he does not enjoy at all” (p. 151).

On the other hand, “technology with a human face,” will embrace the knowledges coming from science and elsewhere to “lighten the burden of work” without eliminating our connections to work. Work satisfies the soul and should consume us, but not necessarily in the ways it did before we gained knowledges that can make this work equally, or more satisfying. For example, gardening is an example technology, lightening the burden of finding food as a hunger/gatherer might. Just as the gardener nurtures the plants health and vitality, the technology of gardening nurtures the gardener. However in the technology of industrial farming, only the plants and animals are nurtured, and marginally at that. This technology has sliced the work of food growing into various disconnected segments, with workers not necessarily overseeing the entire project and much of the work being done by machines and chemicals.

For Schumacher, lightening the burden of work does not mean devaluing work and attempting to eliminate it. The sense of mainstream STEM education is the opposite, that in some ways science and technology will deliver us entirely from the burdens of work, perhaps even of the labor of living in our bodies. Scientist Ray Kurzweil has predicted that within 20 years, nanotechnologies will be capable of replacing all our vital organs and even reverse the aging process (Willis, 2009). This prediction, of course, could only be the case if science and technology continue to work hand-in-hand and are supported as they have been for the past 100 years. It would also require this “progress” remain unencumbered by significant obstacles, like an ecological catastrophe for instance.

C.A. Bowers (1993) notices a trend among what he calls the “ecological conservatives,” among whom are Schumacher, Wendell Berry and Wes Jackson. Bowers descriptions of the uses of technology provide more examples of “subordinating” technology “to the larger concerns of an interdependent biotic community... In effect, their form of conservatism, as it relates to technology, would involve using technology to supplement or only slight modify the workings of natural systems. The use of natural predators over pesticides, solar power, and organic and multicrop farming over petroleum-subsidized monocrop agriculture are just a few examples” (p. 66).

Accordingly, ecojustice STEM needs to recognize such dangers in the trajectory of “progress.” A science and technology program that ultimately delivers us from our bodies is perhaps the best example of the disassociating of people from their nature, or what makes them feel satisfied. If disassociating from our work leads to dissatisfaction, as Schumacher implies, imagine what will happen when we do not struggle with life and death or when we are half robot. No, ecojustice STEM, as I suggested before, divorces science from technology and embraces Schumacher's broader definition of technology. It outright rejects the myth that technology delivers us from our burdens. Technology, as defined in ecojustice STEM, commits itself to human happiness, satisfaction and community with the nonhuman species on earth.

Having wrestled with the troubling juxtaposition of science and technology in mainstream STEM education, I again return to the equally troubling inclusion of mathematics in all of this. Earlier, I described how mathematics contributes to the myth that STEM is a neutral, objective field. Besides rejecting this myth, I describe in the next section how else ecojustice STEM might work with mathematics.

The Role Of Mathematics In Ecojustice Stem

Having discredited math's role in mainstream STEM education, that is, its claims of objectivity, leads to the question, what role will math play in ecojustice STEM? This requires a bit of

theorizing on a variety of mathematical activities, particularly the activities of statistics and pure mathematics. I will demonstrate how these two are relevant to the goals of ecojustice STEM. Some of these ideas resonate with my earlier work on theorizing the connections between math education and anarchist theory and anarchist educational theory (Wolfmeyer, 2012). Anarchist theory and anarchist educational theory is considered relevant to ecojustice education, as indicated by ecojustice writings of Rebecca Martucewicz (2012), and by my discussion earlier of Murray Bookchin, an anarchist. For these reasons, I begin by reviewing my theorizing on anarchism and math, especially as they relate to ecojustice STEM.

First, ecojustice STEM education would embrace pure mathematics for its potential as an art form. As with anarchist education, ecojustice STEM education necessitates a freedom from coercion as ideas are explored. In suggesting the connections between math and anarchism, I highlighted Marcuse's (1978) assertion that "art breaks open a dimension in which human beings, nature, and things no longer stand under the law of the established reality principle...The autonomy of art reflects the unfreedom of individuals in the unfree society" (p. 72). For the details on how mathematics is artistic, again I suggested looking at the descriptions of mathematics from the mathematician Paul Lockhart: "dreamy and poetic," "radical, subversive, and psychedelic" and a discipline that allows "freedom of expression"(p. 23). Lockhart presents mathematics as an art because the artist (mathematician) plays in completely imagined worlds. For example, thinking about and proving that the sum of two even numbers is even is a purely imaginary activity, free from encumbrances. Similar to the painting of a picture, the artist enjoys the experience for what it is.

Again, help comes from the ecojustice writer C.A. Bowers (1993) when he writes on the connection art has to spirituality. First, he asserts that cultural phenomenon is at the root of spirituality, or as he understands it, the connectedness of people to other people and their habitat (pp. 204-205). Bowers draws on Ellen Dissanayake's purposes for art: to be understood "as a behavior involving the intent to 'make special'" (p. 213). "Making special" involves converting reality "from its usual unremarkable state -- in which we take it or its components for granted -- to a significant or especially experienced reality in which their components, by their emphasis or combination or juxtaposition, acquire a meta-reality" (p. 213). Theorizing art this way resonates with the freedom suggested by Marcuse. Redefining spirituality with art at its core suggests the role art can play in ecojustice education. Once again, considering pure math as an art form, an abstraction from reality that "acquires a meta-reality" develops the spirituality of individuals and groups.

To be sure, the art of pure math is to take an abstraction and use the rational process to make conclusions. Because of this, embracing pure math in the ecojustice STEM is a tremendous problem, especially since ecojustice STEM must so strictly reject the rationalism/scientism that has led us to the ecological and social crises we now face. My suggestion is to restrict the rational process to the realm of spirituality and art. The rational process is something to be enjoyed for its artistic, imaginary qualities. In my view, this does not de-value mathematics and the rational process, in fact it might do quite the opposite.

Statistics is the other mathematical activity that is quite relevant to ecojustice STEM, mostly because it can be used as a means for illuminating the particulars of the ecological and social crises. Mathematical activity that critiques societal problems has been written about for at least 4 decades, especially within a branch of math education often referred to as social justice math. The aims of social justice math are typically related to the social crises of hierarchical class structures and disenfranchised populations. Nevertheless, the descriptions of the ways math is used to critique said social crises are relevant for the ways math can critique the social and environmental crises.

Eric Gutstein's (2006) work is a good example from social justice math education. His goal of "liberation from oppression" (p. 22) utilizes a pedagogy comprising "teaching mathematics for social justice" (p. 29). His pedagogy of teaching math includes "reading the world with mathematics" (p. 26), or looking at racial and economic inequality with mathematical analyses and "writing the world with mathematics" (pp. 26-27), or seeing the power in mathematics for social change. An example of reading with mathematics would be the quantitative descriptions of ecological catastrophes as described by Martucewicz, Edmundson and Lupinacci (2011), e.g. "Average temperatures have climbed 1.4 degrees Fahrenheit around the world since 1880" (p. 2). As the Bowers quote from the previous suggestion on technology suggests, statistics education, with its rational ways, should be "subordinated to the biotic community." This would mean seeking statistical answers to the questions that empathize with all aspects of the biotic community, certainly not just those that affect humans, which would indicate a commitment to the cultural trend of anthropocentrism.

Thus, ecojustice STEM will reorient mathematics in two ways: by including mathematics as a pure art form for its spiritual component, and by subordinating its technological uses to viability of the entire biotic community. Ecojustice STEM should reject the mathematical myth of rationality, especially since it has been rejected by many philosophers of math education, because this contributes to the rationalist/scientist cultural trend of mainstream STEM education. By way of example, I conclude these suggestions with the ways that teacher educators can begin to incorporate an ecojustice STEM education into teacher preparation.

Ecojustice Stem In Teacher Education

In the final section I will suggest two opportunities for teaching ecojustice STEM within a general framework for a primary school teacher preparation program. Given the political push for mainstream STEM education, as outlined earlier, it is no surprise that future elementary teachers are required to take coursework devoted exclusively to the methods of science teaching and math teaching at the elementary level. In this way, mainstream STEM education structures provide the opportunity for teaching ecojustice STEM.

A word of caution with anyone considering this approach comes from literature on teaching for social justice. For example, when teaching courses with overt commitments to social justice, Lee Anne Bell and Pat Griffin make clear the consideration of what students will perceive as safe, especially "in order to be willing to express and examine deeply held feelings, confusions and assumptions" (p. 80). To that end, Bell and Griffin suggest careful sequencing of activities to ease into the big ideas and, perhaps, controversial topics. While their considerations pertain to designated social justice courses, the point of careful sequencing is applicable to teaching ecojustice STEM in math and science methods courses because students may not expect to learn alternatives to the mainstream in these courses. In other words, to successfully convey ecojustice STEM, I suggest a teacher must begin the course giving what the students expect, especially the nuts and bolts of teaching scientific concepts and slowly sequence in the ideas of ecojustice STEM within these aims.

There is a natural entry point in science methods courses to begin an ecojustice STEM sequence. Science education generally includes environment and ecology standards, as is the case in my home state of Pennsylvania. In reviewing the curricular standards for science instruction, dedicated time can be taken to explore these standards, clarify the terms sustainability, etc. However, as Martucewicz, Edmundson and Lupinacci (2011) write, such environmental education does not go the distance of ecojustice; it defines ecology "as the scientific study and management of natural systems assumed to be outside of human communities" (p. 10). Keeping in mind the careful sequencing brought to light by considerate social justice education, such points with regard to environmental education can be teased out of

students, especially by offering readings on conservation by Wendell Berry (1992, pp. 27-44). In my experience, the ecological crisis is well understood by younger students, in line with the public opinion polling quoted in the introduction to this paper, and such readings are not entirely frustrating for students to read. Out of these readings comes the consideration of other “hierarchized dualisms,” such as Val Plumwood’s (2012) likening of dominating nature to the oppression of women. All the while these considerations coexist with students’ grappling of the nature of science. The intention is an emerging tension between the two, with a push to a subordination of the scientist/rationalist cultural pattern.

With respect to developing a complex nature of science, typical science education textbooks do little more than the typical science textbooks. For example, Abruscato and DeRosa (2011) tell future elementary teachers that part of the scientific world view is that “The world is understandable” (p. 12). Such a statement as quoted here should be troubled by the class, especially in light of the students having read Berry and Plumwood. This and other deficiencies should be seen as an opportunity for educators of ecojustice STEM.

As for math, I am still seeking opportunities to initiate a sequence for the development of ecojustice STEM within a typical math methods course. For now, I suggest developing a more detailed project out of the typical “Why teach math?” section typically found in a math methods textbook. In Van de Walle, Karp and Bay-Williams (2013) the only answers to these questions are for “A changing world economy,” especially because “math lovers” have been argued by economists as always having career opportunities and options (p. 9). Surprisingly, little in this commonly used textbook is even stated about the role math can have in a democratic society, something typically given lip service in math education but not well detailed in most mainstream writings. However, most students in math methods courses will be willing to explore the “why” question. After all, it is practically a cliché these days that a math student will ask “Why do I have to learn this?” and future teachers of math will likely want to engage with finding answers to the student question.

Therefore, I include several readings on math education that, while not specifically addressing this question, are intended to begin providing answers. These include Bob Moses’ *Radical Equations: Civil Rights from Mississippi to the Algebra Project* and John Allen Paulos’ *Innumeracy: Mathematical Illiteracy and Its Consequences*. The former attends to the ways math education reproduces inequality and seeks to level the playing field with equal opportunity for algebra. In the latter, the consequences of not knowing math include manipulation by others and lack of participation in a democracy. Both speak directly to citizenship education, especially as UNESCO defines it. Other works, like those of Danny Martin and Eric Gutstein, tie more directly education for liberation to math education. However, these are difficult readings to integrate into an introductory math methods course.

Lastly, aesthetic education can be integrated into the math methods course via Paul Lockhart’s (2009) *A Mathematician’s Lament: How School Cheats Us Out of Our Most Fascinating Art Form*. In the title and throughout the work, Lockhart points to the artistry of mathematics. Further, he states “there is nothing as dreamy and poetic, nothing as radical, subversive, and psychedelic, as mathematics” (p. 23). However, he does not explain what he means by radical and subversive, or exactly how math is such. Left undefined, there is a vague implication that the freedom and artistry of math opens us to do something beyond what is expected. Again, in the title Lockhart calls mathematics “our most fascinating and imaginative **art** form [emphasis added],” so this brings to mind the aforementioned works of Bowers and Marcuse as outlined above. Teaching math as an art is part of an education that serves the purposes of sustainability, happiness and liberation.

Providing contrasting views to the reasons for teaching math begins to open the doors for

teaching ecojustice STEM in a math methods course. Linking the notions of oppression over other humans and nature, as in the case of juxtaposing Moses and Paulos, as well as providing an entirely impractical, and spiritual, purpose for math education, are indeed contrary points to what is typically stated about the purposes for teaching math.

In this way, addressing the philosophies of teaching math and science, and the very philosophies of science and math, into STEM methods courses is one means of providing an ecojustice STEM counterpoint within mainstream STEM structures. As I suggested in the opening of this paper, the fury over STEM might equate with impending ecological disaster. I believe this is why, in my experience, introducing ecojustice STEM into math and science methods courses does not appear out of place to all involved. Now that I have gotten through these points, I should be careful to address that the associations I made with the STEM craze and the concerns over stresses on the earth is rooted in the discourse of progress. Our cultural tendencies point to science. Science will get out of this mess. Science and technology will move us forward. My intention is to appeal to these beliefs, to validate them, and then to carefully and consistently encourage the understanding that such progress has contributed to the very problems we face.

In concluding this meeting of ecojustice education with mainstream STEM education, I reiterate the several points that emerge as I sketched an ecojustice STEM. First, ecojustice STEM must reject its mainstream counterparts commitments to rationalism. This occurs via the reorientation of pure mathematics as an important spiritual, as well as impractical, activity. In ecojustice STEM, using the rationalist process in practical ways is always subject to the needs of the biotic community. Science should not be rendered illegitimate, but viewed as one of many ways of knowing, and one of many sources for inspiring technology. Finally, technology's role is not to eliminate our work, but to improve our satisfaction in it, especially as it communes with a given ecosystem.

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Cease and Resist!: Problems in Radical Ecology

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The Radical Turn?

After reading the first sentence, I opened a new .doc with the intention of confronting Deep Green Resistance with a point-by-point analysis and deconstruction of its central arguments. Then I got to the third sentence, and I realized that my analysis would have to become a sentence-by-sentence, line-by-line destruction of the mode of thinking carried forward by DGR.

Although Derrick Jensen's name provides some radical credibility and Lierre Keith evokes the figure of the leader, Aric McBay is clearly the central theoretical figure. McBay deploys a method steeped in rationalism to assess different movements and mobilizations on the principle basis of efficacy. Efficacy, itself, is not measured in terms of a resistance organization's eventual domination over the preceding system, but in terms of taking the decisive steps that destroy that system. One might ask who makes the decision, and where these steps appear? Conveniently, it appears that the steps can be mapped out by preceding examples, which need only to be compiled into a matrix of strategies and tactics and run through a computer-like process for the calibration for the perfect resistance machine.

Yet the problems latent within McBay's matrix-based analysis emerge from the very beginning of the book: profound categorical confusion wherein he proposes a schematic that places Liberal and Radical tendencies at opposite ends of a political spectrum, and advances a bifurcated list of oppositional qualities which mark one or the other side.

Liberalism, we are told, lies strictly within the realm of Idealism and Idealist thought, while Radicalism stands squarely in the threshold of Materialism. One muses immediately: What does McBay really think Liberalism is as opposed to Radicalism? (We will get to the problematic Euro-centrism of this thinking soon.)

Liberalism must be returned to its foundational spot in capitalist economics (Jeremy Bentham, Adam Smith, etc.) and Radicalism must be recognized for its definition: a return to the root of a problematic. One can certainly meet a radical capitalist who professes Materialist claims as the only philosophical solutions to "underdevelopment"—back to the basics, austerity, pull yerself by the bootstraps, and so on. At the same time, one can have a Radical Materialist (Stalin, for instance), who reduces everything to material conditions and becomes the ultimate vulgarizer. Then, of course, there are Radical Materialists who are also capitalists, such as Ayn Rand, and whose Liberal philosophy has influenced this entire generation of neo-liberals.

Let us return to the subject of Radicalism with a new dialectic of Liberalism which mediates between Idealism and Materialism. Liberalism was for many a profoundly emancipatory doctrine of the 18th and 19th Centuries. We find, for instance, the grand tradition of the French Revolution and the Jacobins (Robespierre, Danton, Marat) championed by contemporary radicals, just as in England at the same time the Liberals were a hated and feared ideological set who regulated society in order to exploit the inchoate proletariat and environment. Just as we should recall CLR James's report that not one of the French Revolutionary Jacobins, save for Marat, strove to liberate the colonies, we should also remember that the legacy of the Liberal revolt against the land-based enslavement of the European peasantry under the lash of the nobility went on to inspire future anti-Imperialist thinkers. It was Marat, for instance, who protected the proto-communist revolutionary thinker Babeuf from the Terror. The veins of Liberal Revolution that fed the body politic of the 18th Century returned to the heart of radical

action via the arterial communist insurgencies of the 19th Century.

In a similar vein, Hegel, perhaps the most bourgeois of all philosophers, inspired through his method a generation of extreme radicals, such as Max Stirner, Mikhail Bakunin, and of course Marx. Here, the radical turn moves from Liberalism to Idealism, from the philosophy that all men are equal and free to the dangerous insistence that each individual has the power to create their own world for themselves and others. This turn from Liberal to Idealist to Materialist is present in Marx's relentless critiques of Proudhon, in which he scoffs at the French Socialists' vainglorious allusions to the tenets of Liberty and Equality. For Marx, the capitalist ownership over the means of production and subsequent extraction of surplus value ruled out the concepts of Liberty and Equality by rendering the proletariat subject to the condition of wage slavery; only by self-emancipation could the proletariat liberate itself from the object-relations of capitalism and embrace an empowered communal existence. Here is Proudhon retaining some of Hegel's Idealism, carried over from Liberal Jacobin concepts, and Marx's materialist attack on the nature of idealized concepts, themselves.

The Function of Fascism

But let us turn from Hegel and his influence on the formative generation of radical communism and anarchism to Schiller, perhaps the greatest Idealist of all time. Schiller's aesthetics rivaled those of Hegel's, and his plays inspired revolution in even the most intransigent reactionaries. Schiller was also a proto-fascist—in his letters after the French Revolution, he bemoaned the failure of liberation and proposed standardizing the interior decorations of every household to maintain the goals of the revolution. How is it that Schiller can at one point seek ultimate totalitarian domination while at another point agreeing with Max Stirner, the powerful Hegelian anarchist, on subjects of the environment, the ego, and individual?

Are we not confronted with the problem that the separation between Liberalism and Idealism at its purest is simply a radical inward-turn? Beyond that, the crucial revolution of Marx, Comte, Dilthey, et. al., was the second radical turn from Idealism toward Materialism, Positivism, Functionalism, etc. It was this final turn of the screw that culminated at the beginning of the last century in the battle between Communism as a far Left tendency, Anarchism as a far Right tendency, and Fascism which emerged at the time (in Germany) as a Centrist movement. By this time, Liberalism was a kind of neutral platform. It had become known for condoning the existence of the state, but its most favored champion was not a capitalist like Bentham, but the well-respected academic, Max Weber, whose own anticapitalist writings had generated tremendous popularity.

It was the blandness of Weber's Liberal Democrat party and the disingenuousness of the Social Democrat party in Germany that lent itself to the grand appeal of Communist ideals and representatives like Rosa Luxemburg. Figures aligned with the Social Democrats therefore assassinated the leaders of the Communist party, throwing the political spectrum into a frenzy that the brutality of the Nazis would pull under its control. The Nazi party was by no means Liberal by today's standards; however its theoretical apparatus, led by Martin Heidegger, was perhaps most influenced by the progenitor of Max Weber, Wilhelm Dilthey—the Isaac who begat the 20th Century's terrible Jacob and Essau. This connection functions as a primary reason for the domination wrought by Nazi politics and economics through a kind of polluted Functionalism: bureaucratized state economic control over industry coinciding with a disgustingly reactionary cultural myth of the German folk, free from the tight grips of financial control. In other words, the freedom of the German mythic way of life was predicated, of course, upon the most rigidly controlled and tightly managed bureaucratic machine. If we can, then, take the historical short-cut by saying that Max Weber's Liberalism is really Fascism-lite (Monopoly

Capital with a post-modern distaste for bureaucracy, which is most clearly visible in Bill Gates's "frictionless capitalism"), then we should also navigate the long way around to find the path from Liberalism to Idealism to Materialism (or Functionalism prefigured by Dilthey) that has provided a kind of Lacanian "architecture of pain" for the tectonic quakes of Anarchism, Communism, and Fascism.

Along this rather long arc, we find that we do not have to go far from Schiller's understandings of the living space of the French populous to the scientific and philosophical avenues of Ecology being opened up 100 years later, during the very beginnings of the catastrophic conflicts between radical ideologies. Taken from the root word *oikos*, or household, Ecology was derived in the late 19th Century as a field of study that determined the human interaction with the environment. Using as its fundamental basis the division between *Innenwelt* (innerworld) and *Umwelt* (perceptual environment), the field of Ecology, particularly developed by Jakob von Uexküll's *Theoretical Biology* (1926), inaugurated a kind of study of nature over and above objective reality. Each species could be said to have its own *Umwelt*, its own life-world of instinctive attractions and inhibitions, fields of possible understandings. It is, unfortunately, true that perhaps the most practical Materialists in the world today are graduating from the tradition of Ayn Rand, and researching how to "disinhibit" consumers from purchasing useless commodities that they know will confine them to an ecology of (sub)urban isolation.

Here is, once again, the usurpation of Idealism over Liberalism (the positing of the possibility of multifarious individual worlds colliding at once) within a milieu utterly removed from metaphysics and therefore beyond Idealism, itself (ie, Materialism). It is thus self-evident how Idealism can rise to meet the highest radical challenges of the mind, and then smash them into a kind of vain Materialism that becomes a crude instrument of Liberal, totalitarian power. How many Ecologists are there who remain in the land of Liberalism, convinced by the rhetoric of Liberty that there is nothing more to do than perfect the system?

What is more, I can hear the laughter of Jacques Derrida, Gaston Bachelard, even Emma Goldman, as I consider the idea that one could pigeon-hole, quantify, and isolate some "rational" road to resistance!

Decisions About Colonialism, or Colonial Decisions?

How, then, do we look at McBay's analysis of "decisive" action? It appears that McBay believes only certain actions can be decisive, and most of those appear to be perfectly executed plots of militant groups or above-ground actions effected by individuals, groups, or organizations. The matrix of possibilities—property damage, assassination, etc.—returns to the question of effect and plausible outcomes.

The IRA assassinated torturing police officers, which apparently, according to McBay, led to their ultimate success. We are, of course, not to forget that the orchestrator of these "deep", "decisive" actions, Michael Collins, was assassinated in 1922 by the same organization for which he played hitman. Forget neither that said organization—which in 1917 declared adherence to founding theorist James Connolly's devotion to communist redistribution of the means of production as well as land owned by the Church—in 1940 was collaborating with the Nazis to invade the North of England.

Let's look at a similar case that DGR does not mention. Victor Serge and Leon Trotsky, two radicals who proudly extolled the anarchy taking effect in peasant communes during the first years of the Soviet Revolution, compromised those radical principles by insisting that radicals who complained about the Soviet system had to be purged by State Terror. It did not take long for both of them to be exiled from the USSR; in Serge's case, his expulsion, brought on by his open rejection of Stalin's treatment of China, involved "failing" to "understand" the exacting and rigorous "principles" of "dialectical materialism". Materialism, indeed!

As we are expected to receive an IRA reimagined through rose-colored glasses, McBay presents the Black Panthers and American Indian Movement in an almost unflaggingly negative light. Pursuing the common presentation of sexual deviancy within the Black Panthers and macho hierarchy in AIM, McBay completely fails to offer anything more than a caricature of the people involved in these organizations. Why, might we ask, are organizations created by People of Color reduced to the most perfunctory condemnations while the IRA glows with tactical purity?

Perhaps we can glean the most from McBay's work through an engagement with the movements that he does not mention—mostly movements from the Third World. For instance, the Vietminh or the Algerian National Liberation Front. What about the Nicaraguan Sandinistas, the Salvadorian FMLN? How about radical thinkers and revolutionaries like Amilcar Cabral, Ricardo Flores Magon, Leila Khaled, and so on?

Most of the examples of successful liberation movements around the world come during moments of extreme spontaneity: take for instance the liberation of Indonesia, during which nationalist leader Sukarno simply declared to the public that they had been liberated from colonial rule while the Japanese occupation transition to British rule, and the relations between land, state, and labor were irrevocably changed. Think also of the Cuban Revolution, in which a very small group of guerillas who had become isolated from the political spectrum of Cuba almost entirely garnered the support of the landless and swept into power on a wave of populist sentiment. Who has seen it does not recall blissfully the epic photograph of Che lounging on his bunk with an edition of Goethe in his hands? Idealism in the hands of successful revolution? Is it Liberal? Is it Radical? It does not matter very much, because, incredibly, the Third World has a host of radical philosophers and radicals who have little to nothing to do with Kant, Hegel, Liberalism, or what have you.

Unfortunately, most of McBay's practical examples come from a tragically Euro-centric perspective, so this discussion is generally silenced (one returns sadly to the notion advocated by Octavio Paz that, had South America produced a Kant or a Hegel it would not be "backward" as it was). The Irish Republican Army, the French Resistance, Holocaust resisters, and so on. Why compare the hierarchical and strictly disciplined IRA with the "French Resistance", which took numerous forms, had a dispersed base, and was only consolidated in the last instance by the slightly-fascistic Charles De Gaulle? While each movement is hermetically different; they are supposedly united by their likeness to DGR, which remains pinioned by this failure of method.

The shifts from different movements leave the reader with small anecdotal connections without any real critical comparison. Thus, DGR has replaced combinatoric systems analysis with a kind of retreat into the traditional US American Pragmatism of, for instance, Richard Rorty: a kind of one-size-fits-all rescaling of the environmental movement by convoluting the strategies and tactics that organically grew out of totally different times and places. At this point, such false identities remain unhelpful, because they are total fictions, figments of a historian's imagination, better relegated to the cocktail party than the strategy meeting.

There is No Other

As an organizing tool, the main problem with the DGR schema is that there is no critical intervention in the human subject. The theme bounces from point to point without settling anywhere to hone a truly radical analysis of the human condition in its contemporary settings. We are meant to pick up DGR and at once thrust ourselves into the radical environmental agenda without actually going through an inner transformation. If resistance is the nature of the re, the enforcement against, and the sistare, the redoubling of stare, to stand, the root word of state, then

resistance must be the doubling of the subject, its re-enforcement, and in a sense, the construction of a state of being.

The resistance begins with a state of things, a subjective correlate to what is seen as the objective world. There is then a split within the subject, not where the subject confronts the object in a new way, but where the object literally transforms into something unrecognizable. The subject then re-enstates itself by arriving at terms with the world that has changed, creating new values, new relationships, modalities of life, and so forth.

In psychoanalysis resistance comprises any break, disruption, interruption of the free-flow of consciousness. Resistance is the basis of ego-formation, which is reflexively necessary to present an understanding of the outside world (Umwelt). The problem with DGR is that it relies so heavily on the ego-formation of the triad of leaders that it fails to open discursive patterns and practices that will actually emancipate or even decolonize. Criticizing such a movement's ideology without critiquing the leaders themselves becomes problematic, since the ego formation of those leaders are so tied up in the ideological structure of the movement, itself. Open discussion over real, necessary strategies and tactics that can come from the present conditions at hand becomes stifled. The egos of the authors promotes a double-resistance: first, against the status quo of dominionism (industrial civilization) and second, against its own readers, as it develops a reactionary assault against open discourse and community through ill-conceived hierarchical model that fails in every historical instance.

The most blatant problem of subject formation, which creates a cult of personality, stems from the subjective resistance at play in DGR which takes its central place in the castigation of other radical tendencies or groups. Keith's attack on anarchists and vegan activists is the most blatant form of resistance to a movement that takes shape without her consent; in other words, she imposes her definition of a movement ontop of a movement that already exists, like a cookie cutter that breaks away the undesirable or out-of-order. Here we find a populist "Othering" of groups within the movement who appear to be compromising the integrity of the core of resistance, which is to find its focus on wilderness. We know also from outside documents that Keith's denunciations extend also to trans-folks, whom she believes undermine the authenticity of her own essentialized femininity. Here, we strike upon the classic mode of subject-forming resistance in the deepest psychological sense: deep-seeded patriarchal attacks on non-binary gender roles.

Who is Lierre Keith? The question can only be answered from within her own interpolation, which posits itself as an eco-feminist in opposition to the free play of gender and sexuality not only available but present throughout the world, even (or particularly) in indigenous cultures that she idealizes and essentializes almost as much as herself. Civilization is bad; indigenous peoples are good, but as Proust shows in *Memory of Dead Times*, war itself can be seen both as the most primitive and civilized of all human actions; the two are matters of oppositional engagement that pursues a specific direction. When we think of national liberation movements that have worked—the Vietnamese army supported by Ho and Giap, for instance—there was no real glorification of the uncivilized; rather, there was a sincere understanding, both among anti-war activists in the North Atlantic and Vietnamese freedom fighters, that there had to be another way beyond these inane categories.

After all, we are taught by feminist psychoanalysis that the productive side of subjective resistance is formation based on transference ("as if through a glass, darkly," to recall Patton). No wonder, then, that there is nothing original to be found in DGR—at its most honest, it is simply an amalgam of sloppily cross-referenced theoretical data; at its times of bad faith, it is an oppressive concretion of radical energies into a reactionary bloc at the hands of sheer demagoguery.

Cease and Resist?

In DGR, we have some lucid moments, some vivid writing, but no adequate resistance beyond the subject-formation of the ideologues and demagogues. Instead, we have what Lacoue-Labarthe calls “desistance”, or the problem of the failure of the subject to adequately define itself, to come to terms with being in the world. What is resistance? What is insurgency? How are the two different? We don’t find the answer in this text; we find a de-velopment of a reactionary subject that functions as a fig leaf for the ego formation of its leaders.

“The subject desists,” writes Lacoue-Labarthe, “This is why it is fictionable at its very origin and only accedes to selfhood, if it ever does, through being supplemented by a model or models which precede it.” DGR fails to honestly give an account of itself, because it is constructing itself from the egos of its authors and from prior models of resistance that decline actual material circumstances. Therefore, it is fundamentally a reactionary project. “The problem is probably that desistance resists,” explains Lacoue-Labarthe, but it resists in a dialectical fashion in a struggle against itself to produce an alternate self.

Rather than mobilizing within or really acknowledging pre-existing structures of resistance, DGR coins a new struggle and co-opts all the underlying components. Earth First!, the Earth Liberation Front, small, radical biodiversity groups—why exist outside of the leadership of the three enlightened authorities? Instead, however, of adding momentum, DGR alienates the subject, contains it, sets new, abrupt and parameters according to a convenient metric plot that corresponds only internally to DGR’s ideological position, and not externally to those movements that it co-opts.

The activists who operate under the DGR banner are not subject to the will or direction of its leaders. There is no purpose in following them under the conditions of such intellectual ineptitude and ossification. A new generation of DGR writers must arise from the backwardness of its current leaders. Rise up, DGR, from the glorious ashes of revolution. Forever, for the Earth!

BOOK REVIEW

Best, S., Kahn, R., Nocella II, A. J., & McLaren, P. (Eds.). (2011). *The global industrial complex: Systems of domination* Lanham, MD: Lexington Books. 344 pp. \$37.99 (paperback) \$95.00 (hardcover)

Unpacking the Dominant Paradigm: A Review of Global Industrial Complex

Jan Smitowicz

The Global Industrial Complex: Systems of Domination is an important and extremely informative compilation. It lays bare, for all to see, the myriad horrors of the modern industrial megamachine, the system that has parasitically pervaded every sector of our lives. As a whole, the book *demolishes* the dominant culture's industrial model, and for this reason it is a seminal text.

Global Industrial Complex (GIC)—edited by Steven Best, Richard Kahn, Anthony Nocella, and Peter McLaren—is a collection of twelve essays by a wide variety of academics and activists. Each one focuses with laser-precision on a different specific sector of society that has adopted the industrial model, and demonstrates the numerous pernicious effects of that particular institution or institutions. Each piece is so packed with fascinating and/or significant information, analysis, and statistics that, in hindsight, it would've almost been more efficient to highlight the passages that I felt *weren't* extremely important, and worth revisiting.

There are many standout essays, and every single one has many great things to offer. In his Introduction, Steven Best discusses how in a general sense the industrial model uses “seemingly infinite methods and techniques...to regiment populations, pacify resistance, neutralize activity, and eliminate opposition” (xiv). In Ward Churchill's essay “The Security Industrial Complex”, he offers more specific examples and analysis of Best's assertion. This is highly, appropriate, since Churchill is doubtlessly one of the foremost experts on the history of state repression and suppression of legitimate, even legal dissent. In addition to examining how programs like the FBI's COINTELPRO have done just this, he demonstrates exactly how the powerful elites of the modern corporate-industrial state depend “upon the unhampered continuation of business as usual,” and how this is “of necessity carried out by routinely targeting individuals and organizations guilty of no criminal activity whatsoever” (p. 43). Examples abound. This is so very important, because anybody who has an iota of compassion or conscience extending beyond the scope of their own individual lives *must* know how the ruling elites of industrialized nations will do whatever they can to suppress and divert attempts to challenge the murderous, sociopathic status quo; only in knowing this, and examining the specific methods by which the state upholds this status quo, can caring people make informed decisions and perform legitimately effective activism. In Carl Boggs's “The Corporate War Economy,” he echoes Churchill's sentiment that those in power make the decisions and brook no argument when he writes (and shows) how, “When it comes to the actual making of U.S. foreign policy...even pretenses of democratic participation fall by the wayside” (p. 37).

One of the most interesting essays in *GIC* shows how even nonprofit organizations have become industrialized and unworthy of support from radical activists; this is something I knew a little about, but Andrea Smith goes into great detail and provides a fierce analysis of it in “The Revolution Will Not Be Funded”. She talks about how it is not this or that nonprofit to blame,

but rather the whole system—how the nonprofit has been bastardized and subsumed into a deleterious paradigm. They are used, she compellingly argues, to, among other things, “monitor and control social justice movements”, “redirect activist energies into career-based modes of organizing instead of mass-based organizing capable of actually transforming society”, and that the nonprofit-industrial complex “allow[s] corporations to mask their exploitative and colonial...practices through ‘philanthropic’ work” (p. 134). Ultimately, she says, we must “switch our focus from organization survival to movement survival” (p. 148). As an animal and Earth liberation advocate, this brilliant line made me think immediately of groups like PETA (People for the Ethical Treatment of Animals), HSUS (Humane Society of the United States), Greenpeace, and the Sierra Club, all of which seem to have become co-opted by the capitalist drive to amass greater sums of money as their first priority, rather than effecting real, meaningful social change. This is a disturbing and disheartening development that must be quelled (or at the very least our support for these groups withdrawn)—if, that is, our goals actually are to make real lasting change, rather than to make money feeling like we’re making a difference.

“Higher Education’s Industrial Model” by Cary Nelson shows just how hilariously absurd, surreal, and even Kafka-esque things can get when institutions that should be benign are taken over by the pervasive system. He shows how many schools of so-called higher learning have been invaded by corporate interests, their credibility shot. I couldn’t help but laugh in disbelief when Nelson mentions such real-world academic positions as Washington State University’s *Taco Bell* Distinguished Professor of Hotel and Restaurant Administration (should the phrases “Taco Bell” and “Distinguished Professor” *ever* be in the same sentence?), MIT’s Lego Professor of Learning Research and the Chevron Professor of Chemical Engineering, and the General Mills Chair of Cereal Chemistry and Technology at the University of Minnesota, to name just a few of the dozen-plus listed. These things would be riotously funny without reservation—were it not for the disturbing ramifications and inevitable conflicts-of-interest they invariably produce.

Probably my favorite essay in the whole collection is Vandana Shiva’s “The Agricultural Industrial Complex”. She was one of India’s leading physicists and has now become an activist for environmental justice, women’s rights, and sustainable agriculture and farmer’s rights. Shiva is without question one of the world’s foremost authorities on food and its ties to corporate takeover and unsustainability. Her piece focuses on the triple threat to survival on Earth, which are climate change, peak oil, and the food crisis. She demonstrates unequivocally how industrial agriculture is completely fallacious and unsustainable; it eviscerates the soil and water and environment as a whole (accounting for 40 percent of global greenhouse gas emissions, the majority of this caused specifically by *animal*-based agriculture); it jeopardizes and even kills the small farmer—200,000 farmers in India alone have committed suicide in the last decade as a direct result of corporate practices, especially those of the loathsome Monsanto and its dangerous GMOs; and industrial agriculture produces food that is far less nutritious than more sustainable and traditional methods. Indeed, it is the very “technologies and economic systems that are offered as solutions to hunger that are actually *creating hunger*” [emphasis added] (p. 172). She also indirectly demonstrates how the catastrophic effects of overpopulation—namely, mass hunger, as 33 countries at the end of 2008 were experiencing moderate to severe food crises—predicted by Thomas Malthus in the early 1800s and reaffirmed by Paul Ehrlich in the late 1960s are now unquestionably a reality.

My only real issue with the collection didn’t come until the Afterword by Peter McLaren. He claims that “we have to stop treating the symptoms of the present crisis in order to create a future outside of the social universe of capitalist value production—a socialist future” (p. 295). Yet the entire preceding text of twelve essays and nearly 300 pages was *not* about the capitalist model,

but about the *industrial* model! There is a difference—socialism and industrialism are far from mutually exclusive, as history amply demonstrates. To say that evolving to a socialist global future would dig at the roots of these crises, rather than being just another attempt to reform the symptoms, is completely inaccurate, as the entire collection of *Global Industrial Complex* demonstrates! Any radical change of the dominant paradigm that doesn't address rampant overpopulation and vast overconsumption—which socialism doesn't inherently do—is simply inadequate. If the problem truly is industrialism, (and *GIC* very resolutely affirms that it is), then the answer is *to eliminate industrialism*. I don't know why that is such a difficult concept to grasp. However, in the end, *Global Industrial Complex* provides us with the informational tools to make this cognitive conclusion ourselves, and that is the most important thing. The solution is clear—and the book rigorously demonstrates this clarity. For that, its value cannot be overstated.

BOOK REVIEW

Fassbinder, S. D., Nocella II, A. J., & Kahn, R. (Eds.). (2012). *Greening the academy: Ecopedagogy through the liberal arts*. Rotterdam, The Netherlands: Sense Publishers. 256 pp. \$48.60 (paperback) \$89.10 (hardcover)

A Review of the Book: “Greening the Academy: Ecopedagogy through the Liberal Arts,” edited by Samuel Day Fassbinder, Anthony J. Nocella II and Richard Kahn.

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Introduction.

It is a widespread belief nowadays that Environmental Education is: (i) mainly an issue concerning the lower levels of Education (Primary and Secondary) (Ham & Sewing, 1988; Breiting & Mogensen, 1999) and (ii) when referring to Tertiary Education (University) then Environmental Education simply reflects a teaching and using **only of** Sciences, such as Chemistry, Physics, Ecology or of Mathematics or of Technology in an Environmental-oriented manner (Hicks & Holden, 1995; Stables, 2001).

The major contribution of this great book / collection of papers by Fassbinder, Nocella II and Kahn, is—in our opinion—exactly that **it denies** the two aforementioned arguments. The book states that: (i) Environmental Education must totally penetrate Tertiary Education too, if the latter is to produce critically thinking and “resisting” scientists of all fields, resisting to the industrial complex and the militarization of sciences and (ii) Environmental Education in the Tertiary Education should definitely **not limit** itself to the Science, Mathematics, Ecology or Technology Curriculums but also cover the Human Sciences of all kinds, the Law, Economy and what is called “Liberal Arts” (Giroux, 1988), all the necessary human science curriculum subjects, needed to provide critically and progressively thinking scientists and citizens.

Main Review

The use of the term “greening” has for long been put in a variety of contexts and meanings in sciences, academia, movements, and even in the prevailing today martial and political vocabulary (Prothero & Fitchett, 2000; Wickenberg, 2000; Benton, 1996). Everyone—politicians, educational stake holders, military movements, activists, academia, international institutions like IMF or UNO—use it in a different way, depending on their theoretical background, their beliefs, the things they are struggling for, their financial or political interests and benefits etc.

But what the authors of this brilliant book seem to define as “greening”, seems to coincide with what we (working in an Educational Department of a Greek University, but also being politically active and alert scientists) define as “greening”: Environmental education should immediately—with no further delay—be put in the core of all levels of education, Primary,

Secondary and Tertiary (Kahn, 2010). But certainly, this does not refer to environmental and ecological education simply as a scientific field, providing knowledge and expertise in a technical and scientific sense. (Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002; Tilbury, 1995; Jensen & Schnack, 1997). On the contrary, it means that environmental, as well as ecological education and justice education are formed and introduced in the curricula, in order to create citizens and scientists of all fields (Cole, 2007) who are critically thinking, who are politically aware and active and who are forming academic communities that are sites of resistance to the capitalist and industrial complex that invades and practically dominates the Western World Universities of today.

The authors and the editors chose to reflect upon *only* on the role of the so-called “Liberals Arts” (Blaich et. al., 2004), in the transformation of Tertiary Education towards a direction of environmentalism, ecological justice and non-anthropocentric critical thinking. The reason is that these Arts are the ones mainly responsible for creating citizens and scientists with an active and communicative role in the society (Seifert et. al., 2008). Besides, only Human Sciences were, correctly, chosen as a site of study, since – as was earlier discussed, the role of Science (Physics, Chemistry, Biology, Earth Science etc.), of Mathematics and Technology in Environmental Education and Ecological Education has thoroughly been discussed in the literature (Lucas, 1980; Gough, 2002; Hodson, 2003). Apart from that, these latter scientific fields mainly treat the term “greening” in a rather reductionist, rationalist and technocratic manner, a manner which tends today to suit the needs of Capital, of the Multinationals and of the Martial Alliances (Best, Nocella II & McLaren, 2009). The only possible drawback one could find in the volume would be the absence of a Chapter on “Greening Law Studies”.

The book is tremendously useful for the Greek readers (academic or not) for three reasons; a) the Liberal Arts and the Human Sciences in the Greek Universities today pay almost no attention to environmental or ecological matters and the respective justice issues stemming from these fields. The reason is that the academic teachers of Liberal Arts and Human Sciences consider them to be more an area of study for the Faculties of Science and Technology (Fien, 1993; Ratcliffe & Grace, 2003) b) many educators in the Academic fields of Economics, Literature, Law, History, Humanities etc, have a lot of intertwining with the industrial and banking complex that rules the country, especially its Politics and Education. Many of them are ministers in the cabinet, authors of books for Primary and Secondary Schools etc (Panoussis, 2008; Kimball, 1990). Thus, there is total absence in the Greek Liberal Arts’ and Human Sciences’ Academia, of ideas, actions, writings or speeches about Environmental and Ecological Critical Thinking and Justice. To this field the current book has a lot to contribute. c) Making Environmental and Ecological Justice Education more a “toy” or “gaming activity” in the Primary and Secondary Schools, deprived of any political meaning (with the brave exception of some brilliant primary and secondary school teachers) there is tremendous lack of theoretical background for major peoples’ movements, leading the latter to a gradual degeneration. We will refer to two ongoing major such struggles in Greece (including fights with the police, sometimes the Army, and – of course – the local incumbents and officials): The struggle of the people in Keratea, a degraded outskirt of Athens, to avoid building a big waste landfill in their land (Douzinas, 2012; Botetzagias & Karamichas, 2009) and the struggle of the people around Asopos river in-between Attica and Viotia to stop the water of their river being polluted (better say: poisoned) by the local industries (even Erin Brockovich is involved in the struggle of the latter) (Holst-Warhaft & Steenhuis, 2010). With a book like “Greening the Academy”, such environmental and ecological justice struggles could achieve a strong theoretical background outside the society—where they are already strong—in the Tertiary Education territory.

In a previous work of us (Gkiolmas & Skordoulis, 2006) we presented the view that everyone involved in Environmental, Ecological or Justice Education – being a student, a

teacher, a stake holder, a curriculum creator, a policy-maker or whatever else – would in fact position himself or herself in a certain position, defined by two intersecting theoretical axes. The one axis has as ends “the local” and “the global” and the intersecting axis has as its ends “the old” (“the traditional”) and “the new”. Both axes are depicted in Figure 1, below:

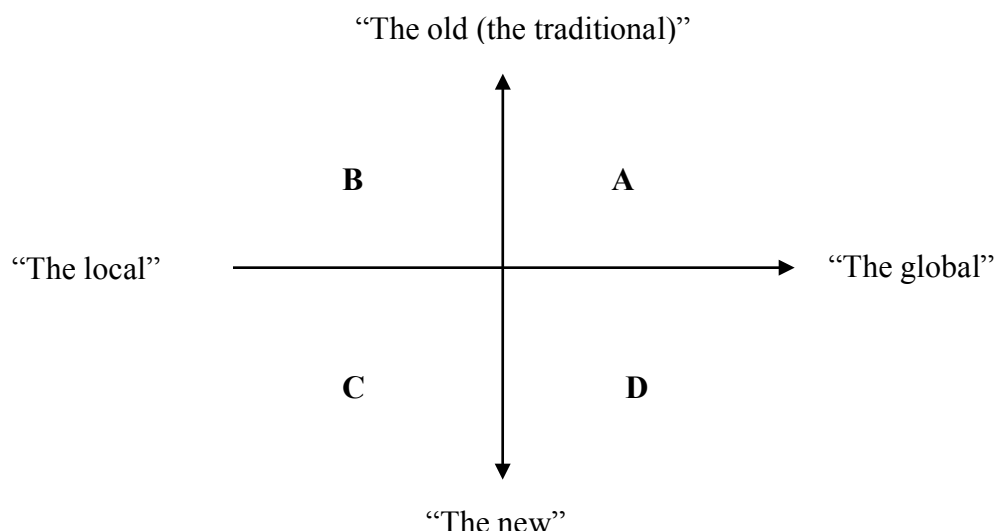


Figure 1: The two intersecting theoretical axes delineating all kinds of involvement with Environmental Education, Ecological Education or Justice Education (Gkiolmas & Skordoulis, 2006).

Everyone involved in “greening” education – and specifically Tertiary Education – as an instructor, as a learner, as an administrator, a stake-holder, a curriculum maker, a policy-maker or even an activist of a non-governmental organization, automatically locates himself and his theoretical context and viewpoints somewhere on the two intersecting axes of Figure 1. One might act or thing closer to “the new” or closer to “the traditional”, closer to “the local” or closer to “the global”. Alternatively he/she can choose to be situated in one of the four quadrants (A, B, C and D) of Figure 1, in the sense that when one is in quadrant A, for example he sees “greening” in a mole global sense and also closer to the traditions of indigenous cultures (like “eco-wisdom”). (Skolimowski, 1991; Van Damme & Neluvhalani, 2004)

It should be stressed that **whenever** one environmentalist, ecologist or social / environmental justice theorist and activist chooses to be situated in the context of Figure 1, **does not identify** him as radical, critical, progressive or – on the contrary – conservative and neoliberal. His actions and thoughts or writings do that! For instance, one may be in Quadrant C of Figure 1 and be radical and progressive, in the sense that he views “greening” as protecting **the local** cultures and ecosystem attitudes of indigenous people in an area and also claim that this must be done with **new methods**, using the Internet, the social media, Wiki-spaces etc. (Rohwedder, 1994; Briano et al., 1997; Stables & Bishop, 2001). Another person could be located in Quadrant C of Figure 1, and be totally conservative and neo-liberal in the sense that he favors **the local** environmental and economical development of an area or city, regardless of the fact that it will ruin the neighbouring areas and civilizations or ecosystems, and he also introduces **new methods** of greening like GMO plants and foods, destroying ecosystems’ balances and peoples’ health. (Leeming et. al., 1993; Cutter-Mackenzie & Smith, R., 2003).

Having introduced this theoretical framework, one can notice that everyone of the

participating authors of this brilliant book, is situating himself within the “system of coordinates” defined in Figure 1, as regards his/her conceptual representation of the term “Greening”. Needless to say, that wherever they are situated in this theoretical scheme, they are all radical, critical, or progressive educators, seeing “green academy” as a site resisting the international industrial and military complex (Best, Nocella II & McLaren, 2009; Bellamy Foster, 2002; Kahn, 2008)

Thus:

- Fassbinder is more on “Quadrant C”, favoring “the local” and “the new”. We focused more on his paper, due to our interest as educators.
- Beirne and South are more on “Quadrant D”, favoring “the global” and “the new”.
- Animasahaun is more on “Quadrant D”, favoring “the global” and “the new”.
- Luke is again “Quadrant D”, favoring “the global” and “the new”.
- Best (an anarchist and non-anthropocentric Ecology theorist, very well known here in Greece) is more on “Quadrant A”, favoring “the global” and “the old (the traditional)”.
- Kennet and Gale de Oliveira are more on “Quadrant D”, favoring “the global” and “the new”.
- Houston, whom we respect a lot as researcher, both her and her husband Greg Martin, finds herself more in “Quadrant B”, favoring “the local” and “the old”.
- Swidler is more on “Quadrant A”, favoring “the global” and “the old (the traditional)”, in the sense of historical perspective.
- McKenna is again more in “Quadrant B”, favoring “the local” (local communities) and “the old” (historical analysis).
- Milstein is located rather in “Quadrant A”, favoring “the global” (overall study of Nature in its communicative role) and “the old (the traditional)” (historical study of the concept of environment).
- Lewis can be situated in “Quadrant C”, favoring “the local” (focusing on American literature) and “the new” (impact on modern neo-liberalism, capitalism and on attitude towards Nature).
- Nocella II is rather in the theoretical context of “Quadrant D”, favoring “the global” (all-inclusive environmental and sustainability education for all) and “the new” (the new scientific paradigm of *eco-ability*, as a concept that connects environmental education and action with social justice and elimination of all kinds of discriminations).
- Finally, Gaard would rather be put in the context of “Quadrant B”, favoring “the local” (the specific contribution of feminism in “greening” education) and “the old” (historical review of it).

All the authors of the volume use excellent critical and radical argumentation and approaches. Some of them deal with “greening” from a more historical perspective (“what has been done” in order to “green” or how a particular academic field contributed to “greening”), others describe more the current situation and if, how, and to what extent the specific field contributes to “greening,” as well as the reasons for this kind of contribution and finally many of them reach to a point of “what has to be done – as soon as possible – to introduce “greening” to the specific field, or to alter drastically the way that this field adds “greening” to Tertiary Education.

Nevertheless, all the authors of this brilliant work, which we introduce warmly to any active and thinking reader, come to the same conclusion (more or less): *if we want academic life and activity to continue resisting the tremendous pressure on behalf of capitalist, neo-liberal, commercial and martial global interests, and to continue – or in some cases, start – producing critically thinking and alert citizens, or producing knowledge and research for people and the Nature and not for industries, we must immediately take the decisive turn. That is to introduce and diffuse as large amounts as possible of environmental, ecological, critical and based-on-justice education and action within the university campuses.*

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FILM REVIEW

Psihoyos, L. (Writer). (2009). *The Cove*. In C. Hambleton, F. Stevens, J. Clark, O. Ahnemann & P. D. Pesemn (Producer). USA: Lions Gate. 92 minutes \$14.95 (DVD)

A Review of the Film: “The Cove”

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One of the most powerful and heart-wrenching documentaries of late, *The Cove* is a vital one to share with anyone concerned about social justice and advocacy. The film has won numerous awards, including Audience Award at the Sundance Film Festival and an Academy Award for best documentary. It tells the story of a group of advocates struggling to reveal the secret slaughter of approximately 23,000 dolphins annually in a small Japanese town Taiji. However, the film isn't just about saving the dolphins; it's also about the larger issues of rising mercury levels in the food chain, ecological degradation from overfishing, political corruption and human/environmental health concerns that the Japanese government sanctions. The filmmakers provide ample facts, vignettes, and analysis into the hows and whys of dolphin genocide but never descends into easy preachiness, doing an excellent job of covering both sides of the issue while naturally siding more with the view that Japan's fishing practices are causing serious problems not only to many populations of marine mammals but to humans too.

The heroes of the film all hail from diverse backgrounds including the director, Louis Psihoyos, a National Geographic photographer and founder of the Oceanic Preservation Society Richard O'Barry, once the leading dolphin trainer in the world, best known for his work on the television show *Flipper*, and now the leading activist against dolphin captivity; a couple of world-class divers, technical experts borrowed from George Lucas's studios and a handful of other volunteers all using their skills and talents in the face of danger so that they can show the world video proof of this hidden dolphin slaughter.

The cove is what O'Barry calls “a dolphin's worst nightmare.” The dolphins' migratory pattern leads them past Taiji where fishermen disrupt their pattern by using sonar, which confuses them into a cul-de-sac where they are trapped in nets. The dolphins are then sorted, with the most desirable dolphins (typically bottlenoses who resemble *Flipper*) corralled and sold to trainers and sea aquariums all over the world. The rest are pushed into the cove – a section of the beach that is secluded from the public because of its steep cliffs, high fences and razor wire – and are harpooned and slaughtered for their meat. The cove is heavily patrolled and guarded; anyone who ventures near the cove is threatened with violence, intimidation and arrest if caught. I liked that the film didn't simply dive into the major issues but carefully eased into the argument against the mistreatment and killing of dolphins. Having been warned about the horrific slaughter scenes in advance, I spent most of the movie on the edge of my seat waiting in suspense. To my surprise, the film included many warm moments, beautiful scenes and imagery that gives the viewer hope and a sense of restitution. The suspense still builds as the crew prepares to go into the secluded cove where the slaughtering takes place.

The film starts out rather peacefully, explaining the grace of dolphins and why they are revered all across the world for their intelligence and performances in sea parks and aquariums. Presumably the dolphins who go into captivity are happy and have been saved from a worse

fate—however this presumption is proven wrong through the commentary of former trainer O’Barry. It is through his contributions to the story that the audience comes to understand why the capturing and slaughtering of dolphins is so very wrong.

O’Barry very remorseful that it was his work on Flipper, which also made him rich and famous, that set in motion the craze for capturing and training wild dolphins. He explains that, after working with the dolphins in captivity for many years, he started to realize the dolphins were not happy being performing animals and that they experience depression just as humans do. This change of heart was solidified after Kathy, the main Flipper dolphin, as Barry explains committed suicide in his arms because of how miserable she was in captivity. From then on, O’Barry’s name became synonymous with dolphin activism and he became the strongest advocate for freeing the dolphins. He said, “I was as ignorant as I could be for as long as I could be ... I spent 10 years building and the next 35 trying to tear it down.” He has devoted his life to freeing the dolphins and risks his life to try and save Taiji’s dolphins. He says, “If a dolphin is in trouble anywhere in the world, my phone rings.” In the film, he comes across as an exhausted yet fearless leader, determined to make amends for his part in the ongoing dolphin tragedy for the rest of his life.

The viewer senses that the filmmakers sincerely want to understand why the antagonists of the film, the Japanese Government and the fishermen of Taiji, insist that their fishing policies are ethical. The film investigates the cultural-relativist angle, that perhaps the capturing, slaughtering and eating of dolphins is somehow connected to a cultural tradition or spiritual event. Should that be the case, then perhaps what they are doing serves a higher purpose and should be respected on the grounds of tolerance for other cultures and general diversity. To the unsuspecting tourist, the town of Taiji seems to love and admire the dolphin as it's decorated with cute dolphin pictures, statues, and tourist boats. What lurks behind the imagery is a small group of people who are determined to protect the lucrative dolphin industrial complex because it fuels the town’s economy. The majority of Japanese people do not have any special connection with dolphins and do not willingly ingest dolphin meat. In fact, many people in the city of Tokyo whose interviews were included in the film were shocked and appalled to learn about what goes on in Taiji, thus the insistence that the mistreatment of dolphins is somehow connected to their culture and therefore should be respected fails to answer the question of why.

Clearly the philosophy that fuels a lot of what happens in Taiji rests on the ideology of anthropocentrism, the privileging of human interests over all other non-human entities. Some of the comments from Japanese officials make their view clear; dolphins have absolutely no intrinsic value and humans are and should be central or the most significant reality of the universe. The Japanese take on a certain “logic of domination,” whereby they assume that human beings are morally superior and that those who are superior have a right to dominate those who are subordinate. The film does an excellent job demonstrating how dolphins are among the most intelligent of mammals, manipulating their environment through the use of tools and have been observed teaching behavior traits to their offspring. Evidence such as this suggests that dolphins should be endowed with unalienable rights and should be treated as an end in themselves, not merely as a means to an end.

It is interesting to see how politics help fuel the slaughtering of dolphins for their meat. The killing of dolphins is legal because they and other small mammals are not protected under the law that deregulated commercial whaling. Dolphins are not classified as whales, despite the fact that they are both mammals. What is even more disturbing is how the International Whaling Commission, which operates on an international scale with the intent of preventing the slaughter of large nonhuman mammals, actually serves to promote the unethical Japanese fishing practices. The viewer learns that Japan coerces cash-strapped nations into protecting the slaughter of dolphins by offering them monetary rewards if they cast votes favoring Japan’s agenda .

Since the Japanese can't legally fish whales to the point of extinction, their covert plan seems to focus on fishing dolphins to the point of extinction. Thus, dolphins are slaughtered and their meat is deceptively labeled as whale meat and sold in stores as well as given to Japanese children in their free-lunch programs at school. A number of scientists have run tests that prove dolphin meat contains high levels of mercury that is dangerous to consume. They argue that the catastrophic Minamata incident should serve as a foreshadowing of what is to come if the government doesn't rise to action against eating dolphin meat. Minamata is a Japanese town where a ruthless Japanese industrial plant dumped mercury into the waterways for years, eventually trickling down the food chain and leading to thousands of deaths, illnesses and life-threatening birth defects. Just as they did with the Minamata incident, the government works hard to keep the mercury poisoning out of the spotlight.

Through this astonishing story we see glimpses into the dark side of humanity and learn many lessons about greed, politics and the nature of animal ethics. What these advocates risk to expose the horrors taking place in Taiji is truly honorable and courageous. There are many scenes that would enrage anyone yet also moments of serenity—and it isn't just the dolphins that create this effect but the people dedicated to their protection too. The ending provides a great deal of satisfaction as well as a much-needed glimmer of hope that perhaps the wrongs done to the dolphin might possibly be corrected in the near future. The argument supporting the protection of these animals is so convincing that it would be almost impossible to walk away from this film and not feel a personal responsibility to help solve it. We only hope that the film will publicize the problem on a global scale and then hold the Japanese fishing industry accountable for not only wasting of precious dolphin lives but also poisoning of our waterways, nonhuman animals, and our fellow human beings. The film is so well crafted that it has the potential of creating systems change and improving our world.



The 2014 North American Critical Animal Studies Conference invites papers, presentations, and workshops from scholars, activists, and artists working on ethical and political issues concerning nonhuman animals. This year's venue in Houston, TX offers a unique opportunity to investigate the intersections of oppression in a locale where many of the pressing concerns about bioengineering, pollution, and animal experimentation are centered and present.

Critical Animal Studies as a field has become a powerful canopy for many convergent arenas of thought, politics, scholarship, and activism. In partnership with the Rice Center for Critical and Cultural Theory, the conference will be housed in the BioScience Research Collaborative located in the Houston Medical Center adjacent to Rice University. The close proximity to the events and practices around which our academic fields of study center will emphasize the immediacy and scope of the issues to be addressed.

Presentations should be fifteen to twenty minutes in length. We are receptive to different and innovative formats including but not limited to panels and workshops. You may propose individual or group panel presentations, but please specify the structure of your proposal.

We welcome presentations from a variety of academic and non-academic fields, including but not limited to:

- **activism and advocacy**
- **animal liberation**
- **biopolitical thought**
- **bioscience and biotechnology**
- **critical legal studies**
- **cultural studies**
- **disability studies**
- **ecology**
- **ethics (applied / philosophical)**
- **feminist theory / gender studies**
- **film studies**
- **political economy**
- **postcolonial studies**
- **queer theory**



