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A Genealogy Of Ecological Rhetoric: Heraclitus, Bacon, Darwin And Huxley

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A GENEALOGY OF ECOLOGICAL RHETORIC:
HERACLITUS, BACON, DARWIN AND HUXLEY

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DEDICATION

To Anna and Jack

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Not all 'ecological' situations are equal,
especially when they include members of the human species
among their protagonists

Isabelle Stengers, *Cosmopolitics* (32)

I would suggest that one of the richest legacies of classical rhetorical traditions
may be the relative 'poverty' of its theories – its resistance to setting fixed boundaries
to the always evolving and incalculable complexity of rhetorical practice.

Janet Atwill, "Rhetoric and Civic Virtue" (89)

It's an issue of dramatizing, conveying how unprecedented are the questions raised by
what we call global warming or climatic disorder, and by all of the "inconvenient truths"
whose common characteristic is, precisely, to "inconvenience" the perspectives
put in place by this same "we" who pride ourselves on no longer believing in sorcery.

Isabelle Stengers,
"History through the Middle : Between Macro and Mesopolitics"

Chapter One: An Ecological Rhetoric Reclaimed

Humans have attained the magnitude of a geological force in terms of our ability to change Earth's Environment and impact its climate system.

NASA's "Statement on how the Global Earth System is Changing"

That we are living through an ecological 'crisis' that is no longer uncertain, and that our social and political responses to a changing climate are too slow, often reactionary, or contradictory, should confirm that the real dilemma is currently one of (or for) rhetoric. When we grapple with 'ecological' issues today, we take on a challenge that now has more to do with mobilizing socio-political and economic responses than with building further scientific proof, which has demonstrated without a reasonable doubt that global warming, ocean acidification and mass extinctions are occurring at a faster rate than it ever in human history, and that humans are now the major cause of any changes, positive or

negative, on the planet. To say, however, that ecological problems are rhetorical problems ready-made for the bread and butter work of rhetorician, philosopher, linguists, critical theorists, or sociologist working with language can still seem potentially ingratiating, or (more reasonably) rather inadequate in the face of unenviable challenges to keep up with rapidly changing science, policies and 'development' fueled by the advances of capital and technoscience we've long struggled to control. This dissertation is a response to a number of such challenges for (environmental) rhetoric in recent decades, and an investigation into a longer history of thought that intersects rhetoric and ecology, looking specifically at the rhetorical interventions of Heraclitus, Francis Bacon, Charles Darwin and T.H. Huxley as "bridge figures" in the history of rhetoric, science and ecological thought. The result is a historical work examining moments where rhetorical and ecological thought are connected in theory and practice and appropriate to a rhetorical tradition, and a genealogical work that foregrounds rhetorical theories and strategies (as discursive practices, performances and techniques) that are suitable to appropriate in rhetorical studies, teaching, and public work.

Recent decades have proven that the rhetorical theories and practices in fields like (environmental) rhetoric, (environmental) science studies, or (eco) linguistics have made prominent contributions to better argumentation, improved inter-disciplinary research, more persuasive policies and successful advocacy in networks of science, politics, policy and activism. At the start, a dissertation offering a long and periodic history of *ecological rhetoric* may seem out of step this kind of work, especially as contemporary scholarship works avidly to keep pace with an 'ecological situation' rapidly expanding with changing exigencies. As the sciences grapple with our shifting relationships with nature we are witnessing previously unimaginable capacities to transform, speed up, slow down, or extinguish ecosystems, capacities which Thomas Princen captures in his analytic snapshot of new terminology that ripples through discourse communities of "scientists, business leaders, policy makers, and citizens alike" (5).[1] Princen hones in on terms that have rapidly becomes commonplace and which reflect "many

people's struggle to fathom fundamental shifts" -- terms like "*surprise* (which now has a technical definition), *threshold* (as in, 'cross that threshold and your environment is completely different'), *irreversibility* (there is no going back, no recovery), *nonsubstitutability* (things like an atmosphere and water cannot be replaced), *unprecedented rates of change* (trends of the past are poor indicators of the present, let alone the future), and that all-purpose, ever-popular *crisis* (both fast and slow)" (5-6). The changes marked by such "fundamental shifts" are now only imperceptible to those beguiled enough (often by a sizable effort by industries and think tanks to persecute scientists and flummox the public) to miss the disappearance of the great pollinators, the devastating impact of migrating species like the mountain pine-beetle on North American forests, an international state of the ocean report that points to a "high risk" of entering a phase of unprecedented extinction, a 2007 IPCC report concluding that emissions growth must end by 2014 to avoid irreversible tipping points, the Antarctic and Amazon defined as endangered ecosystems (that can sustain most life on earth), arguments that it is now physically impossible to increase "net energy" as we have in the past, and over a dozen books published in the last three years on the ethics of geoengineering.[2] Living amid dramatic ecological changes compels us to begin with a provisional definition of *ecological rhetoric* as an evolving concept, one that also begins to explain my historical and genealogical endeavor as stipulating that ecological rhetoric be conceived as a part of the historical fabric of a rhetorical tradition – a gesture which I believe is ultimately in the vein of one of the most valuable legacies of a rhetorical tradition, which Janet Atwill describes as "the relative poverty of its theories – its resistance to setting fixed boundaries to the always evolving and incalculable complexity of rhetorical practice" (89).

The need for this definition stems in part from the way ecological exigencies are addressed in the rhetorical work most interested in ecology, trends developed in the subfield of *environmental rhetoric* which cohered around Killingsworth and Palmer's landmark work *Ecospeak: Rhetoric and Environmental Politics in America* (1992) and which defined *environmental rhetoric* as primarily

emerging in the 20th century and as "primarily analytical" (1). This compelling work aimed to delineate "the patterns of rhetoric typically used in written discourse on environmental politics," and was pitched as a work of *"rhetorica utens,* a study of rhetoric in use" aimed at students of public rhetoric (1). The authors sought to "restore the balance" to a field "exclusively focused on *rhetorica docens,* the theory and pedagogy of rhetoric, while ignoring actual living practice" (2).[3] Looking back at these moments in the early 1990s, we might say that aim of establishing *environmental rhetoric* as a subfield primarily aimed at analyzing and contributing to 'actual living practices' was the beginning of a familiar recurring problem for rhetoricians: the return of another potential 'globalization' of rhetoric as it attempts to account for the character and 'wingspread' of *ecological rhetoric* in theory and practice over the past twenty years. A provisional definition of *ecological rhetoric* should account for this new brand of globalization taking place as rhetorical analysis tracks a network of discourses and practices that extends well beyond the analytic focus of a relatively narrow sub-discipline and even beyond the potential scope of an extraordinarily expansive discipline in rhetoric. Ecological rhetoric today is studied and deployed by countless public and private organizations, and increasingly diverse disciplines and interdisciplinary fields, including the familiar work in our own subfields like environmental rhetoric and the rhetoric of science, which study or collaborate with those working in ecology and related sciences (the actual sciences of how ecologies work), the evolving works of environmentalism (critical and populist suggestions about environmental policy and activism), and critical and philosophical works interested in "ecology" in the broadest senses --scholarship that studies ecology as an evolving concept and intermingles ecological thought with other topics dealing with natural, human, social, technological and networks in more theoretical registers (such as Castells, White, Guattari, Gorz, or Morton). Among such scholarship, ecological rhetoric is often theorized or defined by terms from rhetoric, philosophy and critical theory, or by drawing on the terms and ecological perspectives that took shape with systems theory, cybernetics and related "intellectual synergies of the late 1940s" that established

communication as the process that links the biological and psychological aspects of being, and that "refused to reduce *communication* to the verbal or written exchange among humans" and instead explored communication as connecting humans, machines, and 'nature' in important ways (Mathur 156). It is relatively well known to rhetorical scholars that concepts from cybernetics like *message, interpretation, perception, the circuit, circularity, self-preservation, self-correction, the 'social matrix,' meta-communication* and *entropy*, seem to align well with many more ancient rhetorical theories about how communication practices take place or connect us with an environment.

Another way to give some coherence to this expanding body of theory and practice, and to begin situating the contributions of this dissertation, is to think of our field as taking up *ecological rhetoric* as something akin to a *dispositif* (or "apparatus") which Foucault defined as "a thoroughly heterogenous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions – in short, the said as much as the unsaid […]. The apparatus itself is the system of relations that can be established between these elements" (199). [4] For Foucault, an apparatus is "precisely the nature of the connection that can exist between these heterogeneous elements" and it forms a strategic imperative response to an "urgent need" (201). The idea that *ecological rhetoric* is something like a *dispositif* promptly calls attention to what I believe are three vital registers and points of interest for rhetoricians working with ecological themes or exigencies today, and it highlights a number of important reasons why rhetoric might continue to provide some of the best strategic responses to ecological concerns at present. First, as a concept it captures the scope already mentioned here in this historic challenge motivating our field's efforts to do rhetorical work analyzing, improving or enacting the varied ecological discourses and material practices of sustainability in our teaching, research and action at nearly all points of this apparatus. Second, it captures some sense of the thriving efforts in the field to create some "system of relations… between these elements" in our interdisciplinary and

transdisciplinary inclinations, which have shown a capacity for analyzing diverse rhetorical practices as sustainability is being indexed across various institutional and administrative mechanisms, physical and ecological systems, and knowledge structures that exercise power in social structures. As 'ecology' and 'sustainability' are cathected with so much energy at many points in society, circulating through scientific, political and social realms, rhetoricians must (as Mailloux argued convincingly) continue to illustrate how rhetoric can enable interdisciplinary and transdisciplinary work shaping productive new domains of scholarship in growing areas like the ecological humanities or political ecology. Third, while this notion of *dispositif* captures one stipulation for an expanding cross-disciplinary role for rhetoric in these broad areas of scholarship, it captures another as it is variously translated as 'apparatus' and *'deployment'* in Foucault's work, which seems to suitably describe the corresponding disciplinary efforts aimed at rethinking and *deploying* our extraordinarily long and "flexible" rhetorical tradition (as Atwill noted in the above epigraph) as an archeological or genealogical resource suitable for use in a wide range of these "strategic responses" to this "urgent need" (201). This latter emphasis on a long-view of rhetoric for the present ecological concerns is something that I believe needs further articulation if our rhetorical tradition is to continue to contribute to the work addressing ecological exigencies with the application of rhetorical theory and practice.

To begin to situate my contribution more specifically then, there are a number of interesting moments in the history of rhetoric which I believe deserve our attention, moments that run back to some of the earliest moments in Greek thought and which would seem to deepen an ecological slant on rhetoric today in ways that are both familiar (or perhaps surprisingly conventional to a history of rhetoric, largely as several figures and concepts examined are integral to a rhetorical tradition), and unfamiliar (by developing new relationships between undervalued concepts and strategies from a history of rhetoric and ecological thought, and applying them to present concerns for ecological rhetoric taking shape in theory and practice). In other words, in exploring a history of *ecological rhetoric* in this

dissertation, the aim is also to pursue an objective that is more tactical and genealogical by not simply demonstrating what ecological rhetoric might have been historically, but by bringing forth useful rhetorical theories, concepts and strategies that contribute to rhetorical practices today, an effort which I think also contributes to thinking about ecological rhetoric as an evolving "apparatus" that has some "capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviors, opinions, or discourses of living beings" so they might think and live sustainably as a society (Jäger).[5] Of course, I hope to substantiate this more ambitious claim throughout this chapter and the dissertation, but I can preview the specific contributions of this dissertation in three key areas: *theory, technê, and techniques/strategies.*

Rhetoricians studying recent histories of "environmental communication" have, as Ells argues, sometimes worked to "illuminate much about communication and rhetoric in general as *ecological rhetoric* [which] has considerable persuasive potential in itself for reasons that can be demonstrated through criticism and ascertained through theoretical reflection" (9, emphasis mine). Sid Dobrin put it another way, claiming that in the past several decades the field has studied a "drama" playing out in a variety of political, cultural, and scientific discourses by generalizing the "greening" of rhetoric as having "rhetoric all its own".[6] There has been little said, however, about what this critical or "theoretical urge" (as Mailloux might call it) means for the field's investments in updating its extraordinarily long tradition, or how to pursue it constructively.[7] The main reason for this seems to be that most interested in the intersections of rhetoric and ecology have effectively recycled more recent cybernetic theory or turned to present-day complexity theories to articulate the 'ecological' character of rhetoric or writing (in literature I will review somewhat more below), but the field has done very little in turn to extend the overlap between rhetorical and ecological theory through more historical approaches, particularly through the rhetorical methodology Mailloux dubbed as "using rhetoric to practice history by doing theory" (*Reception Histories,* X-4).[8] This project is an undertaking of this type, of rhetorical

hermeneutics as both interpretation and theorizing through *figurations* of rhetoric that re-articulate persuasive forces, characters, tropes, strategies and their effects upon socio-cultural formations that we might deem distinctive to a particular evolution of ecological thought. While I will discuss my method in more specialized rhetorical terms below, my goal in taking up the works of Heraclitus, Bacon, Darwin and Huxley (the latter two discussed in conjunction) has been to treat them as 'bridge figures' in the history of rhetoric, science and ecology. While there is no final intellectual synthesis between these figures here, or no fully fledged theory of ecology in their individual works, they offer what Kerry Whiteside recently called in *Divided Natures* the "rhetorical fields" of critical theories where "the identities of 'nature' and 'humanity' get constituted together reciprocally" – as they are consistently "reinforced by a rhetorical field in which 'human' and 'natural' issues are kept constantly intertwined" (46). Like Whiteside, who forwards a kind of project that Mailloux would likely endorse by looking at how examples from French critical theory over the past fifty years worked with rhetorical concepts and strategies to shape enduring ecological discourses, philosophies, ethical tenets, or populist arguments, I look at these figures as casting enduring 'rhetorical fields' that are build around several core concepts, or (to borrow from a term from Gross) "essentially contested concepts" that are familiar to a rhetorical tradition, while also holding some sway over many more recent ecological discourses and histories (i.e. in environmental rhetoric, populist environmental arguments, ecological ethics, 'ecosophy', or critical theory). Part of the work in this dissertation is to revisit, reclaim or re-construct rhetorical concepts like *logos, technê,* and *invention* that held historical relevance for several remarkable theories of ecological thought, and to consider how the concepts and theories developed by these figures might help us usefully re-orient some of the more challenged vectors of *environmental rhetoric* at present (discussed in more detail in the upcoming section below), critical theory, ethics, or activism (discussed in the chapter descriptions below).

Technê, above all, surfaced as a particularly important concept in this study. Kelly Pender's study *Technê: from Neoclassicism to Postmodernism* (2011) does the most at present to explore the general bearings *technê* has had on composition and rhetoric. She argues that "*technê's* features have become a kind of invisible foundation for the field", a foundation with five distinctive modalities: (1) as a "handbook" for rhetorical training , (2) a "rational ability to effect a useful result," (3) as a "means of inventing new social possibilities," (4) as "a means of producing resources" that situates "*technê* in a position of extreme [or dangerous] instrumentality" capable of turning the world into "resources" to exploit, and (5) as modes of production that are "capable of the opposite – summoning the world from the void" – the category which she calls *technê's* "non-instrumental mode" (31 -33).[9] Pender's analysis of these last two modalities of *technê* as 'instrumental' and 'non-instrumental' modes is designed to capture an extended use of *technê* in the twentieth century to analyze an 'extreme' spectrum from the most "dangerous" technologies, forms of capitalist production, and reified thought, to an "opposing" tendencies to analyze or reclaim versions of *technê* that might provide a conceptual place-holder for forms of 'non-instrumental' rationality – theories most often drawing on complexity theory, Heideggerean concepts, or joining *phronesis* to *technê* as a necessary counter-part to everyday modes of rhetorical thought. What Pender captures in her discussion of these five modalities of *technê* is the growing trend in make connections between *technê,* rhetoric and ecological thought, and the development of problematic tendencies that result, mainly to either over-extend *technê*, or to look for ecological modalities of the concept in ways that recreate critical impasses between so-called 'instrumental' and 'non-instrumental' modes. This dissertation might help sort out some of these problems in two main ways. My first response comes later in this chapter in a literature review and argument that foregrounds a more recent circulation of *technê* in ecological discourses (environmentalist, economic, literary, and philosophic) which captures a more specific reconfiguration of ecological thought that has coalesced around *technê* in recent decades, presenting us a more

distinctive modality where this concept functions as a *productive* form of ecological rhetoric, rather than operating in a so-called 'non-instrumental' mode which seems to stray too far from any viable understanding of this concept from the history of rhetoric or philosophy. Accordingly, my first contribution is an argument that, if *technê* has often been an "invisible foundation" for the field, these four areas of ecological thought provide another foundation by recycling traditional understandings of *technê* as they offer *technê* as a core concept for ecocriticism, for argumentation in environmental rhetoric, for philosophical tenets in ecosophy, and for theorizing ecological economics. While I will flesh out these interventions later in the chapter, these returns to *technê* take on *rhetorical and instrumental* qualities that line up to some extent with Atwill's treatment of *technê* in *Rhetoric Reclaimed,* where she staked out an ancient rhetorical tradition that evolves as a *technê,* beginning with Sophistic and Isocratic paradigms connected by their notion of *technê* as a model of knowledge that took shape in theorizing and teaching how to "seize an advantage in social and political situations" and which promoted a version of rhetoric as "productive knowledge" with the power to embed man in a social, political and natural environment (contra to ideas of the soul and much in a humanist tradition) as well as to open up spaces for the expression of alternative models of subjectivity, knowledge, value and humanity (44). This chapter argues that recent ecological discourses return to *technê* in parallel ways as they articulate *ecological* subjectivity, knowledge, and value – returns that seem like a key modality for understanding an evolution of ecological rhetoric today. My second contribution will bear out in later chapters (previewed below), where *technê* frames aspects of the rhetorical interventions of Heraclitus, Bacon, and Darwin/Huxley at different moments in a history of ecological rhetoric. To put it plainly, each figure bridges questions rhetorical and ecological knowledge by addressing questions about the role of a productive or inventive rhetoric for advancing forms of knowledge, subjectivity or value we recognize today as 'ecological.' Each figure poses what we might recognize as a recurring *technê* question that began with the Greeks (that propensity to ask: is X a *technê*?), each adds something of

interest about how such questions about *technê* bring together ecology and rhetoric in ways frame parts of their critical interventions, and each presents *technê* as one vector advancing ecological thought as a form of productive rhetorical knowledge that might bridge a number of ethical and political divisions that continue to be at the heart of more contemporary ecological discourses.

In this vein, *technê* is also a placeholder for the value each figure places on certain rhetorical strategies (as discursive practices, performances and techniques) that address more enduring themes in ecological thought. In one respect, my study of these figures follows a prompt by environmental thinkers such as David Orr and Wendell Berry who emphasize that critical ecological scholarship must continue to pull together 'fragments of strategy' from histories of ecological ideas to examine what tactics or strategies advance forms of ecological consciousness (or rhetoric) that "lands squarely in the realm of praxis, which is the study of efficient action" (Orr 62). As I read them here, each figure lays some emphasis on strategic roles for rhetoric as a necessary counterpart (and an enduring challenge) to scientific and technical knowledge. Or to put it another way, each figure emphasizes different ways that rhetorical strategies enact what Castells called an enduring *ecologist's challenge* to "criticize the domination of life by science" while using "science to oppose science on behalf of life" in order to "present a superior knowledge" (181). As I read them here, these figures present rhetorical strategies as integral to their version of 'superior knowledge' that works with advances in science or against them. Indeed, the canonical definitions of wisdom by Heraclitus, Bacon and Huxley are distinctive for bridging rhetorical and ecological qualities, and largely depend upon including rhetorical techniques and strategies for making this wisdom impact everyday life. My motivation in this dissertation for the pursuit of historical iterations of rhetorical theory, noteworthy uses of *technê,* and certain persuasive techniques/strategies will be elaborated in the following three sections: the first generally discussing how scholarship in rhetoric (and how a history of ecological rhetoric) might be responsive to a changing ethos and strategies of third wave environmental discourses, the second foregrounding the particular

turns to *technê* in a range of ecological discourses and the exigence this presents, and the third placing this project's method for a history of ecological rhetoric in the context of related work in the field.

Theorizing a Third Wave Ethos: A Generous Review of Rhetoric and Ecology

We know that "most versions of historical rhetoric proceed from a prior 'theory'… that is, from a set of assumptions whether explicit or unexamined, regarding human psychology and social relations, yielding in each case a distinctive model of *ethos* – which we may here define, broadly and tentatively, as 'character as it emerges in language"' (Bauman 263).[10] While demonstrating remarkable potential in recent approaches to ecological discourses, rhetorical scholarship in recent decades also seems increasingly distanced from the changing ethos and theories of a wider range of ecological discourses and practices, a gap we might characterize by noting a separation in many of our approaches to environmental rhetoric from what is often called a 'third wave' of environmentalism. Several tensions that surface in a transition to a third wave ethos allow us to consider how we might rekindle certain theories and practices of *environmental rhetoric*, and to establish several provisions for the kind of historical work that might draw out suitable versions of *ecological rhetoric* from our rhetorical tradition.

It seems helpful to start again by making use of *Ecospeak: Rhetoric and Environmental Politics in America* (1992) as a starting point, since this seminal work by Killingsworth and Palmer became the conduit for so-much subsequent work in environmental rhetoric. Inspired by rhetoricians like Edward Corbett and Charles Morris, critical theorists like Laclau, Mouffe, Habermas, Adorno and Horkheimer, and environmentalists like Carson, Leopold, and Commoner, *Ecospeak* analyzed the "insidious categorizations" and "bad philosophies" working their way into the newly minted forms of "environmental rhetoric" – an area of study that they would mostly solidify as the study of "The Rhetoric of Scientific Activism" (10). [11] This work focused on the appeals to science by activists and political

advocates that established a different set of practices, topics and problems, which at the time mainly included: the distance that formal discourses of ecology tried to maintain from 'activist' discourses, the transformations of scientific discourses in the media (particularly the entrenching of 'ecospeak' on either sides of a "developentalist/environmentalist dichotomy"), the genre of the scientific impact statement specifically, the role of "environmentalist" and "utopian" discourses in community forming, and the emerging rhetorics of sustainability and ecological economics (10). The alliance of rhetorical, critical and environmental thinkers used to approach these topics privileged two main theoretical frameworks that would give direction to much of the work in environmental rhetoric over the past twenty years. [12] On one hand, it privileged Habermas' theory of communicative action and praxis (as rooted in Aristotle, cited as the great philosopher of "practical reasoning"), an approach to written discourses on environmental politics and sciences that asks rhetorical criticism to work on the possibility that rhetoric and communication could urge "continued development of the story of human cooperation" (167, 19). This primary aim of environmental rhetoric was thoroughly aligned with "the rhetoric of scientific activism" in environmentalist writers who brought together new political goals with a "paradigm of scientific holism that had begun to emerge in the 1950s [through] the varied efforts to bring together scientific ecology and social ecology [...] from Aldo Leopold and Rachael Carson to Murray Bookchin" (19). This genealogy focused the rhetorician's efforts on the analysis of a "continuum of perspectives on nature" in mainstream science (interpreting nature as its *object*), in industries (interpreting nature as *resource*), and in social and deep ecologists (who the authors admired for reanimating nature as *spirit*) (11-21).[13] Killingsworth and Palmer thus defined environmental rhetoric operationally, in a role of "witnessing" and responding to what the authors called "an attitudinal shift and corresponding power shift that would cause the continuum [above] to 'roll,' leaving a new alliance of deep ecology, science, and government – the environmentalist alliance – on the upper axis. Such a shift depends largely upon rhetoric, the building of 'discursive links,' [and] the opening of new 'subject

positions'" (15). On the other hand, *Ecospeak* established a second main objective for environmental rhetoric: to work through the concept of *hegemony,* and the *opposition, tension* and *direction of appeals* between government bodies, business/industry, science, and environmentalist thinkers (14). While the first aim is in developing forms of 'alliance,' this second aim focuses its concern on analyzing the constructions of hegemony and identity as framed by Laclau and Mouffe -- and is less focused on "rationalist coincidence of 'interests' among preconstituted agents" than on tracking a the beginnings of "power shift" that focused environmental rhetoric on the "construction of the very identity of social agents" (15).

Over the past several decades, scholarship in these veins has spanned several subfields, most notably into the work in science studies and the rhetoric of science, which from the 1970s to the present has also had some great success in the objectives of exploring and creating new 'discursive links,' or exploring new subject positions and identities –particularly in the more moderate rhetorical approaches to science, of the likes of Bazerman, Miller, Prelli, Fahnestock, Malone, Myers, or Larson, whose analyses of communication practices, successes, and failures have taken advantage of practical rhetorical approaches and demonstrated their potential impact on policy.[14] Indeed, in recent years we've seen rhetorical scholars like Elizabeth Malone and Jeanne Fahnestock make important contributions to ecologists and policy makers in works like *Rhetorical Analysis of Arguments Made in the Climate Change Debate,* and the works of ecologists like Brendan Larson contribute to rhetoric by explaining how scientists turn to metaphors, how these lead to, or hinder, social understandings and productive policies consistent with sustainability. Such work is in line with a larger movement in fields like Communication, Science and Technology Studies, Psychology and Sociology which have contributed to what Alex Flor in *Environmental Communication* (2004) calls a new global rhetoric with an 'international standard for environmental communication' being executed by organizations like *Skeptical Science* and *the Union Of*

Concerned Scientists, whose communications team produces handbooks of strategies for better argumentation and carry out tactical interventions at all levels of politics. [15]

While such work has brought rhetoric closer than ever to ecology in the past several decades, a there has also been a growing separation between much of this analytic work aiming to explore, create, or remedy 'alliances' between science, industry, and environmental advocates, which has occupied the majority of "environmental rhetoric" in recent decades, particularly the work that has remained closely tied to a 'second wave' environmentalist ethos, while a shift in the ethos and rhetorical strategies of a recent 'third wave' of environmentalism seems to require rethinking the way we align critical and rhetorical theories with these environmentalist discourses. For the most part, just as the second aim (of producing new forms of subjectivity) has gained in popularity in theories and strategies in the discourses marked by a popular 'third wave' of environmentalism.[16] Consider briefly how so-called 'second wave' perspectives have drawn the most sustained attention in environmental rhetoric*,* shaping many of its goals and conclusions in recent decades. Starting in the mid-1940s, a second wave is marked by a shift from Muir and Roosevelt style conservationism to more pervasive problems and intense concern about toxins in nature, food chains, and home environments from the use of synthetic pesticides, and about the relationship this had to a science that was associated with military funding and the war effort. [17] It is most often associated with figures like Rachel Carson and Murray Bookchin (whose *Our Synthetic Environment* in 1962 slightly predated *Silent Spring*)*,* figures that popularized and politicized new knowledge about ecology and human health, or about pollution affecting what we eat, how we work, and live, while raising concerns about industrialized science and the increasing allure of technoscience as potentially 'controlling' nature.[18] The evolving strategies of second wave advocates such as Carson, Erlich, Commoner, Meadows, or Bookchin influenced landmark publications such as the "UN Conference on the Human Environment" (1972) wherein the Stockholm Declaration listed historic policies that might instead control and contain accelerating industrial damage to the environment, and

pioneered principles outlining a new “moral imperative” to cope with pollution as part of "a solemn responsibility to protect and improve the environment" (Guha 3). Second wave perspectives have been extensively analyzed and evaluated by studies in communications, sociology and rhetoric for their effectiveness in motivating various ‘alliances’ as environmental projects (Orr, Theils, Waddell, Guha, Killingsworth and Palmer, Brown and Herndl, Brockmeier and Mühlhäuser, to name a few) and in theorizing how “nature” is thus constructed rhetorically to some extent (a focal point in *Ecospeak,* Herndl and Brown’s *Green Culture,* Harré, Brockmeier and Mühlhäuser’s *Greenspeak,* and Dobrin and Weisser’s *Natural Discourse*). The latter efforts tend to follow variations of the formula of the great environmentalist and ethicist Aldo Leopold’s famous “Land Ethic” where rhetors are tasked with not only demonstrating the rhetorical or social construction of nature, but with rhetorical work raising the land and other nonhuman agents to a new ethical status, or with finding new problems and opportunities to analyze tropes that elevate nonhumans to a different status in such relationships, such as victim, myth, or subject in historical narratives (Coppola 226). [19] Such work has occupied Weisser, Waddell, Cox, Oravec, Cantrill, Socolow, and Throgmorton, who take up the rhetorical problems that environmentalist and philosopher Wendell Berry summarized thusly: “We are using the wrong language... We have a lot of genuinely concerned people calling upon us to ‘save’ a world which their language simultaneously reduces to an assemblage of perfectly featureless and dispirited ‘ecosystems,’ ‘organisms,’ ‘environments,’ ‘mechanisms,’ and the like” (8).

On the other hand, popular discussions about a so-called third wave of environmentalism have circulated widely in recent decades, typically marking a key transition (by organizations like the Sierra Club, sociologists like Giddens, and environmentalists like Thiele, Shellenburger, Nordhaus, Brand and Hawken) where the ethos and strategies of “first wave” and “second wave” movements had been widely rethought in the late 1990s in a range of discussions on politics, ethics, the economy, technology, design, and environmental philosophy. Such discussions also mark several specific changes in the

theories and strategies for rhetorical work: less confidence in forms of rational deliberation, less emphasis on heightening concern or speaking to 'moral imperatives,' less interest in the rhetorical construction of nature than with explicitly deploying or escalating persuasive strategies for modifying current political and economic systems (often by speaking to popular desires for security, status or fulfillment), and more attention to addressing ecological problems as problems of consumerism (rather than only resource management and population control). Some of the most conspicuous third wave arguments circulated in the 'post-environmentalism' debate, which became a topic of popular discussion after the publication of Ted Nordhaus and Michael Shellenberger's 2004 essay "The Death of Environmentalism," and their subsequent book *Break Through: From the Death of Environmentalism to the Politics of Possibility* (2007). These arguments largely worked on questioning the value of a number of dominant narratives in second wave environmentalist discourses, especially those focused on limits to growth, and an alienation or fall from nature, which third wave advocates saw as increasingly "de-politicized" by elitist or ineffective liberal-issue groups, policy literalism, and the near exhaustion of "limits-based" strategies (or a "politics of limits"), which seemed insufficient in mobilizing support to "reverse, prevent, regulate and constrain" global warming, industrial production, or economic growth (7). To address the increasingly salient limits to energy, water, and food (and their connections to a better-known set of ecological tipping points), Nordhaus and Shellenberger proposed veering away from second wave portrayals of the human project as 'essentially destructive' caught in a moral crisis, and proposed work designed to steer more "affirmative" values and desires in ways that might support specific principles of political ecology, or promote environmental mitigation practices or adaptation to climate change. The central idea of their proposal was to embrace new forms of 'eco-pragmatism' and 'eco-modernism' with attendant forms of rhetorical work they saw taking shape in a wide range of environmentalist projects aiming to find more economic, political, institutional, technological means to re-orient behaviors that drive economies and technological and industrial processes towards the

measurable 'indicators' of sustainability.[20] These rhetorical ideas circulate widely in forums like *Dot Earth,* and the works of authors at the *Breakthrough* institute, who argue for a new kind of public intellectual in environmentalism, less bent on 2nd wave "transformational conditions" creating "wicked polarization" in contemporary politics, than on creating a new "vision" for a "politics of possibility" through a "broader exploration of new ways to make ecological information *work* – to give ideas the best chance of getting where they are needed to help advance our relationships to the environment and each other" (Nisbet). When reduced to a "mission," the goal is based on the possibility that we can "accelerate the transition" through the use of regulations and 'regulative media' that forwards solutions based in eco-pragmatism and eco-modernism as a possible "middle ground" in (environmental) politics that appeals to people's desire for "secure, free, prosperous, and fulfilling lives on an ecologically vibrant planet" (Nisbet).

While this emphasis runs far afield from a 'moral imperative' to protect (or return to an idea of) an 'authentic nature,' it remains without much theoretical or critical rhetorical grounding, and is instead rooted in rather hopeful arguments for a "post-industrial social contract" and a new "vision of politics" drawn from a selection of postmodern philosophy gathered by Nordhaus and Shellenberger (drawing especially on Kuhn, Rorty, Hegel and Nietzsche). It does seem possible, however, to broaden our perspective on this "vision" of *third wave rhetoric* in recent decades by looking at a broader trend among similar environmentalists and ecological thinkers seeking out concepts and techniques from rhetoric, often by turning specifically to *technê*.

Ecological Thought, Technê, and a History of Rhetoric

In an age increasingly defined by our attempts at environmental mitigation and adaptation, it might come as no great surprise that a wide range of ecological arguments have sought out *technê* as a

significant concept. My analysis here focuses on several turns to *technê* in environmentalism, economics, eco-criticism, and philosophy/critical theory over the past several decades. The intent is not simply to review several interesting turns to *technê,* but to use these to help us rethink how *technê* might continue to serve, as Pender put it, as a "kind of invisible foundation for the field" (33). *Technê* is of course a central concept in the history of rhetoric (as well as philosophy and technology studies) and has maintained its appeal largely for the reason Michael Cahn articulates nicely here:

> In the strict use of the term, it designates the ability of a form of knowledge to successfully direct action, the ability to master it through the formulation of rules. Therefore *technê* is fundamentally ambivalent. It belongs to two domains at once: to both method and action [...]. This double promise is what makes the title of *technê* so desirable for the rhetorician. The rhetorical value of this concept is, however, grounded in an irresolvable ambiguity between acting and knowing (72).

Cahn nicely summarizes the effect of an initial and "scandalous" framing of rhetoric as *technê* in classical Greece as forming a distinct "unity of knowledge and action" that led both to a new emphasis on pedagogical effectiveness (i.e. of making students of rhetoric better speakers, and speech as a kind of action) and new interest in a kind of *dynamis* that evolves through *technê's* exacting effects in systems of production and in the technologies we produce – resulting often in what Cahn calls a kind of "system-mania [...] which involves an increase of the internal complexity [of rhetoric's rules and conceptual distinctions] that cannot simply be subordinated to the pedagogical utility of its rhetorical insights" (72). *Rhetorike technê*, as the technical insights into controlling language, or systematizing language and a subject's actions, would then manifest in a number different ways of asserting its complexity, most influentially as Aristotle's anatomization of rhetoric, or most notoriously as the complex inventional systems of Hermagoras, which Cicero opposed and Quintilian defended, and which is generally regarded as the chief example of a complex system that loses sight of the benefit of the "practical knowledge" that emerges in relationships between rhetoric, pedagogy and oratory (Cahn 74-5). [21]

On the other hand, as Guattari put it plainly, *technê* is also, a prominent concept that has "since the origin of philosophy" helped many think through the relationship between "man, machine and nature" -- and many readers of this dissertation will recognize that such conceptions of *technê* have drawn more recent attention in field of rhetoric and composition in roughly the manner Pender describes when she articulates five key modalities for *technê* as a kind of foundational concept: as a "handbook," a "rational ability to effect a useful result," as a "means of inventing new social possibilities" or in two distinctly ecological modalities for *technê,* which she notes took on new meaning in the 20th century (31 -33). [22] The positioning of these latter two modalities of *technê* as 'instrumental' and 'non-instrumental' is something paradoxical in the best rhetorical sense of enlarging frames of received opinion by emphasizing a lesser-known connection between rhetoric, *technê* and ecological thought, but it also creates something of a false dichotomy -- a pairing that leans too heavily on Heidegger's formulations of *technê* for the 5th mode while missing much of the work in ecological rhetoric giving more weight and relevance to this concept in ways that deserve some attention from rhetoric at present: (1) as *technê* is used to frame characteristics of a populist third wave ethos, especially in brands of 'ecopragmatism' (for example, in works by Stuart Brand and Paul Hawken), (2) as *technê* is forwarded a key concept in theories of Sustainable Economies (i.e. from Shumacher to Marglin, Holt and Norgaard), (3) as *technê* is positioned as a central concept defining the interpretive work for ecocriticism (as noted by Buell) as a rhetorical endeavor, and (4) as *technê* marks a nexus of debate, and a new direction for ecosophy (in both Naess' effort, and Guattari's response). An analysis of these four perspectives on *technê* gives us specific articulations of how *ecology* and *technê* are often conceptually joined at the hip in ecological discourses, and a better sense of how these fields value *technê* as a productive form of ecological rhetoric designed mainly as rhetorical strategies, techniques or interventions that "rewrite" the linkages or oppositions between the artificial and the natural, or the technological/cultural through forms of critical interpretation, rhetorical argumentation, philosophical

tenets, and economic theories. In doing so they also they raise more specific questions for us to consider what this means for rhetorical theory and practice today.

Full attention to *technê* in a wide range of popular environmental texts over the past 50 years would indeed require us to wade through a large number of texts promoting or bemoaning Heidegger's *technê* or following many of the presumptions of 20th century philosophy about how humanity exists in tension with some version of *technê* that stands in for industrialism or a hegemony of instrumental reason.[23] Beginning instead with several more productive recoveries of *technê*, we can start here with populist *third wave* discourses that turn to *technê* in two key registers. The first explores *technê* as a theoretical concept similar to most anthropologists, or to Marx and Engels, Leroi-Gourhan, or Steigler who all see humans as fundamentally shaped largely by their 'tools,' and takes up *technê* as a concept that connects us in different ways with nature, rather than simply providing a critical foil or antithesis to the authentic or 'natural'. The second registers *technê* as a main conduit for forms of writing and action in ecopragmatist interventions associated with 'bright-green environmentalism' and the works of Stuart Brand and the network of 'Whole Earthers'.

In the first case, consider how Bookchin (who's thought bridges both second and third wave approaches) took up *technê* as a means to rethink production practices in terms of Aristotle's discussions of *technê* – using this concept to bracket the productive practices that seem to have once conditioned more ecologically responsible subjects. He appeals principally to Aristotle's discussions of *technê* as a means to recall a more complex, intimate, and responsible relationship between ancient "technology" and the practices embodied in the ancient "craftsman" – a relationship he thought might help define a form of environmental ethics based in history of "highly sophisticated subjects" who understand the evolution of this 'makers knowledge' (305). Decades later, Hawken and Lovins bring up *technê* as the concept standing for a similar ideal in *Natural Capitalism* (1999), where it is suggested that

a history of ecological ideas might be outlined *through technê* as an evolving concept, claiming that such a history which would use *technê* to link modern technology to ancient handcraft in order to offer a crucial 'long view' of particular changes in human agency over systems of production, while emphasizing their 'ecological contexts.' Hawken offers weaving as an example which suggests that thinking about *technê* in one bioregion would meant tracing how an ancient *technê* and village industry is transformed into industrial textile mills, and into a progressive sustainable company called *Interface*. For Hawken, such a history of *technê* would foreground any of the 'making practices' that *produce* not only industrial changes, but cultural, and biological evolutions as well, and would therefore be intent on mapping out these as the "longish, tough, flexible filaments that connects nature to itself and to human life" (171). Bookchin's "co-responsible" agent "bringing forth" or "presencing" an artifact based on Aristotelian notions of *technê* and Hawken's proposal for *technê* as integral to an ecological history of cultural and economic processes connected to natural processes, are interesting spins on some old-saws in (environmental) philosophy and rhetoric. However, we might argue that these perspectives on *technê* took on more than an air of scholarly nostalgia as they circulated extensively through third wave discourses associated with the works of Steward Brand and the *Whole Earth Network,* which built an 'ecopragmatic' ethos around *technê* in the literate practices and creative processes of invention in *Whole Earth* catalogues, and their transformation into open source cultures like "The WELL" (Kirk 217).[24] While Brand's work originally emphasized individual and communal empowerment through "access to tools" and 'how-to' forums promoting environmental projects, the recent emphasis has been more explicitly on leveraging forms of persuasion by creating persuasive artifacts and texts that might create cumulative forms of social change. Brand defines the ethos of "Planet craft" as both a technological and rhetorical endeavor, saying: "We are forced to learn planet craft – in both senses of the word craft as skill and craft as cunning. […] Our participation has to be subtle and tentative, and then cumulative in a stabilizing direction. If we make the right moves at the right time, all may yet be well" (276).[25] Brand

defines today's "ecopragmatist" project as a "Whole-Earth Discipline" that focuses more explicitly on the productive capacities of new technologies and the creation of new "systems of exchange" intended to "nudge civilization toward making long-term thinking automatic and common" through projects such as the Long Now Foundation. The "Long Now" project builds both monuments and icons intending to reframe the way people think (like the 10, 000 year clock and Library in Nevada) and the more explicitly rhetorical "Long Bets," which is a forum of public wagers between wealthy authors, biologists, futurists, and environmentalists who make high wage predictions about the future in order to act out long-term debates that they think might slowly refine logic, improve predictions, and create systemic accountability, while improving certain argument fields or environmental 'ecospeak' (Long Bets). This network of third wave discourses recalls some of the more dynamic understandings of *technê* in rhetorical scholarship in recent decades, particularly Atwill's delineation of *technê* as "productive knowledge" – a category distinguished from theoretical and practical knowledge that evolves in the realm of rhetorical invention and interventions that are "persistently implicated in the transgression of boundaries…limits to knowledge and subjectivity, as well as social, political, and economic limits" – and that marks "a desire for 'more' that challenges or redefines relations of power" (2-7). Atwill insists that this modality of rhetorical *technê* is one designed to create value (not merely conserving values) or forms of signification that create value, and is something that must be studied as "a power rather than [only as] a body of principles or information, as it creates new subjectivities and produces new possibilities and lines of power in every exchange" (ix-x). What Atwill and others have studied, recovered, or reclaimed as a modality of *technê* may indeed by the best theoretical framework for what is taking shape in such third wave discourses – and as a configuration of ecological thought that coalesces around *technê*, this might present *us* a more distinctive modality where this concept functions as a *productive* form of ecological rhetoric in theory and practice, rather than in a so-called 'non-instrumental' mode.

In a second register, *technê* is more specifically connected to theorizing economic transactions and sustainable economic systems as it is an underlying concept in the work of environmental economists like E.F. Schumacher, Stephen Marglin, and (more recently) Richard Norgaard and Richard Holt. Schumacher was of course the economist and student of Keynes who wrote *Small is Beautiful* and was the pioneer of the "Appropriate Technology Movement" which has since morphed into the group "Practical Action." In his philosophical study of knowledge systems, *A Guide for the Perplexed,* he argued that the separation of *technê* and *arête* was at the heart of the energy and economic crisis in the 1970s. For the sake of brevity here, consider how Stephen Alan Marglin (member of the "World Future Council" and professor of economics at Harvard since 1968) picks up Schumacher's invocation of *technê* in his 2006 essay "Sustainable Development: A Systems of Knowledge Approach." Here Marglin argues for a version of sustainability as a knowledge system, arguing that sustainability is "a way of understanding, perceiving, apprehending, and experiencing reality" – which requires developing a shared or "common" systematization of knowledge "by distinguishing *episteme* and *technê* as two generally accepted forms of knowledge systems" (Schroyer 145).[26] Granting that economists, chemical engineers and physicists all deal with different domains of knowledge, and even have their own theories of knowledge and different rules for acquiring and sharing knowledge, he argues that "from a knowledge-systems perspective, the central problem of the Western economic model with respect to sustainability is the imbalance between *episteme* and *technê*; [as] the marginalization of *technê* puts to one side our best hope for softening the destructive effects of *episteme* on our selves, our work, our land, and our body politic" (146). For Marglin, the marginalization of the knowledge associated with *technê* causes most economists to miss "other socio-cultural mediating factors" that would allow them to integrate and help to manage "situations where craft production or other micro-industry combinations can be supported by socio-political arrangements that facilitate the optimal integrations of local-regional, national, and even wider markets" (148). In other words, Marglin theorizes (similarly

to Norgaard, Holt and other environmental economists writing in recent years) that an important dimension of ecological knowledge was subverted with *technê's* subversion to *episteme*, which is recognized less as a philosophical crux than as an economic problematic today, since a subversion of situated and embodied practices (such as 'ethno-sciences' and biologically diverse systems of horticulture) seems to overshadow crucial components needing to be managed as globally sustainable, or suitably diversified biologically and economically as systems.[27] One example is detailed in Frederique Appfel-Marglin and Kathryn Pyne Addelson's essay on how "Situated Knowledge" of groups like PRATEC (an Andean Project for Peasant Technologies), as a small organization in Peru responding to the "technical packages of the green revolution in South America," can affirm "a peasant *technê* domain rather than modern epistemic agronomy" with qualitative and quantitative benefits for a sustainable model of agronomy (Schroyer 137). These benefits are only economically viable in a sustainable economy with a global metric for diversity, which includes farming practices that economists not only 'know' have value, but can be put to use as systems that demonstrably show *how* to "live in, participate in, and to collectively create" sustainable agriculture and economies in a bioregion (137). In other words, these economic discourses points to the domain of subverted knowledge that must be maintained or rebuilt as ecologically and culturally diversified *technê,* a task which urges us to think about well-known rhetorical modalities for *technê* (that Pender lists), while specifically addressing new connections between quantitatively indexing sustainability, and rhetorically constructing these participatory and inventive regional economies.

In a third register, Laurence Buell, one of the pioneers of ecocriticism, has frequently appealed to ecocritics to pay careful attention to the place of *technê* in ecocriticism during the past two decades. In *Writing for an Endangered World* (2001), Buell states that while critics "have always taken a keen interest in how the material world is engaged, absorbed, and reshaped by theory, imagination, and *technê,*" ecocritics have paid more attention to the obvious changes in the relationship between *technê*

and *physis* since the late 60s, when certain *topoi* and general fears of an increasingly toxic world cascaded into the public imaginary and into fields including medicine, political science, history, sociology, economics, and ethics (42-45).[28] Buell coins the expression "toxic topoi" to refer to the excessive and redundant focus of on the critical ideas in second wave discourses led by "ecological holism models" (also favored by much in a second wave of environmental rhetoric), and the corresponding acts of ecocriticism that sought out acts of imagination or persuasion that have "the capacity to reconnect us with a purified physical environment" (45).[29] In a third wave of environmentalism, Buell largely re-established *technê* as a leading concept for ecocritics by "reinforcing the deromanticization of nature" and by "urging the expansion of 'nature' as an operative category" associated closely with *technê* (45).[30] As he says: "this view is neither 'preservationist,' given its recognition of the human powers and the legitimacy of human needs, nor is it 'conservationist,' since not resource management so much as viable symbiosis with physical environment is its goal" (45-6). In the *Future of Environmental Criticism* (2005), Buell offers his plea to continue to take up a "strong interest in rhetoric" and *technê,* while having new forms of ecocriticism serve "as rhetoric, as performance, and as world-making" (45). Buell's challenge to ecocriticism frames its challenge by urging interpretive work to be framed as a *technê,* again as a form of rhetorical "productive knowledge" that is as Atwill suggests "situational and relational, representing the realm of human invention and intervention" (ix).

In a fourth register, *technê* surfaced as a critical concept in defining *ecosophy* – a term that gained currency in its different uses by Guattari and Arne Naess and his student David Rothenberg in the late 1980s. Naess had begun using the term *ecosophy* (sometimes calling it "ecosophy T") to supplement the perspectives laid out in deep ecology, the 'ethics of care' that provided a major direction for second wave environmental thought, and to set his work apart from what he also coined as the "shallow ecology movement" the "fight against pollution and resource depletion" which he saw as

coupled with the goal of "the health and affluence of people in the developed countries" (7).[31] While the *ecosophy* famously proposed by Naess worked on a definition of the human as a totally integrated organism, dissolved in a relational "total-field image" of the human organism *as* "knots" linked in a field of intrinsic relations, it was in Næss' later projects in ecosophy where he tied this ecological philosophy to *technê* by creating a template of principles that was to become one foundation for an environmental ethic based in argumentation. Here deep ecology ceased to be a philosophical doctrine, and instead became what he called a "platform" of eight simple points upon which Næss hoped all deep green thinkers could agree and put to use in different ways. The platform (though less successful than he hoped) was conceived as establishing a middle ground, between underlying philosophical orientations and the practical principles for action in specific situations, principles generated from underlying philosophies. Thus, his ecosophy became an effort at developing a *technê* (Ecosophy-T) that would be explicitly pluralist and normative, as Naess took his version of ecosophy from a philosophy of ecological harmony or equilibrium, and turned it towards spreading a kind of wisdom he called "openly normative...containing both norms, rules, postulates, value priority announcements and hypotheses concerning the state of affairs in our universe" (Drengson and Inoue 8). As Naess says: "Wisdom here is policy wisdom, prescription, not only scientific description and prediction" (8).[32] Most explicitly drawing on *technê*, Naess and his student David Rothenberg co-wrote the chapter "Ecosophy T: from intuition to 0system" in the 1989 work *Ecology, Community, and Lifestyle: Outline of an Ecosophy,* where they set up *Ecosophy* as kind of rhetorical ability to respond, specifically contrasted to the kind of paralysis one can have from seeking ecological wisdom in a kind of "philosophical repose," which they say must be re-qualified as a 'love of wisdom' that comes only when it is wisdom related to action. Rothenberg would follow his mentor's prompts by leaning on *technê* as the guiding concept in the 1993 work: *Hand's End: Technology and the Limits of Nature* -- where he pursued *technê* in an attempt to historicize different ecological perspectives, arguing that they have depended on the technological and rhetorical "complex

that enables us to approach nature" (109). Recreating facets of history that foreground several principles and axioms about *technê*, he says that "it has always been possible to look at nature as a machine [although] the meaning of the machinery changes consistently though history [...and] that certain technologies seem to express a yearning towards nature itself through its 'latent language'" (109). He argues that many technologies have repeatedly displayed or made visible a larger order that (he believed) is beyond pragmatic uses and that working through these various technical analogies humans have connection with nature as a machine, and encountered what he also calls a "recurrent "paradox of *technê*" (xv).

This later work in Ecosophy comes closer to Guattari's work of the late 1980s, which had already argued that *technê* and ecology should now to be thought of as inseparable. He argues that *technê* should be understood as a concept that enveloped any form of technology or communication technology reconstructing a social assemblage, and stipulates that the concept should carry a forward momentum (rather than any scholarly nostalgia) as it might help "unbound the unconscious from archaic fixations by reorienting it towards the future" -- a future that he saw forcing us to re-orient both human and non-human nature, without, as he stated, "completely doing away with human time or with *physis*" (Conley 99). His use of *technê* was of course a response to two familiar stances on the concept (Heidegger's and Aristotle's), but Guattari still emphasized that *technê* must be thought of as being "the order of 'knowledge' and not simply of 'doing'" (*Chaosmosis* 34). What he means by this, I believe, is that the idea that *technê* might have power as body of knowledge that emerges as a kind of creative mediation between theory and practice, and between nature and humanity whose status of intercession Guattari treated as a source of perpetual ambiguity. As noted earlier, Guattari picked up on *technê* primarily because it was a concept that, as he said: "since the origin of philosophy" helped many figure out or interrogate the relationship between "man, machine and nature," but also because *technê* presented us with a force that progressed 'on its own' to some extent, and formed a part of his proposal

for an 'escape forward' (*Chaosmosis,* 30). Most basically he defined *technê* as an umbrella concept for those *strategies* oriented towards constructing or altering social and natural equilibriums that, he predicted, will require a period of greater human intervention.[33]

Verena Andermatt Conley, following Guattari's interest in *technê* through the 1990s*,* argues that this concept should be at the core of the humanities, since it was increasingly accepted that technology is a mode of thinking, since it might be the best concept for problematizing how technology "literally applies its own rules to itself and then becomes," and since we might pursue *technê* as a means of "introducing the concept of history into nature" (xii). Again, Atwill implies some of this potential to foreground some important ecological modalities for *technê* in *Rhetoric Reclaimed* by tracing how it emerged as a rhetorical concept from comparisons to how humans mimic and extend forms of animal cunning (56, 53, 62), by demonstrating how *technê* was initially (as far as we know) defined against *physis* (70), by elucidating how *technê* came to frame the ideas that nature was now compelled by art (61), and by arguing that *technê* framed ideas about an extended human being or extended human agencies that take shape through humanities constant transformation of limits in their environment (19). In the following section, I discuss how I contribute to these ecological modalities of *technê* and how this concept helps tie together my contribution to a history of ecological rhetoric that might be of some value to the present.

A Genealogy of Ecological Rhetoric: Contested Concepts and Rhetorical Strategies

Writing a longer history of ecological rhetoric in this dissertation might primarily be thought of as an attempt to move recent histories of ecological rhetoric from the fringes of a rhetorical tradition closer to the center. Most of our landmark 'ecological' theories, including Cooper's seminal essay "The Ecology of Writing" (1986) and Luhmann's *Ecological Communication* (1989) catalyzed an ecological

perspective for rhetoric and composition in the late 1980s by using the concepts from systems theories to bridge rhetorical theories or to introduce "an ecological model of writing," as Cooper did with her "tenet that writing is an activity through which a person is continually engaged with a variety of socially constituted systems," just as "writing produces systems" as it interacts with them (367). While work exploring these relationships between rhetoric, systems theories and cybernetics will continue to be some of our most significant scholarship, our attempts to extend connections with a history of rhetorical theories or practices have (as mentioned in the introduction) too often been quite focused on the 'discursive,' and have not pursued other potential configurations for ecological rhetoric like this recurrent modality of *technê*. We have, however, generated several leads for a deeper history of ecological rhetoric, such as Dobrin and Weisser's prompt for historical work in *Natural Discourse* (2002) where they claimed that ecocomposition "begins" with ancient rhetoric, with the Socratic and Sophistic questions that divided or connected the human (and human concerns) from natural forces, which surfaced in a *nomos-physis* antithesis that "stands to teach us about ... discourse, discursive functions, constructions, communities [that] all operate as norms, or *nomos*" (166). The classification of discursive conventions "as a series of *nomos*" that operate as "antithetical to *physis,* to that which is natural," is emphasized as a 'beginning' because the Sophists blurred this *nomos-physis* distinction by acting as 'technicians' selling rhetorical moves and rhetorical teachings treated as discourse and "as a system [that] transcends the *nomos-physis* antithesis and stands as a system that is rhetorically both *nomos* and *physis*, a discursive means by which to taxonomize and codify natural from constructed, and as […] discourse becomes an entity that resists that very codification" (167). This work, however, remains more of a brief and insightful prompt to investigate ancient rhetoric in light of contemporary ecological concerns, pointing to this well-known antithesis, as well as to "Aristotle's conception of the communicative situation" as something "ecological" (a claim supporting without much luster, as it

doesn't go much farther than reminding us of the persuasiveness of discursive constructs or that the rhetorical situation is 'transactional' and includes a real context) (168).

In contrast to this relatively uncomplicated prompt for an ecological history of rhetoric, Bernard Alan Miller's recent *Rhetoric's Earthly Realms: Heidegger, Sophistry, and the Gorgian Kairos* (2011) develops a complex and highly refined notion of ecological rhetoric in a thorough study that addresses Plato's elevation of "the realm of absolute reality and truth above and beyond the world of language, discourse, and rhetoric," which he contrasts to Sophistic rhetoric which he thinks "bears the expression of *physis* and native soil" (13). Miller makes a familiar counter argument to Plato's subverting of rhetoric, but extends this to examine how this subverts "the earth" as harboring "mere appearances and the evils of the bewitching powers," which he claims is integral to Gorgias' conception of *kairos,* and which he takes to denote a spontaneity of an "earthly realm" (13, 15). While this is an innovative study of *kairos*, his effort to re-configure Sophistic concepts (including *doxa, apate,* and *technê*) is framed by his theory of "earth" in its Heideggerian aspects, and by a focus on demonstrating how this resurfaces "purely as language" (15). As we increasingly see historical work extend ecological thought back to the Greeks (such as Donald Hughes' work with the pre-Socratics), to philosophical or rhetorical concepts like Plato's "first principles" as what might deepen theories of political ecology (William Ophuls), or to *ethos* and ethics in order to rethink theories of sustainability (Melissa Lane), rhetoric seems especially well positioned to build a more diversified and robust history of ecological rhetoric that runs back to some of its earliest moments, while remaining responsive to today's critical and populist 'third wave' of ecological rhetoric, to which we might continue to serve as a resource. In doing so, we should not delimit our efforts to thinking, as Cooper does in her 2010 essay "Sustainable Writing," that *environmental rhetoric* is "ultimately the kind of work that promotes rhetorics of deliberation working through the discursive shaping of complex social, scientific, and economic data that is being framed in discourses about sustainability" (236). [34] What we might emphasize instead is a history of *ecological*

rhetoric built carefully through a configuration or rhetorical and 'ecological' concepts (granting some special attention to *technê* as having, as Socrates said, its own *dunamis* or potency/potential as a type of wisdom like *episteme* or *phronesis*), in association with rhetorical strategies that are responsive to contemporary exigencies and environmental arguments.[35] This kind of history might grant a clearer depiction of the evolving relationship between rhetorical and ecological knowledge, while articulating specific rhetorical strategies with the potential to change minds or behaviors today.

Thus, my method in writing a longer history of *ecological rhetoric* is largely based on the ongoing challenge of 'recovering' (or revisiting and repurposing) specific rhetorical *concepts* and *strategies* recognizable as a history of ecological and rhetorical thought, and suitable for our present ecological rhetoric. Some context for my positions on historiography is expected here, as is the expectation that I briefly lay bare any assumptions I make about why this project would enable another contribution to histories of rhetoric. As a field, rhetoric and composition has developed a lengthy body of work on its histories and on historiography more generally, approaches which have supported diverse studies of the theory and practice of rhetoric in different historical periods, cultures and languages, and in relation to politics, religion, law, science, poetics and other cultural forces.[36] Debates over historiography in rhetoric are tied closely to the rise of rhetoric and composition as a distinct field in the 20th century, and revolve around a number of influential histories of rhetoric by classicists (i.e. Kennedy 1963, 1980) and members of English departments (i.e. Corbett 1965, Vickers 1988) that helped ease rhetoric and composition into its place in the Liberal Arts (Walzer and Beard, 15-16). The field, however, continues to question the establishment of any uniform "rhetorical tradition" (often invoked during efforts to legitimize programs in rhetoric and composition), while coping with scholarship that consistently adds complexity and breadth to its history, a trend that (for some) reproduces confusions about defining any sense of a rhetorical 'tradition' (Gross 32). For instance, when Stephen M. North took his 'portrait of an emerging field' (1987) and offered a valuable account of "the historians" as knowledge makers helping

the impressive rise in status of rhetoric and composition, he was concerned that the methods of finding, identifying, and validating relevant texts was tainted by "voices so often seem[ing] more zealous than reasonable, fervent than curious, converted than, in the best sense of the word, disinterested" (92).[37] More than two decades later, with the influences of postmodernism, new historicism, feminism, and the allure of dependably 'recovering' excluded or subordinated rhetorical traditions, the field has witnessed many histories written with more strategic and persuasive ends in mind. While we are familiar with historical 'recoveries' that unpack rhetorical concepts, figures, strategies and texts for the present (such as Glenn's *Rhetoric Retold,* Atwill's *Rhetoric Reclaimed,* Jarratt's *Rereading the Sophists,* Hawk's *Counter-History,* Asante's *The Afrocentric Idea,* Brooke's *Lingua Fracta,* etc.), the act of 'recovering' a history of ecological rhetoric seems ill-suited to some of our better-known schematics, like Vitanza's current-traditional, revisionary, or sub/versive histories, or Kennedy's proposal that the rhetorical tradition has three strands: technical, sophistic and philosophical.[38] While these are useful breakdowns for students of rhetoric, a historical work aiming to be recognizably rhetorical and ecological might simply bridge such categories while taking up a challenge of 'recovering' in a relatively straightforward manner, by recovering certain 'contested' rhetorical *concepts* we think of as recognizable to a history of ecological and rhetorical thought, while appropriating certain strategies from figures that have thought through these concepts, making them appropriate to the present exigencies in ecological rhetoric.

In working with certain rhetorical concepts, I follow several related stipulations from recent work: John Muckelbauer's approach to reading rhetorical concepts in *The Future of Invention,* a similar proposal for working with "essentially contested concepts" by Alan Gross, and Richard Doyle's Deleuzean approach to thinking about concepts that bridge the sciences and rhetoric. Muckelbauer identifies dialectical problems in historical work that tends to develop innovative ideas only by overcoming or negating other concepts, models, or social structures. He works to resolve this with a method of "affirmative strategies" for reading the "constellation of concepts and practices … [that] offer

a wealth of possible points of intervention for the extraction of singular variation" (Muckelbauer 43-44). To put it plainly, Muckelbauer proposes that many so-called 'recoveries' in the history of rhetoric might work best through a nondialectical reading, performing a kind of "repetition" of "familiar figures from the history of rhetoric," as well as key concepts that "end up seeming both recognizable and somehow unfamiliar" (44). In approaching figures like Heraclitus, Bacon, Darwin and Huxley, the concepts I emphasize for an 'ecological rhetoric' are often also what Alan G. Gross calls the 'essentially contested' concepts of the field – concepts which are imbricated in numerous 'old quarrels' between rhetoric and philosophy. Making a similar argument to Muckelbauer, Gross proposes (in *The Viability of the Rhetorical Tradition,* 2005) that a careful reconstruction such "essentially contested concepts" can form the intellectual strand of the rhetorical tradition, a form of historical reconstruction "that accepts historical discontinuity and centers on the problem of coherence, that sees the tradition as a succession of theorists, each of whom makes a contribution, one that is, at the same time, unique and dependent on past theoretical refinement" (33).[39] Gross claims two disciplinary advantages for emphasizing "essentially contested concepts" in this way. The first is that this emphasis can addresses problems with our 'archeological' approaches that have attempted to finesse rhetorical anthologies by giving equal treatment to figures like Nietzsche, Bakhtin, Bacon and Thomas Sheridan, while at the same asserting that this "lack of continuous intellectual progress is not, essentially, an artifact of anthology making" -- which Gross thinks is more of a symptom of "anthology makers" who "unsuccessfully finesse" an "intellectual strand of the rhetorical tradition" and overlook some important continuities in the concepts they deploy (32).[40] The second advantage is that arguing for "essential" concepts in the field might not only address a problem of finding any "genuine continuity," but might improve genealogical efforts aiming to build an "intellectual history of rhetoric" through the "elevation of mediocrities to canonical status or by the specious transgression of disciplinary boundaries" (33). Muckelbauer's performative reading might be the best example in recent years of a method that succeeds in finessing this approach

to the 'essential' concept of *invention,* while leveraging both of these advantages: a "political" advantage of reconstructing concepts from classical rhetoric in a way that helps to provide an "intellectual core" and "legitimation" for the field, while also allowing for continued dialogue with related disciplines like communications and philosophy, which he calls "a necessary condition for disciplinary flourishing" today (which in Muckelbauer's case demonstrates how rhetorical *invention* can address certain impasses in postmodern theory) (Gross 33). As I see it, Muckelbauer's spin on 'affirmative repetition' is a method that aligns well with what Gross calls "the safest general characterization of the European philosophical tradition," one that (quoting Whitehead) "consists of a series of footnotes to Plato," and addresses the "contestant users of concepts" that originate in "exemplars" in classical and pre-classical times (34).

While this dissertation works with a number of 'essentially contested concepts' from a long history of rhetoric, philosophy and ecological thought (such as *logos, physis,* and *technê*), the emphasis is often on how certain concepts have bridged or altered the power dynamic between scientific and rhetorical knowledge formation. Richard Doyle offers some useful provisions about how certain concepts can effectively bridge this terrain in his study *On Beyond Living: Rhetorical Transformations in the Life Sciences* (1997). He reiterates that concepts must be seen as 'historically morphing' with 'multiple becomings,' and as empirical inventions of philosophers, but he also emphasizes that concepts as such mark a fundamental "genre distinction" between philosophy or rhetoric and science, where the latter sees scientific thought as "not derived from concepts, but by functions or propositions; [where by contrast] every concept has an irregular contour defined by the sum of its components [...] only on this condition can it escape the mental chaos constantly threatening it, stalking it, trying to reabsorb it" (Doyle 6, citing Deleuze 116). In other words, this fundamental genre distinction is found in how the "irregularity of the concept is ill-suited to machine science" that takes regularities as its "prey" (6). While concepts evolve in creative/irregular ways, scientific propositions function more like a freeze-

frame, or a "fantastic *slowing down"* of matter and of thought -- where thought is "disciplined" into references as matter is "framed" and "penetrated with propositions" (6). What is perhaps most significant is that the majority of the scientific language that creates these 'freeze-frames' obscures or erases the technology of framing -- the conceptual apparatus or the so-called "rhetorical software" that can highlight active rhetorics in the life sciences that make possible the inventive and imaginative framing of matter, and the emergence of scientific statements and events (2,7). Doyle's coinage of 'rhetorical software' works alongside the Deleuzian notion of the 'functive,' where certain concepts can function at the intersection between science and philosophy, like 'bifurcation' or 'pre-individual state,' which can move in two directions, one way becoming "reinscribed" into science as propositions, functioning to make verifiable truth-claims, and another where it is "borrowed" to create a concept that concerns philosophy, rhetoric or the creation of the 'virtual' (7). Importantly, while the notion of rhetorical software highlights the textuality of scientific processes, he coins it to help avoid textual determinism, stating that "as any user of software knows, software is usable only within a network of hardware and – this frequently overlooked 'wetware' of bodily and cognitive functions (7).[41] Following Doyle a bit further, I pursue several concepts in *ecological rhetoric* based on the hypothesis that the historical 'morphing' of concepts can be studied as they are put in use by a number of well-known figures from a history of rhetoric and ecology thinking through protean concepts that we might deem 'essential' to an ecological rhetoric formed in a vital tension between rhetorical and scientific knowledge formation at several key historical moments.[42] Doyle again follows Deleuze and Guattari's claim that we study concepts by thinking about how they were made "persuasive" by figures who leave their mark or "signatures" on certain concepts (such as Descartes' *cogito*, Leibniz's *monad*, Bergson's *duration*) (2-4).[43] In this sense, 'giant figures' like Heraclitus, Bacon, Darwin and Huxley have reflected explicitly on rhetorical concepts and appropriated a number of these from rhetoric to 'frame' science since antiquity. In re-appropriating the "conglomerate of metaphors, principles, analogies, and figures" we've

associated with rhetoric since ancient Greece, they offer up one way to create a history of *ecological rhetoric* where 'contested concepts' like *physis, logos, technê , nature, invention, mastery, artificial selection,* and *ecology* allow us to think through the 'rhetorical software' of 'bridge figures' that have advanced ideas about rhetoric and ecology.

While emphasizing certain concepts can contribute to the groundwork for our theories of *ecological rhetoric,* this study also extends a genealogy of concepts to emphasize key rhetorical *strategies.* While Gross's "safeguard" proposal to work with concepts cautions against certain forms of genealogical work, each upcoming chapter makes an effort to foreground rhetorical strategies responsive to certain exigencies for ecological rhetoric today. Like other scholars studying "strategy as practice" in the humanities and social sciences, this approach emphasizes another level of analysis built on the conceptual base (upon which strategies develop) by examining how rhetorical strategies take shape as discursive practices, performances and techniques that are inextricable from exercises of power. Kornberger and Clegg stipulate that the analysis of "strategy as practice" asks both *what knowledge is a strategy based upon,* and *what are its power effects?* These driving questions focus an analysis to extend beyond the study of concepts, to the exigencies for the strategy-making process, to the performativity of such strategies, and to track any notable consequences on power relations (and in this study, to think particularly about the power relations between humans and 'nature') (137-8). Emphasizing a genealogy of "rhetorical strategy as practice" in this dissertation seems salutary for two central reasons. First, this emphasis on "strategy as performative practice" has gained appeal in recent years in studies of economic and environmental organizations, and there is new potential to bridge these approaches with this rather familiar emphasis on rhetorical strategies in rhetorical studies (more on this in the concluding chapter). Second, and more ambitiously, constructing a history of *ecological rhetoric* as a *genealogy* is an attempt to follow many more ambitious attempts to demonstrate how genealogical work can, as both Foucault and Nietzsche hoped, form "a new organization of the sciences,

a new organization of philosophy, a determination of the values of the future" (Deleuze *NP,* 3). A key aspect of what we deem to be *ecological rhetoric* is genealogical in the sense that it may have to lead or structure other types of knowledge, and orient current thoughts towards a sustainable future. As such, this dissertation is perhaps a small contribution to this end.

Chapter Descriptions

Chapter Two, "First Second Nature: Heraclitus and the Ecologist's Challenge," begins with the case that Heraclitus may be a figure that most resembles the first ecologist. In a few words, my thesis in this chapter is that Heraclitus promotes an ecologist's challenge not because he introduced "ecologic considerations" and classifications in "scientific literature" or epistemologies, but because Heraclitus presented a challenge for a rhetorical tradition to pick up his fragments from *On Nature* as a well calibrated rhetorical intervention and strategy. This occurred in a great historical "shift from relative to absolute" uses of *physis* as a critical concept, and was designed to counterbalance early scientific interests in nature by attempting to make principles he observed in nature's hidden *Logos* engage his audience with a common way of perceiving, thinking and acting (Hadot 18). I suggest that the movement around Heraclitus' thought might now challenge us to engage with two concepts. The first, which I'm calling "*logos from the Logos,*" follows Barry Sandywell's analysis of Heraclitus' rhetorical innovations as evidence of a "*logos on the Logos,"* or as an "icon" or principled expression of written ideas (his *logos*) on the elusive metaphysical concept *Logos* (as something like 'natural processes'). Extending Sandywell's reading, I lay emphasis on how this analysis enables us to sidestep problems with reading Heraclitus as representing the metaphysical concept *Logos*, and instead allows us to read *logos* as a more dynamic set of rhetorical innovations and goals drawn *from* principles Heraclitus found in his singular pursuit of *Logos*, core principles such as *flux*, the unity of opposites, and strife as justice, which are integral to his discussion of persuasion as type of common wisdom and a social force. Thus, I'm not

attempting to conclusively answer the elusive historical question "what was *Logos*?*"* once and for all in this chapter, but make a case for reading this particular *logos* as a distinctive rhetorical strategy and persuasive method that gave form and content to his wisdom. The second concept I emphasize in this chapter, *first second nature,* preserves his vital word play while minimally defining Heraclitus' singular strategy and its goal – a unique persuasive strategy to be embodied in his figuration of the wise man, with an end goal of making *logos* a broader 'sense,' ability, 'attunement' or type of wisdom held in common. In other words, *first second nature* emphasizes that the value of this sage seems to be tied to a vital challenge to make something strategically persuasive *from* pre-Socratic ideas of *first nature* by affirming a way of thinking he thought should become so "obvious"[44] that it be considered nothing less than *second nature.*[45]

The third chapter, "The Whole Strategy/To Stir the Earth: Bacon's Ruse of Mastery and the Precepts of Rhetorical Invention," begins with a genealogy of 'mastery' (as a concept that has perhaps shaped Bacon's legacy more than any other) that forms a well-known crux in ecological thought. Here Bacon's philosophy and method are used to help explain many more contemporary forms of domination – often going as far as positioning Bacon as one of the great "sources of all our ecological misfortunes" for promoting a "philosophy [that] gave birth to the scientific dream of modernity [where] the advancement of society goes hand-in-hand with the unimpeded development of all technologies" (Mathews 15, Zittel xx). I then pick up on what has been demonstrated frequently enough by rhetorical scholars defending Bacon, that those who have branded Bacon's authority or his ideas as 'commanding' or 'mastering' nature have persistently misread his rhetorical innovations or strategies, or as I will argue, more substantially missed the role and responsibility Bacon gave to rhetoric and persuasion in constructing human/nature relationships. I thus join a group of scholars who have countered a wide-range of resentment such as Brian Vickers and John Briggs who have shown that twentieth century perspectives building on a *topoi* of mastery have persistently avoided the central role of rhetoric and

persuasion as "the paradigm for Bacon's 'universal Philosophy' or the 'wisdom' he identifies with new learning … the new sciences, which indeed promise to move or persuade 'all things'" (Vickers 3, Briggs 1-2). [46] My initial contribution is to extend these defenses by connecting Bacon's notion of *mastery* to his deeper insights on this 'promise of persuasion', which requires thinking about the odd admixture of agency and arrogance in his discussions of rhetoric and persuasion as a surprisingly apposite idea of mastery that took on a range of meanings for this term (as forms of *power* and *dominion* as well the forms of *skill, control, or proficiency*). I argue that Bacon's ideas about the 'arts of possibility' hinge on his more aggressive rhetorical strategies for configuring novel human/nature relationships – what I'm calling 'the whole strategy' (after Serres). After making this case, the third section explores two undervalued components of Bacon's "whole strategy" by introducing two rhetorical "precepts of invention" -- a term he uses in both *Advancement* and *Novum* to denote certain principles, axioms and strategies for shaping human/nature relationships (CXXVII). This reading requires making a considerable switch in emphasis from some disciplinary views that Bacon attenuated this canon by reducing invention to a role of 'mere discovery' in support of Bacon's science, a praxis oriented method, or a new natural philosophy. To state it plainly, in this chapter I stress the precepts for invention as a leading category for his thought, and as a key to understanding his notion of mastery. Bacon treats invention as an exigency for his articulation of the well-known *internal* function of rhetoric as a tool for managing the faculties within his larger rational system (and moderating the imagination in his constructivist epistemology), and as an exigency for a less-often discussed *external* function for rhetoric as a social force -- those strategies which inspire and organize some of his more aggressive persuasive strategies for changing the relationships between nature and culture.[47] My final section concludes by considering what a more recent history of ecological thought might resemble had it embraced Bacon's handling of rhetoric and his rhetorical conception of mastery in particular – examining especially the long shadow this casts on deep ecology, the precepts of anthropomorphic/ecocentric debate in ecological ethics, and

more recent trends in ecological thought that seem to slow-down or undermine many strategic or political responses to today's ecological exigencies.

In the fourth chapter, *Darwin's Ecology, Huxley's Ethics: Artificial Selection and Rhetoric,* I draw our attention to a history of 'rhetorical Darwinism' that has taken up Darwin's work as integral to a history of ecological thought in the sciences and humanities. Similarly to other well-known efforts to rectify certain ideological uses of Darwin's theories or his ethos (among which perhaps Richard Hofstadter's work still stands out as the model), my primary aim is to discuss a number of ways that 'rhetorical Darwinism' advanced with lines of ecological thought and ecological ethics, especially those treating Darwin as a proto-ecologist and leveraging a 'synthetic appeal' that tends more and more to borrow symbiotic metaphors from Darwin in work that offers rich descriptions of networked behaviors that avoid or confront assorted dangers of "biologism" or "essentialism" and offer many ways for scholars to become more conscious of their descriptions of complex (and many relevant) technological, social and ecological factors in their work. Such work, however, also seems too often to overdetermine the case of our 'entanglements,' 'meshwork,' or 'interconnectivity' with other organisms and living systems, and are less adept from an ethical or rhetorical point of view, often making it difficult to give due relevance to human intelligence, situate responsible agency, or translate this to present forms of action, largely because the complex nodes of agency also strategically passes over "what is commonly taken as distinctive or even unique about humans" and/or insists on superseding or forcing out any or all nature/culture dualisms (Bennettt, ix). This is the main reason why I believe those in the humanities interested in ecology might benefit from particular reading of Darwin's 'rhetoric of artificial selection' as originating a form of rhetorical agency that remains in some ways unexplained and which could be a potentially valuable history for ecological thought today. This chapter does not seek to cast a new proposition about artificial selection as a 'mechanism' of evolution, but in taking a more thorough rhetorical approach to thinking about certain risks Darwin took in using artificial selection as a crucial

trope (metaphor, analogy, and concept), I diagnose how this trope repeatedly influences a genealogy of ecological thought, and I infer another way it might open up to a more "conceptually progressive" reception history for ecological thought today (to borrow a term from Paul Sheldon Davies). To make this case the chapter draws our attention first to the ways that ecological thought in the humanities orbits around artificial selection as a problematic metaphor that encourages an unwanted *division* between of Darwin's (anthropocentric, individualistic, or economic) rhetoric and forms of 'true ecological connectedness' – a division that is defended against in some of the earliest definitions of ecology (i.e. Haeckel) and that becomes an exigence for resultant forms of ecological ethics bent on limiting Darwinian rhetoric with metaphors of symbiosis and cooperation (i.e. Leopold), or a division that fuels Darwin's 'persuasive logic' in ways that polarizes a great deal of 19th century Arcadian vs. anti-Arcadian ecological themes. A following section then examines a counter trend in rhetorical scholarship valuing this division by looking particularly at Burke, Campbell, and Davies as leading arguments into own reading of the rhetoric of artificial selection as initiating a suitable trope for ecological thought today. Indeed, many discussions about the accuracy or appropriateness of parallels between natural selection and artificial selection have become something of an unwanted or dangerous cliché in histories of science largely because they have missed much of what rhetoricians have valued in this trope as marking a crucial 'division' or moment of incommensurability between science and rhetoric that raised certain challenges for Darwin which orbit around questions of agency, ethics and 'the rhetoric of artificial selection.' To demonstrate how this rhetoric artificial selection becomes an important trope for ecological rhetoric in particular, I shift from a discussion of Darwin to a comparative analysis that maps out an understudied debate over artificial selection between Darwin and Huxley as one of the first thinkers responding carefully to these questions. This reading emphasizes a shared exigence for amplifying artificial selection as a symbolic category that compelled a kind of rhetorical inquiry between the two, an exigence for defining artificial selection in rhetorical terms as a *technê*, and an exigence for

establishing certain ethical principles and rhetorical strategies that might guide practices of artificial selection --- principles that Huxley believes might steer artificial selection away from transcendent ideals and towards an emphasis on an ethics of 'transactions' or 'debts' and 'redundancies' calibrated between two 'artificial' realms: a social-rhetorical realm and a more rigorously scientific realm of artificial selection (agriculture, fisheries, etc.). It is the latter realm that Huxley conceives of as a 'centre of force' in society, creating a dynamic that replicates something like the 'cosmic processes' in nature.

The dissertation concludes by thinking about the future of ecological rhetoric and applying some of the concepts and strategies to the challenges of theorizing and defining the present responsibilities for this area of study. I conclude by dealing with advantages and disadvantages of the historical and genealogical approach of this dissertation, and raising several potential implications for rhetoricians interested in rhetorical theory, environmental rhetoric, technical writing, or ecocomposition. I argue that the project's investigation into a longer history of rhetoric might make modest contributions as we "move beyond the foundational and totalizing question of 'What is rhetoric?' to a more inclusive and proactive question: 'What can a rhetoric be?'" (Haskins 208) The potential contributions here are fleshed out in three registers. First, this study of several authoritative figures from a long history of rhetoric bridges rhetorical and critical ecological theories in ways that might also help extend this alliance as it has developed in recent decades. It particular, it can help us deal with the failed promises of critical theory since the Frankfurt school to free ecological thought from 'instrumental reason' with its varied critiques, mainly by aligning several concepts from this history with critical work that has worked to move beyond such critiques (work leveraging actor-network theory, cybernetics, ecocriticism, political ecology, or theories in science studies), and also by noting particular changes in recent social and ecological circumstances that add more responsibility to rhetoric for theorizing axioms for a kind of responsible instrumentality. Second, the dissertation offers several accounts of *technê* as a core concept for a progressive ecological rhetoric, accounts which add to our field's interest in this concept's

performances in different historical and cultural circumstances (i.e. Papillion, Jarratt, Atwill, McComiskey, Haskins, Pender, Hawk, etc.). Moreover, as Pender argues that "*technê's* features have become a kind of invisible foundation for the field," the way the project ties in an ecological definition of *technê* in the first chapter began by negating the opposition of 'instrumental' vs. 'non instrumental' modalities of this concept, and proceeded to replace this with a genealogical narrative of recent ecological valuations of *technê* as a core concept for ecocriticism, for argumentation in environmental rhetoric, for philosophical tenets in ecosophy, and for theorizing ecological economics (followed by the three turns to *technê* in each subsequent chapter where *technê* marks another distinctive unity of ecological knowledge and action) (31). Thirdly, the study offers an emphasis on the inclusion of rhetorical strategies that might reform or advance forms of ecologically responsible praxis today, or to put it more boldly, rhetorical strategies offering us some lessons for the responsibilities of ecological rhetoric today.

Chapter Two) First Second Nature: Heraclitus and the Ecologist's Challenge

Cultures exhaust themselves; civilizations die; everything becomes inscribed in the mechanism of saturation ... This is nothing we don't not already know. There is however a more interesting question: what is it that causes life to perdure? The glimmers of an answer may in fact be found in the Heraclitian or Nietzschean perspectives: destruction is also construction.

-- Michel Maffesoli, *The Time of the Tribes* (115)

We need never deny the presence of strife, enmity, factions, as a characteristic motive of rhetorical expression. We need not close our eyes to their almost tyranneous ubiquity in human relations; we can be on the alert always to see how such temptations to strife are implicit in the institutions that condition human relationships; yet we can at the same time always look beyond this order, to the principle of identification in general, a terministic choice justified by the facts that the identifications in the order of love are also characteristic of rhetorical expression.

--Kenneth Burke, *A Rhetoric of Motives* (20)

Introduction:

Among many caveats and disagreements about anachronistically classifying Heraclitus as an early 'process philosopher,' 'scientific cosmologist,' 'metaphysician,' or 'religious thinker,' it seems less contentious to risk a claim that what we have in Heraclitus may be a figure that most resembles the first ecologist.[48] Even though environmental sciences and ecology are understood as interdisciplinary fields that took shape in the second half of the 20th century, conceptions of 'ecology' and ecological thought are now regularly extended to classical Greek thought. More often than not, ecology is traced back in accordance with views on early Greek 'ecological science,' above all to Aristotle and Theophrastus as they introduce "ecologic considerations into scientific literature" by developing an inductive method and system for examining the relationships between living and nonliving matter, and a lexicon for dealing with natural cultivation, extinction (of plants only), and relationships between species and habitat (what was called by Theophrastus "the appropriate place" *oikeios topos*) (Hughes 63). On several occasions Theophrastus has been named as the 'first ecologist' for his consistent application of

Aristotle's methods on these ecological topics, while also resisting Aristotle's suggestions that "creatures exist to serve mankind" (60).[49] In another set of interests shared among scholars in the humanities, Greek thought contributes to the rhetorical, social and political aspects of ecological thought as scholars reassess specific philosophical or rhetorical concepts in light of ecological exigencies, such as rethinking Plato's "first principles" as they might support theories of political ecology (William Ophuls), adapting *ethos* and ethics to questions of sustainability (Melissa Lane), or re-interpreting Gorgias' *kairos* as a form of ecological time (Bernard Allan Miller).[50] In some respects, work of this kind is only the most recent return to vital ideas among the Greeks concerning how 'nature' can have a formative influence on ideas and civilization, ideas that largely take shape in relation to a cast of figures running from pre-Socratics like Empedocles who saw the earth's elements as a constant process of interchange or "endless recycling," or poets like Hesiod whose saga of the Earth's decline predicts declining civilizations, to philosophers like Democritus who chiefly "saw the environment as a teacher" whose "habits" when closely observed taught many civilizations to advance, or Thucydides who tracked nature's effects on history and war (Hughes 62 -67).

It is also common enough for histories of science to position pre-Socratic figures as sages who anticipate major scientific positions, where Anaxamander's vortex serves as examples for the study of spiral galaxies, Heraclitus' fire resonates with energy and conservation problems, or Parmenides' immutable substance appears as a forbearer of quantum physics, however, to think of Heraclitus in this vein would undermine much about how this provocative sage has endured.[51] It is well-known that Heraclitus proposed a model of wisdom that competed directly with early Greek science, and as Foucault stated with typical insight, Heraclitus has relayed a much longer history of thought allowing him to "speak" to "urgent situations" about social change, and about the meaning and social value of competing ideas of truth, wisdom and knowledge (*Courage of Truth* 17). It is in light of today's ecological exigencies that Heraclitus seems compelling again, and much less because his wisdom

anticipates some principles of ecological science per se, than because his method intercedes and arbitrates between the earliest scientific and philosophical perspectives, and as I argue here, because this wisdom has evolved as both a challenge for rhetoric and an "ecologist's challenge" relating a much longer history of thought.

Castells used the term "ecologist's challenge" in *The Power of Identity* (1997) to describe aspects of the "fundamental struggles over the appropriation of science, space, and time, [through which] ecologists induce the creation of a new identity, a biological identity, a culture of the human species as a component of nature" (184). He traces the roots of this challenge from a small 19th century discourse community of ecological thinkers to a major expansion in the early 1970s in innovative networks of environmentalist, scientific, humanist and social thinkers linking a diverse set of environmental "actions, discourses and practices" with ecological "beliefs, theories, and projects that consider humankind as a component of a broader ecosystem and wish to maintain the system's balance in a dynamic, evolutionary perspective" (171). [52] Castells marks a direct correspondence between the rise of a networked society and the spread of four fundamental components to the ecologist's challenge that resonate with social and academic pursuits in recent decades. The first challenge is largely rhetorical, and stems from a "*an ambiguous but deep connection with science and technology*" that Castells maps from a 19th century "revolt of science against science" to contemporary challenges to "productively negotiate diverse responses to technoscience" ranging from zealous proposals to geoengineer the planet to authoritative activists with neo-luddite biases (181). A second related challenge stems from attempts to use science while "criticizing the domination of life by science or to "use science to oppose science on behalf of life" in order to "present a superior knowledge" (181). Castells states: "The principle advocated is not the negation of knowledge, but superior knowledge: the wisdom of a holistic vision, able to reach beyond piecemeal approaches and short sighted strategies geared toward the satisfaction of basic instincts" (181). Thirdly, the challenge is to create structural transformations in

social and economic life, which he calls a challenge *"tantamount to fighting for historical redefinition of two fundamental material expressions of society: space* [emphasizing the importance of constructing local sustainable spaces], *and time* [emphasizing an evolutionary perspective and a sense of 'glacial time' as a necessary perspective to changing social and economic structures]" (183). The fourth is to *create a historical struggle that works against forces that "fundamentally break the unity of humankind, as well as the interrelation between territories,"* the appropriations of science and technology for profit, the commandeering of territorial and social spaces, or forms of nationalism, regionalism or individualism that impede a necessary kind of "harmony" that is essential to ecology as a "unity of the species, then of matter as a whole, and of its spatiotemporal evolution" (184-5).

Castells repeatedly makes the case that these four themes of a networked "ecologist's challenge" sum up a sizeable intellectual challenge to bring together and strengthen the connections between different expressions of environmentalism and ecological wisdom, and to extend these across a much longer history of thought, back to our best understandings of our "cosmological self" and to a "fierce green fire" (184). From this point we might begin to think of Heraclitus as the first to present a version of an ecologist's challenge that relays similar themes back to ideas stemming from his influence on pre-Socratic conversations that obsessed over nature while inaugurating key-areas of scientific and philosophical inquiry such as ontology, cosmology, the configuration of the soul, perception, and the possibilities for human knowledge. Initially we might note that, similar to how 'ecology' sits in an uneasy rapport with the 'pure sciences' today, Heraclitus' theory of social and natural change was promoted as a kind of 'common wisdom' that also sat uneasily among the pre-Socratics, among their competing obsessions with nature, and among a larger conversation among the Greeks about philosophy and rhetoric. While this "weeping philosopher" is often thought of as an outlier from philosophical schools and often said to have "made a wisdom of his own" by searching reclusively for what is 'hidden in nature,' Heraclitus' work *On Nature* was a uniquely designed[53] provocation, and

provocative enough so to make him the archetypal thinker of change or *flux,* a figure who is now impossible to approach in isolation without retrieving extensions of interpretations, quotes, mediums, and other figures in relation (McLuhan 21).[54] Therefore, to begin to think of Heraclitus as a unique figure in an ecological history requires thinking through Heraclitus as what Gadamer called a "persistent challenge" for subsequent thinkers bent on categorizing his thought, or restoring Heraclitus' voice in the present (Gadamer, *The Beginnings of Knowledge* 38). While the evolution of this challenge can be mapped in several different ways, it can be analogous to an ecologist's challenge from the beginning if read as a distinctive rhetorical intervention, one designed to intervene among pre-Socratic obsessions with nature's "hidden code," to intercede in the historical trends where the concept of nature was in transition from more "relative to absolute uses," and where Heraclitus becomes a figurehead for a great antagonism towards either extreme (Hadot 18). This intervention seemed to anticipate some sense of permanence as a written text designed for public consumption, and might endure as an intervention calibrated among early scientific and philosophical perspectives on knowledge, as it is passed down to a rhetorical tradition starting with the Sophists rather than into the hands of Plato or Aristotle.[55] During a 19th century resurrection of Heraclitus by major thinkers like Hegel, Marx, Nietzsche, and T.H. Huxley (who all become devoted Heracliteans in different ways), perhaps Huxley said it best when he said that "the scientific heritage of Heraclitus passed neither into the hands of Plato nor Aristotle" but inspired those taking scientific ideas about evolution of a 'cosmic process' as crucial to understanding social progress, which for Huxley insists that "social progress means a checking of the cosmic process at every step and the substitution for it of another, which may be called the ethical process; the end for which is not the survival of the fittest... but of those who are ethically the best" (70, 81). Huxley in fact crafted his "Evolution and Ethics" in part by borrowing from Heraclitean principles, tracing these in relation to others who have "seen the cosmic process in evolution ... and sought to discover the bearing of these great facts on ethics," while maintaining that "no better expressions of the essence of the modern

doctrine of evolutions can be found than are presented by some of his pithy aphorisms and striking metaphors" (53, 69).

In a few words, my thesis in this chapter is that Heraclitus promotes an ecologist's challenge not because he introduced "ecologic considerations" and classifications in "scientific literature" or epistemologies, but because Heraclitus presented a challenge for a rhetorical tradition to pick up his fragments from *On Nature* as a well calibrated rhetorical intervention and strategy. This occurred in a great historical "shift from relative to absolute" uses of *physis* as a critical concept, and designed to counterbalance early scientific interests in nature by attempting to make principles he observed in nature's hidden *Logos* engage his audience with a common way of thinking and acting (Hadot 18). It is no coincidence that Heraclitus made no concerted contribution to new fields of science such as physics or astronomy, but stressed the underlying principles of nature, the *logos* and its two-part idea (that all things are one *and* undergoing constant process of changes creation and dissolution) as crucial to understanding the human condition, human senses, and a process of 'reasoning' or a capacity to think he characterized as both wisdom and fate. It is also no accident that some Heraclitus scholars in recent decades have made the case for reading Heraclitus' method rhetorically as a robust means to understand his enduring appeal to major thinkers, and to analyze his work as a form of persuasion in order to elucidate his unique wisdom.[56]

Building on such approaches, I suggest that the movement around Heraclitus' thought might now challenge us to engage with two concepts. The first, which I'm calling "*logos from the Logos,*" follows Barry Sandywell's analysis of Heraclitus' rhetorical innovations as evidence of a "*logos on the Logos,"* or as an "icon" or principled expression of written ideas (his *logos*) on the elusive metaphysical concept *Logos* (as something like 'natural processes'). Following and extending Sandywell's identification of several rhetorical tropes in *On Nature*, my reading lays emphasis on how his analysis

enables us to sidestep problems with reading Heraclitus as representing the metaphysical concept *Logos*, and instead allows us to read *logos* as a more dynamic set of rhetorical innovations and goals drawn *from* principles Heraclitus found in his singular pursuit of *Logos*, core principles such as *flux*, the unity of opposites, and strife as justice, which become integral to his effort establishing a form of persuasion as type of common wisdom and a social force. Thus, I'm not attempting to conclusively answer the elusive historical question "what was *Logos*?*"* once and for all, but make a case for reading this particular *logos* as a distinctive rhetorical strategy and persuasive method that gave form and content to his wisdom, which of course he thought should be persuasive enough to be held in *common* thought and action.

The second concept I emphasize in this chapter, *first second nature,* preserves his vital word play while minimally defining Heraclitus' singular strategy and its goal – a unique persuasive strategy to be embodied in his figuration of the wise man, with an end goal of making *logos* a broader 'sense,' ability, 'attunement' or type of wisdom held in common. In other words, *first second nature* emphasizes that the value of this sage seems to be tied to a vital challenge to make something strategically persuasive *from* pre-Socratic ideas of *first nature* by affirming a way of thinking he thought should become so "obvious" (as he repeatedly puts it) that it be considered nothing less than *second nature.*[57] Reading Heraclitus' method rhetorically we can emphasize how his wisdom was grounded in a strategy to make a *common* character and rhetorical ability permeate the early stages of the 'Greek Miracle' -- a pursuit that we might mark as a distant comparison to what Castell's saw as "the creation of a new identity" by a networked ecology movement.[58] My concluding section in this chapter distinguishes Heraclitus' ideas about what should be 'common' from other ideas about 'common sense' in antiquity, and then distinguishes Heraclitus' intervention as a "fundamental strategy" to establish something like common rhetorical attunement as a superior type of wisdom. To examine how he attempted to make this intervention among the more "private" understandings of nature (among geometricians, early scientists

and philosophers) I examine how Heraclitus aimed to intercede among emerging conceptions of nature, human nature, and truth, which we recognize as integral to this historic phase of Western thought.

We already think of Heraclitus as having an important place in genealogies of the pre-Socratic idea of truth, where Heraclitus is often discussed as a reclusive sage and a "lonely truth finder...eternally and everywhere seeking one" (Nietzshe), or the reclusive 'sage' with an ethos equated to one of four distinct modes of "truth telling and veridiction" (Foucault's *Courage of Truth*), or similarly as one of the "poet masters of truth" (Detienne's *The Masters of Truth in Ancient* Greece). We rarely, however, think of this 'sage' as a distinctive figure promoting a truth value in terms more amenable to a rhetorical method – one designed to make certain connections between social and natural change seem true in the sense that they are obvious (or perceptible everywhere), inseparable, and potentially just. In striving to make something strategically persuasive from pre-Socratic ideas of *first nature*, he affirmed a distinctly rhetorical way of thinking he thought should be so obvious that it be considered *second nature*, a way of thinking that might ensure human/nature relationships are held in common thought, and only thusly 'ring true' in everyday life.

Reading Heraclitus Rhetorically

Day and night … they are one

Heraclitus, B57.

The obscurity in the philosophy of Heraclitus lies essentially
in the fact that a speculative thought is expressed in it.

Hegel, *Lectures on the History of Philosophy*

Heraclitus is called the 'obscure'. But he is the luminous.

Heidegger, *Aletheia*

There is of course an interminably long chain of patient research into Heraclitus' contributions to pre-Socratic discourses and to the so-called 'Greek Miracle' in civilization, art, thought, and social organization. Moreover, his concept of *logos* has drawn some of the greatest debates during the history of philosophy and rhetoric, inspiring interpretations ranging from 'god,' to 'fate,' 'necessity,'

'universality,' 'wisdom,' to 'law'. During the shift from *mythos* to *logos,* when speech became the instrument of the city's political life, Heraclitus obsessed over the power of "both human thought and the governing principle of the universe" (Guthrie*,* 428). His great essay *On Nature* presented *Logos* as an exciting and curious type of world-ordering or world-regulating principle, in ways that were both highly figurative and symbolic, and principled on a much more straightforward conviction that neither gods nor humans created the world's *logos*, all things could be produced and changed by fire, and all things can be perceived as constantly changing and becoming. His method, which combines an odd mix of material monism (all things flow from or are modified by *fire*) and dialectics (considering everything to be generating and changing through the conflict and unity of opposites), offered up a distinctive brand of ecological thinking recognizable in his unique analysis and its intervention into pre-Socratic thought.

In the first respect, he formulated as a series of subtle and poetic analyses affirming the interconnectedness of contrary states in society and in nature. The many apparent contradictions Heraclitus observes, such as "The way up and the way down are one and the same," did of course inspire many great (and still encumbering) debates about what it meant to speak 'correctly' or logically about nature, but Heraclitus was clearly bent on establishing a perspective on time and patterns of change that he thought was a cut above other ways of thinking about nature.[59] When Heraclitus states, "Collections: wholes and not wholes; brought together, pulled apart; sung in unison, sung in conflict; from all things one and from one all things" (B10), this statement was provocative in design because of its apparent paradoxes and logical contradictions, and because it proclaimed a higher perspective on many disparate phenomena, contexts, and perspectives, which seem to bear out what he says as true. For instance, Heraclitus offers the evocative perspective on how many contraries are connected over time: "As the same thing in us are living and dead, waking and sleeping, young and old. For these things having changed around are those, and those in turn having changed around are these (B88)."

We should be reminded that his 'superior' perspective on expansive time and dialectical change (often deemed 'elitist') stems from his apparent belief that he had found significant problems with budding sciences and their 'rational' studies of nature -- an antagonistic stance that stirred many accusations or Heraclitus as a mystic or misologist. As one of the most influential Heracliteans, Hegel (who claimed in his *Lectures* "there is no proposition of Heraclitus which I have not adopted in my logic") saw Heraclitus as offering up a "mature" dialectical logic in response.[60] This took shape as the first attempt to distinguish nature not only as material phenomena, but as the "single idea in the form of otherness... as the negative of itself," or simply as the "externality" that "constitutes the determination in which nature as nature exists," or the first to "grasp nature as in itself infinite, that is, its essence as [dialectical] process" (*Lectures,* 192). Hegel framed Heraclitus as establishing the need for a 'superior wisdom' among Pre-Socratics by diagnosing the moment when 'nature' became responsive to *contingent* ideas, "human words or art, ethical programs, reflective self-consciousness," and to *necessary* ideas about material changes "obedient to natural laws," those ideas he saw presenting nature as a "living whole" over a sequence of historical stages including "ideas about nature as universal" (like math), "real and apart from inorganic nature" (physics) and "actually living" (organic physics) (Miller).[61] While it is now both commonplace and potentially trivial to say that pre-Socratic nature began to evolve as a Hegelian "ideology" marked by the emerging concepts like *physis* or *logos,* or that nature can still be thought of as evolving in dialectical terms, Hegel thought Heraclitus inaugurated a mature form of dialectical thinking for a second reason. [62] He not only diagnosed the behavior of both 'necessary' and 'contingent' categories for thinking about nature, but his effort was bent on challenging his audience to "yield a few well-integrated truths" from this logic into everyday thought and action, and to do so in ways that were responsive to problems he associated with the 'private,' 'bookish' and 'limited' wisdom of his contemporaries promoting early science and *histore* in particular (Harntack 17).[63] It is this strategy by Heraclitus to "yield a few well-integrated truths" from

nature's perceived 'logic' that prompts this rhetorical reading of his intervention in Greek thought, a reading that still accounts for this curious mix of dialectics and material monism as integral to his method, but that sees this as less befitting to a Hegelian or Platonic framework than to a line of thought interested in Heraclitus as initiating a unique rhetorical intervention, which can resonate with ecological thought in ways I begin to detail below.

This rationale also stems from the fact that I am not the first to try and make such connections between Heraclitus, rhetoric and ecology. Several deep ecologists sought to develop such connections in the mid 1980s when Devall and Sessions initially suggested that Heraclitus might "sponsor a deeper ecology" and offer the "possible basis for an ecological metaphysics of the West" (*Deep Ecology,* 1985, p236). While Devall and Sessions positioned Heraclitus briefly as a prehistoric "process philosopher" engaging with notable "ecological themes," this was followed by a more thought-provoking perspective on Heraclitus by Arne Naess and David Rothenberg who discerned several rhetorical qualities in Heraclitus that they believed might ring with a "Deeper Ecology." [64] Naess and Rothenberg believed ecological philosophies were promoting a "new love of wisdom" that seemed increasingly "unconnected to action" because it was paralyzed by ecological ideas that seemed both wise and ethically sound, while being strategically inept in the face of obviously accelerating social and technological changes (particularly those second wave environmental tenets promoting a morality or respect for our interconnectedness with nature, and bent on resisting or slowing change by always proposing to *lessen* excessive human interventions into wilderness, *preserve* nature, live *simply* and tread *lightly*) (Naess 2).[65] In a co-authored argument in *Ecology, Community, Lifestyle: Outline of an Ecosophy* (1993), they turned to Heraclitus to argue that Deep Ecology might "strive for a greater familiarity with an understanding closer to that of Heraclitus: everything flows" and work against "objective descriptions of nature offered by physics" while striving for new ways to articulate "universal" or "common" descriptions of certain conditions of interdependence – a tradition they also suggest might be passed

down to the Sophists (Protagoras in particular) (50). In subsequent projects, Naess would turn his attention to developing schematics and principles for effective argumentation on environmental issues and policy (what we largely recognize when we think of *technê* as a handbook for argument), while Rothenberg would position Heraclitus as the first to offer a "technique" promoting an historic "ecological sensibility" by challenging his audience with a thought-provoking conception of *logos* and a "recurrent paradox of *technê*" as somehow inseparable (2-3). [66] Rothenberg argues that Heraclitus deployed these concepts because 'nature' seemed to elude language at the time, and his fragments present an initial "technique" for understanding *and* "reconnecting" with nature by analyzing *logos* with images and analogies from the realm of *technê* (2). He points to the famous fragment of 'the bow and lyre' to suggest that Heraclitus thought these concepts could mutually explain or 'reveal' a hidden *flux* of nature by showing his audience how nature eludes linguistic explanation on its own, and takes on fuller meaning only through analogies to the world of *technê*; thus establishing that nature evolves or changes with both linguistic and "technological" interventions (2, 109). [67] A fragment such as "The name of the bow is life, but its work is death" thus serves to help reveal a basic principle from nature, that the ending of one life is often necessary to sustain another, and to promote a kind of thinking that embraces how certain human actions and technologies are always imbricated with a constant "advance" of human built processes and techniques that either excludes or "enhances our place in nature... [as they] change the vary meaning of nature" (Rothenberg xv -xvii). [68] Here the value placed on *technê* seems to be how it offers allegories and metaphors that enables one to articulate and potentially construct relationships with nature, often in ways that either metaphorically extends what *logos* states or represents to the realm of action, or in ways that relates the potentially distant or rarified language describing nature to the realm of rhetoric, especially the reproduction of techniques and actions we associate with *technê*.

It is not hard to see that Naess' frustrations with a 'love of wisdom' or Rothenberg's gestures towards an earliest pairing of *logos* and *technê* might appeal to a rhetorician interested in intersections

between ecology and rhetoric, as it raises the possibility that we could think more critically and deeply about the deployment of this original 'ecological sensibility' as something like a *rhetorical* "technique" that intervened in pre-Socratic discourses, and as a challenge to a longer history of thought. Glossing these endeavors to renew Deep Ecology shows us that Rothenberg and Naess (to a lesser extent) hoped to leverage Heraclitus as the first to put in words a "mental technique" that blurs "somewhat the distinction between thought and action" while promoting a common ecological mindset (Rothenberg 45). Rothenberg suggests that Heraclitus introduces a kind of intelligence that is recognizably dialectical as well as promoting a "tangible idea" associated with *technê* as the very "first technology... which begins with the hand ... Fingers trained to guide tools to reshape the world in our image, bridging the gap between those two infinities: human idea and tactile nature" (45, xi). While claiming that this kind of intelligence seemed to depend on pairing of *technê* and *logos,* Rothenberg leaves ample room to unpack the rhetorical elements of this "mental technique" (109).[69] Unpacking this so-called "technique" rhetorically allows us to think about the development of an "ecological sensibility" as supported by a more dynamic idea about the potentials for rhetoric than other ancient thinker's ideas on rhetoric, and a fairly methodical set of strategies for social persuasion -- designed with the historic goals of influencing a form of common thinking that is indeed recognizably 'ecological' in a number of respects.

To bear out these rhetorical aspects of Heraclitus' intervention, my method for reading Heraclitus rhetorically in the remainder of this chapter follows Gadamer's careful approach to "Heraclitus Studies" in a number of ways, particularly as he describes "effective history" in this area to involve both careful attention to primary texts and characterizing a coherent theme from the "persistent challenge" Heraclitus presented to subsequent thinkers (*The Beginning of Knowledge,* 23). Gadamer is of course well-known by his preference for studying the beginnings of Western thought based on the "solid ground" offered by Plato and Aristotle, texts "handed down to us authentically and completely," and for critiquing how quoted passages of Pre-Socratics lend themselves to almost any use whatsoever

(*The Beginnings of Philosophy,* 33). When addressing pre-Socratics he gives "a certain priority" to original texts like the *Phaedo* where the title *On Nature*[70] first appears, but in his writing on "Heraclitus Studies" he makes a vital exception when arguing that "the challenge since Plato" has been to find a "historically appropriate yet philosophically expressive understanding" of Heraclitus, which is only well understood as he "remains a continual challenge for every thinker...Men such as Hegel, Nietzsche and Heidegger met this challenge in fundamentally different ways" (203).[71] When Gadamer diagnoses the persistency of a "Heraclitean challenge" across a wide range of thinkers he follows a similar tact to classicist Charles Kahn who urges that we avoid looking for the "real meaning" in Heraclitus (which he calls a "whole history of mistakes") and instead look for certain consistencies in how *On Nature* often functioned like "a kind of commonplace book" among a wider range of Greeks, and in a longer history of philosophy formulating arguments about a range of topics including language, nature, cosmology, ethics and politics (Kahn 6-7).[72]

Gadamer makes two critical stipulations for any such reception history, or for readings that might invoke a rhetorical slant aimed at producing a longer theme from the arguments enabled by Heraclitus' thought. First Gadamer specifies that we maintain the general appeal Heraclitus presents as "a constant challenge for every kind of thinking" and in the promises of a pre-historic wisdom which took shape prior to more stable origins of Western thought (17). In this respect, the challenge is to effectively re-appropriate the protean Heraclitus, to carefully maintain the allure of his dramatic questions, curiosities, and guidelines that were both general and persuasive enough to ring with all subsequent pursuits of knowledge in the early sciences, philosophy and "sophistry" (Gadamer 17). In a second respect, and perhaps more interestingly for its contrast, writing near the end of his life Gadamer also marks a challenge of reading Heraclitus as one still holding potential as a "figure of the enlightenment, a thinker with no sophistic theatricality" (17). In the first respect, Gadamer resurrects Heidegger's infatuations with Heraclitus as offering space for thinking outside some of the delimiting

questions of Western philosophy, looking to Heraclitus for a different sense of truth, or a broader truth value in his versions of *logos* and *aletheia,* as Gadamer raises the central question: "Was cosmology really of much interest to him at all, or was it, rather, the whole of human/political love?" (18) In the second respect, he argues that Heraclitus might inform an 'enlightened' method, if we ground this archetypal figure in ways that avoid certain "modern terms," distinguish him from other figures of early Greek sciences, sophistry, and philosophy, and emphasize the "style in which Heraclitus constructs his propositions" as our most reliable perspectives on his method (34).

Subsequently, several scholars have risked using more explicitly rhetorical terms to help distinguish Heraclitus' method. As Erin O'Connell put it several years later, until the mid 20th century relatively few scholars, "with the notable exceptions of Nietzsche and perhaps Hegel" had considered Heraclitus' "unusual rhetorical style to be a method that clarifies his meaning rather than obscures it... and the relationship between form and content was overlooked, especially the relationship between rhetorical style and his epistemological point of view" (O'Connell 8).[73] O'Connell positions herself as following an increasing trend to give "weight to his use of subtler tropes of communication that are not found in the other Pre-Socratic authors, tropes which connect a physical theory of cosmological unity... with an account of the human epistemological condition, and, significantly, imply its relation to the production of meaning" (9). For O'Connell, it is the intersections between his metaphysical views on *physis* and *logos,* his account of a vital human condition, and his ideas about knowledge production that rhetorical readings are well suited to draw out from the near-legendary obscurity that often surrounds Heraclitus. Indeed, as Barry Sandywell has also suggested, Heraclitus endures largely as the result of his innovative rhetorical moves, stating: "nowhere in the surviving fragments does Heraclitus turn deliberately to explore the reflexive resources of the Greek language or its multiform linguistic traditions; yet his *rhetorical* manipulation of language attests to a critical consciousness of the possibilities and limits of traditional speech and literary genres" (257, emphasis his).[74] Sandywell reads

Heraclitus in full command of his form and suggests that we have in Heraclitus a *"logos on the Logos,"* or in other words, a *rhetorical* intervention based on "aphoristic, reflexive and not infrequently enigmatic word-play [that] should be seen as a principled expression of the paradoxical phenomena which forms the substance of his thought; his style is 'homologous' in both revealing and occluding... in other words, Heraclitus' own discourse is an icon of the original *Logos*" (256).

My own reading of Heraclitus follows Gadamer's cues, as well as Sandywell and O'Connell's prompts to further inquire into Heraclitus through rhetorical analyses of his fragments. However, my main goal is to deepen these analyses by making the case that this rhetorical reading resonates more deeply with critical ideas brought into sharper relief by today's ecological exigencies. To begin, while Sandywell is concerned with a rhetorical reading that emphasizes a *logos on Logos* (Heraclitus' rhetoric as a kind of representation and implementation of *Logos*), my reading might be said to focus on how Heraclitus originates a certain *logos from the Logos* to argue that this is not only well understood as initiating a unique *method* of persuasion, but that this had noted rhetorical effects on something like an ecological sensibility, and that this might be a necessary starting point for a longer tradition of ecological thought and rhetoric.

logos from the Logos

Despite his distance from the more formal lineage of Greek rhetoric, it is not hard to think of Heraclitus' most fundamental 'rhetorical' move as an attempt to make something strategically persuasive *from* nature's *Logos.* Sandywell makes a similar claim when he argues that his rhetorical analysis of "*logos on the Logos"* not only reads Heraclitus' fragments as an "icon" making *Logos* a distinctive concept (remembering that Heraclitus pursued the "invisible *harmonie/harmonia* [which] is better than the visible"), but as an interplay of rhetorical features in *On Nature* designed to "effect a change ... in his listeners commensurate with the vision it recounts" (Fr. 54, Sandywell 257). Sandywell

emphasizes the “homologous” *logos on the Logos* is well understood as a “principled expression of the paradoxical phenomena which forms the substance of his thought,” as an interplay of several main rhetorical “codes” or tropes that give us the sense of his *logos* as expressing something about how nature works (modeling his language on the paradoxes he saw in nature for instance). Sandywell also mentions however that this allows us to study a method for persuading and ‘unifying’ an audience to ‘hold’ on, ‘listen to,’ or ‘gather in’ principles from *physis* so that these rhetorical tropes influence a way of thinking with ethical and political consequences (256).[75] Sandywell analyzes several main tropes designed to affect this change: an *adversarial code* that served as a polemical device, an *alethic code* that insists on a version of the truth that “plays with verbal devices to mark truth and inquiry together,” a *paragramatic code* of “ambivalent symbols, antithesis, and paradoxes” designed to incense contemporary thinkers, and a *dialectical code* “concerned with the elaboration of dialectical oppositions” (256-7). Sandywell’s rhetorical analysis of *On Nature* identifies these features as constituting a Heraclitean *logos,* features discussed as rhetorical innovations that seem inseparable from the substance of his wisdom. Unpacking these ‘codes’ or tropes somewhat further here, we can deepen Sandywell’s analysis by emphasizing the connection between these rhetorical features and the type of ecological sensibility Heraclitus supposed should become immanent to his audience in both thought and action.

As mentioned in the introduction, approaching Heraclitus’ conception of *logos* from a rhetorical perspective does raise some strong reservations, as we tend to think of *logos* as more fully fleshed out by the Sophists or Aristotle, or during more protracted debates about the principles of logical reasoning, truth, falsity and rhetoric (Metzer 87). While Heraclitus’ *logos* seems to be the first place where the concept was given a special consideration in ancient Greek philosophy, it is notoriously difficult to translate from fragments where it can mean "word,” "reason,” “speech,” "account,” “gathering in,” "plan,” "formula,” "measure,” "proportion,” or "reckoning" (Watkins).[76] This indispensable range of

meaning usually distinguishes Heraclitus' *logos* as the earliest attempt to, as Guthrie put it, explain "both human thought and the governing principle of the universe" a challenge that set the stage for many to make his *logos* into a more "technical term" or strive to "discover a metaphysical sense for it" which, according to Jonathon Barnes, only encouraged so many vain attempts "wasting labour by seeking Heraclitus' secret in the sense of *logos*" (44). In the early 1970s Barnes attempted to clear the ground among classicists and philosophers by arguing "Heraclitus had no 'metaphysical' theory to propound, no 'Logos-doctrine,' as the commentators have it," claiming instead that *logos* is "just what is said" about nature, and that this was an "act" that begins "something like a 'general law of nature' [where] 'everything happens' in accordance with the account" (44).[77] Evan Brann reiterated this argument in *The Logos of Heraclitus* (2011), claiming that because translations of *logos* would run from 'word' to 'world-principle,' from 'sense' to 'universal law,' we are better off with "the upshot that no interpretation has prevailed" because there maintains "a spirit of receptivity and reserve" that still looks to ground this curious version of *logos* in appropriate contexts (Brann 6).[78]

While such interpretations always seem to flirt with philosophical relativism or call to mind a number of core postmodernist and poststructuralist concerns, Barnes and Brann both hedge by emphasizing that Heraclitus' *logos* must be understood in relation to the polemical edge found throughout his fragments. Even the most general interpretation of *logos* as only "what is said" about nature implies that Heraclitus was responding to more 'private' accounts of nature, and will reference claims that *logos* is "common to everything" and what all men *should* have in common but remain "deaf" (Barnes 59). Interpreters like Mark Cohen and J.H. Lesher emphasize this polemical edge further, arguing that *logos* must be thought of as "a kind of polemical argument" to make *logos* something held in common , emphasizing that *logos* is more than "just what is said" about nature, calling this "deflationary" (Cohen). In citing fragments 1, 2, 44, and 104, Cohen points out that readers are told the *logos* can "hold," be "heard" and be "understood," as well as that things "come to be in accordance

with" it, that it is "common," that it is wise to "listen to it," and that it can at the same time be "so deep" that its limits can never be discovered (Cohen). Cohen and Lesher emphasize that *logos* is thus more than just one concept in a list of Heraclitean theories or principles, noting that it must be understood as the formula that connects all other components of a method for engaging and 'unifying' a public in ways similar to what Heraclitus observed as the *harmonia* that bound conflicting opposites in nature's *Logos*, and that his own *logos* can be understood similarly as a kind of "unifying formula or proportionate method of arrangement of things, what might almost be called their structural plan, both individual and in sum" (citing Kirk, Raven and Schofield). Cohen and Lesher in fact stress that there is some "genuine content" to *logos* only if we understand it as a method that opens up to and engages a public with this 'unifying formula' Heraclitus saw inherent in natural processes.

Stressing the expression *logos from the Logos* maintains that his *logos* is more than a representation or 'icon' of the patterns of change he saw in nature's *Logos*, and stresses that this is part of his "unifying formula" that is not only a polemic, but a fundamental strategy reformulating principles from nature into a kind of 'rhetorical' intelligence and attunement that might unify a public. It is helpful to remember that this slant on Heraclitean wisdom was crowded out by other perspectives on *logos*, particularly by the commanding heights of Plato's notion of a 'world soul' or the Catholic church's notion of *logos* as 'divine consciousness' which was cast partly in an ideological separation of a Christian *logos* from the *logos* of Heraclitus which was deemed as pagan. It is also of course fairly common to see the re-purposing of *logos* in these ways as integral to the gradual partitioning and separation of humans from nature, as pursuing *logos* gradually became associated with a pursuit of the 'divine' word rather than natural, or as the pursuit of *logos* was allied with epistemological pursuits of natural substances. Comparably, Heraclitus drew his *logos from the Logos* in a most direct way that rests comfortably with rhetorical qualities that do away with the shadowy business of the soul or divine consciousness or eternal substances as they would be articulated in branches of philosophy and science. If Heraclitus

fashioned *logos* as something fundamental or eternal it is that the basic principles or *logos* of nature like constant change or flux, the unity of opposites, were carried forward, condensed into his pithy aphorisms and his style which were well suited to convey wisdom aimed at being easily remembered or kept in mind. What is constant is his constant working out of ideas in opposition, which shows both the division and certain unity of such opposites, which is revealed through what he calls the "counter-thrust" or *harmonia* between opposites in fragment 75: "The counter-thrust brings together, and from tones at variance comes perfect attunement, all things come to pass through conflict" (fr 75, Kahn). The simple but constant pairing of opposites in his fragments fuels a method far less concerned with any detailed representations or explication of the natural phenomena that obsessed him, than with presenting and encouraging a simple and pervasive pattern of thought *from* the most pervasive patterns and paradoxes of 'first nature'. His polemic is thus a kind of insistence on a fundamental or common attribute to human understanding. When Heraclitus stated that "The hidden attunement is better than the obvious one," or "A hidden connection is stronger than an obvious one" or "Invisible harmony is better than visible," he established a position that is therefore pointedly polemical and dialectical because, since it is the case that what is hidden *is* not only better, but that this type of attunement or harmony must indeed be resolved in a process of *becoming* so 'obvious' that it is visible nearly everywhere, from the basic rhetorical structures of Heraclitus' thought to the broad patterns of nature, life and social exchanges. To put it more plainly, for Heraclitus, wisdom is meaningful only when it becomes persuasive enough to pervade our thinking about human interactions *and* human/nature interactions.

There is also, of course, a more targeted antagonism that fueled Heraclitus' rhetorical formulation of wisdom. This is apparent in the attitude he bore towards a number of problems he perceived in other pre-Socratic obsessions with nature, some of which he explicitly mocked as profound failures or fallacies. Heraclitus makes this apparent in his first two fragments. Even while there is some

debate about whether the fragments are part of a single treatise or whether it was titled *On Nature*, there is little dispute that there was once a significant order with a rather unambiguous starting point, a claim which Jonathon Barnes notes that both Sextus Empiricus and Aristotle testified to in his *Rhetoric* (44). [79] As Barnes put it, there is relative unanimity on a "critical and polemic nature at the beginning" in the first and second fragments, which offer a condensed argument granting some stability to other arrangements of his ideas (Barnes 43).[80]

> Though this Word is true evermore, yet men are as unable to understand it when they hear it for the first time as before they have heard it at all. For, though all things come to pass in accordance with this Word, men seem as if they had no experience of them, when they make trial of words and deeds such as I set forth, dividing each thing according to its kind and showing how it is what it is. But other men know not what they are doing when awake, even as they forget what they do in sleep (DK1).

Here Heraclitus establishes his fundamental concern with interpretations of *Logos*, as the first part of his polemic targets the failures of human senses to adequately 'gather in' or 'account' for what is hidden in nature, and then mock schools of thought that "make trial of words and deeds ...dividing each thing according to its kind and showing how it is what it is" (DK1). The second fragment then sets the tone for his fundamental problematic: "Though the *Logos* is common, the many live as if they had a wisdom of their own" (DK 2). Or as it is often put in other common translations: "Although this Word is common, the many live as if they had a private understanding" (Barnes 2). This antagonism can, however, be further understood as calibrating his pursuit of what is common through a more measured or moderate stance between competing perspectives on nature, or as many have put it, as deeply warring in spirit against these extremes.

While these initial fragments are still often used to identify a 'weeping philosopher' "generally railing against human failures to grasp the universal *logos* in an effective way," or to call to mind that Heraclitus encouraged forms of misology, his antagonism was clearly a more strategic and measured response to what he saw as the extremes in early Greek science, philosophy and *histore* (Kahn 8).

G.E.R. Lloyd's adage that Heraclitus is only well understood as a combatant against the "far more radical view that reason alone is to be trusted," situates Heraclitus' antagonism as an attempt to place his ideas in a middle position among contemporary ways of thinking about nature (36-38). As Pierre Hadot argued more recently in *The Veil of Isis* (2004), Heraclitus was in fact calibrating a strategy that turned pre-Socratic obsessions with a 'hidden nature' into a widespread polemic during a historical trend where the concept of nature was in transition from more "relative to absolute uses," a transition when Heraclitus became figurehead for a great antagonism towards either extreme, building his work in response to both relativistic and more 'objectivist' pursuits of knowledge about nature's "hidden code" (18). By the same token, it was the potency of these 'fighting words' that Nietzsche prized most intensely as a strategy, one that deepened his own suspicions of the rationality that seized pre-Socratic philosophers and early figures of science, which Nietzsche of course saw as 'the greatest error' and 'aberration of philosophy' to believe that these "possessed the criterions of truth and reality" instead of as means "towards the adjustment of the world" towards more utilitarian ends – a position that perhaps also suggests that the rationalists confused nature by treating it as something to be understood as *logos* without seeing how *logos* also somehow 'becomes' *technê* (*Will to Power*, B3, 584).[81] Heraclitus was particularly compelling for Nietzsche on a number of levels, but emphatically because Heraclitus strategically directs a fight that "tames this drive" in emerging rational understandings of nature, and counters this fundamental error with a method that affirms a different set of contingencies and constraints for thinking about 'nature' (Nietzsche *PTAG* 46).[82] While these contingencies and constraints are framed on either end by his firm rejection of scientific and poetic interpretations of nature, rejecting "*polumathiê* or information-gathering on the grounds that it 'does not teach understanding," and treating "the epic poets as fools and calling Pythagoras a fraud," he seemed to accept other constraints, including something from the mathematical theorems of Pythagoras who had "pursued 'scientific' investigation further than other men" and established mathematically the one and

the dyad, which clearly resonated with Heraclitus notion of *logos* as a formula that gave some "account" of *physisa* in a logic that captures the "the beginning of strife" between varied nature/human relationships – which in his "account" of nature presents as an evolving fight between humanity and nature that also unifies them in multiple ways (Burnet 31-2). The 'fight' therefore is both a rhetorical one aimed at the limitations of other treatments of nature in this historical context, and integral to his *logos* as a 'superior' accounting of 'nature' that thinks only this in terms of this 'conflictual harmony'.

Primarily then, Heraclitus' impact on pre-history is in his attempt to make nature a central force in human knowledge by moderating or correcting the 'fundamental error' Nietzsche gave so much currency to in his genealogies of truth, lies, and power – the so-called "entire fatal error" he identified at the moment when reason began to construe as "false" the opposing properties that constitute the world: "change, becoming, multiplicity, opposition, contradiction, war" (*Will to Power*, B3, 584). While Heraclitus' affirmations of *fire, flux, becoming* and *contradiction* are often said to establish him vis-a-vis the "way of truth" of Parmenides, and to position him as "the first opponent to 'the first philosopher,'" the more basic contrast is in his antagonism towards any "appeal to nature" arguments that point to 'nature' as a kind of foundation, and do so in ways that tend toward the more formal "naturalistic fallacy" -- those claims that associate something 'inherently good' or right with what is natural and what is 'inherently wrong' or bad with what is 'unnatural' (Brann 5).[83] Accordingly, Hadot describes Heraclitus plainly as the pre-Socratic that insisted any definition of nature always account for more than knowledge of *what is* by accounting for how nature was already in a process of becoming deeply social as it always already exists as a "process of realization, appearance or growth" that takes shape, but "loves to hide" in "the discourse of dissimulation" (8-10). As Hadot states, it is for this reason that Heraclitus is almost never left out of our discussions of the Pre-Socratic concept of nature, and for this basic reason that his understanding 'nature' evokes its potential as form of rhetorical responsibility in his audience – since the contemplation of nature begs thinking about how nature is transformed,

hidden, or dissolved as a concept as it circulates public discourses rhetorically (8-11).[84] Indeed, Heraclitus' interest seems to be, in the broadest purview, in how everyone thinks of nature.

To put it another way, if Heraclitus' *logos from the Logos* can be thought of as a starting point for rhetorical strategy working against varied naturalistic fallacies, we might say that it his concern is with working to articulate and resolve new "second order problems" (to borrow Luhmann's terms for a moment) about how we observe nature. As Luhmann saw it, historically, concerns with "second order observations" mark "vastly different historical starting points for problem solving methods [...]Where a first-order observer lives in a world that seems both probable and true... by contrast, the second-order observer notices the improbability of first-order observation ... [and begins to work on articulating] the problems of various arts concerned with how we cut up the world" and offering solutions that can make any "actions it requires accessible to everyone" (*Art as Social System,* 62). That Heraclitus is a kind of 'second-order' problem solver is most evident in his 'paragrammatical' intervention -- the strangely *unnatural* language that marks his starkly contrasting style as a well-known innovation, one which comes to us as an almost exasperating series of aphorisms, logical paradoxes, enigmas, and equivocations that reflect the attitude Heraclitus bore towards *polymathy* and *histore* and attempts to make this palpable to a broad audience (Sandywell 256).[85] The paragrammatical (or stylistic and grammatical deviations) support his intervention in important ways, buttressing his deep interests in "expunging the devine" from natural phenomena and cosmogony, while promoting his efforts at breaking down the less obvious natural fallacies that were impediments to his own professed method, a way of understanding the problematics of everyday language and encouraging inquiry into the form and content of a more publically available *logos* (Granger 236). We know that the paradoxes in *On Nature*, while pointing out perceptible contradictions observed in nature, also outraged more logical ways of thinking and prompted an innovative kind of 'linguistic inquiry' that took many deep into his thought.[86] Carol Poster's "The Task of the Bow: Heraclitus' Rhetorical Critique of Epic Language" has already

offered an insightful look at this role of Heraclitus' stylistic innovations, especially his novel use of paradox, arguing that "reinterpreting natural phenomena and using new verbal modes were not independent activities; the means and the ends of intellectual inquiry were constantly interacting with and reshaping each other" (4). Poster argues that his paradoxical style was designed to set an inquiring process in motion, and was thus a rhetorical intervention that was equal parts: (1) an attack on epic forms misusing language (particularly in the example of using the wrong term for "bow"), (2) an attempt to both "lead readers to question the relationship of names to things, and particularly whether names can be correct in a nonarbitrary manner (doing so well before Prodicus or Protagoras)," and (3) an effort to show that "behind these errors are truths that can be discovered by allegorical reading, albeit truths that were not necessarily apparent to the epic authors" (16). In other words, Heraclitus challenged his audiences to see deeply into the paradox that change is the one constant, and his unusual stylistic innovations seem largely designed to make these "truths" he saw in nature immanent to his audience by provoking them to take on a common process of inquiry that could promote an appropriate grasp of the world and their place in it.

As such, it remains accurate, as Sandywell suggested, that this "infrequently enigmatic word-play should be seen as a principled expression of the paradoxical phenomena which forms the substance of his thought" or his "discourse is an icon of the original *Logos*," but, moreover, his incessant use of contrasting opposites (such as "it is by disease that health is pleasant; by evil that good is pleasant; by hunger, satiety; by weariness, rest") are deployed to create a sense that such *unnatural language* reflects a certain strife that is not only 'natural' but potentially just. This strife between opposing powers is presented as essential to the cosmos and its ability to sustain life, health, pleasure, and goodness, and these equations are fundamental to a kind of ethics based equally on a human ability to measure such apparent truths —truths obvious enough that any simple "linguistic analysis" of any single event in nature can reveal them (Sandywell 12). His principal paradoxes thus emphasize something

equally about nature and about humanity, since man is, or can be, the measure of this *Logos*, and the paragrammatical intervention only reinforces that this measured truth is within man's purview and basic ability to weigh such oppositions. Accepting certain inviolable contradictions and paradoxes thus potentially opens one up to a continual and difficult practice of discrimination based on such insights, and a more careful and a more disciplined habit of thought, not some form of mysticism or misology.

First Second Nature

The [sciences] introduce no reasoning which is aimed to deceive, but all the principles of the rhetoricians are aimed exclusively at that, and according to Heraclitus rhetoric is the prince of liars[87]

Fragment 81 translated by Diogenes of Babylon, cited in Philodemus, *Rhetoric*, I, col. 62.

The "strife of opposites" is really an "attunement" (συντονισμός). From this it follows that wisdom is not a knowledge of many things but the perception of the underlying unity of the warring opposites. That this really was the fundamental thought of Heraclitos as stated by Philo.

Burnet, 158

In recent decades, the activity around Heraclitus' thought has been largely motivated by two contrasting trends: the possibility of inferring that he attained some higher insight into a type of truth, a singular or "superior truth" not hither-to established, or the possibility that he represents a type of 'postmodern Pre-Socratic' (Burnet 151-2).[88] Gadamer and Sandywell, for instance, both stress a unique *alethic* code in the fragments, doing so mainly by following Heidegger's influential reading of Heraclitus as offering a 'habit of mind' that in fact performs *how* one might think 'Being'. In other words, in these readings Heraclitus seems to offer a method for thinking about the ways we *are* in the world, and a way that *nature* can simply *be* "that which can be thought" without recourse to Plato's ontology or Aristotle's metaphysics.[89] On the other hand, in recent decades we have seen Heraclitus refigured as a type of postmodern Pre-Socratic, a trend that Joanne Waugh described as a revaluation of a type of anti-essentialism, of the multiple interpretations of meaning in his fragments, and of a sense that the "only demand" in Heraclitus seems to be that he "demands to be uncertain" (608). According to both Havelock and Waugh, much of these interpretations tend instead to "follow" Nietzsche's valuation of

Heraclitus as "eternally right with his assertion that being is an empty fiction… [that] the 'apparent' world it the only one: the 'true' world is merely added by a lie" (*Twilight of the Idols,* 167-8).

Both interpretations reiterate that Heraclitus' intervention takes place in the interstices between the extremes of relative and objective understandings of nature, while at the same time re-embedding us in some of the most well-known critical impasses of 'nature' as a critical concept. The 'Heidegerrian' perspective upholds some of what is most interesting or singular about Heraclitus by relying on terms like 'higher truth,' which plays into the tendencies to brood over some lost truth, lost nature, or even lost sense of holism. The approach applying a so-called postmodern emphasis on 'contingency' that masks Heraclitus' singular point that *logos* must be what draws enduring connections between principles of social *and* natural change, and seems to make the prior his key stipulation for making this relevant as a form of *common knowledge*. In order to emphasize what is historically unique (and perhaps most noteworthy today) about Heraclitus' *logos from the Logos,* we can think further about the specific ways Heraclitus' rhetorical strategy seems to play out, especially as it was designed to intercede among these emerging conceptions of nature, human nature, and truth, which we recognize as integral to this historic phase of Western thought. Heraclitus does indeed contribute to an "*alethic* code" as key contribution to the genealogy of the pre-Socratic ideas of truth. This contribution is typically discussed as one of the "poet masters of truth" (Detienne), or as initiating a distinctive form of truth telling that, as Foucault argued, has a modality of veridiction based in the ethos of the sage who "against the background of his silence, tells of being and nature (*phusis*) in the name of wisdom" (*Courage* 24).[90] We might, though, open up such discussions of this 'sage' and his pursuit of 'truth' in terms more amenable to rhetoric than often granted in these genealogies, and in doing so see the novel conceptions of *truth*, *nature*, and *human nature* as the primary targets that triangulate Heraclitus' distinct intervention as it emerges among these fundamental concepts -- largely by working against how they tended to promote forms of *private knowledge* rather than *common wisdom*. If his *logos from the*

Logos surfaces among such concepts, his competing "fundamental thought," as Burnet called it in the above epigraph, is perhaps less apposite as a 'higher truth' or as an ancient an 'anti-essentialism' than as a unique rhetorical 'attunement' and vital ability of a wise man, which he prescribes as a more pervasive, social or common form of wisdom we can value as distinctly rhetorical and ecological. The "fundamental thought" here is more like a competing "strategy" designed to make the underlying principles he saw in *Logos* seem indispensable from the *logos* of a wise or "judicious man" – a capacity to think that gave the wise man his sense of character and of fate. Unlike the poets Homer, Hesiod or Orpheus who either personified natural phenomena, or saw man "Born of the Earth" (which as Loraux demonstrated, established distinctions between natural men and their artificial creations and technical acts), and unlike the more fully fleshed-out theories of human nature we find in Plato or Aristotle, Heraclitus characterizes *logos* in the figure of a wise man, and argues for this brand of wisdom to become nothing less what me might simply call *first second nature.*

The term *first second nature* preserves his vital word play and his emphasis on paradox, while minimally defining Heraclitus' singular strategy and its goal – a unique persuasive strategy drawn from his observations of *Logos,* to be embodied in his figuration of the wise man, with an end goal of making *logos* a broader 'sense'-ability, or type of wisdom held in common. In other words, *first second nature* emphasizes that this 'sage' and his 'truth value' seems to be tied to a vital attempt to make something strategically persuasive from pre-Socratic ideas of *first nature* by affirming a way of thinking he thought should be so obvious that it be considered *second nature.* Rhetoric has been particularly attentive to the recurring trope of 'second nature' from Aristotle's association of rhetoric as part of the warring spirit that is "like second nature" to man (in *The Politics* 1.3.8, and *Rhetoric*, 1152a 30-32), to George Campbell's belief that a rhetorician's work involves negotiating the fundamental relationship between human nature and evidence (*The Philosophy of Rhetoric,* volume 1), to Burke's contention that man is by nature the 'symbol using animal'. Here we can shift our attention from unpacking the rhetorical tropes

that make up Heraclitus' compact rhetorical strategy, to focus more explicitly on the desired ends, the form of common "attunement" or abilities that would deeply embed something like rhetorical and ecological thought as competing with (or at least holding the same currency as) the emerging ideas of truth, nature, and human nature.

We can discuss this effort on three levels. First, and most explicitly, in the effort to promote his figure of the wise man as one holding this ability or 'attunement' that observes an 'order of fire' in oneself and in society -- and who uses this as a form of leadership that actively promotes this as a necessary form of public intelligence.[91] In this perspective, we see his intervention not only as a *compact* rhetorical strategy deploying aphoristic or epigrammatic wisdom relying on the rhetorical tropes discussed above, but also as a type of *pact* for the judicious man to deontologize and transgress boundaries like human and nature, to promote instead a common ability that is recognizably rhetorical in its attempt to create social connections as a form of attunement or *harmonia.*[92] Second, we can account for the distinctive goals of his 'common knowledge' as having not only a personal/social role, but an ethical characterization designed to reverse some tendencies he saw in emerging natural sciences -- particularly Anixamander's view that natural strife, or the growth and passing away of nature, was unjust. As is fairly well known, the common intelligence Heraclitus initiates is intent on promoting a form of *cosmodicy* – an ethical model that hinges on his "judicious thinker" promoting a way of thinking that might make the connections between personal, social, 'technological' and natural change seem not only obvious and inseparable, but potentially just.[93] Together, these arguments might compel us to delineate the emergence of an "ecological rhetoric" in Heraclitus' thought, which we can use to distinguish his intervention from these earlier ideas about contingency or 'higher truth.'

The first way Heraclitus' *logos* promotes something like *first second nature* is in his treatment of the 'inward-outward' turn of a judicious thinker –his promotion of the 'wise man' as a figure reflecting

upon destructive tendencies equated with 'second nature' which he aligns with an ability to observe destructive trends in 'first nature'. It is commonplace in Heraclitus studies to note that Heraclitus sought to promote an "inward journey [where] one discovers the value of a measured existence for one's well-being, which depends upon knowledge of the proper limits of the great destructive forces of emotion and desire" (Granger 257). This turn inward is never dissociated from its essential opposite orientation, the outward observations of a world order of "fire ever living, kindled in measures and in measures going out" (B30). Heraclitus promotes this basic dialectic as a vital human measure of a world *and* our impact on that world – as only by looking outward to nature's *Logos* can one reflect inward in a way that promotes a kind of self-understanding of our common destructive tendencies. His figure of wisdom or 'judicious man' has to start with a fundamental question: What can be done to counteract an aspect of human nature itself? The answers he offers are in caught in the same dialectical questions about how the 'wise-man' can live with a deeper sense of *strife*, caught in a tendency towards more mystical, reclusive, and introspective pursuits, which all point to a singular pursuit of *logos* -- a form of wisdom which requires one taking on a more active social or public role. Heraclitus of course seems to have become an aloof sage himself, with an "inward-turning wisdom" in the singular pursuit of *one* intelligence (or *logos*) in all things. It almost goes without saying that the figure of "sound thinking" Heraclitus promoted is often reduced to Heraclitus' own path in life and its odd conclusion, ending (as the story goes) as a reclusive and elitist "hater of humanity wandering in the mountains living on a diet of grass and herbs," speaking for nature and truth before dying of a natural remedy for malnutrition that either involved drowning in a cure made from dried cow dung, or baking to death in this remedy as he lay in the sun (Critchley 12). Such stories turn the distrust Heraclitus had for the thinking and actions of everyday people into a main trope of an elitist philosophy looking down on the wider human condition, rather than emphasizing the basic tension between an 'inward journey' and his apparent aspirations to make a 'common truth' ring with everyday knowledge. The role of the wise and 'privileged thinker' is in

fact to show that such fundamental "truths" about destructive tendencies are "superabundant" or equally open to all, or "no farther away than in the homely truths of every man's daily life" (Granger 258). While Heraclitus also seems to have seen this wisdom as a rare skill and *virtue*,[94] he encourages this capacity in individuals only if it creates *leadership*[95] that would encourage a certain common sense, stating that "speaking with sense we must fortify ourselves in the common sense of all… for all human laws are nourished by the one divine law. For it prevails as far as it will and suffices for all and is superabundant" (B114).[96] The full challenge for the wise man, as far as we can tell today, is to work against a "great clutter of truths," to make a few "well-integrated truths…yield to a judicious man," and to make these persuasive enough that they make common "man's character his fate" (B 19, 238).

This brings us to the second way *first second nature* becomes an important target for Heraclitus' thought, as this characterization of the wise man making 'sound thinking' *common* is the basis for any sense of Heraclitus' ethics. When Heraclitus says: "Sound thinking as the greatest virtue and wisdom: to *speak* the truth and to *act* on the basis of an understanding of the nature of things" (B112), this fragment is agonizingly open to interpretation, but it hinges on his repeatedly making the categories of "speaking" and "action" integral to the "character" and "fate" of a "judicious man," a point he frequently makes by contrasting his wisdom to Pythagoras' "bookish" wisdom that transformed nature into a form of private "malpractice" and "plagiarism" and mistook language as "a necessary condition for wisdom for a sufficient one" (Granger 248). As we noted earlier, Heraclitus' paragrammatical choices present some evidence of his distrust of some emerging genres of writing, which seems largely due to their insufficiencies in supporting forms of public intelligence.[97] This also reinforces his tendency to endorse his type of wisdom as enacted through a type of "common sense" which he (and the wise man) promotes quite literally as a *way of seeing*. In promoting vision over other senses (as he says "eyes are more exact witnesses than ears," B 101), Heraclitus elevates a kind of first hand learning based quite literally on an ability to see a wide variety of phenomena in nature, language and culture as all taking

place like “exchanges for fire.” While aspects of this idea are unclear, we can put it plainly as an odd spin on ‘common sense’ that is most clearly at odds with the ‘common sense’ Aristotle defined in *De Anima* (Book III, Part 2) as *sensus communis,* a lower tier rationality whereby the senses unite and judge the substance of a thing (a howl of a wolf for example). Heraclitus instead differentiates and elevates an ability to see/observe similarities in nature, society, and self as the highest prerogative. Common sense is for Heraclitus, as Nietzsche argued, rooted in a an ability to recognize repeating patterns in nature and in everyday life, and to maintain that these are the beginnings of what is *just*, an idea that is distinctly contrary to Anixamander who offered the idea that the natural law of becoming and passing away is unjust. Nietzsche showed that Heraclitus instead presents a polemical “cosmodicy over and against his predecessor, the teacher of the injustice of the world” (*PPP,* 63). Cosmodicy, a term for the vindication of the goodness of the cosmos, becomes (to put it very briefly by comparison) an insistence that justice starts with observations of the strife of nature and is developed through their concords (or ‘conflictual harmony’) with the forms of striving one does in everyday life.[98] It was in reading Heraclitus that Nietzsche most firmly rejects any formal separation between systems of morality and the patterns of strife in nature, deeming instead the necessity of finding ethics only in the idea that Heraclitus started, which, as Simon Gillham put it, “from ceaseless strife comes ceaseless justice” (148). History, philosophy and ethics are rendered meaningful only in the face of such patterns of necessity which are visible in nature and life, and from their articulations as a common sense, since in Heraclitus “this conception of justice is grounded in accordance between the just man and the creative strife of the cosmos” (148).

Conclusion:

We might emphasize in conclusion some of what seems to have limited the Heraclitus that we have discussed here as a rhetorical intervention. If we take something of his aim to be as ambitious as creating something like *first second nature,* and this is to be something *common,* it is in notable contrast

to other more familiar types of 'common knowledge'-- since Heraclitus consistently shows his disinterest and distrust in persuading towards common ground or common consensus. For Heraclitus, 'common sense' is not like Cicero's use of the common to denote the rhetor's efforts to account for "common practice, custom, speech, views, and mentality of the crowd whose tastes the orator had to take into account if he were to influence them" (De Oratore, I, 3, 12). Although, it is perhaps like Cicero's common sense when it factors in the ethical *sense* he attributes to the "collection of spontaneous judgments which all men possess by nature and which permits them to discern good from evil" (*De Oratore*, III, 50, 195). The specific differences would be that Heraclitus' *fundamental strategy* seems to be designed as a rhetorical strategy best suited for the sage or teacher (sophist), though this connection is never clear, and is one that may not have disseminated as a common rhetorical ability to press back against certain common fallacies associated with other emerging pursuits of nature, human nature and truth, forcing inquiry into certain rhetorical fields that were seemingly unexplored by his contemporaries. Instead, if we read Heraclitus' texts as a strategic rhetorical intervention that did disseminate significantly, it seems to have done so in other important ways, as influencing perceptions of nature an human agency to some extent. Susan Jarratt notes something similar when she stresses the importance of Heraclitus for the sophists, noting that he offers a theory of "human agency for change" in light of the "continuity between physical and social forms" (47). This is perhaps one and the same starting point for thinking about his influence on rhetoric, and for thinking about the 'ecologist's challenge' it still presents. Heraclitus intervenes among concepts like truth, nature and human nature by pushing thinking into a rhetorical field that must be responsive to 'obvious' or perceptible aspects of *logos.* But that this is actively promoted as integral to an 'original' human condition, seems to be only an untapped potential for the teachings of the sophists, who clearly treated subjects not as any singular or isolated human nature, but instead as part of rhetorical terrain for a network of activity in relationships between nature, society, *technê* and the self. We could say that Heraclitus' promotion of

a wise subject is similar to some figures of the sophists, whose 'wisdom-for-hire' always involved thinking through set of relations held in place by rhetorical structures of relations, exchanges and possibility. This has been argued to marks the terrain a 'relational ontology,' but for rhetoricians it might be the terrain of a primordial ecological rhetoric.[99] As mentioned at the beginning of the chapter, while Heraclitus is recognizable as introducing an odd mix of ecological themes, combining of material monism, the doctrine unity of opposites, and dialectics, it might be the rhetorical quality of his wisdom that sutures these together and brings the "natural" (the physical, material, or ecological) into a our present concerns about ecology that are today suffused with concerns about articulation, discursivity, and social construction, without, at the same time, taking us back to any ideas about transcendental nature, or simply to something like post-modern contingency. In so doing, we might keep in mind that if Aristotle and Theophrastus suit ecological histories interested in clarifying the beginnings of a scientific epistemology undergirding one division of ecological thought, Heraclitus might be understood as carving another primal space for ecological thought among the pre-Socratics, one that is perhaps only well understood rhetorically.

To put it more plainly, this is a prompt which rhetoricians might take up again as a challenge. Many philosophers and classicists since have come together to challenge the once commonplace presentation of Heraclitus' work as one of "superficial obscurity" with treatments of Heraclitus as offering a more "systematic view of human existence, a theory of language which sees ambiguity as a device for the expression of multiple meaning, and a vision of human life and death within the larger order of nature."[100] As I see it, the two concepts discussed in this chapter can emphasize that what is often interpreted as obscure or esoteric wisdom in Heraclitus is essentially grounded in a fundamental rhetorical strategy to make *logos* something distinctly *common* -- a strategy that has long engaged us as teachers and scholars with historical exigencies about truth, relativism, nature and ethics that only seem to resonate more strongly with ecological concerns today (Kahn ix). At the beginning of this chapter we

saw several ways Heraclitus has already been considered an important figures in deep ecology and ecosophy, and how we might enhance his potential contribution to ecological thought through rhetorical readings that make *logos from the Logos* into a more consistent theme. To finally draw conclusions about how such rhetorical approaches provide methods for reading the 'persistent challenge' Heraclitus presents, *first second nature* is a challenge that might resonate with our histories of rhetoric, as well as current trends in critical theory and ecological thought. The field has both cautioned against historicizing rhetoric in relation to Heraclitus (Metzer) and looked to make historical connections to Heraclitus both valid and interesting.[101] Schiappa, and several scholars since, have read Heraclitus as the possible initiator of the man-measure doctrine and at Protagoras' two-logoi fragment as "a logical extension of the Heraclitean thesis" (Schiappa), as leading to Gorgias' unique emphasis on *kairos* (Miller), or as offering a peculiar theory of style meaning, and persuasion given to rhetoric by "an ontology of flux" within a very particular "religio-pholosophical rhetoric" of a historical moment (Poster). [102] Susan Jarratt's *Rereading the Sophists* argues that Heraclitus was a key figure grounding the Sophistic movement in an early 'science' and concern with things 'natural,' and that he established the paradox that lead to the "contradictory arguments Protagoras identified as the basis of rhetorical encounters and the only possible source of knowledge," a sophistic principle that need not lead to "a necessary logic of non-contradiction," but to "at least a suggestion ... that other arrangements of thought and language were possible" (45). Would it not be possible then to see Heraclitus as the forerunner of an ecological rhetoric?

Chapter Three) The Whole Strategy/To Stir the Earth: Bacon's Ruse of Mastery and the Precepts of Rhetorical Invention

Do not be in a hurry to open Heraclitus' book. The Ephesian's work is very hard going. It is unrelieved darkness unless an initiate guide your steps, and then it is brighter than the sun.

Francis Bacon*, The Advancement of Learning,* p. 225

We are very far from knowing enough about Lord Bacon, the first realist in every great sense of that word…

Nietzsche, *Ecce Homo*, p.246 (1888)

"I am not much in the habit of giving you advice concerning university work, but if you want to study Bacon, I don't think that you would be wasting your time."

Foucault, *Security, Territory, Population,* p. 267 (1978)

Introduction:

Being convinced that the human intellect makes its own difficulties, not using the true helps which are at man's disposal soberly and judiciously; whence follows manifold ignorance of things, and by reason of that ignorance mischiefs innumerable; he thought all trial should be made, whether that commerce between the mind of man and the nature of things, which is more precious than anything on earth, or at least than anything that is of the earth, might by any means be restored to its perfect and original condition, or if that may not be, yet reduced to a better condition than that in which it now is.[103]

Opening lines: *The Great Instauration*

There is perhaps no opening judged more often for its audaciousness than these first lines of Bacon's *Great Instauration* or his ensuing claim that "there was but one course left, therefore -- to try the whole thing anew upon a better plan, and to commence a total reconstruction of sciences, arts, and all human knowledge, raised upon the proper foundations" (8). His ambitious 'new natural philosophy' took shape in writings that were capacious and often incomplete, taking on subjects ranging from the most particular axioms of logic to the most general questions about natural philosophy, history, science, mechanics, magic, wisdom, and rhetoric.[104] While he stands out among early modern contemporaries for his skillful and subtle treatments of many such topics, it might be his drive to displace older philosophic and religious discourses on nature, truth, ethics, and politics with a revised idea of 'mastery' that has shaped his legacy more than any other. Mastery is, of course, not a concept Bacon carefully

defines. It has, most often, been given distinctive shape through efforts at interpreting a Baconian ethos fueling his ambitious new method that would not yield "just a few discoveries, but a mastery over nature hitherto undreamed of" by aligning the "twin objects: human Knowledge and human Power, which do really meet in one" (Purvers 32).[105] Just as any sense of mastery is bound to be flanked between these 'twin objectives' of Bacon's legendary attempt to bring together *truth* and *works,* or *knowledge* and *power,* it is also flanked by two standard evaluations of the *methodical* and the *rhetorical* aspects of his work, which also go hand-in-hand. On one hand, Bacon's elaborate method revolutionized empirical research, induction and experimental science, and revised a theory of forms -- all of which made nature more accessible as it grew more open to manipulation by scientist as the knower/maker of nature's representations, which radically changed the groundwork for the productions of truth and knowledge. On the other hand, a conception of the 'mastery of nature' is (more often?) studied not just as praxis oriented methodology fed by empirical research, data gathering and experiment, but as a rhetorical framework sustaining a sort of credence or belief that scientific, technological and social *advancement* would come to depend on increasing knowledge of natural phenomena and control of natural processes as the fuel for a new age of production. Thus, as many Bacon scholars know well, 'mastery' is perhaps even better understood as a kind of master trope constraining a number of historiographical perspectives on Bacon's authoritative thought, acting as both metonymy (a great reduction of the shifting conceptions of truth and nature that Bacon helped usher into early modern discourses on science), and as metaphor (a means of shaping many subsequent perspectives returning to Bacon's sense of 'mastery' to explain other forms of power that carry-over from one historical moment to another). Montaigne in fact seems to be the first to have alluded to Bacon's central trope in this way, calling such interpretations the beginning of a 'ruse of mastery' and hinting at how such readings would come to reduce or amplify Bacon's reputation and value for the present. [106] Indeed, in recent years Bacon's 'mastery' has indeed become the frequent target of

environmental critiques looking for the root of problems in the spirit of science that Bacon brought to an age of production. This has perhaps been the greatest 'ruse' on ecological thought in recent decades, since Bacon's theme of mastery introduces us to his distinctive mix of arrogance and human agency in his vision of rhetoric, which can help us think through a spirit of science in an age of consumption.

Thus, it is largely by rethinking a relationship between this theme of mastery and the role granted to rhetoric in his body of work that Francis Bacon becomes a pivotal figure in this dissertation's study of rhetoric in a history of ecological thought. In one respect this chapter follows a series of responses to the dissemination of this theme in more recent decades, when Bacon became a figurehead for the 'mastery of nature' and shaped a well-known crux in ecological thought where his philosophy and method have been used to help explain many more contemporary forms of domination. Such arguments have gone as far as positioning Bacon as one of the great "sources of all our ecological misfortunes" for promoting a "philosophy [that] gave birth to the scientific dream of modernity [where] the advancement of society goes hand-in-hand with the unimpeded development of all technologies" (Mathews 15, Zittel xx). Even though the term 'mastery' as *dominatus* only surfaces in a handful of instances in all of his work, and usually in the context of cautioning against a form scientific arrogance, conceptions of 'mastery' were indeed woven into a foreboding theme by many of the grander critiques of technoscience in the 20th century, such as Heidegger, Popper, Adorno, Horkheimer, Marcuse, Merchant and Harding who all libeled Bacon as one of the origins and authors of a *topoi* of mastery. In such readings, Bacon's attempts to renovate scholasticism and natural philosophy in order to found a new "commerce between the mind of man and the nature of things" became the grounds for well-known critiques of the modern scientific method, positivism, objectivism, rationalization and *technê* -- usually by selecting particular phrases about 'disturbing nature' (*natura vexata*), 'mechanizing natural philosophy,'[107] or 'instrumentalizing science' and connecting these to an ill-fated alignment of knowledge, power, science and technology. It almost goes without saying that many of these

arguments are also guilty of extending what Foucault called the "blackmail of the enlightenment," the forced choice that one must be "for or against" this transition into a 17th century intellectual movement without regard for its complexities.[108] Indeed, Bacon might be a more problematic case of 'blackmail,' as historians like Paolo Rossi and Nieves Mathews have noted an awkward inclination where: "those who exalted science allowed Bacon no part in it, while those who looked on it as thoroughly evil, saw him as its very essence." [109] The resulting ebb and flow between "character assassinations" and historical "defenses" is a trend that Mathews charted in great depth, noting that the most influential defenses of Bacon tended to recapture how Bacon not only ushered in key methods and concepts supporting the emergence of physical and applied sciences in the 17th century, but a philosophical system that bridged a brand of vitalism with rationalism (most notably defended by Vico and Whitehead), or that developed a system that placed its highest values on developing ethical relationships between scientific, political, social and experiential knowledge formation (most notably valued by Coleridge).[110] The result of the so-called 'blackmail' and subsequent ebb-and flow of 'recoveries' have overshadowed much of what might be more resolutely important about Bacon's rhetoric, and its use in an age of ecology.

Rhetorical scholars have, of course, also made many important contributions to 'defending' Bacon by revaluing the role and responsibility Bacon granted to rhetoric as a discipline and as a force or power affecting social change – indeed, a good number of contemporary analyses of Bacon now take for granted that his reform of the scientific method and his reform of rhetoric go hand-in-hand. [111] It has been demonstrated frequently enough that those who have branded Bacon's authoritative ideas of 'commanding' or 'mastering' of nature as exploitative have persistently misread his rhetorical innovations or strategies, or, as I will argue, more substantially missed the role and responsibility Bacon gave to rhetoric in constructing human/nature relationships. Here I am joining a group of scholars who have endeavored to counter a wide-range of resentment towards Bacon's authority and influence by

paying closer attention to the central role of persuasion in Bacon's work (Vickers 3).[112] Brian Vickers and John Briggs in particular have shown that twentieth century perspectives building on a *topoi* of mastery have persistently avoided the central role of rhetoric and persuasion as "the paradigm for Bacon's 'universal Philosophy' or the 'wisdom' he identifies with new learning … the new sciences, which indeed promise to move or persuade 'all things'" (Vickers, 3, Briggs 1-2). Given that Bacon has, as Zappen argued, "upheld several different even incompatible and conflicting views of science and scientific rhetoric [in search of] models or precedents for our own time," it seems most worthwhile to return to Bacon's broader meanings of *mastery* as they correlate with his deeper insights on this 'promise of persuasion'. This asks us to think about the odd admixture of agency and arrogance that materializes in his discussions of rhetoric and persuasion as the heart of surprisingly apposite forms of 'mastery' that take on a range of meanings for this term as forms of *power* and *dominion* as well the forms of *skill, control, or proficiency* that mark Bacon's ideas about the 'arts of possibility' that he articulates largely as rhetorical strategies for configuring novel human/nature relationships.

Therefore, this chapter aims to rethink this *topoi* of mastery by arguing for a rhetorical conception of Bacon's *mastery* that takes shape as both a set of strategies in Bacon's thought, and particularly as a structuring principle for Bacon's reformulation of rhetorical *invention* as a leading concept in his natural philosophy.[113] As a 'strategy' it might be wise to appropriate what Michel Serres once called a "whole strategy" when arguing that mastery surfaced within "Francis Bacon's work, [wherein] these relations have been described, from the heights of his social situation, by the command/obedience couplet. One commands nature only by obeying it" (21). Serres situated this 'command/obey' trope as central to Bacon's sense of praxis, calling it a "political ideology betrayed by the *prosopopeia*—which implies practices of ruse and subtlety: *in short, a whole strategy*" (21).[114] This is an apt term for the pivotal role Bacon gave to a set of rhetorical strategies and their connection to guiding a number of social actions, which Serres both reduces to their simplest form as a

'command/obey' imperative, and identifies as a form of 'betrayal' because it is not a natural "contract but a strategy, a tactic not a pact, a fight to the death and not a coitus" (105). Of course, Serres is here only reiterating a well-known historical sentiment undermining or undervaluing both the complexion and the components of this *whole strategy* since Hobbes and Descartes who, although they were great admirers of Bacon, diluted the value of any "strategic" rhetorical designs of our relationships with 'nature' because this is not reasonable enough, because there is too much of a duel or agonistic struggle for mastery of nature between reason and rhetoric.

The first arc of this chapter is therefore a genealogy of sorts, a look at a number of the historical 'revaluations' of the rhetorical strategies that form this *whole strategy* for shaping nature/culture relations. Continuing my method of rhetorical hermeneutics in this dissertation, I analyze rhetorical paths of thought by examining rhetoric as a topic and as a tool, and more particularly, I describe the latter in terms of "rhetorical strategy as practice" by examining how rhetorical and discursive practices, performances and techniques are inextricable from exercises of power. The initial genealogy may also 'betray' some of Bacon's own ideas by foregrounding a reception history that enhances some preferable ideas that Bacon often contradicts elsewhere, or by aligning and simplifying some of his key principles and precepts through these histories that are better suited to the present. As such, the goal of this chapter is a genealogy that works to articulate Bacon's *whole strategy* as a more dynamic set of rhetorical strategies than typically accounted for, demonstrating that his sense of mastery must be approached from several angles, and that it can be demarcated in familiar rhetorical forms as *power, dominion*, *control*, *skill* and *proficiency*. Like in many rhetorical histories, in this reading Bacon is treated less as a pre-scientific figure working to inaugurate a modern scientific method, than as a figure inaugurating a version of 'scientific rhetoric' that still holds much value, in this case as promoting an open-ended art of *invention* that might create correlated means of human control over nature and society that he fundamentally treats as an ecology of persuasive forces.

As such, the bulk of this chapter then turns to a closer reading of Bacon's primary texts to build on Bacon's *whole strategy* by introducing two rhetorical "precepts of invention" -- a term he uses in both *Advancement* and *Novum* to denote certain principles, axioms and strategies (CXXVII). This reading requires making a considerable switch in emphasis from some disciplinary views that Bacon attenuated this canon by reducing it to a role of 'mere discovery' in support of Bacon's science, a praxis oriented method, or a 'new natural philosophy,' towards reading rhetorical invention as a leading category for his thought. To state it plainly, in this chapter I stress invention as an exigency for both the well-known *internal* functions Bacon gave to rhetoric as a tool for 'managing' the faculties within his larger rational system and 'moderating' the imagination in his constructivist epistemology, and as an exigency for related *external* functions where Bacon grants explores the potential roles of rhetoric as a social force, those strategies which inspire and organize some of his more aggressive persuasive strategies for changing the relationships between nature and culture.[115] My final section concludes by considering what a more recent history of ecological thought might resemble had it embraced Bacon's handling of rhetoric and of the question of mastery in particular – examining especially the long shadow this casts on deep ecology, the precepts of anthropomorphic/ecocentric debate in ecological ethics, and more recent trends in ecological though that seem to slow-down or undermine many strategic or political responses to today's ecological exigencies.

Visions of Mastery, Rhetorical Revisions, and the Whole Strategy

> *Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule"*
>
> *Novum Organum,* 1.3, *Works* 4:47

> *English Renaissance ideas of rhetoric—and hence ideas of persuasion—are invisible to modern readers precisely because they have not taken into account the traditional associations of natural philosophy... with the figures and ends of rhetoric.*
>
> (Briggs*, 12)*

Bacon's influence on a history of ideas cannot, of course, be reduced to the loaded question of mastery, but its polarizing effect on a long history of venerations and admonishments is testimony to how often this theme has been used to help explain the spirit of science, evolving power structures and human/nature relationships. Twentieth century interpretations have revisited Bacon's "mastery" in its most conspicuous forms, with the inclination of turning Bacon's "great authority" into a "kind of place-holder for a particular ethos or way of thinking [standing in for an] entire history in which nature moves from a position of authority over humanity to a position of subservience, and ultimately slavery" (Desroches 16). Evolving alongside these, however, there is a lesser-known genealogy in response to this recent brand of critique, responses which have aimed to correct, contextualize, delimit or enrich a more complex rhetorical handling of his idea of mastery (or should I say *rhetoric of mastery?*). Coming from work within rhetorical studies and other disciplinary perspectives, these responses provide us with a review of differing perceptions of Bacon's mastery, and some necessary groundwork supporting more pressing perspectives on Bacon's mastery a set of rhetorical strategies, or *whole strategy* linked to his revival of rhetorical invention as a leading concept in his thought.

First you might consider what Dennis Desroche calls the "rhetorical threads in Bacon's thinking" which have been speciously teased out when evaluating Bacon's sense of mastery as the beginning of more modern "technological abuses of nature" (in *Forces of Nature,* 2012) (15). The first tends towards a myopic focus on a patriarchal rhetoric that simultaneously devalues nature and the feminine,[116] the second to find Bacon to exalt 'objective' and 'instrumental' knowledge while reducing nature to pragmatic social or economic use value, and the third to unearth Bacon's sanctioning of anthropocentric and exploitative styles of government (15-16).[117] Desroche, like numerous 'defenses' familiar to rhetorical scholars such as Keroetge, Vickers, Soble, Mathews, and Parry, diagnoses these readings as evolving "bad habits" with the tendency of picking up only one end of the "rhetorical thread" of a "command/obey" imperative. Rhetorical scholars have instead secured this well-known

'command/obey' trope as a fundamental tenet supported by a wider set of rhetorical strategies with prominent effects on Bacon's audiences or on subsequent discursive practices (12). Desroches reiterates the basic pedigree of this defense in the following claim:

> Bacon feels compelled, furthermore, to point out in both the "Preface" and the "Plan" of "The Great Instauration," that "Nature to be commanded must be obeyed," repeating this suggestion yet again in Book II; "man," ultimately, must be construed as the "servant and interpreter of nature." Thus nature may indeed be the "spouse" of science, but *which* spouse it is …is not easily determined if we remain sensitive to [limited] rhetorical dynamics of Bacon's thought.[118] (20)

Appealing to modern readers to account for "both ends of this rhetorical thread" or what he calls a "kind of doubleness of rhetorical strategy" that is "persistent throughout Bacon's body of work… but routinely disregarded by scholars both within and beyond the confines of Bacon commentary," Desroches argues that the command/obey trope is a baseline rhetorical strategy that manifests in a number of related 'double strategies' supporting Bacon's method for learning, and epitomizing his broader vision for new forms of scientific advance and new forms of human/nature relationships (18). These 'double strategies' have been exhaustively analyzed in terms of the role Bacon granted his imaginative prose, or in terms of key metaphors that scaffold or complicate premises of Bacon's new natural philosophy (Desrosche 15).[119] As John Briggs stated succinctly, there is a whole body of work that has "testified to a more general tendency … to attribute immense suasory energy to poetic and rhetorical fictions" as substantial parts of Bacon's "rational" program (11). For Desroche, a richer set of dueling metaphors profiles not only Bacon's obvious reliance on the occasional rhetorical strategy but reveals the basic conception of mastery as an adaptation of a "dialectical wisdom" that calibrates a philosophy between two human drives: a "violent race" to command nature by scientific or instrumental means and a slower "cultivation" of nature for social good (18). [120] Desroches typifies many interpretations that focus on how Bacon 'moderated' his drive for mastery in some way, usually

by according Baconian metaphors of 'care' and 'cultivation' with essential roles in shaping Bacon's articulation of the relationships between humans and nature as guided to some extent by his rhetoric.

We can expand on Desroches' view by situating this command/obey trope as not only a 'dialectical wisdom' but as a wisdom that draws us deeper into a number of rhetorical strategies that Bacon set to work supporting this central trope in his writings. Indeed, there are a number of exemplary arguments showing (as Briggs, Soble, Vickers and others worked diligently to prove) that Bacon actually worked to 'cultivate' a number of rhetorical and persuasive conditions that were overwhelmingly successful in not only creating the Baconian method as a "new art of inquiry" that would truly interpret and "command" nature, but do so in a way that would cause most of his closest followers to "speak of nature with a good deal of humility and respect" (see Vickers 353-7, and Soble 461-2). We can examine these rhetorical and persuasive conditions briefly through the lens of a number of historical analyses that have traced the effects of Bacon's rhetorical strategies on subsequent discursive practices. In order to keep their divisions clear, we might classify these as historical expressions of a *rhetoric of revelation,* a *rhetoric of instrumentality,* and a *rhetoric of reflection.*

The first category, a *rhetoric of revelation*, was skillfully articulated by Briggs in part to counter many scholarly commitments to reading Bacon as "the essence of modernity" by showing how Bacon's rhetoric constructed a set of terms for discovering a 'new nature' of secrets, violence and revelations that was unapproachable with traditional logic, but that could only by "mastered" rhetorically by turning nature into a "providential code" (viii).[121] This code served as an "organizing principle […for] the relation between his science and his rhetoric," as the latter became a means to a "profoundly restorative" end where all new discoveries and innovations could only seen to take place within the "unifying idea of God's role in history" by any orthodox reading of Bacon's philosophy (viii-ix). In other words, Bacon's rhetoric transformed God into a "code-maker who makes nature decipherable to the

'sons of science'" -- and this "paradigm" helped others work out scientific discoveries within a rhetoric of revelation, revealing nature's (and God's) secrets to be "mastered with religious care rather than merely Herculean force" (ix, 1-2).[122]

The second category, drawing some of the most renewed interest, can be loosely grouped as *rhetoric of instrumentality* which, to put it simply, emphasizes that Bacon's major influence on his age's attraction 'truth' was inseparable from his developing a more sophisticated sense of both instrumentality and rhetoric as indispensible categories leading the ascent up this famous 'hill of truth'. In other words, rhetorical and instrumental processes figure prominently in his methods of interpreting nature, and as forces he sought to control or amplify in his larger program for advancing learning and for social betterment. Scholars have tended therefore to emphasize that what Bacon's methods worked to *master* was not something like a novel scientific objectivity, but what Ronald Levao called the "Mobility of Science" defined in the distinctive manner Bacon aspired to both inspire a new attraction to truth and to "produce a peculiar wavering about the plurality and contingency of our approaches to truth" (2).[123] Levao charts how Bacon does this as he consistently "mingles" "epistemic aggression" with other rhetorical and instrumental approaches to truth in ways that were designed to create "intellectual tolerance" to other methods, arts, and even cultures -- and most importantly, in order to promote further thinking about how these unavoidable mediations of truth can be leveraged to sway an emerging scientific knowledge towards social good. Keep in mind that, as Thomas Kuhn and Sophie Wolfe both argued, Bacon also saw a deeper theoretical connection between rhetoric and early-modern instrumentality as theoretical lenses for understanding power, knowledge and social change. Bacon often sees machines through the lens of rhetoric, and vice versa, since "machines foreground the intermedial nature of human knowledge and interaction… [and] provide a theoretical took kit …to analyze non-mechanical forms of mediation, from translation and rhetoric to diplomacy and the art of perspective" (Wolfe 5). Jessica Wolfe, Sophie Weeks, Paolo Rossi, Antonio Perez-Ramos and others

have discussed at length how Bacon considered machines and instruments as "alternatively viewed as agents of truth and agents of deception," as well as 'artificial helps' that can "imitate, supersede, or travesty the senses" (5). Bacon searches out new 'artificial helps' from elaborate new systems for representing nature, notations of new and old experiments, complex tables of instances, technical models, prosaic and poetic descriptions -- and his thoughts on instrumentality align with many other Renaissance thinkers obsessed with how techniques and *artes mechanicae* seemed to definitely alter ancient epistemological debates. In this vein, Bacon does treat machines and instruments as the potential for new forms of control over nature, not only for clarifying representations of nature, but forms of power he discusses in familiar rhetorical terms as the Greek characterizations of mechanical power, and largely as a species of *metis,* since machines are not only perceived as the adversary force to nature, but are viewed as potentially an improved form of cunning (we might master) or a subversive tactic of the weak to triumph over the strong (see Perez-Ramos 48-9, Wolfe 8-12). As Bacon said in Book Two of *The Advancement*, "if my judgment be of any weight, the use of history mechanical is of all others the most radical and fundamental towards natural philosophy…" (I, XI).

Thirdly, Bacon's influence on a *rhetoric of reflection* is the most conventional perspective in rhetorical studies. The focus here is on examining how Bacon re-conceived rhetoric as a serious art with the responsibility of arbitrating between imagination, reason, the will, character and virtue. The more generous readings of his functional definition of rhetoric as "the application of reason to the imagination to move the will" have thus tended to value how Bacon granted rhetoric a new role in relation to the intellectual faculties, one that opens up his audience to timely historical process of enlightened reflection on the emergence of science, or taking this somewhat further, to valuing Bacon's program as advancing a type of "scientific rhetoric" that asks us to think about the advance of science as inextricable from rhetoric as an intellectual art, and vice versa.[124] This is essentially what Bizzell and Herzberg called a "critical epistemology" that divided the mind into faculties like reason, memory and

imagination, and then granted rhetoric a role in guiding these faculties in their imperfect perceptions of nature (where rhetoric is leveraged in an analytic role), as well as in guiding the four intellectual arts of inquiry and invention, judgment, memory and delivery (where rhetoric is leveraged mainly to moderate the faculty of the imagination and motivate the will towards reason) (623). Here rhetoric is repurposed in potentially "taming" the excesses of imagination, but also in a role that guides or 'tames' reason in some instances (more on this below), especially as it serves to guide a more practical and moral version of science that Bacon both elevated and at times called "a monster, being strangely gazed at and admired by the ignorant and unskillful" (XXVIII, "Sphinx or Science," *Wisdom of the Ancients,* 409). [125]

It is not difficult to see in each set of historical evaluations how Bacon's uses for rhetoric take on some elements of this theme of mastery, or that Bacon drew out these potential designs for rhetoric to 'tame' or 'ground' the new methods of experimental science in discriminating ways. But when thinking about Bacon's 'scientific rhetoric' as integral to his aggressive pursuit of scientific *discoveries*, we should note that his ambitious pursuit of a "higher science" also emphasized a more aggressive rhetoric of *invention*, one that, as I will argue in the upcoming section, is something Bacon deploys in order to articulate the ways his new "higher science" can take some control of a great "common world" (*AL,* XIV, 6).[126] What this emphasis would add to Bacon's discerning rhetoric of reflection, instrumentality and revelation is a key rhetorical dimension of his thought that hinges on some his more explicitly 'manipulative' rhetorical theories and strategies, which we can categorize as his theories and methods for an inventive art aimed at configuring human/nature relationships. As Desroche said well, Bacon often seemed to engage with a more "domineering" rhetoric precisely because "nature was a force…that, precisely because of its clear superiority over humanity, could not otherwise be engaged" (Desroches 18). As Briggs and Stephens have commented, for Bacon, nature's vast impact on the conditions of life require us to strive for a version of rhetoric that is "clearly rational *and* manipulative," and as Briggs said, Bacon's rationale for the more manipulative aspects of rhetoric (which both authors

ultimately disregard) is something guiding his double aim to "perfect Aristotle" by making the "old rhetoric a respectable tool" for science, and to invent a "a new, more powerful art of ingenious presentation and persuasion" (Briggs 14). As I see it, Briggs and Stephens put it very well, saying that these crucial components of Bacon's rhetoric are articulated in such a way that it often "appears that the more Machiavellian Bacon's tactics become, the more they can be justified as components of an enlightened style" (12).[127] Keep in mind, however, that in a genealogy of 'mastery' it is the most influential admirers of Bacon such as Vico, Leibniz, and Hobbes who targeted these more "Machiavellian" or technocratic aspect of Bacon's rhetoric to be rejected from an 'enlightened Bacon.'[128] We might today, however, find some place for Bacon's enthusiasm for a form of rhetorical invention that he thought might impact the inventiveness of his culture, which he both admired and diagnosed as problematic. As I will discuss in the upcoming section, Bacon seemed to think an inventive rhetoric would appeal not just to the intellect of the Renaissance man, but should create forms of persuasion that affect, as Wallace put it, the "whole man" by a certain spirit of science and an age of production (Wallace, 132).[129] We can look at ways that Bacon diagnoses certain exigencies and mentalities he sees as hindering an art of *invention*, and how he stipulates a role for an inventive rhetoric that takes on a wider role of moderating, enhancing or conditioning the appetites and ambitions that undergird an inventive culture. Indeed, certain perspectives on an 'inventive art' and specific 'precepts' laid out for rhetorical invention seem integral to his most ambitious ideas about a "higher science" that he envisioned as potentially shaping the wisdom of a "great common world" (*AL,* V, 6-7). Again, characteristically, Bacon pursues a 'higher science' that is not beyond human control but within the reach of a 'scientific rhetoric' that grants key roles to an inventive 'art' that can be deployed to 'master' some of rhetoric's most common and 'universal' powers captured in the human drives, ambitions and appetites as they affect social domains. He recognizes, at least, that if he is to correct certain impediments to invention and to extend his 'command/obey' tenet deeply into the

'middle propositions' of everyday people (and a class of merchants and artisans in particular) than these forces also play a crucial role in bringing nature to culture. In other words, as I will argue in the next section, to bring his theory of nature to culture, Bacon needs the inventive 'arts of the possible' – and this rounds out a type of 'mastery' turned to an ecology of persuasive forces that can be guided to some extent by an inventive art.

The Precepts of Rhetorical Invention

One of Bacon's most appealing metaphors to scholars in recent years is of the 'inventive animals' which he used to mark differences in historical approaches to knowledge production and understandings of nature.[130] The metaphor emphasizes that Bacon's "art" would be a "middle way" hinging on its openness to several interdependent methodological goals, and as Nieves Matthews put it, resisting simply "severing poetry from science, art from technology, imagination from reason, the divine from the natural world" (Matthews 409). Madeleine Muntersbjorn most recently translated the excerpt thusly:

> Those who have handled the sciences have been either Empiricists or Rationalists. Empiricists, like ants, merely collect things and use them. The Rationalists, like spiders, spin webs out of themselves. The middle way is that of the bee, which gathers its material from the flowers of the garden and field, but then transforms and digests it by a power of its own.[131] (1:95, *New Organon*)

While the ants discover but don't invent, detecting things without really transforming them, and the spiders construct only of what comes from their own entrails, the middle way of the bee is distinctive as *invention* -- through a process of gathering and transforming nature into a "nourishing product" (Muntersbjorn 2). This metaphor is a nice entry point to discussing the ways Bacon thinks about invention rhetorically, particularly as he considers a forms of influence over range of behaviors he thinks of as 'transforming and digesting' nature. The bee metaphor in fact seems to underscore several ways Bacon repurposes an inventive rhetoric that, to some extent, leads or "handles" the other sciences by

creating the rhetorical conditions necessary for the advance of the combination of methods within his larger program – which of course was an arrangement of methods much grander in scope and design than the scientific methods of inquiry associated most closely with *The Novum Organum.*

Bacon's philosophical and rhetorical system surfaces in its greatest detail in two main texts: his first philosophical treatise *The Advancement of Learning (Partition of the Sciences)* (1605), which contains a review of the state of learning of his age and an important revision and restoration of rhetoric (as well as the subsequently expanded and translated version *De Augmentis Scientiarum,* 1623), and the *Novum Organum* (1620). This "new instrument, or new instrument of science" focused on "*True Directions Concerning the Interpretation of Nature,"* explicating components of a scientific method as the mental and technical process of *interpretations* designed to replace the old reliance on resemblances well documented by Foucault.[132] We should remember, however, that Bacon kept this method open to several other approaches to understanding and manipulating 'nature' in his expansive plan, summarized (but never completed) in six parts dedicated to: *The Divisions of the Sciences, The New Organon: or Directions concerning the Interpretation of Nature, A Natural and Experimental History for the foundation of Philosophy, The Ladder of Intellect, The Forerunners: or Anticipations of the New Philosophy,* and *The New Philosophy: or Active Science*.[133] The "Preface" to the *Novum* notes that his new "art" of interpretation will indeed be both the "only way" to "command" nature, and yet not ready in its design to disrupt valuable debates of philosophers or to the bringing "profit to teachers of rhetoric and civil servants" -- for he claims that his radically new art will not be "ready at hand" for any of "those purposes" (1-2). In a signature mix of arrogance and diplomacy, he invites these different "groups of philosophers" to collaborate in his new "way of doing philosophy" unless of course they have no "mental powers needed to understand it" or they "prefer cultivation rather than discovery" – the latter being the "only way to health" and the only way "to penetrate further, to conquer nature by works, not conquer an adversary by argument, to look not for nice probable opinions but for sure proven

knowledge" (1-2). While *Novum* then focuses fairly tightly on a method of 'true interpretation' through three main stages, "A Natural and Experimental History," "Tables and Arrangements of Instances," and "Induction," and succeeded in granting what Foucault called "the great privilege" to empirical observations in the sciences, Bacon also establishes his focus on a future realignment of the two greater methods for two approaching nature: "the interpretation of nature" and "the mind's anticipation of nature." While the prior is addressed only a little in *Novum*, and usually as an impediment to Bacon's ground clearing methods for interpretation, it's worth remembering that Bacon returns to these problems of *anticipation* in more generous ways as the *'forerunners'* of the sciences, especially in relation to his specific and unwavering "anticipation" that "the art of invention grows with inventions" (*Advancement* XIII, 10). [134]

This anticipation directs Bacon to a set of impediments to invention that leads him to writing several *precepts* for an inventive art that deploys some of his more 'manipulative' rhetorical strategies. While there has been some insistence that Bacon saw rhetoric as an art that "neither discovers nor invents" but "only discovers or recovers" (as Carolyn Miller and Janice Lauer have claimed, saying that Bacon made rhetoric neither generative nor epistemic but "managerial"), rhetoricians studying Bacon extensively have typically found the relationship between invention and rhetoric to be more complicated, pointing out that Bacon presents a "significantly altered view of invention which could not help alter views of rhetoric, if widely adopted" while disagreeing over whether he presents a "denigration of rhetorical invention …which ultimately constricted the range of rhetoric," or whether there is a relationship between rhetoric and invention that establishes the "curious" tension between his "apparent contempt for the art" and his granting it "a far more extensive role than any other philosopher ever assigned to rhetoric" (32-36). [135] Following this work, we can examine how Bacon responds to a number of historical impediments in the *Advancement* in particular, where, as he says initially: man seems to pass over the art of invention with "*cuique in sua arte credendum,"* or *with his*

own a skill or craft to which we give him credit (*Advancement,* XIII, 2). He argues that Cicero had correctly diagnosed this problem of tacit knowledge in craftsmen, but as he found no remedy, it returned as a more powerful and elusive problem affecting an intellectual 'stagnation' of sciences of discovery, a tacit instrumental reason of the craftsmen and merchant class, and a cultural disregard for other cultural and technological intelligences (see Book 2, sections XII-XV). [136] Bacon saw this problem compounding because it could not be adequately diagnosed or addressed by those thinking about the most "infinite particulars" that occupy physicians, or by those thinking about tradition in terms of universal rules or theories. It could, however, be remedied by a process that can produce or "*maketh* the artsman differ from the inexpert" and by those thinkers who can generate and work with "the middle propositions" taken from both tradition and experience and most often used in discourses by the productive merchant and artisan class (XIII, 2). It is here that Bacon begins to take up this problem as a rhetorical challenge on a number of fronts: (1) to address the famous "excluded middle" of Aristotelian logic of truth, falsity and non-contradiction, (2) to address the historic "consecration of invention" by the Egyptians, Greeks and Romans (who "ascribe the first inventions to men" leading us to "believe that Prometheus first stroke the flint and marveled at the spark" rather than having "expected" it), (3) to address the present effects of this legacy on a growing artisan and merchant class, and the effect on a political ethos that Bacon thinks is rife with colonialist arrogance about other culture's technologies (like the widespread belief that "the West Indian Prometheus had no intelligence," and (4) to address the allure of future inventions as a motivational force (XIII, 2).[137] In other words, as Bacon sees it, this problem of invention affects the present use of traditional knowledge, the present culture of invention/production, and his program's potential to advance and have some control of the future.

These exigencies are the grounds that open up several key connections between rhetoric and invention – connections which have their ultimate stake in remedying scholastic and cultural relationships with 'nature,' an idea Bacon most pointedly asserts when he argues that the historical

impediments to an inventive art are what have "wronged, abused and traduced" nature in section XII. 3, where he accuses Plato and Aristotle's logical induction as leading to both faulty principles of science which "pretended to be invented" and to the "fouler problem" stemming from how this missed the "duty of art to perfect and exalt nature" which they "contrariwise have wronged, abused, and traduced" (XII, 3). The longer passage reads:

> The induction which the logicians speak of, and which seemeth familiar with Plato, whereby the principles of sciences may be pretended to be invented, and so the middle propositions by derivation from the principles; their form of induction, I say, is utterly vicious and incompetent; wherein their error is the fouler, because it is the duty of art to perfect and exalt nature; but they contrariwise have wronged, abused, and traduced nature. (XII, 3)

As Bacon sees a tightly knit logic of invention and this neglect of the 'excluded' middle as major impediments to Bacon's 'art,' we can foreground the rhetorical domain between true and false propositions as the frontline of this problem, which Bacon says has not only has been wrongly treated and neglected, but missed the potential opportunity and "duty" to "perfect and exalt nature."

It is said often enough that Bacon presents the first great argument that there is a "need for a philosophy of invention" and that this is what gives formal structure to the processes of production, invention, and 'technology' as the forerunners of the science of interpreting nature, of the advancement of learning, and of what creates the major impact of humanity's presence in nature (Scharff and Dusek 25). We can, however, focus on the dynamic in Bacon's thought that stems from his admiration for how the ancients *enhanced* a culture of invention, such as his condoning of the Egyptians who "deified their inventors" and the Greeks who were "unlucky" enough to have made only as many discoveries as other "irrational animals" but keen enough to kindle a cultural enthusiasm for the inventions they produced (25-26). Throughout his work Bacon's more 'domineering' rhetoric most often appears in relation to this enthusiasm for the impact of 'productive works' on a 'culture of inventiveness,' a trend which is evident from his earliest *Essays,* particularly in his tendencies to shift his discussions of the exigencies for

creating new forms of inquiry and discovery that mediate nature and the 'truth' to discuss shrewd rhetorical strategies for how to *moderate, enhance,* or *condition* the human appetites *with* these mediations. These tendencies surface in Bacon's earliest *Essays* (first published in 1597), where he began to map out some of the strategic ways rhetoric might affect what he desired to change most: *man in relation to the physical world, man in relation to himself and his morals, and man in relation to truth and knowledge.*[138] From the first essay "Of Truth," we see Bacon seeking to inspire a novel attraction to the 'hill of truth' while reflecting initially on the value and costs of truth and lies for pursuits of knowledge in relation to a range of civil affairs. Bacon opens with the exigency that we think seriously about both moderating the "appetites" (which he calls a well-known "naked truth" made apparent by the mixture of truth and lies best achieved by poesy's affecting of pleasure and commerce's affecting of advantage) and enhancing their worth as persuasive social effects. He opens the essay by swerving past any binary truth and falsity, answering the question "what is truth?" with a retort that it is not as simple as what those "discoursing wits" find when bringing a certain "delight in giddiness, and count it a bondage to fix a belief; affecting free-will in thinking, as well as acting" (we can safely assume these wits are in the veins of scholasticism as well as classical rhetoric) (3). Bacon will never simply discount these "discoursing wits" but only admonishes them here as "having not so much blood in them as was in those of the ancients," and while he begins delimiting a role for the "natural though corrupt love for lie" and the process of "fixing belief," he also grants that no "man would doubt" that man's mind would be "poor shrunken things" without the "role of vain opinions, flattering hopes, false valuations and imaginations. […as] it is not the lie that passeth through the mind, but the lie that sinketh in and settleth in, that dothe the hurt" (3-4). In the *Essays,* rhetoric is what makes people "able to contend" and there are frequent justifications and adaptations of the Sophists techniques as means to seize desires as a "shew of advancement," and appeals to enhance the "the Georgics of the Mind" as the poetic and rhetorical powers directing the social impact of affections (love, beauty, praise, honour and reputation,

friendship, etc) and vices (usury, riches, suspicion, envy, anger, etc).[139] With these relatively well-known tendencies to play with this 'naked-truth,' Bacon also introduces an inclination to contemplate these in relation to new forms of cultural and 'technological' conditioning, and to strategize about how these social motivations of his present (those which he claimed could be known in the "open day-light") might influence, or be influenced by a new 'hill of truth' that could be known only by the lens brought by new "candle light" (3-4).

These tendencies introduce us to the 'realist Bacon' that Nietzsche valued in the opening epigraph, as Bacon establishes the rhetorical conditions he thinks are necessary for guiding not just more 'truthful' *interpretations* of nature, but for guiding forces of persuasion that he sees as necessary conditions stemming nature as a force which deeply impacts the conditions of everyday life. Keep in mind that this tension is cathected by Bacon's deep predilection for thinking about all his theories and methods as fundamentally aligned by what we might call, following Sophie Weeks, the "arts of the possible," which he draws explicitly from his revised theory of nature as a set of 'powers' or 'appetites'. Bacon uses the term 'art' generally, as Jonathan Bennett said, as any "human activity that involves techniques and requires skills," but he also rethought the meaning of 'art' by affiliating it closely with his theory of 'nature,' creating a relationship between *art* and *nature* that sheds light on all the intellectual, political and mechanical skills and techniques Bacon articulates in his ambitious work.[140] This "art/nature distinction" is a commonplace in the secondary literature (i.e. Newman, Rossi, Weeks) taking up how Bacon redefines art *and* nature by making "nature bound" the common-ground for notions *art, technique, skill, mastery* and even *government* as, what Sophie Weeks calls, the fundamental "arts of the possible" (101). He does this specifically by defining the potential operations of all arts against the backdrop of his detailed theory of *matter* as the source of all operative power[141] (101-2). Bacon's theory of nature is a kind of material monism explicated in natural-philosophical and cosmogonical terms, and it aims largely to reverse treatments of matter as passive, considering matter's

substratum (the atom) and its power (or potency) to instead be "appetitive" – which means that he considers the potency of all matter to "hide within its folds the power to bring into being all potential worlds" (108). Bacon patently resists Aristotle's distinctions between the natural and artificial, saying "artificial things differ from natural things not in form or essence, but only in the efficient…or in their *motive power,*" and while studies have obsessed over the sources of this difference, such as the way Bacon enhances the status of machines (i.e. Rossi) or revises alchemy to account for closer similarities between artificial and natural processes (i.e. Newman), Weeks shifts attention to examine how Bacon's theory of matter defines a flexible and open-ended art that seems to underlie or cohere many the different methods that cut-across Bacon's programs in the *Instauration* (102).[142] In other words, we might say that a definition of 'arts of the possible' makes new processes of discovery and invention inseparable sides-of the same coin – and as we know, *inventione* is often translated haphazardly as meaning either. Bacon, much like Heraclitus, thinks 'nature loves to hide' and must be discovered, but also that the enfolded power of nature that grows and multiplies is "the true moderator of hope and works," which, on one hand, inspires Bacon to discuss a how we can "moderate" an *unfolding of matter* (*Plica Materiae*) through works like alchemy and machines that alter simple motions, cardinal virtues (dense/rare, heavy/light, etc.), forms, and more complex processes in nature, and on the other hand, inspires Bacon's conclusions that we need an art of invention to moderate, enhance and condition the rhetorical forces in a culture where "there is no true rest," there is only "relative stability," and only "dynamic tensions" (116).[143] In other words, Bacon's theory of matter not only underpins his discussion of the origins of the world, but the "great sum" of nature's processes is an "operative analogue" for arts that are powerful enough to balance *nature free* and *nature bound*, since to control matter's appetitive power is to manipulate its "desire to change," and to master the opposing forces of concord and discord that stem from matter's basic appetites (112). To some extent, as the great English materialist, all of Bacon's methods are extension of this art of curbing the appetites of matter -- whether through powers

of the alchemist, the craftsman, or the machinery of the rhetorician – all are for Bacon are processes of moderating nature free into nature bound. Weeks goes on to argue that Bacon's statement that "these words, *nature, art* and *violence,* are a kind of trivial shorthand" for a more expansive effort to make it seem possible to his audience that these concepts are fare "more elastic" than people realize, and that his own project on the whole is orientated to nothing less than "the effecting of all things possible" (105). [144]

If we follow these trends somewhat further into Bacon's work, we can pull together two specific "precepts" for Bacon's inventive rhetoric. These both surface in response to the aforementioned impediments to an inventive art and culture of invention, and in response to the ways he thought Platonic philosophy and Aristotle's inductive methods have 'infantilized' what he called "the footsteps of seducement" (XII, 3-4). Bacon thought a more "divine and human truth" cannot be "enchained in those bonds" of syllogism, or even in words, propositions or argument alone, but could be deployed to align "the subtlety of nature and operations" through an art that "collects and concludes upon the reports of the senses" (XII, 3 - 4). The first precept for this inventive rhetoric stems from the role Bacon grants to rhetoric in not only moderating the 'anticipations,' but in defining his 'great anticipation' that the 'art of invention grows with inventions' operationally, so that this anticipation is designed to repurpose the traditional goal of 'mastering the anticipations' in a new way, leading Bacon to an inventive rhetoric designed not only to moderate the imagination but to enhance a 'presence-making' function of rhetoric that strategically 'manipulates the icons of reason'. The second deals with a traditional domain of rhetorical invention but presents a required shift from discovering a range of rhetorical topics to inventing social uses for commonplaces, a shift from *contemplating* the nature and role of "suggestion" and imagination in guiding reason, to inventing forms of *judgment* and *action* that work on the powers of "seducements," a set of rhetorical moves which also results in Bacon's invention of the 'greatest human ambition' as what must be trained for the 'mastery' of nature to be effectively pursued.

Precept One: Anticipating Invention and Manipulating the Icons of Reason

The first precept stems specifically from Bacon's anticipation that "*ars inveniendi adolescit cum inventis*" from the *Advancement,* which is translated more fully as "I regard that the mind, not only in its own faculties, but in its connection with things, must hold that the art of invention may advance as inventions advance" (XII, 10). Beyond the obvious interpretation of this quote as Bacon's prompt that the advancement of learning was falling in-line behind the advancement of experimental science, this particular anticipation is presented as a unique exigence that requires him to think through and leverage a new and function for what he called 'the anticipation of nature.' Throughout his work 'anticipation' means, as Jonathan Bennett notes, "something like 'second-guessing, getting ahead of the data, jumping the gun'. Bacon means it to sound rash and risky; no one current English word does the job" (3). While the anticipations are often seen as a sort of 'out of place art' in *Novum,* Jürgen Klein notes that Bacon also clearly articulates a role for the anticipations in an intermediate function between his interpretive theories of induction and his most speculative philosophy, in a role that aims at finding a 'middle way' among the more rationalists and speculative theories of the past, and designed to moderate or temper his own enthusiasm for technical modes of interpreting nature (Klein).[145] In other words, Bacon situates a role for anticipation that might moderate and redirect these past extremes and the extremes in his own thought -- and this revised role for the anticipations is taken up in affiliation with his ideas on rhetoric as intimately connected with the imagination (as something to be both tempered and enhanced in his larger program of the *Instauration* and in its aim to influence social and civic action). As he put it in axioms 26-29 in *Novum*, because anticipations "aim … to be master of what people believe but not of the facts" and they "have much more power than interpretations do." Bacon maintains that he both needs them to get his larger ideas across, and needs to find ways to moderate and repurpose the

anticipations that have the scholastics and ancients have been overly driven to "master." The full selection reads:

> 26. To help me get my ideas across, I have generally used different labels for human reason's two ways of approaching nature: the customary way I describe as anticipating nature (because it is rash and premature) and the way that draws conclusions from facts in the right way I describe as interpreting nature.
>
> 27. Anticipations are a firm enough basis for consent, for even if men all went mad in the same way they might agree one with another well enough.
>
> 28. Indeed, anticipations have much more power to win assent than interpretations do. They are inferred from a few instances, mostly of familiar kinds, so that they immediately brush past the intellect and fill the imagination; whereas interpretations are gathered from very various and widely dispersed facts, so that they can't suddenly strike the intellect, and must seem weird and hard to swallow—rather like the mysteries of faith.
>
> 29. Anticipations and dialectics have their place in sciences based on opinions and dogmas, because in those sciences the aim is to be master of what people believe but not of the facts.

While the *Novum* typically presents the anticipations as divergences from his own innovative methods for 'true interpretations' of nature, they also prompts him to think openly about how more commonplace mental faculties and instrumentalities act as forces mediating nature, and how rhetoric may serve as an art that 'harnesses the anticipations' and gains greater influence over the "processes of everyday life." This claim is clearest the Preface to the *Novum,* where he argues for creating a 'middle way' calibrated between "those who have taken it on themselves to lay down the law of nature as something that has already been discovered and understood…[and those] gone the opposite way, asserting that absolutely nothing can be known—having reached this opinion through dislike of the ancient sophists, or through uncertainty and fluctuation of mind, or even through being crammed with some doctrine or other" (1). [146] In this broad terrain, Bacon states that the 'middle way' will draw on rhetoric to affect changes to the thinking and practices of everyday life through a "method [that] is hard to practice but easy to explain"-- since rhetoric is especially relevant in a diagnostic role that analyzes the powerful fallacies in the idols of the mind, and in a motivating/productive role that supports and

structures the *imagination*. Both functions of rhetoric are aimed at harnessing certain pervasive types of 'anticipation,' which directs Bacon to the realm of invention that seems to guide a number of social pursuits and ambitions – and to seek out new 'degrees of certainty' about how such pursuits might be guided.

Bacon's thoughts on how to reach certain "processes of everyday life" are both clear-cut and uncharacteristically nebulous at times, but we can begin clearly enough with Marc Cogan's lucid discussion of how Bacon parses *idols* and *imagination* into separate concepts from the more neutral term *imagines.* Bacon does this in an attempt to redefine the function of the imagination as "a mental faculty distinct from the senses, and distinct also from both reason and memory… functioning in an intermediate position between the senses and the rational faculties" (214).[147] As such, the function of the imagination was reconceived largely in rhetorical terms "as possessing the power of recombining images or parts of images into forms which need not exist in nature, but can be willful, arbitrary or playful" (214-215). His rhetorical structuring of the imagination can, however, be interpreted as something more 'willful' and strategic in terms of how it aims to address the stagnation Bacon saw with the 'inventiveness' and practical reasoning of everyday life. Cogan points out that Bacon argues for a rhetorical imagination that differs from poetry, which was most often the source of imaginative power, but which seemed increasingly "unconscious," a source of an entire range of errors in "wishful thinking and speculation," and increasingly ill-equipped for the age (214). We can take Cogan's point a step further by noting how Bacon addresses the imagination as ill-equipped to address the specific impediments to invention and the unavoidable powers of the anticipations (214). Cogan argues that Bacon looks to foreground the a new role for rhetoric as moderating the imagination by selecting what images are presented to the will from the senses and passions, doing so with rhetorical strategies which sometimes follow the "precepts of reason," while sometimes "ignoring the directions proposed by reason … directing the will on its own irrationally" (216). This is evident in what Cogan calls one of

Bacon's "most important" passages on rhetoric, in a well known collaboration in *Rhetoric Society Quarterly:*

> Reason would become captive and servile, if Eloquence of Persuasions did not practise and win the Imagination from the Affection's part, and contract a confederacy between the Reason and Imagination against the Affections. For the affections themselves carry ever an appetite to good, as reason doth; the difference is, that the affections beholdeth merely the present; reason beholdeth the future and sum of time; and therefore the present filling the imagination more, reason is commonly vanquished; but after that force of eloquence and persuasion hath made things future and remote appear as present, then upon the revolt of the imagination reason prevaileth (3:410-1 1) [148]

Cogan rightly points out that Bacon presents a 'give and take' between reason and imagination in guiding the will to action, but to suggest that Bacon gives imagination a leading role that can "usurp" reason either "rationally" or "irrationally" also seems to support a familiar way of overlooking how Bacon leverages more specific "precepts" and strategies for an inventive rhetoric on the so-called 'irrational' side of this equation, and disconnect this effort from the explicit exigencies associated with the impediments to invention he saw in his day. We know from Bacon's famous definition of rhetoric that "the duty and office of rhetoric is to apply reason to imagination for the better moving of the will," that Bacon's striking innovation in rhetorical theory was in explaining the "nature of rhetoric…in terms of its relation to, and effect on, a given set of human faculties" and also its "intimate connection to action" (213). But when we focus on how Bacon aims to alter and control the "will" in the context of an age of production, we must consider how he engages a wide range of social motivations and more specific actions of a merchant and artisan class he considered to be afflicted with a tacit knowledge of invention.

The example of the 'presence-making function' of rhetoric seems enough to bear out why distinguishing our first *precept for rhetorical invention* would be something worthwhile, as what is "collected and concluded upon" by the sciences becomes, to some respect, the contents of rhetorical

invention in a fairly traditional sense. Bacon bears out this 'presence-making function' for rhetoric in response to both the aforementioned exigencies and to particular limitations of scientific representation, which Bacon thinks grants rhetoric a new role in influencing the "next degree" of scientific depictions in order to correct a major defect in the new science's contraction and intensification of the faculties of reason (Cogan 225-227). Cogan's own work in "Rhetoric and Action" brings us to this 'presence-making function' as precept for Bacon's rhetoric when he notes that Bacon was concerned with all of the operations of the imagination, including the strong influence on it by "what can be called 'presence' by things (or their images) which [become] immediate and vivid" (217).[149] With a new science driven to bring abstract and distant discoveries to the center of human knowledge, Bacon grants rhetoric a strategic public role in *moderating* "the competition for the attention of the imagination, and thus for control over the objects the will chooses (and the will itself)" (218). He does so by giving rhetoric a role of selecting and moderating the "unqualified 'making present'" of abstract or remote things brought to public's attention by scientific discoveries (218). Cogan notes, however, that while rhetoric shares with poetry the ability to shape the impressions of the senses and the urgings of the appetites into a meaningful public 'presence,' a more distinctly "manipulative" and prescriptive art would now be required by a "manipulation of the tokens of reason" into "lively representations" that create a public "imprint of goodness" through "verbal embellishments" and "adornment of words" (220-221). Weeks points to a more specific example in the *Advancement* where Bacon thought one aspect of the hidden facets of nature was "evidenced by the occurrence of marvels" because, as he puts it, they are useful for "leading the intellect from what does exist to what may exist" (106). Marvels are "irregulars of nature" or "Pretergenerations" and are of interest to Bacon in particular for two related reasons: because they are an example that bears out his relentless efforts to find the 'nearest passages' between art and nature, and because they have clear social consequences demonstrating how his theory that matter's dormant powers can be drawn out by an art that functions

as "operative analogue of the primary cosmogonical contraction exercised in Cupid's restraining and binding of matter's absolute potency" (104). Cogan sees this art of 'moderating nature's potency' and "the entire presence-making function of rhetoric to depend on …*elocution,"* and while he is right that Baconian rhetoric on the whole resists classical ways of distinguishing the art into five canons, it remains useful here to think of this presence-making function as a type of invention because this maintains the relationship between this strategy and the aforementioned exigencies, and because elocution in fact seems to be the ideal office of rhetoric's presence-making function (which Bacon unquestionably mastered in his day), while invention would emphasize this function as a teachable (and hence public) and evolving art that looks to make evolving forms of scientific *discovery* into inventive forms of influence that direct social action aimed at a better future.

As is often the case in histories of rhetoric, the connections between rhetoric and a 'new science' are made in ways that either demeans the art, or as Bacon seeks to do here, made in ways that deepen our sense of rhetoric's potential and power by emphasizing how it might direct a new science to the improvement of human life in thought and action.[150] What we can qualify as Bacon's first precept for invention is thus a role he gives rhetoric in moderating a socially widespread form of 'anticipation' arising from popular representations coming from a new science of discovery, and moderating a particular type of social 'seducement' (like speculation in particular) or an allure about the future more generally through process of invention. To cite Cogan once more, Bacon responded to the problems of the 'unconscious' imagination with an "unconventional strategy": he "invented…the art of rhetoric…for this end: to fill the imagination with manifestations and likeness that bring aid to the reason, not oppress it. [A process that proceeds] after eloquence and force of persuasion have made things future and remote appear as present, then upon the revolt of imagination to reason, reason prevails" (218).[151] We might here claim then, that Bacon's first precept emphasizes an inventive rhetoric as a pragmatic response to the anticipations he both needs and seeks to moderate -- a particular role for rhetoric in

moderating these already persuasive conditions from science's "bringing the remote and the future to the present" in order to make this something present at hand to philosophers, rhetoricians and teachers. In a present when ecological crisis brings so-called 'icons of reason' and 'marvels' to public awareness at every moment, Bacon's first precept seems to resonate with an almost obvious responsibility. In one sense then, Bacon sees rhetorical invention play the role of *technê* that crafts new knowledge by providing a technique for moving the imagination from the affectations or anticipations to a deeper form of reason.

Precept Two: Commonplacing and the Ars Nova: From Ordinary Invention a Noble Ambition

Bacon's famous definition of rhetoric is rarely cited in full form. In reference to his so-called "descent" into classical ideas on rhetoric, Bacon states: "Notwithstanding, to stir the earth a little about the roots of this science, as we have done of the rest, the duty and office of rhetoric is to apply reason to imagination for the better moving of the will" (XVIII, 2). "To stir the earth a little about the roots of this science" is of course his reference to "that part which concerneth the illustration of tradition, comprehended in that science which we call rhetoric, or art of eloquence, a science excellent, and excellently well labored" (XVIII, 1). A second precept for an inventive rhetoric surfaces as Bacon discusses new uses for the commonplaces in *The Advancement* and *De Augmentis*, as he distinguishes their traditional role in supporting discovery from their potential role in supporting forms of invention that would be integral to the *Ars Nova* in his larger program. In *Book Two,* where Bacon gives his most sustained attention to rhetoric, Bacon distinguishes a form of invention in terms of the "present use" of commonplaces, elenchus as forms of *preparation* and *suggestion,* granting the latter a special place as part of 'true judgment' of nature (that is, as he calls it, *invention and judgment in one act*), which he

thinks must give direction to processes of "ordinary invention" and the ambitions of the artisan and merchant class (Wallace 90, XIII.6). [152]

Bacon initially emphasizes a key distinction between two kinds of invention "much differing - the one of arts and sciences, and the other of speech and arguments," and he claims initially that arguments are typically not thought of as invention, but as a form of discovery that applies "remembrance" to discover past suggestions (a pursuit he refers to as "chasing…deer in an enclosed park") (XIII.6). He promptly, however, argues that the discovery of a past "suggestion" with a present application or purpose should indeed "be called invention" simply because "the scope and end of this invention is readiness and present use of our knowledge, and not addition or amplification thereof" (XIII.1 and XIII.6). It is in Bacon's exploration of this 'present use' of commonplaces that Bacon finds a unique alliance between the inventive arts 'of sciences' and 'of arguments' as they support a 'true art of judgment' for nature. To "procure the ready use" of commonplaces as a form in invention, Bacon distinguishes *preparation* and *suggestion* as two courses, the first of which is more like "diligence" and in fact "hardly knowledge," while the second is regarded as a type of "artificial erudition" (XIII, 7). He sets out to help both 'courses' mature beyond "childhood," focusing mainly on admonishing Aristotle for reducing the "preparations" offered by the Sophists and Demosthenes from a "rich wardrobe" to "a pair of shears,"[153] and for undermining the potential in the "suggestions" as forces of "seducement" and "impression" (XIII.7- XIV.2).

Bacon thinks 'diligence' goes a long way in supporting an culture of learning, and that the contributions of a "storehouse" and "commerce" of arguments should be restored to what "the ancient writers of rhetoric do give …in precept, that pleaders should have the places, whereof they have most continual use, ready handled in all the variety that may be; as that, to speak for the literal interpretation of the law against equity, and contrary; and to speak for presumptions and inferences against testimony,

and contrary" (XIII, 7). [154] Initially, Bacon presents a customary concern with cultivating the 'wingspread' of rhetoric through commonplaces that might support a moral education, considering a wingspread of rhetoric that includes:

> Those points which are within our own command and have force and operation upon the mind, to affect the will and appetite, and to alter manners: wherein they ought to have handled custom, exercise, habit, education, example, imitation, emulation, company, friends, praise, reproof, exhortation, fame, laws, books, studies: these as they have determinate use in moralities, from these the mind suffereth … because it were too long to prosecute all; and therefore we do resume custom and habit to speak of. (XXII, 7)

Rather than taking a 'pair of shears' to this wingspread, however, Bacon shows keen interest in exploring what the commonplaces might do to advance the ambitions supporting (his notoriously ambitious) program. When he turns to discuss "this part of invention, concerning the invention of sciences" he claims to have "digested it into two parts: whereof the one I term *experientia literata*, and the other *interpretatio naturæ*; the former being but a degree and rudiment of the latter" (XII. 5). This re-introduces a "rudimentary" connection between his two greater methods for inquiry, which here becomes the inquiry into 'literate' or 'learned' *experiences of nature* (too often reduced to his compilation and arrangements of *experiments*), and the inquiry through new systems of *interpretation of* nature.[155] The 'literate experiences' are concerned with many forms of experimentation that generate new and unknown effects, an ethos which Bacon brings to the 'ready use' of the commonplaces in argument. This becomes a more specific strategy as Bacon transitions from a section dealing with general topics (which he deems sufficient as school topics) to the particular topics (places of invention and inquiry in areas of particular knowledge), where he delineates some ideas for manipulating the latter as places of "seducements" and "impressions" affecting merchants and craftsmen, arguing for manipulating the forces so they become inseparable to the role of man as not leveraging not only new arts of interpreting nature, but new arts of "judgment" (XIV.1-4).

Section XIV in particular follows up on his claim that "the art of invention grows with inventions" and demonstrates how specific topics might be designed to lead a type of *judgment* where judgment and invention are two parts of the same action ("the mind which inventeth, judgeth – all as in one sense") (XIV.1). Here Bacon argues that man, in order to 'truly' *experience* and *interpret* nature, requires a more assertive handling of both *preparation* and *suggestion* to prepare the ground for such judgments. Suggestion in particular is singled out as integral to a "real and exact form of judgment," noting that *suggestion* should create forms of "impression" in a dialectic process involving "*the invention of the mean,* and *the judgment of the consequence,* where the first is exciting, the second is examining" (XIV.1). Perhaps our best example of Bacon's characterization of this art of judgment is in his own evaluation of Aristotle's treatment of rhetoric – which is much more than a simple admonishment. After repudiating the sophists to some extent, and defending rhetoric against a "great injustice in Plato… resembling it to cookery,"[156] Bacon proceeds to discuss the deficiencies of Aristotle's placement of "rhetoric as between logic on the one side, and moral or civic knowledge on the other, as participating of both" (XVIII.5). It is here that Bacon thinks Aristotle brags of the worth of rhetoric, while cheapening it, saying: "*Malum est*, *malum est (inquit emptor): sed cum recesserit, tum gloriabitur*" (*My wares are excellent, the seller cries, And with bold face extols them to them to the skies… but having got them, Brags of their worth, and says How cheap I bought them!)* (XVIII.6). Pointing to three specific defects in Aristotle's labor here he says: "one, that there be but a few of many; another, that there *elenches* are not annexed; and the third, that he conceived but a part of the use of them: for their use is not only in probation, but much more in impression" (XVIII, 6). As Bacon works to extend and deepen Aristotle's treatment of rhetorical proofs, he also elevates a strategic use of the force of impression, and exemplifies how it can be integral to the form of judgment he seeks to define. He does so by deploying a sophistic strategy he detailed in twelve sophisms of good and evil, or what he calls "the colours of good and evil," which he once again argues are commonly accepted not for their truth but for their the

powers of impression (XVIII.6-9). Here he praises and blames Aristotle in the same pages, but his accusation of Aristotle is strategically barbed. He accuses him of a major violation of his own golden mean by excessively reducing rhetoric's "many forms" and their potential "differences in impression" to that which is "flat," at which point the accusation sharpens on Aristotle's legacy as "evil," "pleasing to his enemies" and in violation of the wisdom of the ancients, particularly his prized figures of moderation and morality in science: granting what "Ithicus and Atreus' sons much wish" (XVIII, 6). The irony is in how Bacon uses this "colouring" of Aristotle as 'moderate to excess' in order to push the limits of rhetoric in the name of moderation (or in the name of his inventive 'middle way'). After creating an exigency for annexing and expanding Aristotle's rhetoric, Bacon proceeds to develop the *elenches,* and broaden the role of commonplaces as forces of 'suggestion' into the realms of both "scientific invention" and "ordinary invention," particularly as Bacon focuses on taking some command over suggestions as a forces of "seducement," "impression" and "insinuation" that might affect the ambitions caught up in artisan and merchant class.

In making this argument, Bacon claims to more "attentively observe how the mind doth gather this excellent dew of knowledge, like unto that which the poet speaketh of, *Aërei mellis cælestia dona,* [Virgil's bee] distilling and contriving it out of particulars natural and artificial, as the flowers of the field and garden, [finding] that the mind of herself by nature doth manage and act on induction much better than they describe it" (XII, 3).[157] In plainer terms, Bacon avows his interest in how the faculties of the mind (and soul) behave when engaged with inventive thinking, particularly with how an artisan and merchant class searches for available materials and likely 'places' from which to "abstract, apprehend and come up with new ideas" (Wallace 89). Karl Wallace studied Bacon's interests in this new rhetorical territory, arguing that he was drawn to analyze how the invention of an idea takes shape in ways that are "logically and temporally prior to the invention of its word and statement," in any processes that either "opened the understanding" and "forged discourse" for a new idea, processes which Bacon

distinguished as cites of “ordinary invention” rather than “scientific invention” (90). Guided by his belief that nearly all fields of knowledge should be collaborative and progressive in nature, and driven by a sense of inventiveness and even perfectibility, Bacon is deeply interested in how invention is driven by what he calls “insinuation,” not-fully discursive process of “bending and turning in a manner that was perceived to be an accommodation to the matter at hand, and action or movement that was fitting or appropriate” (90). To put this more plainly, Bacon saw men driven by the appeals of pragmatism and utility, particularly around inventions and commerce, which he saw as deeply impressing most men. He sought to intervene in these forces of impression with a form of invention which must be “exempted” from the reduction of propositions to middle terms or principles “to be agreed by all” or “elected at the liberty of every man’s invention” but instead created by “a seducement that worketh by the strength of the impression, and not by the subtlety of the illaqueation - not so much perplexing the reason, as overruling it by power of the imagination” (XIV, 8). Voicing his fondness of how religion kindled admiration of a world blessed with many ‘gifts of man’ (empires, architecture, agriculture, servants…), and believing that the forces of mechanical inventions (especially Printing, Gunpowder, and the Nautical Needle) had tipped the balance from human’s potential power to simply guide nature’s course, to a belief in humanity’s potential power to “conquer or subdue her,” Bacon argued the need align these new *forces of impression* towards a more *noble ambition.* Bacon considered the nature of human ambition in three nobler kinds: a restless striving to augment personal power (the least noble ambition), the currents of nationalism or patriotism, and the greater “endeavor to restore and exalt the power and dominion of man himself, of the human race over the universe… [which] rests only on knowledge” (Scharff 26-7). This quote reiterates that Bacon thought man’s “greater ambition” is some form of ‘mastery over’ nature, which lacks much of the context of Bacon’s thoughts on how rhetoric might be responsive to new forces of ‘impression’ creating this ambition. Indeed, Bacon’s aim of creating *invention and judgment* in one act seems inseparable belief that rhetoric must create forces of

impression that guide or create this 'noble ambition' of mastery. Bacon, in fact seems to think that the ambitions might be what make humans more seamlessly a part of nature's forces, that is, if the aim of mastery is rhetorical in nature, aimed at guiding forces of invention so that: "No force of action is limited to what he knows. No force avails to break the chain of natural causation. Nature cannot be conquered but by obeying her" (27). It is a the addition of an inventive rhetoric to his instrumental, reflective and revelatory rhetoric that grants us a fuller and more specified sense of Bacon's claim "Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule."

Bacon's Ruse of Mastery

This enduring 'ruse of mastery' charted at the beginning of this chapter has, perhaps, had the most unwelcome consequences in its influence on a recent history of ecological thought and environmental critique, which has for almost half a century shrouded much of Bacon's fusion of 'scientific-rhetoric' under the critiques of his trope of mastery. Can we, however, imagine a recent history of ecological thought drawn to strategic aspects of Bacon's rhetoric and its handling of mastery? Would it not have curbed the excessive focus on critiquing technoscience, 'mechanization' or 'instrumentality,' the many returns to some version of organicism, or the absolutist attempts at overcoming, re-writing or reuniting the antithesis between nature and man? [158] Would not the attempts of many deep ecologists to radically restructure society with ideas of 'ecocentrism,' 'inherent worth,' 'holism,' 'preservation,' and 'limits' have taken on qualities of pragmatism, agency, and reflective instrumentalism aimed at progressive forms of rhetorical, scientific *and* technological intervention? Would Bacon not only help us think about the spirit of science in an age of production, but the spirit of science in our age of consumption? Let's briefly consider this thought experiment about

how Bacon's influence might have re-directed these pursuits – since this kind of thinking would also only follow Bacon's precepts that we need to harness an evolving *anticipation* of nature, need rhetoric to move the will and moderate some forms of *speculation*, and to work diligently towards turning what is now commonplace into something of present use for influencing the judgments of nature.

We might start with the question of beginnings, with where one starts as an 'ecological thinker.' Our current age of ecology has repeatedly sought out the roots of our *crisis* – particularly since the 'second wave' of environmentalism in the 1960s, as Carson's and Bookchin's popular critiques of modern chemistry and technology inspired many subsequent challenges to the deeper beginnings of a 'crisis' that involve the emergence of modern science and technology and the anthropocentric philosophies, religions and elements of Western culture. Lynn White Jr. raised such concerns most poignantly, stirring up many attempts to remedy these problems of scientific and cultural "arrogance" spiritually, philosophically and morally. Pointing to the Baconian ethos as one of the great sources of all our ecological misfortunes has thusly steered much in ecological thought afield from such "arrogance," and swayed many to an unfortunate set of debates between more "anthropocentric ecologists, who contend that the value of our nonhuman surroundings derives from their role in fulfilling human interests, and ecocentric ecologists, who contend that the nonhuman world holds ultimate value in and of itself" (Whiteside 2). We've witnessed decades of such debates framing the contributions of Muir and Pinchot in the early 20th century, or swaying the good efforts of thinkers like Barry Commoner and Ralph Nader, who today are proclaimed as "anthropocentric survival environmentalists" positioned against most ecologists focused on maintaining quality and "integrity" of the earth's systems (Sessions XI). Bacon's theme of mastery is perhaps an act of "arrogance" but it is neither the beginning nor the amplification of a crude anthropocentrism, or of a crisis. Instead, his well-known struggle with tradition is testament to the best kind of 'present-use' of conventional wisdom, one gearing much of antiquity towards the concerns of science, society and (if we allow it) ecology. We could say that, to some extent,

the beginnings for Bacon remain the classical strains of Western thought, but his interests are especially in the evolution of human/nature as an arrangement of persuasive forces and inventive arts, particularly in the present use of the 'arts of the possible' which seemed at the time to grant the rhetorical conditions and techniques of 'mastery' more responsibility to human agency in relation to nature. If Bacon deserves 'critique' it is that this mastery was not forceful enough in its conception as a 'scientific rhetoric' that articulates such responsibilities for a subsequent history of ecological thought. He did nonetheless revise and restore the ancients with the aim of granting some present control over the forces of 'fate' and 'nature' – so that this "nature" that "loves to hide" must not only be discovered, but unfolded as "the true moderator of hope and works," through an evolving art of invention to moderate, enhance and condition the rhetorical forces in a culture where "there is no true rest," there is only "relative stability," and only "dynamic tensions" (116).[159]

It also seems necessary to re-pose the question of authority, particularly by weighing the trend of 'resentment' towards Bacon we began with in this chapter against the opposing trend in the venerations of Heidegger, whose philosophy was entrenched into countless environmental discourses promoting (or bemoaning) his relevance to ecological thought over the past 50 years. In "Thinking with Heidegger: Rethinking Environmental Theory and Practice" (2005) Kevin Michael DeLuca sums up this trend promptly, claiming that the surge of environmental scholars looking to reform or deepen environmentalism through Heidegger's work since the late 1960s is enough to "displace a preoccupation with Heidegger as the thinker of the Truth of Being" while at the same time pulling Heidegger into "a confusing array of reform environmentalists, deep ecologists, social ecologists, ecofeminists, wilderness advocates, social justice activists, social constructionists, and Christian ecologists" (68). Deluca argues that the only way to "think with Heidegger" is above all: "thinking Heidegger in distress: in the distress of machination; in the distress of the technological enframing of the earth; in the distress of the environmental crisis" (68). Or as it was put more recently in the collection

Heidegger and the Earth: Essays in Environmental Philosophy (2009) "thinking ecologically" means "thinking about the earth in our time-- means thinking catastrophe, it means thinking the possibility of utter annihilation not just for human beings but for all that lives on this planet and for the living planet itself" (viii). [160] Such "catastrophe readings," according to Feenberg, usually hinge on an ontological account that explains technology as a violent mode of revealing distinct from, and somehow similar to, a more ancient and authentic *techne*, while assuming that somehow 'saving' this involves following what Feenberg calls the "apparently naive questioning" based on the difference between modern and ancient *techne* -- a process he readily encourages, saying: "these are naive questions, but they are reasonable questions [...worth taking] seriously and attempting to fill in the gaps" (*Heidegger and Marcuse* 25). Compared to this emphasis on a more authentic bond with the earth, with *techne,* or the emphasis on meditative thinking on crisis, lost wisdom, instrumentality and now even 'catastrophe,' Bacon seems unconcerned with 'authenticity,' and instead asks for a mix of reflective, pragmatic, instrumental and rhetorical thinking, an equation that he presents as open ended, requiring "endurance" and a lengthy, wise and industrious "suffering" to "overcome both fate and nature" (XXII 3). As an older and even more polarizing figure than Heidegger, Bacon's authority has evolved as a symbol of science and reason for the Royal Society, through the admiration of philosophers and scientists like Descartes, Hobbes, Rousseau, Kant and Darwin, and through the condemnation by many romantic era thinkers, the famous scolding by Victorian historian Thomas Macaulay, and the environmental critiques of the 20th century. [161] As the 'father of modern science' within a 'scientific revolution,' this characterization is one hardly dares to venture today and a perspective that, as Brian Vickers argued, brought "precious few benefits to anyone" (1-2, 120). [162] In today's intellectual climate, Bacon's authority seems worth re-engaging instead as another *ecologist's challenge*, one striving to inaugurate the challenges of rhetorical *mastery* at the cusp of the 17th century that granted a new responsibility to take on instrumental, pragmatic, rhetorical and reflective thought. Bacon's refrains about rejecting a known teleological natural order to

which man's arts and actions were alleged to conform, about the truth values of empirical methods and experiments, and the progress of mechanization and mathematization of nature, all come to play in the context of this authoritative idea: that this period in history required man to drive for a fuller 'mastery' not only turned 'inward' towards 'mastering the self,' but in an outward turn to controlling 'nature' through a scientific and rhetorical process.

Bacon also compels us to take on the challenges of thinking about "nature" as a critical category, in ways that sidestep the well-known perils of either flirting with biologism or essentialism, or with the opposite trend in more deconstructive strategies that presently theorize nature in seemingly endless terms as complex networks of meanings, seeking (it seems) only to find as many ways as possible to think of nature in terms of 'relatedness' or 'interconnectedness' (Wolfe 2). Bacon's theory of nature as always/already a dogmatic force on human culture led him to emphasize not only *discovering* the multiple-meanings of nature through processes of interpretation and experiment, but to inextricable processes of *invention* aimed at moderating, enhancing and conditioning human appetite through social persuasive technologies. This is not some distant memory of social construction, but the articulation of a symbiosis between discovery and invention, sciences and rhetoric, which should requires anyone studying nature through the sciences to study rhetoric, and vice-versa.

Finally, this great effort to establish the spirit of a 'scientific rhetoric' in an age of production also established distinctive mix of arrogance and human agency that helps us think through a spirit of science in an age of consumption. John Bellamy Foster recently argued in *The Ecological Rift,* that "Bacon's complex notion of the domination and subjugation of nature" might indeed be the beginnings of the "notion of sustainability insofar as it demanded that society follow 'nature's laws'" (496). He goes on to say: "The Baconian ruse was that nature could be mastered through its own laws. But nature's laws *if followed completely* nonetheless put restrictions on production – those necessitated by

reproduction and sustainability" (emphasis his, 496). Foster marks Bacon as a thinker of sustainability in a traditional sense, as thinking about how the human creative processes might align in with finite natural energies or 'potencies'. But, given his emphasis on rhetoric, and rhetorical invention in this chapter, the Baconian challenge might be to not only think about reaching nature's *limits* in relation to logical limitations of global production processes, but to also connect this to a type of mastery aiming to steer appetites and ambitions as an ecology of persuasive forces. From this angle, Bacon's challenge is not an intervention aimed at limiting these forces, but calibrating how to moderate, enhance and condition new (noble?) ambitions, expanding into everyday realms of a 'merchant' and 'artisan' class.

In closing, consider two examples of ecological interventions that resonate with this Baconian spirit of 'scientific rhetoric'. The first example is brief, as the series of essays in Sanford Kwinter's *Far From Equilibrium* are presented plainly as "A New Organon (after Aristotle, Bacon, and Brecht)" because they attempt to turn a "subtle coup" in the field of architecture into an "organon, that is a system of investigation, invention and technique" (46-7). Kwinter argues that architecture is being supplanted by *design* as "an organon in the making" with research that takes on a "more classical formulation" of investigation that extends more deeply into "real logics present in the human or non-human environment and their conversion into potential" (47). The dominant logic or 'science' of architecture is to be supplanted by research that marries "design science to philosophy" aimed at the creation of buildings and spaces that work on the principle of "design from within," unfolding the "real logics" of nature into design techniques that intervene in the "real domains" of subjectivity impacted by our living environments (47-57). His essays propose that design must theorize and enact techniques of invention based on "productive power" that makes "environmental effects" – a power that "coerces without observable violence" and which works "within a broad ecological model" (19). His manifesto is thusly asserted as a kind of Baconian ethos bent on mastering new modes of inquiry, invention and techniques designed to marry certain persuasive logics with ecological ones.

A longer example involves several key shifts in the recent history of climate science, climate modeling and the attendant environmental discourses, which might serve as a protracted example of how a number of Bacon's ideas slowly returned to shape this terrain today. Today's climate science and the disparate endeavors to develop prediction technologies about climate change and our impact on the planet can be thought of, as Denis Loveridge recently put it, evidence of an evolving "art of foresight" we would identify with "anticipation, appreciation and learning" (5).[163] Loveridge argues, however, that many disciplines, corporations and agencies like UNEP (the United Nations Environment Program) have demonstrated that potential of such foresight is routinely short circuited by both the form of climate science itself, and by procedural forms of decision making that have become central to many of the forums for national and international planning today. There is, however, evidence in our recent history of climate science where Bacon's concerns with developing a 'scientific rhetoric' with certain precepts for an inventive art have resurfaced as a somewhat inevitable solutions to recurring problems with the climate science.

Consider first the well-known set of debates that emerged after Jay W. Forrester's *World Dynamics* and the Club of Rome's popularization of systems dynamics based "World" models of the late 60s and early 70s, designed to simulate and predict the interactions between populations, economic and industrial growth, agricultural systems, and ecological systems. [164] The most publicized was *World3* developed from 1970-72 at M.I.T. and applied as part of "The Club of Rome" study that ran the model and then published the well-known book *Limits to Growth*. The predictions that the model and simulations helped to generate about accelerating population growth and resource use have (until the past two decades or so) been repeatedly cited as an authority by environmental advocates, policy makers and politicians. However, both the models and the subsequent arguments in *Limits to Growth* immediately generated severe criticism ranging from accusations of gross-oversimplifications (in terms of both the amount of data used and the assumptions about what factors determine future

ecological collapse), to ideological and political biases (particularly for Malthusian and Marxist brands of pessimism), or more generally as "an attempt to substitute mathematics for knowledge and computation for understanding" (Cole 12). The critiques in the subsequent *Models of Doom: A Critique of the Limits of to Growth* (1973) by a panel of scientists, mathematicians, economists, social psychologists, engineers, and political scientists focused on the limitations to forecasting that input precarious historical data (drawn from 1900 to 1970) and the encoding of what was termed “avoidable assumptions and political biases” into, what were called, “deceptively neutral models” – a critique more crassly described as too overtly rhetorical in design, stated simply as: “garbage in, garbage out” (Cole 15).[165]

The legacy of many similar large “causal models” that use statistics to “describe” the development of the phenomenon to be predicted but also to “explain” these, would be that experts were left to try and enhance or dampen the explanatory powers of models with (a much maligned) candor about degrees of uncertainty, noting likely variations, fuzzy curves, fuzzy scales, parallel scenarios, and verbal explanations that inevitably rely on terms such as ‘probable,’ ‘likely,’ or ‘very likely,’ a lexicon which has ‘almost certainly’ gained more infamy in the past decade than these early “World Modelers” would have predicted. [166] The unavoidable return to this “rhetoric” isn’t surprising, since the roots of the models lie in cybernetics and systems theory work from twenty years earlier that initiated the symbolic language of systems dynamics for representation for systems inputs/outputs and regulatory feedback loops, in which many to point out that the relationships are “merely” symbolic, and to point out that the models were always designed to affect policy, and to deal with large scale data in easy to interpret economic and social terms that also reinforced the well publicized critiques (and still do) that led to an eventual stigma for the group. The eventual breakdown of the science and rhetoric of these "big simulation" projects has, however, been followed by advances in scientific data collection and modeling practices and a striking spirit of inventiveness to changing the rhetorical form and function of

climate data. Consider first A.I.'s impact on environmental sciences, and new geographic information system (GIS) software which came into use in the models currently employed by the U.N. and the World Meteorological Organization, and led to new practices in the communal and distributed "use" of models where more attention was granted to using postulates in A.I. to give rhetorical structure to 'decision making forums' that address the rhetorical problems of older modeling practices, their reliance on expert 'explanatory powers' and the subsequent confusions of deliberative practices. Generally, this involves opening up model building to more expansive networks of users responsible to provide feedback and data, while asking experts to design visuals, interfaces and usability (similar to precept one: manipulating the icons of reason). The recent collection *Artificial Intelligence Methods in the Environmental Sciences* (2008) is one of the first comprehensive reports on the impacts of (AI) methods, including neural networks, decision trees, genetic algorithms and fuzzy logic, and the collection stresses important considerations in applying these advanced rhetorical methods or techniques as means to mediate between traditional models, new computational powers, and several more "artful" human abilities to recognize patterns and "persuasively and responsibly" explain the fuzzy logic involved in terms generated in part by the programs (7). With programs that integrate user observations of empirical data (from national environmental agencies and government research groups, to farming collectives, environmental watch dogs, and aboriginal communities in remote northern areas) while applying A.I. techniques such as "fuzzy logic" to encode imprecise verbal cues like "very probable" or "less water" that were once left to concerned natural and social scientists like the Club of Rome, A.I. techniques are aggregated to yield more firm "final answers" that shore up "user-friendly automated decision-support systems that model what a human expert would do under similar circumstances" (10). There are numerous emerging examples of tools applying new software programs aimed at mediating the data's 'uncertain terms' so that the models outputs influence more robust decision making, and thus remove some of the impediments to inventive forms of adaptation and mitigation.[167]

The most striking example foregrounding the reformulation and increasing acceptance of a 'scientific-rhetoric' is evident in the evolving practices of climate science in our current "data-deluge," which Chris Anderson (in)famously suggested means that we can potentially "flip many modeling practices on their head by first trolling through massive amounts of data, which can be analyzed mathematically, without hypotheses about what they might show" (WIRED June 2008). Here the popular prediction of an "end of models" is prefigured by the trend that we can "punch as many numbers as possible into the biggest computing clusters the world has ever seen and let statistical algorithms find patterns where science might not" (Anderson). In climate forecasting this has meant more reliance on what is popularly referred to now as 'the cloud,' and led to open-source software Grids and visual representations tools that make for easier calibration of risks, resource scarcities and excesses, and for making this data more persuasive for the economic calculus used for forecasting investment and general trends. The challenge here is no longer well-understood as a problem of representing large amounts of data based mostly on science you can't see, or of problematic user inputs, but to model and re-code the more freely roaming climate information through risk management software in insurance firms and banks that help generate both carbon credit portfolios and Event Linked Futures (ELFs). Various emissions and green commodities trading programs thus rely on recoded climate data as "risks" (climate change and severe weather or natural disasters) and "scarcity" (drought, famine, agricultural short-falls, post-peak oil, etc). The most pertinent example is the move to code climate predictions as part of the emerging carbon trading markets like CCX in Chicago (Chicago Climate Exchange), or the European Climate Exchange, both of which rely on voluntary compliance of data collected through 'the cloud' and the reshaping of this data by open-source software Grids and visual representations tools that make a functional calibration of risks, resource scarcities and excesses into the economic calculus models designed to both forecast investment and to encourage carbon trade-offs. Not unlike the coterminous trends in science and economics during Forrester's day,

increasing access to such data, to new visual representations of risks, and calibrations of these into a new algebraic form, has opened up a new economic calculus made to help traders assess the frameworks for valuation and risk, such as the European Union Emissions Trading Scheme (EU ETS)'s data viewer, which portrays transactions, and trading schemes within the cloud, and allows for easy comparison of this in production of graphs, data and downloads.

A more explicitly rhetorical response to the rapid commonplacing of this data (or these rhetorical-technical conditions) is the oddly coined "Gort Cloud," which allows public access to the cloud of climate data and to connect with a large-scale interconnected social network described as "a vast, largely invisible and growing (environmentally-aware) 'community' that sieves, measures and exchanges information on environmental (green) products and services"(Seireeni and Fields 4). According to Seireeni and Fields, the authors and publishers of the book, *The Gort Cloud:* "the community includes NGOs, government agencies, certifying groups, academics, eco-tech specialists, business alliances, green media including green business news, sustainable designers, ... other social networks, conferences, trade shows, events, competitions, green blogs, special interest groups, and trendspotters — to name just a few" (3). The effort is to make the climate data influence marketing and brand-building experiences of sustainable businesses in America and Europe. The Gort Cloud has a flexible and highly rhetorical set of "limits" to growth, and is designed largely as an attempt to encourage responsible production and (more so) consumption patterns while representing much more faith in virtual economic growth. This raises entirely different sets of questions about the "Garbage in, Garbage out" critique or *Limits to Growth*, because its audience largely engaged with using the data to shape the ambitions of consumers whose confidence is now also asked to be measured not only in profits but in carbon footprints, green job indexes, and other small scale measurements meant to rethink what is responsible in the way of production and consumption (in ways that remind us of both is first and second precept).

Can we not think of this recent history from a systems dynamics approach to climate modeling and scenario building to more sophisticated and "scientifically relevant" GCMs or Global Climate Models as the new grounds for a *whole strategy* of rhetorical work? Would this not help bring imagination to the procedural approaches used today by groups like the IPCC, rebuttals to the policy makers that still see too much uncertainty, or an argument about what is 'true judgment' to the logic of the scientist and mathematicians that say the climate problem must be *fully described* or for the models to be fully coded to function (Loveridge 55). Indeed, if Bacon was a leading figure of ecological thought in recent decades, would we live in a world where the recent issue of "Nature" (July 2013) closes with another appeal for "better modelling" after it describes how "the amount of Arctic sea ice declines at an unprecedented rate, the thawing of a 50-gigatonne (Gt) reservoir of methane, stored in the form of hydrates... is likely to be emitted as the seabed warms, either steadily over 50 years or suddenly... [and cost an] extra $60 trillion ...the scenario with no mitigation, or 15% of the mean total predicted cost of climate change impacts (about $400 trillion)." Wouldn't the pursuit of 'mastery' here be a distinctly rhetorical response?

Chapter Four) Darwin's Ecology, Huxley's Ethics: Artificial Selection and Rhetoric

Introduction:

As Thomas Lessl recently put it in *Rhetorical Darwinism* (2012) "it would be hard to miss the fact that the concept of evolution lives a double life, that it references a body of technical knowledge developed through careful scientific study but also evokes a cluster of more intangible meanings at once emotive, ideological, perhaps even religious, that move in orbit around the notion of progress" (XI).[168] What Lessl studies as "rhetorical Darwinism" is the "persuasive work" that continues to bring Darwin's ideas to various public arguments in ways that flirt with familiar forms of Social-Darwinism that drew analogies from the language or concepts underpinning evolutionary biology to apply them to individuals, races, collectives or corporations. This genre of work aiming to rectify certain rhetorical or ideological uses of Darwin's texts (among which perhaps Richard Hofstadter's work still stands out as the model) has of course long been a topic of popular argument and focus of study for rhetoricians.[169] This chapter works in a similar vein, drawing our attention to the principle ways Darwin has been taken up as an integral figure to ecology, ways which we can initially think of as granting at least another kind of 'double life' to Darwin: one advancing with ecological sciences, and one advancing with ecological thought in the humanities, particularly, as Lessl put it, in ways that 'move in orbit around' what has come to be called 'self-conscious ecology.'

Certainly it would come as no surprise to most that, as R.C. Stauffer noted, the roots of scientific ecology are often traced back to Darwin as one of its pioneering figures, often by considering how many of Darwin's observations and proposed mechanisms still fit within the parameters of contemporary scientific ecology, or by describing key differences in the methods of classifying tens of thousands of new plant and animal species on global expeditions, or the means of identifying their 'geography' or biota, their co-adaptations or interdependencies with abiotic factors, or non- living chemical and

physical forces (2).[170] Among works by ecological historians (including both historians and ecologists) such as McIntosh, Egerton, Worster, Nicholson, Nash probably the main distinction in studying Darwin as one of the "antecedents of ecology" in relation to other pioneering figures like Humbolt, Wallace, Warming, Huxley and Haeckel is the objective of either building a "retrospective ecology" that generally looks at Darwin as "someone doing something similar to what came later to be recognized as an aspect of ecological science," or the objective of tracing how Darwin realigns older ideas from philosophy, science or religion that contribute to "self-conscious ecology" –the "distinctive concepts and questions" that make ecology a form of thought and praxis that extends beyond the parameters of science (McIntosh 22). Both "retrospective ecology" and "self-conscious ecology" approaches have, as Robert McIntosh suggests in his seminal work *The Background of Ecology*, frequently revolved around semantic debates about a definition or disciplinary identity for ecology in the 18th and 19th century. While the prior tends to consider how a Darwinian 'revolution' gave certain parameters to the "crystallization of ecology" as a science that emerged from a more amorphous body of natural philosophy or theology, the latter tends to consider how Darwin contributed to what "is commonly described as a synthetic science" that advances new knowledge through methods of investigation that continually integrates, synthesizes, or (to give it its Burkean term) perceives the world through a fundamental process of *composition* of diverse facts from natural and social phenomena in order to gain new levels of insight -- a process challenging disciplinary science as it raises clear political and ethical questions by putting humans in new "objectively determinable ecological relations with nature" while raising the stakes of our responsibility as the species with some consciousness of our influence or control over evolutionary processes (McIntosh 25-27). [171]

What we might call the 'synthetic appeal' to treat Darwin as a proto-ecologist grew in prevalence mostly after the many persuasive rebuttals of more "tired Social-Darwinist metaphors" emphasizing the individual in 'competition' or the so-called 'struggle for existence' (among which

perhaps Margulis and Sagan's work still stands out as the model), rebuttals which have proven without any doubt that organisms are not self-contained, and that any notion of an independent individual is, scientifically speaking, a myth that ignores how the human is "embedded in ecological communities" comprising of varied symbiotic relationships of mutual 'benefit,' 'cost,' 'cooperation' *and* 'competition' between organisms (Margulis and Sagan 15-18). This has led, on one hand, to a number of recent works by ecologists who admirably forward research programs that align readings of Darwin endorsing images of nature and society as essentially cooperative (such as Allee, Emerson, or Mittman), and on the other hand, to more and more work in the humanities borrowing symbiotic metaphors from Darwin in ways that only seem to overdetermine the case of our 'entanglements,' 'meshwork,' or 'interconnectivity' with other organisms and living systems -- especially given the slew of recent historical and philosophical taking versions of Actor-Network-Theory to study large socio-technological systems that account for 'natural,' social and technological phenomena as ecological agents participating within ecological systems (Law, Latour, Callon, Serres, etc.). Indeed, while this growing body of work provides us with important ways of doing ecological histories, offering rich descriptions of networked behaviors that avoid or confront assorted dangers of "biologism" or "essentialism" and a wealth of ways for scholars to become more conscious of their descriptions of complex (and many relevant) technological, social and ecological factors in their work, these perspectives might benefit from considering Darwin as a proto-ecological figure in a way that seems largely to contradict most 'synthetic' appeals. While rich in their ecological descriptions, such perspectives are less adept from an ethical or rhetorical point of view, often making it difficult to give due relevance to human intelligence, situate responsible agency, or translate this to present forms of action, largely because the complex nodes of agency also strategically passes over "what is commonly taken as distinctive or even unique about humans" and/or insists on superseding or forcing out any or all nature/culture dualisms (Bennettt, ix). This is the main reason why I believe those in the humanities interested in ecology might benefit from particular reading of Darwin's

'rhetoric of artificial selection' as originating a form of rhetorical agency that remains in some ways unexplained and which could be a potentially valuable history for ecological thought today.

As one might expect, widespread discussions of 'artificial selection' range from the uncontroversial to the highly contentious. Conventional treatments of artificial selection will of course tend to emphasize it as an important concept, metaphor, or analogy in Darwin, and it has become a truism for many in both the sciences and humanities many to accept artificial selection as a crucial tool in Darwin's process of rhetorical discovery of natural selection, and as providing a convenient metaphor or analogy in explaining natural selection to readers. Darwin's observations of how humans can greatly alter the behavior and form of plant or animal species (fan-tailed pigeons, English bull-dogs, Hereford cattle, etc.) certainly helped lead to his inference that nature might achieve even more dramatic changes over longer periods of time.[172] And on the origin of natural selection as a theory, Darwin said: "All my notion[s] about how species change are derived from long-continued study of the works of agriculturalists and horticulturalists" (480). By the same token it is commonly taught (as it was to me) that while natural selection relies on analogies and metaphors from artificial selection to readily explain a process of how evolutionary changes function as a kind 'blind watchmaker' that lack a *telos* or designer, we can (or should?) confirm that such metaphors can then simply be shed as we explain change on the basis of the three interrelated scientific processes: variation (the inheritable genetic differences among individual organisms), selection (the differential reproduction of those organisms) and retention (the differential representation of fittest genetic variants in the gene pool). In such cases, shedding *divine selection* for *natural selection* also hinges on shedding *artificial selection* as another unwanted rhetorical corollary to Darwin's *real* theory, or perhaps half-heartedly grants that *artificial selection* is something of a rhetorical inevitability in reading Darwin and something to be pinned down as potentially ripe for misinterpretation or misappropriation for political or philosophical arguments. On the contrary, there are a few less conventional arguments from philosophers picking up artificial

selection as a concept, such Gill Aitken who recently cut against the grain by treating artificial selection not only as a problematic category or vital corollary to Darwin's theory, but as a third mechanism for evolutionary change in Darwin's theory.[173] Aitken argues artificial selection is a 'similar but different' evolutionary mechanism, one either distinctive to an aspect of human evolution, or an aspect of evolution able to move partially outside the realm of natural selection and into a relatively distinct forms of human evolution as something goal directed (which natural selection is not), generally engaged by the requirements of a single species (which natural selection is not), and capable of much more rapid and particularized changes to species (Aitken 57).[174]

This chapter does not seek to cast a new proposition about artificial selection as a 'mechanism' of evolution, but in taking a more thorough rhetorical approach to thinking about certain risks Darwin took in using artificial selection as a crucial trope (metaphor, analogy, and concept), I diagnose how this trope repeatedly influences a genealogy of ecological thought, and like Aitken I infer another way it might open up to a more "conceptually progressive" reception history for ecological thought today (to borrow a term from Paul Sheldon Davies). To make this case the upcoming section draws our attention first to the ways that ecological thought in the humanities orbits around artificial selection as a problematic metaphor that encourages an unwanted *division* between of Darwin's (anthropocentric, individualistic, or economic) rhetoric and forms of 'true ecological connectedness' – a division that is defend against in some of the earliest definitions of ecology (i.e. Haeckel) and that becomes an exigence for resultant forms of ecological ethics bent on limiting Darwinian rhetoric with metaphors of symbiosis and cooperation (i.e. Leopold), or a division that fuels Darwin's 'persuasive logic' in ways that polarizes a great deal of 19th century arcadian vs. anti-arcadian ecological themes. The following section then examines a counter trend in rhetorical scholarship valuing this division by looking particularly at Burke, Campbell, and Davies as leading arguments into own reading of the rhetoric of artificial selection as initiating a suitable trope for ecological thought today.

Indeed, many discussions about the accuracy or appropriateness of parallels between natural selection and artificial selection have become something of an unwanted or dangerous cliché in histories of science largely because they have missed much of what rhetoricians have valued in this trope as marking a crucial 'division' or moment of incommensurability between science and rhetoric that raised certain challenges for Darwin which orbit around questions of agency, ethics and 'the rhetoric of artificial selection.' To demonstrate how this rhetoric artificial selection becomes an important trope for ecological rhetoric in particular, I shift from a discussion of Darwin to a comparative analysis that maps out an understudied debate over artificial selection between Darwin and Huxley as one of the first thinkers responding carefully to these questions. This reading emphasizes a shared exigence for amplifying artificial selection as a symbolic category that compelled a kind of rhetorical inquiry between the two, an exigence for defining artificial selection in rhetorical terms as a *technê*, and an exigence for establishing certain ethical principles and rhetorical strategies that might guide practices of artificial selection --- principles that Huxley believes might steer artificial selection away from transcendent ideals and towards an emphasis on an ethics of 'transactions' or 'debts' and 'redundancies' calibrated between two 'artificial' realms: a social-rhetorical realm and a more rigorously scientific realm of artificial selection (agriculture, fisheries, etc.). It is the latter realm that Huxley conceives of as a 'centre of force' in society, creating a dynamic that replicates something like the 'cosmic processes' in nature.

Analyzing Huxley as a rhetorician allows us to examine how he moves from analysis of the rhetoric of artificial selection and critique of its narrow or vulgar uses, to both speculating about a heightened role for this rhetoric in an evolutionary and ecological context (one that might moderate or enrich forms of materialism, idealism, or merely "cosmetic rhetorics") and appropriating it for pragmatic political purposes (as we will see in an example from his address to the fisheries exhibition). This speculative and practical appropriation becomes a means to convince his audience to think more broadly about the relationships (or 'debts') between science and the commercial industries most

directly sustaining society, as well as to an ethics calibrated by the pleasures or tastes of the public. Taking a broader view of what Huxley does then, we see him considering what ways evolutionary science might require a corresponding ecological rhetoric to *create* forms of socio-ecological sustainability. Indeed, as I will argue in conclusion, this 'rhetoric of artificial selection' seems to mark several important trends, an early rendition of a turn from analytic philosophies to the varied theses of pragmatism, wherein rhetoric is increasingly regarded as an unavoidable bridge between sciences of nature and culture, and a move beyond mere recognition of the unavoidability of nature/culture dichotomies or the need to 'destroy' or reclassify these, by strategically and affirmatively bridging how science revealed deeper truths of the workings of nature, with the rhetorical supplements of art, *technê*, images, representation, convention (etc) with a particular end: supporting both (ecological) consciousness and our (unavoidable) political and technological interventions into natural and social systems. The case of artificial selection shows us this kind of rhetoric is not a matter of choice; it is by default that artificial selection becomes a rhetoric that does come into play. We can see, however, both Darwin and Huxley also play with how it *should* be made persuasive and sufficient for exigencies we increasingly define as ecological and sustainable – exigencies that include meeting a range of human needs and desires – for not only sustenance, but for emotional well-being, and moral or ethical training.

Darwin's Ecology and the Rhetoric of Artificial Selection

> *It is interesting to contemplate an entangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent on each other in so complex a manner, have all been produced by laws acting around us.*
>
> *On the Origin of Species*, pg 489

> *Slow though the process of selection may be, if feeble man can do much by his powers of artificial selection, I can see no limit to the amount of change, to the beauty and infinite complexity of the*

coadaptations between all organic beings, one with another and with their physical conditions of life, which may be effected in the long course of time by nature's power of selection.

On the Origin of Species, pg 109.

Darwin's value for ecology and ecological thought in the humanities has taken a number of trajectories, and Robert McIntosh's *The Background of Ecology* skillfully surveys many of these in discussions about Darwin's contributions to ecology sciences, from some of the earliest ecologists who described Darwin as "the great exponent of ecology before it had a name" (Spalding, 1903), to some of the earliest historians who consider it "hyperbolic" to describe Darwin as "the true premier ecologist" (Ramaley, 1940) (10). With the upsurge of more 'theoretical ecology' in the humanities since the 1960s, the varied discourses on ecological ethics, philosophy and critical theory, it is somewhat surprising that so of much Darwin's appeal remains staked to an overriding deference for his 'synthetic method' generally centered on this in the idea of a kind of 'true' ecological "consciousness." It may seem counterintuitive initially to suggest that this overarching appeal to 'synthesis' is problematic – especially as this is the primary appeal that lead first-rate ecological historians like Donald Worster to vet Darwin as "the single most important figure in the history of ecology over the past two or three centuries" and influential ecological thinkers like Roderick Nash to cite Darwin's work as the 'origin' of environmental and animal rights discourses that remain influential today (128, 42).[175] While I certainly don't disagree that such works have rightly described the main contributions of Darwin for a vital trajectory of ecological thought and ethics, I would suggest that far too many ongoing discussions of ecology and ecological ethics in recent decades repeat an older set of rhetorical concerns in arguments that continually appeal to a 'synthetic Darwin' as the overriding contribution to 'self-conscious ecology' -- mainly since such readings typically emphasize 'entanglements' or interconnections with nature (which the first epigraph above captures as one of Darwin's more persistently in-vogue quotes) as the overriding contribution to some form of evolving 'consciousness,' and usually by privileging some version of true 'ecological connectedness' that can support virtues like respect or care at the expense of

any form of self-consciousness that accounts for any manner of 'anthropocentric' behavior or thought, the frequently self-centered nature of our language and rhetoric, or (to give it the opposite Burkean inflection) to confront the implications of this central 'division' between artificial and natural processes (or human culture and nature) in Darwin's thought.

The philosopher and ecologist Ricardo Rozzi offers up a case in point of a commonplace way of reading Darwin's synthetic method through a dialectical reading of Darwin's evolutionary concepts working their way into seminal texts on environmental ethics, arguing that Darwin provided the clearest examples of "complex links" between two open systems, the sociocultural and the natural environment, which promoted a basic dialectical relationship between how "ecologists formulate their scientific theories influenced by ethical values, and in turn, environmental ethicists value nature based on scientific theories."[176] Like many others valuing a 'synthetic' rhetoric in Darwin, Rozzi values the origin of a basic dialectic stipulating a logical "is/ought" problem grounding ecologists who approach nature with the aim of understanding what it *is,* while raising new questions for environmental ethicists "who approach nature asking how we should relate to it, or live in and with it." Grounding a Darwinian intervention in Hume's basic terms is, however, also presented as a new 'rough ground' with a set of problems surfacing in Darwin's rhetoric. Rozzi sums it up thusly:

> On the one hand, the Darwinian conception of a common evolutionary origin and ecological connectedness has promoted a respect for all forms of life. On the other hand, the metaphors of struggle for existence and natural selection appear as problematic because they foist onto nature the Hobbesian model of a liberal state, a Malthusian model of the economy, and the productive practice of artificial selection, all of which reaffirm modern individualism and the profit motive that are at the roots of our current environmental crisis. These metaphors were included in the original definitions of ecology and environmental ethics by Haeckel and Leopold respectively, and are still pervasive among both ecologists and ethicists.[177]

It is worth examining further how Rozzi identifies these metaphors as integral to a particular 'birth' of ecological thought. Haeckel of course offered the fledgling term ecology (*oekologie*) in part as a

response to Darwin, stating: "the body of knowledge concerning the economy of nature […] in a word, ecology is the study of all those complex interrelations referred to by Darwin as the conditions of the struggle for existence." While Leopold would much later define ecological ethics and ecological evolution as “two definitions of one thing,” and his influential “land ethic” counseled a wide range of ecological thinkers to take on narrow models of land usage (especially those he addressed as economic, utilitarian, and libertarian) with arguments for “a limitation on freedom of action in the struggle for existence” and a replacement of the evolution of current “politics and economies [that] are advanced symbioses” with “co-operative mechanisms with an ethical content” (248, 238).

Rozzi’s argument is helpful for thinking about a basic relationships between Darwin and these historic moments in ecological discourses, but perhaps more so for reflecting on a long-term inclination in environmental ethics to elevate what is deemed ‘ecologically ethical’ in Darwin’s ideas by emphasizing this basic dichotomy in Darwin’s rhetoric, where some consciousness of true ‘ecological connectedness’ is singled out as reinforcing virtues like respect, admiration or awe, while they are pitted against a brand of rhetorical Darwinism that could promote lesser qualities marked by their political, artificial or economic status as they might sponsor dangerous ideas of ‘individualism’ or (we assume) turn the ‘productive practices of artificial selection’ towards dangers associated with capitalism or technoscience. This basic dichotomy and the potential use or abuse of Darwinian rhetoric is one that Rozzi addresses as a familiar tune in a “long line” of work in environmentalism and ecological ethics focusing repeatedly on Darwinian ideas that are “easy to abuse” because they “can favor patterns of over-consumption and exploitation of the natural environment by strengthening individualism and the idea of progress,” even though Rozzi thinks Darwin initially diminishes this "abuse" by “weakening anthropocentrism” with metaphors like the "entangled bank" and "the tree of life." In this general ecological-ethical sequence largely opened up by Darwin, Rozzi singles out a prescriptive normative ethics, one emphasizing both a new moral “respect” for nature, as the path most effective in limiting

Darwinian rhetoric "strengthening individualism" or discovering ways to read Darwin as "weakening anthropocentrism." That Darwin can be read either way is, again, is obvious enough, and has garnered much attention especially as it takes shape within a dominant ideational swerve of a normative or limits based environmental ethics with this particular 'birth.'

In his more multifaceted reading of ecological history, Donald Worster's *Nature's Economy: A History of Ecological Ideas* (1977), marks another important division and set of trajectories in ecological thought fueled by Darwin's "persuasive logic" (128). Worster reads ecological themes that develop from a rough ground in rhetorical Darwinism, mapping out similar dualisms to Rozzi while drawing upon rhetorical terms more explicitly to read a reception history he picks up mainly from where Clarence Glacken left off in *Traces on the Rhodian Shore* (1976) by examining the relationship between a "new ecological model" Darwin handed down in his evolutionary theories to science, and in a new form of "persuasive logic" that Darwin handed to an "expansive rhetoric" in subsequent ecological thought "prior to [ecology's] recent ascent to oracular power in a popular environmental movement" (128).[178] What brings Worster to call Darwin the "the single most important figure in the history of ecology" is that Darwin seems to be the "chief architect" of a history of consistently oppositional ecological ideas, or at least of ideas consistently pulled in two opposing directions: those flirting with an ideal (but often also 'dark') vision of mastery, and those flirting with the darkest themes of Darwinism, "extinction, conflict, depravity, terror – these were far from the qualities of an arcadia" (124). Worster summarizes several large-scale tensions in 19th and 20th century rhetorical Darwinism, mainly in what is often referred to as the themes of "Arcadian Ecology" (a collections of motivations led by a renewed sense of mastery he attributes to a revised Baconian rhetoric that aspired to replace the sense of "equilibrium between man and nature" with a "more aggressively artificial, humanized landscape: a new world in which science would give mankind absolute power over the land and its creatures") and a rhetorical Darwinism he calls "Anti-Arcadian" or "imperial" (a collection of motivations guided by the darker

"lessons of the Galapagos" as lessons of "ecological turbulence" and human nature as driven by a creative force in nature that is 'red in tooth and claw' and frequently compared to a similar "human malevolence and conflict" which Darwin saw as the "inevitable effects of an invasion of people who not only were ignorant of the natural order but found the pursuit of conquest easier than the principle of cooperation") (123-128). Worster's ambitious history is not quite as binary as I describe it here, as he attempts to account for how Darwin converted the early ecological writings of Linnaeus, Ray and others, and how this influenced a wide array of subsequent interests in ecological themes.[179] However, what he captures in this basic tension reflects another consistent form of rhetorical Darwinism that is at least pulled in these divergent 'Arcadian/Anti-Arcadian' directions, which have advanced a great deal of content and ecological themes about human agency and evolution.

In treating Darwinian rhetoric as grounding these trajectories for ecological thought, dialectical readings like Rozzi's (while useful and accurate in some respects) seem to consistently misconstrue any meaningful interpretation of the rhetoric of artificial selection -- and most would agree that many similarly construed readings to narrowly concerned with Social-Dawinism or the anthropocentric or individualism slant from rhetorical Darwinism may even have become a dangerous cliché in the history of science and ecology. Worster's rhetorical reading, on the other hand, while impressive in its reach and its precise analysis, would also seem to benefit from a more thorough rhetorical analysis that might offer ways of moving beyond, or dissuade any ongoing appeal to Darwinian rhetoric from simply repeating this Arcadian tension – appeals that extend this particular 'double life' in ecological thought right up to the present.

Consider briefly a main thread of Timothy Morton's recent work that repeatedly appeals to Darwin as essential to rethinking ecological criticism today, starting with his influential *Ecology Without Nature* (2009), which recreates the case against naturalistic fallacies by arguing that we do without any

writing about "nature" that "ironically impedes a proper relationship with the earth and its life-forms," especially three problematic and commonplace uses of *nature*: (1) as an empty placeholder an array of other concepts, (2) as a 'normal' force or law of nature used to measure other deviations, and (3) as a "Pandora's box" for disparate fantasies (2, 15). In *The Ecological Thought* (2010), which Morton calls his "prequel" to these arguments, he appeals to his readers to understand "ecological thought" as much more than just extending new descriptions of our countless interconnections with nature or a lifeworld, and to instead exemplify "the form of ecological thought" or "how you think" the ecological thought, which he says is "at least as important as *its content*" (4, emphasis his). Principally, "the ecological thought" requires us to think by making connections between the natural and artificial, a claim which he recurrently backs up by claiming we should "just read Darwin" as providing the most persuasive example of a "denatured" nature, since Darwin's writing is so consistently based on comparing the natural and artificial that his view is never strictly "natural," or never sees nature as a closed-system, since his writing interconnects nature with many "unnatural, uncanny sequence of mutations and catastrophic events" (8). While Morton is interested in Darwin as a figure helping us think about ecology 'without nature' by helping us understand an evolving "form of ecological thought," a main trajectory of his own work on this seems increasingly ill-formed, as his invocations of Darwin make especially clear. Darwin is invoked as both a great thinker of the Arcadian/Anti-Arcadian rhetoric well charted by Worster and others, and for thoughts on a 'denatured' nature through his well-known natural/artificial analogies. However, Morton's analysis (especially in his most recent work *Realist Magic*) turns to Darwin's use of *dialetheias* (contradiction or 'double truths') leads him only to claims he warned about earlier as insufficient – a repetition of almost interchangeable claims about humanity as an interconnected 'mesh' of organisms, or worse to the speculative realist zeal that then concludes that we need a democracy of objects, or that follows an odd circular logic back to claims like there "are no species and they have no

origin" since "lifeforms are made of other lifeforms, which in turn are made of other non-living entities" (*Realist Magic,* 29).

While Morton's later work at times seems to fall into the critical trap he identifies in his earlier work in *Ecology Without Nature,* he does however offer the most recent diagnosis of a key part of the problem I will now turn to address in this chapter. He notes in "Ecomimesis: Nature Writing and the Nature of Writing" that 'ecomimesis' is a prevailing rhetorical device at work in a wide range of ecological texts in recent decades (particularly Nature writing) aiming to bring us closer to an authentic experience of nature by erasing the aesthetic or rhetorical conventions that supposedly 'separate' us from our connections with 'nature' (31). He notes that "ecomimesis is an authenticating device" that seems to have largely effaced or greatly reduced what "Rhetoric used to have a whole panoply of terms for" allocating as persuasive appeals in writing or speech making the basic appeals of"*geographia* (the description of earth or land), *topographia* (place), *chorographia* (nation), *chronographia* (time), *hydrographia* (water), *anemographia* (wind), *dendographia* (trees)…" (33). While Morton notes a concern that forms of identification or appeal are too often effaced by 'ecomimesis' in genres of nature writing and numerous other critical works invoking or rethinking nature as a category, in this chapter I make a similar contention about the more specific trend in these ongoing appeals to Darwin's 'synthesis' in ecological thought that either tend to misconstrue, reduce or overshadow how the 'rhetoric of artificial selection' might serve as a historical benchmark for a key *form* of ecological rhetoric taking its first (and perhaps clearest) shape in Darwin and its reception by T.H. Huxley who gave artificial selection some explicit rhetorical principles and context. Indeed, as I will argue, this 'rhetoric of artificial selection' might contribute to some helpful ways of thinking about how ecological thought can move different trajectories than the dialectical reading noted, and without recourse to the Arcadian tensions, or the circular appeal to Darwin that Morton marks out here.

De-Composing Darwin: Rhetoric of Artificial Selection from Division, to Mystery, to "Imperfect Instrument"

This comparative reading will require something of a pendulum swing from our field's recent penchant in reading Darwin rhetorically, and the reasons for this need some initial explanation. The attention to Darwin has gone through a major shift in perspective in recent decades from reading Darwin as a reclusive figure and "rhetorical indigent" relying on "the charity of the persuasively gifted" like T.H. Huxley and Joseph Dalton Hooker, to an array of eulogies on Darwin's rhetorical prowess in his own right (Campbell 55). Rhetoric and Communication scholars like Fahnestock, Miller, Halloran, Lessl and Campbell have shown how Darwin's rhetorical skills were able to change the perception of his 19th century audience from theistic design in nature to scientific or naturalistic perspectives, doing so by analyzing both precise rhetorical features of his rhetoric (such as Fahnestock's analysis of *incrementum* and *gradatio*), and investigating broader elements of a Darwinian ethos powerful enough to promote a new genre of "Historical Science" (as Miller and Halloran argued), a genre that diverges from "experimental-predictive" sciences like physics or chemistry largely because Darwinian rhetoric (as a set of concepts, methods, claims, and as an authoritative ethos) went so far as to make "conformity with the works of Darwin crucial" in a widely held genre of historical science that "offers explanations that are narrative and sufficient rather than predictive and necessary" (112).[180] In rhetoric it had been common enough to accept that Darwin played a major role in creating a genre that can "problematize the very concept of science," that this framed several longstanding objectives for the rhetoric of science to examine this genre of 'historical science,' and urged rhetoricians to move beyond the debate about what Darwin "means" and to examine instead how Darwin's strategies and his ethos have evolved through subsequent intellectual communities (108). The texts and rhetorical problems I work with in this chapter are firmly in this vein of 'rhetorical Darwinism,' and the attempt to remedy what seems to hinder Darwin's potential for recent branches of ecological thought seems to dictate some initial

synthesis between several ways of reading Darwin rhetorically (particularly by Burke, Campbell, and Davies), while noting the particular connections these readings of a rhetoric of artificial selection have with Darwin's rhetorical contributions to ecology. Through these readings we see a clearer exigency for my later reading of Darwin's 'rhetoric of artificial selection' as it extends beyond his own rhetorical strategies to include his 'bulldog,' T.H. Huxley, who initially problematized and strove to systematize Darwin's rhetoric of artificial selection as he lectured and wrote about science, culture, and ethics.

A crucial starting point here is thinking more critically and rhetorically about Darwin's method as promoting a form of 'synthesis' as the highest (or sometimes singular) value in ecological texts invoking or appealing to Darwin. To do so we needn't look much further than Burke's unfavorable diagnosis of Darwin as the exemplar of the terministic screen of *composition* rather than *division*. Burke remarked how Darwin "sees only a difference of degree between man and other animals… as *continuous"* – a perspective which Burke thought made "Darwin overstate his case" and "unduly slighted the evidence for *discontinuity* here" (*Language as Symbolic Action,* 50). In *Language as Symbolic Action* he accused Darwin of saying "astonishingly little about man's special aptitudes as a symbol- user" and that Darwin's "terministic screen so stressed the principle of continuity here that he could view the principle of discontinuity only as a case of human self-flattery," but that we only need evidence of our "characteristic sociopolitical disorders, to make it apparent that man, the typically symbol-using animal, is alas! Something special" (50). Almost two decades earlier in *A Grammar of Motives* Burke cites Darwin's stance on domestication as a crucial instance where "a great biologist's Grammar" is guilty of overshadowing any stress on the study of "motivational functions covered by our term *agent,"* and in being guilty of "reducing all phenomena to terms of motion, biology is as unambiguously scenic as physics" (157). He finds Darwin's descriptive biology and its account of the human "organism" to be grammatically the equivalent to articulating a world without human agency or of describing an earth "agent-minus" (*GM* 157). We should note that Burke singles out domestication and Darwin's notion of

"variability" in particular, noting that this concept emerges with an "idealistic stress" on our 'interconnections' with external conditions because Darwin's notion of variability is too completely and "ultimately" tied to 'conditions' as the "locus of motives" (157). Keep in mind that Darwin does make variability of distinctive species a key mechanism for natural selection principally by discussing and comparing the forces of artificial and natural selection together during his *Beagle* Voyage, his work on barnacles, and most thoroughly thought through in *Origin* in "Variation under Domestication."[181] For Burke, we can safely say that these repeated analogies between artificial and natural selection by Darwin seem to be a missed opportunity for thinking about a crucial 'division' or discontinuity that should emerges as another key concept, one that implicates a particular kind of "strife" taking place in this thinking, or is mixed up in this thinking that requires analogical reasoning as the "mediatory ground that makes communication possible" and that is moreover that crucial moment where we "put identification and division ambiguously together, so that you cannot know for certain just where one ends and the other begins, and you have the characteristic invitation to rhetoric" (*RM* 25).

To say that this is one invitation to rhetoric in Darwin's thought, or the beginning of type of rhetorical Darwinism that deserves our attention is to say that, from Burke's perspective, Darwin's emphasis on *composition* not only overshadows a fundamental *division,* but that this is associated specifically with Darwin's artificial/selection analogy as something like a "semi-conscious identification" or a rhetorical concept, device or strategy that is "not wholly deliberate yet not unconscious" (115). In Burke's reading, what comes from Darwin's use of the artificial selection analogy as a rhetorical device is indeed connected to a more enduring form of persuasion, one that Burke diagnoses as a type of "mystery" around the connections between natural/artificial selection in Darwin's thought (*RM* 115). The concept of 'mystery' refers to what arises constantly in the interplay between different species, or different 'beings' in moments of hierarchical estrangement, such as between humans and animals or royalty and commoners. *Mystery* is also that element of a symbol's persuasiveness that is either

passively reflected by a class or culture, or *actively* deployed in maintaining some form of persuasion, or identification and cultural cohesion. Burke's interpretations of Darwin take several directions, but one case made is that the interplay of analogies and metaphors used by Darwin to describe artificial and natural selection is a particular instance of *mystery*, that this instance holds some permanence in that there is always the possibility of mystification, and that "rival rhetoricians" would need to redraw this key "distinction" at "different places, [as] their persuasiveness varies with the resources each has at hand" (25). What Burke seems to suggest is not only that we distinguish *artificial selection* as having an element of rhetorical 'mystery' for readers, but that there is some exigence for rhetoricians to examine or reengage this actively as an evolving rhetorical 'instrument,' to explore how this functions as a concept, strategy or a more formal device now that it had taken an initial form of rhetorical Darwinism.

Of course, rhetorical scholars have indeed often been drawn on Darwin to discuss how symbolic and rhetorical expression, as 'artificial' practices, might indeed be theorized as a *shared* form of 'natural' adaptation among species, presenting interesting connections between rhetorical and evolutionary theories, or charting persuasive activities as a kind of wavering communication between species, or drawn to think rhetorically about *sexual selection* as based in persuasive biological or biocultural practices that allows us to consider the overlap between evolutionary and persuasive activities (Kennedy, Campbell, Doyle or Parrish for instance).[182] Most rhetoricians, however, will recognize the root of a basic division in Darwin's use of the artificial/natural selection analogy as a basic *strategy* (even if perhaps only a 'semi-conscious' one) that not only marks some similarities between forms of evolutionary change as processes of so-called 'selection,' but demarcates *artificial selection* as something 'incommensurable' in that it cannot be strictly scientifically identified with, or defined in terms that evade rhetoric. Indeed Lessl, for instance, recently treats *artificial selection* as one piece of evidence for a distinctive birth of a form of rhetorical positivism or "ideological science" which he adjoins to Kuhnian categories of 'revolutionary' and 'normal' science (Lessl 209). There are, however,

other ways of thinking about artificial selection's place in Darwin's theory and its rhetorical function with worth drawing our attention to. John Angus Campbell and Paul Sheldon Davies offer two notable readings by rhetorical scholars singling out *artificial selection* as a means to understand other substantial aspects of Darwin's rhetorical strategizing, and they help to flip our attention from *artificial selection* as the means to invent the theory of natural selection, to focus on the re-invention of *artificial selection* itself as distinctive rhetorical concept. Both study this analogy/metaphor/concept as something connecting Darwin's method of inquiry to certain rhetorical strategies, and as something connected to a pattern rhetorical response that Darwin seemed to anticipate might forward a kind of responsible (and perhaps ecological?) agency in his readers, especially in both the "habits of thought common to breeders" and the "inability of professionals to see beyond their own specialty" (Campbell, "Comic Frame," 34).

Campbell's thirty years of work on Darwin has contributed more than anyone on Darwin's rhetoric, and it offers one key framework for reading the rhetoric of artificial selection. He has examined both large and small scale rhetorical strategies (from his 'grammar of natural theology' to the evidence of his textual choices), as well as Darwin's natural and scholarly resources for rhetorical invention and discovery. If we begin with a panoptic look at his work, we see that his scholarship began with his dissertation work and ensuing essay "Charles Darwin and the Crisis of Ecology" which took Darwin as a key figure in developing a an ecological rhetoric largely by interpreting Darwin's attitude toward nature as a "moral and humane response to the competition and violence in nature" one that resists crude translations that have led to the "ruinous exploitation" of nature in social, scientific, and economic pursuits (444). Here Campbell argued that Darwin saw nature "not simply as a technical system in which means were intricately adapted to ends, but he also viewed nature from an aesthetic and implicitly from even a moral perspective" (445). Campbell not only challenged other claims that Darwin secularized nature for man, giving him dominion over nature to appropriate its products to its

own use, he argued that a rhetorical evaluation of Darwin's "attitude towards nature … enables us to respect the historical integrity of these works, yet read them in light of our own [ecological] situation"(444-445). This early work by Campbell claims that *The Origin* "is not an extension or justification of a philosophy of competition, but instead a moral and humane response to the competition and violence in nature" because Darwin's attitude was to "wonder" at nature in a way that draws rhetorical parallels to many natural theologians, and which allowed him to invest nature with a sophisticated sanctity while promoting scientific understanding (444).

While I could hardly begin to do justice to Campbell's whole body of work here, it seems clear that Campbell had a lingering struggle with reading Darwin's value as based solely (if profoundly) these largely moral consequences from this kind of 'synthesis.' Claiming that he paid too much attention to Darwin's minor rhetorical strategies, Campbell's later work returns to consider the ways that rhetoric could be considered integral to Darwin's larger philosophical and historical ideas -- and their influence on scientific theory and practice. In doing so, he turns to Darwin's use of the artificial selection/natural selection analogy as the groundwork for an enduring rhetorical exigence, one that almost surely stems from Burke's critique, as Campbell reclaims this analogy in terms of a 'tragic-comic' deflection of meaning, or as a particular moment of incommensurability between science and rhetoric in their descriptions of human nature, human agency, and evolutionary change. In his essay "The Comic Frame and the Rhetoric of Science" (1994) specifically, Campbell argues that the natural/artificial connection is not just a "benign deception" that serves as a helpful but basically false analogy for making nature or evolution more understandable to laymen, but instead thinks the analogy is a historically significant "tragic/comic deception" with a double purpose of making readers more aware of their status as a "variety" of species of animals (the tragic), and aware of their status as separate "incipient species" of a "more or less permanent variety" (the comic) (38).[183] The prior awareness is 'tragic' (surprisingly perhaps today) mainly due to religious circumstances, and because making this case would spread

Darwin's own deep sense of guilt; while the latter is (equally surprising perhaps) 'comic' mainly because its emphasis is moreover on man's undervalued ability to create certain forms of change that seem unbounded by natural selection, which stems from an awareness of certain human abilities that are hoped to "secure the reader's tacit recognition of its competence and responsibility to bring about unbounded morphological change" (37). In this particular essay, when Campbell reads Darwin's use of this "leading/misleading analogy" as a potentially raising a kind of tragic/comic awareness, he is mainly interested in articulating a less frequently discussed 'comic frame' as something both 'framing' his evolutionary theories rhetorically, and s a set of rhetorical strategies designed to extend one of two main forms of responsibility which would seem to bridge scientific knowledge and rhetoric in ways that are far from 'benign.'

Pointing to Darwin's "responsibility" chapters in particular, Campbell singles out two main forms of responsibility which we might distinguish briefly in terms of how they are attributed to Darwin's rhetoric, and how they would supposedly develop or diffuse through forms of rhetorical Darwinism. The first is already highly esteemed and regularly attributed to Darwin's powerful causal analysis of unobservable past events, which historians and philosophers like Gould and Edward Carr have analyzed as it became more extensive or commonplace as forms of 'historical rationality' that Darwin brought as a "properly historical mode of reason to the aid of biology" and which marks "one of Darwin's most signal contributions as a thinker" (35). Campbell then attributes another less-discussed form of responsibility mainly to *artificial selection* as an analogy, metaphor and concept, which he thinks raises a specific set of exigencies for rhetoric because he sees Darwin not only leveraging the analogy as a form of rhetorical discovery or a means to help explain natural selection, but sees Darwin's commentaries on artificial selection as an attempts to help his readers move beyond "numerous tacit commitments linking domestication and nature, directionless struggle, variation and selection" to become more conscious of their productive abilities as this "incipient species" to create forms of change that are not

completely bounded by *natural* selection. Campbell mainly singles out varied topics where *artificial selection* can be treated as an analogy, oxymoron, metaphor or concept, and argues that Darwin treats domestication, breeding, and horticultural practices as diverse topics in need of a "specific rhetorical task common to them all" (41). This common 'rhetorical task' is, however, only ever supported where Darwin leverages two fairly rudimentary strategies designed to increase 'awareness' of certain distinctive human abilities (37). The two rhetorical strategies Campbell singles out are also notably 'thin,' especially as they are diagnosed as the potential beginnings of a kind of "Darwinian reason" with a 'logic' and 'rhetoric' that might engender another comparable form or responsibility to this 'historical rationality.' Campbell singles out Darwin's use of 'abductive inferences' and the rhetorical use of 'persuasive images' (mainly industrial images and persistent references to a 'manufactory' of species through artificial selection) as the strategies that seem most directly tied to artificial selection and to an attendant form of responsibility, though his analysis is pretty limited and scope and in any apparent application for two reasons. The he acknowledges as he is only able to tease out examples of abductive inferences, strategies which are notably 'weak' forms of reason. The second reason may be due to how he (like Worster) contextualizes these rhetorical strategies by looking backward to a Baconian tradition to explain these strategies (31-41). [184] Campbell's conclusion is, nonetheless, revealing as he urges us rhetoricians to look further into Darwin's method as offering both *causes* of origins as well as *clues* about how knowledge advances rhetorically through a kind of "synthetic and speculative character" while specifically asking asks readers to pick up on Darwin's "inferential openness" about artificial selection as a rhetorical tool or instrument (35). He stipulates that this is designed not only for facilitating understandings or designed to help "tip the balance of probability" about the existence of *natural* selection, but also as a rhetorical strategy to persuade readers to take on what is at issue in a "divergence in character" that distinguishes one species based on their tragic/comic existence, where the comic is bound to a sense of a 'limitless' potential and an attendant responsibility that would deeply

conflict with what animal breeders and plant breeders had always known about artificial selection as having distinct *limits* in terms of what they could accomplish in altering a species (35-7). While these 'clues' may seem to be little more than another return to 'mystery,' and these fragments of strategy in Darwin's thought are notably 'thin' in Darwin's own writing, they would still seem also to present an opportunity for reading these particular rhetorical *strategies* as the groundwork for more distinctive line of work and form of ecological rhetoric, especially if we read these 'strategies' in terms of what Paul Sheldon Davies calls a kind of 'conceptual progressivism.'

In *Subjects of the World: Darwin's Rhetoric and the Study of Agency in Nature* (2009), Davies positions much of his study on the back of a claim that would, at first glance, seem wholly contrasted to Burke's critique, stating: "the method of inquiry best suited for discovering the nature of human agency" and "the best methods for discovering the truth about ourselves are methods framed, at least in part by Darwin's rhetorical insights" (19-21). Davies' work, however, is guided by several central questions about how to *apply* and *extend* Darwin's rhetorical insights into human nature or into humanity's place in nature -- especially by thinking about the role we grant rhetorical *strategies* in our readings of the key concepts that support Darwin's theories.[185] Like many studies in rhetoric in recent decades, Davies thinks Darwin's skills as a rhetorician do not diminish his accomplishments as a scientist, but that his rhetorical insights are deeply intertwined with his scientific inquiry.[186] Davies' attention is not merely directed to how Darwin used forms of rhetorical invention to generate his theories, or to how he crafted a theory *and* public argument by "lavishing upon the implicit, affective reactions" that keep animals alive and "entrench habits of thought" in humans, which Darwin recognized "his theory was bound to provoke" (5). Davies focuses instead on how we might read certain Darwinian concepts as initial openings, or 'origins,' of a form of rhetorical inquiry that have much to teach humanistic thought itself by focusing on the relationships between scientific concepts and certain forms of rhetorical agency. This emphasis requires placing a heightened value on certain rhetorical strategies that humanists have too

often subverted through readings he calls 'conceptually conservative' or 'conceptually imperialist.' It is here, also, that he notes *artificial selection* as a special victim of such readings – those that aim to locate and venerate concepts concerning human agency within our most well-developed scientific theories. 'Conceptual conservatism' is genealogical work identifying and venerating a concept of particular importance for humans (such as responsibility, freedom, or consciousness) without considering how this might be 'dubious by descent' (meaning the concept has since become seriously disconnected from science) or 'dubious by psychology' (meaning the concept leads thinkers astray as they become disconnected from our predisposed psychological abilities to use concepts, or they are simply over-extended or under extended). "Conceptual imperialism" is a related problem tied to a defensiveness against the possibility that many concepts describing human agency (or the methods of inquiry that locate and valorize them) might need drastic alteration or elimination, but persist in work to "describe what the world must be like for it to fit under such concepts" (26). His remedy, to put it simply, is to take on a method of "conceptual progressivism" grounded in genealogical projects that are aware of 'dubious' or 'imperialist' concepts, and to instead track what concepts in tighter relationship with the rhetorical strategies that enabled them to have significant rhetorical effects – with the aim of testing whether or not these concepts might yet effectively promote a distinctive rhetorical agency at present or the near future. While he never applies this method fully to *artificial selection*, it is a central example early in his work, one which emphasizes some need to clear the ground of those 'naturalist' readings that seem to perpetually appeal to Darwin's insights as insisting we are part of the animal kingdom, which while true, has lead to inquiries that either seek "grand truths about human nature" or attempt to re-articulate something about the "conflicted" nature of humans as a species by either raising "irresolvable antimonies" or attempting to integrate our most incredible capacities to reason, reflect, or transcend ourselves to our status as "children of nature" (21). For Davies such pursuits have tracked the wrong problems or repeatedly returned to conservatism or imperialism instead of working on the idea

of that Darwin's concepts are inexorably tied to rhetorical strategies which provide a greater way of bridging scientific thought describing/representing nature and humanistic thoughts on agency (that are lost or at least hard to express in scientific description) – especially if we emphasize histories that engender forms of rhetorical agency *from* these initial strategies. This exigence brings Davies again to example of *artificial selection* as a concept within Darwin's theory that must be understood as a set of rhetorical strategies which enable understandings of a "fuller range of capacities" of subjects agency "outside the natural" (21). In doing so, he lays down the beginning of a 'conceptually progressive' for the rhetoric of artificial selection that I take up in the next section. The challenge, for Davies, is to take up the 'cultivation' of artificial selection as a conceptual category *and* set of strategies that evolve in public arguments or scholarship that either perpetuates or addresses bad habits of thought. As I see it, this challenge begins with some of the particular rhetorical strategies Campbell and Burke identify, but it takes us rather directly to a comparative analysis between Darwin and Huxley and on the topic of rhetoric, artificial selection *and* our habits of ecological thought.

Darwin's Technê Question

> *On p. 8 of Darwin's copy of J. Sebright's "Art of Improving the Breeds of Domestic Animals," Darwin noted (in pen), "does not take into account loss of desire." He made similar observations on pp. 10 and 14...*
>
> -- John F. Cornell, "Analogy and Technology in Darwin's Vision of Nature," pg 316

To discuss *artificial selection* in a conceptually progressive way asks us to look briefly at a pattern of inquiry into the concept by Darwin, and to consider how this inquiry correlates with certain rhetorical strategies and persuasive effects that (as previewed earlier) Darwin thought might impact "habits of thought common to breeders" and the "inability of professionals to see beyond their own specialty" (Campbell, "Comic Frame" 34). We can follow John Cornell's perspective initially, who worked

on the premise that the artificial/natural selection analogy is "one of the most significant analogies in the history of science," and while he also treats the analogy as a type of rhetorical invention, he foregrounds instead how Darwin's notebooks are replete with question about whether artificial selection is a kind of *technê,* questions which he suggests served as another kind of "powerful research tool" that focuses Darwin on the invention of 'artificial selection' as a concept itself, rather than merely as a tool of discovery for natural selection.

To make this argument Cornell notes how Darwin distinguishes his conception of artificial selection from Linnaeus, Buffon, Lyell or Lamark, as "naturalists [who] showed little awareness of the role of *art in* the transformation of domestic organisms" (306). Cornell emphasizes that "not even Buffon's allusion to human tyranny is meant to place animals in the category of artistic products," while Darwin repeatedly questions whether or not human were making new species or varieties, and how these questions were clearly joined at the hip with his more philosophical questions about a potential need for a "reinterpretation of the meaning of art and nature," a renewed "vision of man and all other being in a limitless historical flux," and about "the power of artificial selection … [being] as difficult to delimit as man's changing relations to different organisms is difficult to ascertain" (306 -308). While modern European intellectuals and scientists were well acquainted with thinking about the relations between art and nature, as well as the idea of looking at nature or organisms as machines, Cornell demonstrates that Darwin's central analogy differs from a long-line of 'machinic metaphors' for nature (which of course it is to some extent), but is something he explored analogically and conceptually as a kind of *technê* -- whereby Darwin makes certain uses of a classical *technê* analogy or the classical propensity to ask: is X a *technê,* or does X work like a *technê?* Reviving a classical Greek *technê* question is of course to consider how something comes to be defined through practices of *craftsmanship*, *craft*, or any *art* that relied on learning a skill, technique, method, or aptitude involved in producing an object or accomplishing a goal, and by definition *technê* often seamlessly (and therefore sometimes

scandalously) links making and doing, or method and action. Its compass in classical Greece inquiry pointed to an array of activities and professions that stirred diverse figures to test and challenge *technê's* potential reach in describing politics, economics, farming, medicine, rhetoric, navigation, warfare, etc. To briefly size up Cornell's argument, he starts and finishes by diagnosing a '*technê* analogy' in Darwin's notebooks, which he says offers clear evidence of questioning that generally follows classical interests in questioning whether a particular craft and some form of cultural action is a *technê* – questions leading Darwin through inquiry into how *technê* diverges from *theoria* (as something like 'pure knowledge') by being related with productive practices (that are teachable, more easily transferrable and connected to certain use values) and inquiring into how these forms of 'productive knowledge' might cause a problematic uncoupling from moral responsibility, virtue, and contemplations of truth.[187] Darwin's *technê* questions resurface classical attempts to think about that branch of knowledge situated between Plato's and Aristotle's conceptions of *theoria* and *emperia* (experience), knowledge that operates in fixed ways *and* in distinctly more rhetorical ways because *technê* was not to be conceptualized "merely as routine experience," but as guided practices of a crafts or vocations built from an 'artifice' with some known rules or seemingly fixed knowledge, as well cultural forms of strategic thinking or 'cunning' that are often harder to schematize (Jaeger, 130). More specifically then, the ways Darwin thinks about distinguishing artificial selection from comparable definitions by naturalists and philosophers is by re-posing classical "*technê* questions" that have a history of expanding, delimiting, and finding paradoxes in "technological thinking" – a kind of thinking that leads Darwin to several conclusions.

First, this inquiry would lead Darwin to believe the "connection between artificial and natural selection [was] a genuine advantage" because it enabled many of his "bold" discussions of "the boundless possibilities of rigorous selection" and because it challenged Darwin to extend his ideas about moral responsibilities towards nature to deal with the way breeders increasing seem to talk of agency as

'unlimited' by natural or by moral laws (303-308). Much of Cornell's key evidence comes from Darwin's defenses of the analogy in his correspondence with A. R. Wallace, who thought the natural/artificial analogies threatened the reliability of his theory (303). Cornell notes how Darwin sought to "maintain the analogy even at some cost" as he consistently invoked artificial selection practices, particularly breeding, as the main example of something that is both an art and technology, and that comes to bear on his theory in ways that science could not easily translate (303-4). Darwin was prone to argue: "It is easy to forget that breeding is a form of technology; it seems to be simply an art, and a traditional one, unrelated to machines and modern industry. But breeding became increasingly rationalized in the England of the agricultural and industrial revolutions [by breeders claiming they were able to] 'summon into life whatever form and mold' they pleased" (304). Cornell argues that Darwin's thoughts on artificial selection and breeding consistently return to a concern with a "latent technological slant" of breeders, and leads him to believe that a definition of artificial selection must expand to take into account both this technological thinking and "the effects of human desire and design when they viewed the creatures living with man," an effect he traces in interesting ways to the potential "loss of desire" in domesticated animals themselves (as noted in the above epigraph). Darwin's insistence in his notebooks that most other botanists and naturalists "did not see effects of human desire and design when they viewed the creatures living with man" is, as Cornell points out, a key to Darwin's "conceptual creativity" mainly because this marks a feature of "the power of artificial selection … [which is] as difficult to delimit as man's changing relations to different organisms is difficult to ascertain" (306, 308). The exigence for a new definition of artificial selection vis-à-vis other recent ideas on domestication should thus be taken up as a concern for 'delimiting' artificial selection by some means, which leads Cornell to cite a good many of Darwin's comments while "under the influence of the breeding literature," from Darwin paying attention to how breeders "wish to alter" whatever "could be effected,"

to any moment where Darwin seems to make his own "intellectual leap from the notion of anthropomorphic engineering deity to the possibility of … man's mastery of natural things" (317).

What's most interesting in Cornell's reading is the focus on Darwin's thinking as a process of inquiry which takes Darwin on a deeper rhetorical "assessment of man's place in nature [hinging on] a paradox in technological thinking" – one that seems conditioned to aim for a practical forms of mastery but is always delimited by biological *and* rhetorical conditions (305-317). While Cornell sometimes merely calls this a "transition to a technological perspective" in Darwin's own thought, his larger conclusions are that we read this as a process of rhetorical inquiry, such as when he says: "The question [for Darwin]: 'Has nature any process analogous?' must be taken not as analogical but as *rhetorical"* (322, emphasis his). He goes on to say: "from the moment Darwin hits upon the analogy of the breeder and nature, his conception of evolution is advanced by rhetoric and imagination. He pursues less an analogical argument than a conceptual realignment of the relation of breeding and nature" (327). Cornell in fact concludes that 'artificial selection' is essentially "the first enunciation of his rhetorical strategy using analogical reasoning" directed at the breeder who "necessarily takes a particular, technological view" because their understanding nature requires some "technical mastery over it" through forms of "selective action" (324-5).

Like Cornell, I think looking at how Darwin explores his conception of *artificial selection* as a *technê* allows us to consider some important rhetorical questions, some of which revive a number of well-trodden '*technê* questions' that raise epistemological and ethical questions about how *technê* implies, carries forward, or hinders forces of rhetoric, how these are tied to the development of virtue or character (i.e. Gadamer, Roochnik, Angier), the command of memory (i.e. Derrida, Stiegler), or the formation of a polis (i.e. Arendt, Yunis). In particular, however, I would suggest that Cornell helps open the door to pursue this particular reading of Darwin's process of inquiry as it leads to more particular set

of rhetorical strategies, and to certain 'fragments of strategy' that T.H. Huxley critiqued, theorized and developed as Darwin's rhetorical uses of 'artificial selection.' Putting Darwin and Huxley in conversation around a distinctive *technê* question can allow us to compare how they each articulate *artificial selection* as a type of productive knowledge they mark out in evolutionary and rhetorical terms. An emphasis on *technê* can also delineate several distinctive ways Darwin deploys rhetorical strategies that Huxley more clearly picks up potentially productive processes bridging human and natural systems. While Darwin's sometimes use of these strategies is sometimes fragmentary or an 'unconscious identification' with rhetoric, Huxley on one hand critiqued artificial selection analogy as potentially unscientific, and on the other hand treats this analogy as the crux of new questions about evolution and ethics, and the underlying importance of a kind of rhetorical intelligence we might associate with an evolving ideas about *technê,* and more broadly, ecology.

Darwin and Huxley: A Rhetoric of Artificial Selection

"The garden was apt to turn into a hothouse."

T.H. Huxley's "Evolution and Ethics," pg 55

Strictly observed, the 'golden rule' involves the negation of law by the refusal to put it in motion against law-breakers; and, as regards the external relations of a polity, it is the refusal to continue the struggle for existence. It can be obeyed, even partially, only under the protection of a society which repudiates it. Without such shelter, the followers of the 'golden rule' may indulge in hopes of heaven, but they must reckon with the certainty the other people will be the masters of the earth.

T.H. Huxley's "Evolution and Ethics," pg 32

Emphasizing artificial selection, as we have discussed, covers a number of conventional lines of thought on how this analogy 'rewrites' certain links and oppositions between the 'artificial' and the 'natural.' Foregrounding this as an important *technê* question for both Darwin and Huxley establishes quite another way of thinking about this rhetorical intervention – one that is integral to Huxley's ethical

theory and altogether more strategic in relation to a technological, economic and political context for both thinkers. The relatively brief comparative rhetorical analysis here demonstrates some of this by fleshing out several main aspects of an understudied debate between Darwin and Huxley over artificial selection, including commentaries by both figures on the repercussions of how artificial selection is guided rhetorically by certain ideals, and an appeal by Huxley to consider how this demands thinking of artificial selection as another kind of "imperfect instrument" that might serve as a "constant counteraction of the hostile influences of the state of nature," and one that, like *technê*, connects certain social and technological systems to a set of transferrable or transactional rhetorical principles that might steer forms of productive knowledge associated with practices of artificial selection (35, 55). [188] These principles take shape in Huxley's response to Darwin's rhetorical amplification of the concept of artificial selection (rather than his more consistent concern about delimiting its role in his theory), a response that leads Huxley to contest several contemporary ideals for artificial selection with a theory emphasizing his ethics of 'transactions' or 'debts' and 'redundancies' between two 'artificial' realms: a social-rhetorical realm and a more rigorously scientific realm of artificial selection (agriculture, fisheries, etc.). It is the latter realm that Huxley conceives of as a 'centre of force' in society, creating a dynamic that replicates something like the 'cosmic process' in nature.

Huxley's vision of ethics is, of course, largely a response to certain contextual matters we should briefly be reminded of, particularly his response to ethical tenets and economic theories of this initial and politically diverse wave of social Darwinism, a response which allows us to pay attention to his key emphasis on this particular rhetorical shift that turns on artificial selection as an "imperfect instrument" for advancing an ethical and political system with the science he forcefully defended (Huxley *EE,* 35).[189] It should be remembered that Huxley's reviews of *The Origin of Species,* his public lectures, and his writings, provide not only the best known defenses of natural selection as "the best explanation available of evolution" but a relatively consistent treatment of its "analog, artificial selection or

breeding" as "imperfect" in at least two key ways (Blinderman citing Huxley in "The Westminister Review").[190] The first concern is one he largely shared with Darwin about the role artificial selection played in shaping the questions, discoveries, or types of evidence that both Huxley and Darwin troubled over as they leveraged breeding literature, sharing concerns about how this either challenges, weakens or fragments the new-found boundaries of evolutionary biology.[191] On the other hand, Huxley diagnosed a second 'imperfection' tied to artificial selection's rhetorical function, mainly in terms of how Darwin turns its potential function (as either a tool of invention, or for its rhetorical/political effects) towards 'old ideals,' a concern which also led Huxley to speculate about how social realms being thought of in terms of 'artificial selection' might be reconceived as rhetorical instrument that functions as what he calls a "centre of force" in society – a term he reclaims from those taking strictly materialist views of 'atomic force' , or sophistic views of 'man measure' relativism on the other (131). Indeed, as the analogies to artificial selection seem unavoidable, Huxley turns the rhetoric of artificial selection towards a kind of dialectic between a central region of inquiry for biology (noting the rise of the laboratory in particular) where he thought something like pure scientific knowledge could be known, and (in reflecting his need for an 'ethics of the macrocosm') into a rhetorical realm that might come to bear on politics and ethics in ways that would ground his ethical system without recourse to certain ideologies, shallow or "cosmetic" rhetorics, or to a strict materialism in science (*EE* 125).[192]

Ironically, as also discussed in *The Westminster Review*, Huxley's rhetorical assessments of artificial selection came in a type of research that "to Darwin's dismay" directed Huxley both to "his old line" that artificial selection is limited by the impossibility of cross-breeding certain hybrid animals and by forms of sterility, and led Huxley to pursue what Darwin thought was a far too "demanding a type of evidence... in research indicating that speciation would *not* occur through the agency of artificial selection" (Lyons 163). This research around artificial selection led to two main points of disagreement between the two, one hinging on Huxley's continual insistence that Darwin over-emphasized

gradualism, which contrasts to Huxley's belief in some probability of drastic sudden change or 'saltation' as a likely driver of evolution, and to a related point of disagreement over Huxley's insistence that "speech alone" offers a strong possibility that humans evolved more dramatically and rapidly as "reasonable beings," who are plausibly capable of unlimited intellectual progress (Blinderman). While Darwin seemed to think Huxley was wasting his time pursuing these, this may have led to a number of Huxley's better conclusions about why the emerging rhetoric of artificial selection was particularly problematic, and yet a something of an unavoidable rhetorical bridge between Victorian science, society and any ethical theories that might keep up or advance beyond the current rhetorical, ethical, and scientific climate. What's interesting today, moreover, is taking a more contemporary outlook on these conversations and extended debates, a perspective less interested in demarcating new boundaries between science and society, or science and rhetoric, than entertaining instead how these debates led to more definitive rhetorical theories, strategies and questions about how the "rhetoric of artificial selection" might function as what Huxley called an "imperfect instrument" as a social technology.

As we foreground this perspective, it should also be remembered that Huxley's lectures, such as his famous Romanes lecture "Evolution and Ethics" (1893) are commonly understood as offering a "humanistic statement" against the use of science, especially Darwin's, "to justify a specific social ethic or policy" (Himelfarb 322). Others, like Michael Helfand , have argued that his lectures and the political essays leading up to them mark their own combination of "scientific theory, class consciousness and rhetorical dexterity" designed to remedy the rhetorical problems Huxley saw in vulgar constructs of social Darwinism in the "excessive" responses by Spencer, Wallace, Henry George, and numerous other British politicians, scientists and social scientists who were defending a middle class with capitalist or socialist ideals during the economic depression in the latter quarter of the 19th century (160). Most know Huxley calibrated many of his ideas about science, ethics and rhetoric in direct opposition to his friend Spencer's analogies between evolution, economic theory and a brand of ethical relativism, as well

as to George and Wallace's policies on land socialism, especially in the latter's work with Mill in the Land Nationalization Society during the 1880s.[193] It is helpful initially to remember that despite their similarities, Huxley's thought differs from Wallace's political and philosophical ideas, particularly those in the essay "Human Selection" which emphasizes socialism as a socio-political framework that helped ensure that "higher intelligence" or those with improving mental ability are selected (176). Such claims caused a notable "shift in [Huxley's] philosophical rhetoric" later in life, which led him to thematize artificial selection as it became either a problematic ideal in readings of Darwin (especially as it repeats either religious ideals or turns towards novel ideals of 'social stability') or as what it might be thought of as an "imperfect instrument" of rhetoric for other socio-political purposes (*EE* 35). Indeed, it is Huxley's "rhetorical dexterity" when taking up Darwin's rhetoric of artificial selection where we see him articulate an analogical model for another kind of collective social arrangement with an ethics and rhetoric potentially ahead of its time, especially as Huxley focuses in on issues that have always been at the heart of social systems (breeding, farming, and horticultural practices) treating them as a social realm requiring a 'common' set of strategies for the enculturation of forms of responsible/ethical decision making, but only if this common is treated as "a 'vital' capital and energy that sustains life" (Helfand 160, 172). As we can see in a somewhat closer reading, Huxley turns the rhetoric of artificial selection towards another kind of political-economic parable, one working against what he sees as both capitalist and socialist ideals, and instead working to make the realm of artificial selection a space where, on one hand, science can pursue a new ideal for comprehensive knowledge and control (or a more suitable realm of "drastic thoroughness" in scientific pursuit than those pitched by contemporaries), and on the other hand a rhetorical and social theory based in a notion of *debt* as potential a "centre of force" for a culture that seems to necessitate a certain kind of redundancy in the artificial selection of species, but a redundancy that might be calibrated socially, ethically, and (mainly

by several implications Huxley could hardly anticipate) towards levels of biodiversity suitable to sustain human life (which is arguably ecologically responsible today) (*EE,* 22, 131).

The way artificial selection becomes the predicate for these arguments is relatively uncomplicated, as both Darwin and Huxley discuss artificial selection as something being guided rhetorically by ideals constructed by the species making supposedly intelligent interventions in processes of natural selection. As Burke put it, Darwin obviously lay 'idealistic stress' on environmental conditions as the locus of human motives, but Darwin consistently makes room for a role of several more distinctly idealistic motives that play upon the purposes for artificial selection, most often by aligning it with the images from industrial and technological revolutions of his day. Campbell singles out the imagery associated industrialism as a one basic persuasive strategy, such as Darwin's request to allow him "to use the expression *the manufactury of species*," which Campbell claims is an attempt to show that this "manufactured" process must be "intelligible to the common sense of technological reason" and is appeal to connect with those breeders who would be self-assured that they are "beyond the average" in their ability to influence evolution (Campbell 38, citing Origin pg 56). Artificial selection is also symbolized by a more conspicuous image in Darwin's "Sketch of 1842" essay, where he calls the breeder "a being infinitely more sagacious than man" (see "Sketch" pg 45) and in a later version of the essay compares the breeder to an imaginary Overseer of nature who sidestep temporal or geographic limits and "select chance variations for the benefit of all organisms" (Cornell 326). Huxley seems to treat the extension of transcendent or God-like ideals as a particular problem and opportunity to elucidate what seemed to be the rhetorical stakes in the recourse to such ideals. It's especially interesting that, as Huxley would largely agree with Darwin in thinking that artificial selection is a boundary zone between science and art, and that any notion of 'art' had now become a too narrow concept to explicate artificial selection as an analogous process to natural selection, he seems to treat Darwin's 'breeder/overseer' image as serious attempt to amplify rather than simply delimit artificial

selection as category. [194] In doing so he deeply challenges how this strategy plays out as it comes into contact with other culturally dominant ideals, while taking up the opportunity to refine the rhetoric of artificial selection as an "imperfect instrument" that might create a "constant counteraction of the hostile influences of the state of nature" that functions much more like *technê* involving both scientific/technological systems and a set of related rhetorical principles (55).

Consider first how Huxley works at re-contextualizing the latter example of Darwin's 'ideal breeder' by turning this into a potentially useful commonplace or *topoi* for argumentation as he initially contrasts this ideal to two dominant socio-cultural ideals: one stemming from religious metaphors of 'man the gardener,' and one from colonialist metaphors of 'man the administrator' of extensive spans of wilderness and agriculture. In these moments Huxley is not interested in disentangling Darwin's rhetoric of artificial selection from a scientific theory; he makes unequivocal arguments in lectures, including the enduring "Evolution and Ethics" and "Science and Morals" lectures, urging his audience to first explore how Darwin marks artificial selection as a process guided in part as "selection directed towards an Ideal," and then challenging them to see artificial selection as a concept that falls partly outside what contemporary ideals are capable of doing as they shape human/nature relationships, raising not only his well-known agnostic arguments, but several familiar *technê* questions challenging how value based theories hold up to what artificial selection would mean as a distinctly rhetorical concept imbricated in an evolutionary context ("Prologomena to Evolution and Ethics" 19). Many interested in Huxley's rhetoric have commented on how he often addresses the *topoi* of the ideal vs. the actual, especially in his agnostic arguments, but never in the context of how his later lectures and essays apply this to artificial selection as, in general, guided by some version of the ideals of a gardener or administrator (or by analogies to them), by our imagining of "some administrative authority as far superior in power and intelligence" who would "proceed in the same fashion as that which the gardener dealt with his garden" by restricting the multiplications in the "cosmic process" of competition between myriad species, based

on standards of the useful or beautiful (17).[195] In "Evolution and Ethics" he suggests that the more contemporary "process of colonization presents many analogies to the formation of a garden which are highly instructive" in order to show how varieties of 'gardener ideal' and 'administrator ideal' (of which he notes both capitalist and socialist iterations) imagine similar versions of mastery that cast narrow "limits within which this mastery of man over nature can be maintained" (14). Although this may bring to mind a more recent postcolonial or environmentalist reaction to limiting a frontier mentality or vulgar forms of capitalist expansion, the 'limits' Huxley points to are the those on the "intelligence" in theorizing a "state of art" for intervening in nature, and those to ethical theories based for the most part on such recurring ideals (33). He addresses these limits symbolically initially by foregrounding the metaphor of the "hothouse" vis-à-vis the "garden ideal," as the latter reflects too simply the desire to "restrict" or replace nature's "cosmic process, the course struggle for existence" with any ideal "state of art" (55). Indeed, in the first sections of this essay Huxley consistently berates those following ideals of the administrator and gardener because he believes religious and colonial ideals have failed to admit that "garden was apt to turn into a hothouse," a competing metaphor he thinks offers the right "mixture of two worlds" the artificial and natural, the transitory and permanent, and an admixture of ideals of mastery "latent in man" in conjunction with the inevitable return of more 'imperfect instruments' of rhetoric (55, 108). This competing metaphor of a 'hothouse' enables Huxley to set his aim plainly on nuancing the ideals of mastery "latent in man" while also maintaining, on one hand, that he can "see no limit to the extent to which intelligence and will, guided by sound principles of investigation, and organized in common effort, may modify the conditions of existence, for a period longer than now covered by history. And much may be done to change the nature of man himself" (85). On the other hand, Huxley uses the metaphor to forward a basic claim that ideals for either a "garden" or "the most orderly polity" are tainted by a 'positivist' quality naïve to the ways they would necessarily lead to a rekindling of the cosmic process by selection that leads to further "stimulation of the senses, the

pampering of the emotions, endlessly multiplied the sources of pleasure… and capacity for suffering" (55). In other words, the 'hothouse' metaphor allows him to balance a "mixture of two worlds," an ideal for 'unlimited' pursuit of intelligence and sound investigation through science, with more distinctly rhetorical considerations leading into the beginnings of the ethical formula he casts in response to these enduring ideals.

What's most interesting today perhaps is how this hothouse metaphor enables him to discuss this "mixture of two worlds" with some of his greatest rhetorical dexterity by tying the metaphor to an ethics of "the macrocosm" that hinges on several rhetorical principles (83). Huxley's knowledge of ethics and the changing ideals in Western and Eastern philosophy is evident throughout his body of work, but captured succinctly in these particular arguments against ideals, which he extends to reproach those with strict materialist ideals in sciences, as well as those "modern idealists" who veer too far into 'immaterial' philosophies and new forms of "subjective idealism" (70). In doing so he both meets and breaks some our expectations to form a typical sort of middle ground argument, particularly as he explores some of his ideas about rekindling Gautama or Heraclitus as the only figures focusing on ethical problems of "the macrocosm" before the "forsaking" of this ethics by the Greek concentration on ethical problems "of the microcosm" (70). This emphasis on the macrocosm reinforces some of Huxley's basic (if now somewhat warn-out conclusions) that ethics must be based fundamentally in humanity's struggle to distinguish a 'state of art' in politics, education, and professionalized science from the struggle for existence, states of 'art' that would be fundamentally separated from nature, but in "conflictual harmony" with nature's cosmic process – a dynamic casting a set of tensions that he thinks would make humans more capable of improving the whole of nature for human ends. As Huxley says: "That which lies before the human race is a constant struggle to maintain and improve, in opposition to the State of Nature, the State of Art of an organized polity; in which, and by which, man may develop a worthy civilization, capable of maintaining and constantly improving itself (EE 45)." Emphasizing this

seemingly anthropocentric foundation for an ethics based in conflicts with nature stems largely from his distrust of "those endowed with the largest share of energy, of industry, or intellectual capacity, of tenacity of purpose… of wealth and influence," those who Huxley thinks have also overshadowed any genuine "ethical process" with transcendent ideals, vulgar parallels between humans and the animal kingdom, or poorly formed beliefs about social progress as "direct selection, after the fashion of the horticulturalist and the breeder" (36). He is indeed adamant in "making obvious to everyone" that the most influential social actors affecting an ethical course of humanity "bear no real resemblance to that which adapts living beings to current conditions in the state of nature; nor any to the artificial selection of the horticulturalist" (36-42). His ethics, however, is based in more than critique and general distrust of the ability of contemporary leaders to frame adequate metaphors that advance social engineering, and indeed it is either that is his ethics is simply unable to abandon these analogies to artificial selection or perhaps that he consciously appropriates them.

While he clearly wants no "pigeon-fancier's polity," he reiterates his interest in the breeder and horticulturalist as the broadest social category where there is another kind of "constant counteraction" of an "antithetic" and "antagonistic" relationship with nature – one that he extrapolates is "manifest everywhere between the artificial and the natural" and one that interests him in terms of the particular "artificial personality" (as he quotes Adam Smith) of the breeder or farmer which this creates, and which seems to present "the bonds of a singular character" within socio-political systems (13-24). Indeed, if we track Huxley's 'rhetorical dexterity' along one of its main paths, he first reweaves problematic analogies to nature or to ideals of 'selection' in order to shed light on certain limitations of antiquated ideals, he then flips the main function of the analogy so that it seems to not only be an important 'parallel' between social and natural evolution, but something that should do persuasive work that makes 'obvious' that distinction between human artifice and nature's cosmic process requires a novel ethical framework. His conclusions to "Evolution and Ethics" urge his audience to "return, once more,

to the parallel of horticulture" but to think beyond a restricted metaphor to "the gardening of men" or of "selection," and to think instead both as a moral philosopher and scientist -- as a moral philosopher about how these metaphors expand "the creation of conditions more favorable than those of the state of nature; to the end of facilitating the free expansion of the innate faculties of the citizen," and as a scientist thinking about how "the method of observation, experiment and ratiocination… practice in other kinds of scientific work" that might influence these metaphors (43). Indeed, Huxley's pursuit of an 'ethics of the macrocosm' appropriates the rhetoric of artificial selection mainly as he repeatedly insists that breeding, like all productive arts, is a process "constantly trying to break down and destroy" nature's cosmic process, and noting that breeders or horticulturalists are perhaps some of the clearest examples of human work in "constant counteractions" with a "cosmic process," to the point where "man retains his identity through the whole substance of his body constantly shifting to the river constantly changing" (89). Beyond Huxley's attempts to use the artificial selection analogy to rekindle a notably obscure ethics of Heraclitus or Gautama, he offers several more concrete principles that stem from this rhetoric of artificial selection – particularly as they are connected with principles of debt and redundancy. His recourse to these two related principles is evident in his speculation about how an "imperfect instrument" might "suffice to subdue masterfulness" without recourse to "purely ethical ends," speculation which takes Huxley to consider how a more "drastically" rigorous scientific approach to artificial selection might also function as social or rhetorical *technê* suitable for intensifying or delimiting the 'cosmic processes' in social orders.[196]

To put it more plainly, Huxley's conceptions of 'debt' and 'redundancy' are interesting ways of thinking about how he creates ethical principles that bridge the social-rhetorical aspect of his ethics with his evolving ideal for a more thoroughly scientific pursuit of knowledge – principles which remain largely tied his appropriation of the rhetoric of artificial selection. His notion of 'debt' surfaces mainly as he forwards some merits of Darwin's analogical reasoning, responding to them as something like tacit or

underutilized rhetorical strategies. Of course, he singles out Darwin's comparisons between humans and animals as effectively drawing out scientific propositions without ever using such comparisons about competitive, co-operative or even 'capricious' animal or human 'tendencies' to draw reductive or overdetermined conclusions about human society (*EE* 27).[197] Huxley, however, also suggests that a persuasive function of such analogies is not only that they should improve understandings of human nature or human society as *analogous* to forms of animal conduct, cunning, cognition, or social organization, but that these analogies should make "obvious" that the whole "artificial world within the cosmos" is easily distinguishable by "the quality of [human] intellects" and/or "the intensity of [human] passions," especially "the insatiable hunger for enjoyment – of all mankind" (27). We know that Huxley consistently emphasized that the production of culture "was what distinguished man from the lower animals," but as he notes in the "Prolemogena," the analogies making nature/culture relationships obvious should lead others (as they do Huxley) through a kind of rhetorical inquiry into the limits of their current moral or political ideals seeking to bring cosmic processes of competition, co-operation, or capricious behaviors to some ideal "end," and to weigh the merits any recent rhetorical acts that 'selectively' pitch analogies to natural or artificial selection as structuring principles for human society (White 120). Better metaphors or analogies would, at the very least, encourage exploring a fuller range of any human intellectual or material labor as a product "borrowed from her [nature] and arranged in combinations which are not favoured by the general cosmic process" (12). In fact this emphasis on an act of 'borrowing' seems to be his key stipulation as an attendant analogy for selection, as it stresses that Darwinian analogies *create* either intensifications or delimitations of observable forms of conduct, cunning, cognition, or social organization in nature, and stipulates specifically that those forwarding the "ideals of society" or those forwarding newer forms of rhetorical Darwinism were limiting the richness of scientific perspectives on evolution by being naïve to the range of "debts" that their rhetorical constructs create, or as he occasionally puts it, naïve to just how they rhetorically pit "the macrocosm

against the microcosm" (83). Indeed, for Huxley the potential strength in the popularization of metaphors and analogies to natural or artificial 'selection' in particular seems to be that it expands the framework of terms for thinking about what distinguishes human arts (in any intellectual or material form) by the quality of the exchanges or transactions they make with nature, allowing us to consider what material and ethical 'debts' develop. This is not an idea that gets fully formed as ethical system, but it takes shape as set of ethical tenets for treating all human artifice as intensifications of forms of animal conduct, cunning, cognition, or social organization borrowed from a 'cosmic process,' and it leads to his stipulations that both social and material constructs are best constructed rhetorically if they make "man mindful of his debt to those who have laboriously constructed it" (82).

Consider several of Huxley's central examples, starting with Huxley's general illustration of how to extend the limited rhetoric of popular analogies between humans/animals, natural/artificial selection, or the cosmic process and a social or ethical process, which too often foreground one aspect of the cosmic process by either intensifying or delimiting 'competition' or 'efficiency' or 'co-operation' as singular or primary drivers of social evolution. In "Evolution and Ethics" and "Science and Morals" he argues that science will continue to teach us how society has multiple ways of limiting or intensifying a wider range of 'natural' behaviors. His central example is the relative exclusion 'pleasurable imitation' by contemporary nature/culture analogies, which he marks as a crucial behavior going relatively 'unchecked.' As Huxley states, if there has come to be a "vast and fundamental difference between bee society and human society," it perhaps most largely because:

> Man is the most consummate mimics… compelled to imitate for the pure pleasure of it. And there is no such other emotional chameleon. By a purely reflex operation of the mind, we take the hue of passion of those who are about us… It is not by any 'conscious' putting one's self in the place' of a joyful or suffering person that the state of mind we call sympathy usually arises (26 - 28).

For Huxley, the 'pleasurable imitation' of human 'mimics' is an analogy like those to competitive, capricious, or co-operative behaviors in nature, mainly in that it evolves in a cosmic process that is prior to our consciousness and most often "in spite of one's will" or "contrary to one's sense of what is right," and is intensified or delimited in a "harmonious contrast" to nature by cultural processes (28). As an intelligent commentator on Hume and Smith, it is not surprising that Huxley distinguishes the sympathies, particularly *enjoyment* as the main example of one that casts a certain debt culture owes to nature, stipulating that our intensified 'mimicry' has become "one of the essential conditions of success in the war with the state of nature outside; and is yet the sure agent of the destruction of society if allowed free play within" (27). This affective, ideological, or rhetorical terrain for 'sympathy' and 'enjoyment' is of course a philosophical staple discussed in many more nuanced scholarly registers today, but what's unique about Huxley's discussion of an 'ethics of pleasurable imitation' is in how he asks his readers to think about how the *doxa* of a social realm might be partially "governed" (a term he references as a 'governor of a steam engine,' which is now more familiar metaphor in rhetoric and cybernetics for communication and control) by the realm of artificial selection as the domain that might ground or curb the "excesses" of sympathies that lead to every polity but that can become "ruinous to it" (115, 31). Huxley thinks ethical 'checks' must be based in social and rhetorical systems that calibrate human 'selfishness' between excess and ennui, while creating systems that make "each man who enters into the enjoyment of the advantages of a polity … mindful of his debt" in ways that might check excesses like "fanatical individualism" (82-3). Some of his political lectures consider how these general ideas might be applied, such as the curious example of Huxley's inaugural address to the London Fisheries Exhibition (1883), captured in his *Scientific Memoirs*, where he brings this rhetoric of artificial selection and its attendant ethical and rhetorical principles to the problem of overfishing.

We know Huxley valued a kind of separation of a new 'purer- science' from industry, revering the possibilities in the shift from a "museum based natural history to a laboratory-based biology' as the

potential for something like a "pure-sphere, free from social influences… in which nature was mediated only by impersonal and perfectly neutral instruments" (White 56). He had a rather 'matter of fact' perspective that any 'purity' in the lab would be mediated by something like the "gentlemanly reclusiveness of Darwin in his pursuit of truth," which still manifested a number of Victorian values, but he nonetheless valued the separation of science especially from commercial and industrial programs (such as "the training of engineers to exploit colonial resources") as an opportunity to rethink the relationships between an improved science, culture, and industries (61).[198] In the fisheries example, Huxley is clearly motivated to voice several possibilities for bringing a more powerful culture of science to a Victorian concern with a kind of Malthusian collapse of fish stocks, and in doing so he cycles back again to artificial selection as an analogy and potential 'center of force,' arguing that fisheries seem likely to forever be only partially protected or controlled by even the most rigorous science and careful laws. He starts the speech with a fairly rich description of the problem, one that is reminiscent of present discussions of 'multiple agencies' in an ecosystem, while again foregrounding an unrivalled role of human "intelligence" as "constantly tending to break it down and destroy" such natural systems (*EE* 12-13).

> In this case, although man is only one of many agents which are continually effecting the destruction of salmon in all stages of its existence–although he shares the work with otters and multitudes of other animals, and even with parasitic plants–yet his intelligence enables him, whenever he pleases, to do more damage than all the rest put together; in fact, to extirpate all the salmon in the river and to prevent the access of any others (*Scientific Memoirs* V, 86-87)

Huxley goes on to discusses the "plain enough" idea that better scientific knowledge about the redundancies fish stocks is likely to increasingly offer new ways for "dealing with this kind of exhaustible fishery" by creating the grounds for dealing with man as "the chief enemy...by force of law." But to deal with the less obvious, Huxley goes on to leverage the analogy to artificial selection again, saying: "If the stock of a river is to be kept up, it must be treated upon just the same principles as the stock of a sheep farm." Here Huxley draws in the analogy between laws for fish conservation and the "sheep farmer" to

first note the limitations of the analogy, the limited agencies of the fisherman or the farmer on these grounds. When Huxley goes on to say: "All I desire to show is that in principle, the measures adopted by the conservators, if they are to be efficient, must be identical with those of the sheep farmer," he proceeds to ask his listeners to think beyond the (again) "obvious" idea that conservation would completely efficient by means of legislations grounded in science, and to think further about a what is required to "complete the analogy." Here Huxley states:

> And the analogy is complete, for when the conservator has done all he can, droughts, parasites, and other natural agents which are beyond human control, may nullify his efforts. In the case of the salmon, as in that of the sheep, careful and intelligent protection may promote the prosperity of the stock to any conceivable extent; but it cannot ensure that prosperity, nor prevent immense fluctuations in the yield from year to year.

Emphasizing the limitations of conservations or "mere" protection, he questions whether all fisheries are exhaustible (something he doubts, but is open to), and notes that he can't imagine how laws of conservation could be thoroughly enough enforced, before asking his listeners to consider how "every legislative restriction means the creation of a new offence" by robbing people of their means of survival and of pleasure. For Huxley, conservation laws established in relation to knowledge of the redundancies of species of fish will also necessitate the creation of new means of production, new fisheries in this case, to be conceived of as evolving relative to the pleasures or tastes of the public. What would complete the analogy in this case, it seems, would be to manage to ensure that his audience is not limited to evolving within a limited rhetoric of artificial selection, but open to the possibility that the 'control' of species through processes of 'artificial selection' that would sustain a human population would require a better combination of science, law, and forms of public persuasion – all of which might calibrate artificial selection as something like a 'center of force' that endures without succumbing to the excesses of human intellect or human behavior that constantly tries to break down such natural processes.

Conclusion

Criticism of metaphoric world, or vision, become one clear and important –
perhaps the clearest and most important—instance of a general human project of improving life by criticizing it.

-- Wayne Booth, "Metaphor as Rhetoric"

Rhetoricians, philosophers and many scientists (Ted Brown, Stephen Jay Gould, Brendan Larson, to name a notable few) have commented on the historical relationships between science and important metaphors, analogies and concepts that have advanced important lines of inquiry, provided crucial means of description, communicated new ideas, or helped to bind new discourse communities within new cultural contexts. We know that the term metaphor itself is notoriously hard to define (there are arguments [Ricoeur], Dictionaries [Elsye and Weisse], and Annotated Compendiums [Shibles] on the subject); we know that certain metaphors 'die' and others seem to 'live on' as "root metaphors" (such as Stephen Pepper's argument that all philosophies hinge on metaphors to *formism, mechanism, organicism,* or *contextualism*); we know also that today's work in science studies, the rhetoric of science, or 'post-normal science,' accepts that the way we speak about nature, ecology, conservation or sustainability reflects the values and priorities of culture, and that there is always a certain confluence between value-laden language and the sciences that inform us of ecological exigencies (while also asking those rhetorically inclined to account for the world beyond language). What Darwin and Huxley ask us is not simply to accept artificial selection a 'rival metaphor' for describing a relationship between science and society, an argument that would run against Darwin's vital theory, much of Huxley's fairly traditionalist leanings and his specific arguments on the natural/artificial selection analogy. Nor, however, does this argument ask us to simply critique this metaphor and analogy, or to extend a critique to similar metaphors in ways that he could have easily retraced to similar criticisms of pastoral literature, to Virgil's political uses of similar metaphors, or to Thrasymachus in The Republic who offers

the metaphor shepherd and sheep to attempt to refute Plato's notion of justice (Booth 66). Huxley does indeed, as we have discussed, analyze and critique the rhetoric of artificial selection, but he also manipulates it in such a way that it becomes more than an epistemic metaphor to *describe* evolutionary theories, and instead foregrounds particular role for rhetoric that might *function* as an alternative to vulgar forms of materialism, idealism, or merely "cosmetic" rhetorics. If we take a broader conception of what he does, is it not that he asks us to consider in what ways will evolutionary science require a corresponding ecological rhetoric to *create* forms of socio-ecological sustainability?

Analyzing Darwin (rhetorically) and Huxley (largely as a rhetorician) allows us to not only examine early critiques of the rhetoric of artificial selection, or how this was ripe for appropriation in an evolutionary context, but to consider this as a shift that imbricates these domains of scientific, rhetorical and ethical study as something that might have *ended* their distinctions, largely by distinguishing their relationship as a superior human art suitable for promoting something like ecological sustainability today. The rhetoric of 'artificial selection' today would focus on commonplace concerns with the advance of monocultures, preserving traditional and cultural practices for managing the land that are rapidly being lost, or forwarding progressive bioregional or technological and experimental farming practices. In such cases, what rhetoric advances this work might hinge on extending Huxley's principles of debt and redundancy to better scientific knowledge of biodiversity, 'extinction debt,' integrity, resilience etc., as well as to present socio-political concepts like ecosystem engineering, and ethical ideas like ecophilia. In these veins of ecological thought we should be mindful of the origin of this Darwinian and Huxleyan rhetoric as the end of an era that disconnects what we value as our 'synthesis' with nature, from the values of these 'synthetic' arts forwarding a rhetorical-ethical horizon for the human sustained by the practices of artificial selection.

Chapter Five) Conclusion: Towards a Responsible Ecological Rhetoric

Planetary thought can have no other logic: it wills itself, it presents itself as politics, strategy.

Deleuze, Desert Islands and Other Texts, 158

As Bateson told us long ago, an ecological "struggle for survival" has been taking place in the domain of ideas and "the task of every ecological analyst now is to promote ecologically 'good' ideas in the hope that these will prevail, through a process of natural selection" (Sutton and Pindar, 11).[199] In light of this struggle, this dissertation's analysis of familiar figures from the history of rhetoric might be considered a fairly conventional contribution to rhetorical studies, a field that has witnessed many historical 'recoveries' that unpack rhetorical figures, concepts, strategies and texts for the present. Amid other recent ecological histories contributing to our sense of the rhetorical tradition (Dobrin and Weisser, Miller, Ophuls, Lane, etc.), we have made a good start at reclaiming ecological knowledge as part of the rhetorical tradition, and there is certainly an enduring exigency for working with other Western thinkers who make 'unusual suspects' for ecological rhetoric (Protagoras, Lucretius, Nietzsche, Bataille, etc.), Aboriginal traditions, or Eastern philosophers and religious thinkers who have made reverence for nature so persuasive in the Buddhist, Jain, and Hindu religions and in cultural centers. While such work will likely bring more to our present understandings of what ecological rhetoric can be, without some added sense of what this project brings to the present, the historical and genealogical approach of this dissertation might be either conceived as a serious limitation of the study, or might urge other dissertation work that pursues 'interesting histories' without addressing today's pressing ecological exigencies through such historical work.

This project reveals almost nothing of my initial research exploring contemporary forms of rhetorical agency or interventions for ecological exigencies now. The project does little to address the folly of numerous arguments forwarding rhetorics of ecological revolution or reflecting on a 'slow

reckoning' or 'paradigm shift in ecological consciousness,' and little to specifically contribute to the motivations or forms of communication working hard to accelerate community or socio-political work with great ecological potential. I do very little here to consider the countless forms of exploitation, preservation, or 'wise use' of ecological 'resources' in the West at present. I do nothing at all to address how these align with waning forms of disciplinary power, how they are revealed in a metamorphosis to the dominant political technologies of control society, or they might shift to 'eco-nomies' with a new emphasis on 'sustainability' that currently seem dedicated to re-privatizing and unleashing multifarious desires, floating capital and values. An influential intervention in ecological rhetoric today seems to need to trace up-to-the-minute theories and strategies that that can circulate among the most complex and efficient forms of social control transversely linked across a great number of sites in everyday life, while paying particular attention to control of instant communication –making a genealogy of ecological rhetoric familiar with the genealogy of power in contemporary American economic and cultural life, what Jeff Nealon calls "the operating system" for "a new modality of cultural 'resistance' to capital" (26).

On the other hand, the project's investigation into a longer history of rhetoric might make modest contributions as we "move beyond the foundational and totalizing question of 'What is rhetoric?' to a more inclusive and proactive question: 'What can a rhetoric be?'" (Haskins 208) The potential contributions here can be fleshed out in three main registers. First, this study of several authoritative figures from this long history of rhetoric bridges rhetorical and ecological theories in ways that might help extend this alliance as it has developed in recent decades. Particularly, we can briefly discuss here the main ways this dissertation helps us move beyond the more dated alliances between critical theory, ecological thought and rhetoric detailed in the first chapter, and discuss how these historical studies emphasize rhetorical theories that align with (and potentially help forward) more recent work interested in leveraging actor-network theory, cybernetics, ecocriticism, political ecology, or certain concepts from science studies. Second, the dissertation offers several specific accounts of

technê as a core concept for a progressive ecological rhetoric, accounts which add to our field's interest in this concept's performances in different historical and cultural circumstances (i.e. Papillion, Jarratt, Atwill, McComiskey, Haskins, Pender, Hawk, etc.). Moreover, as Pender argues that "*technê's* features have become a kind of invisible foundation for the field," this project ties in an ecological definition of *technê* in the first chapter that began by negating the opposition of 'instrumental' vs. 'non instrumental' modalities of this concept, and proceeded to replace this with a genealogical narrative of recent ecological valuations of *technê* as a core concept for ecocriticism, for argumentation in environmental rhetoric, for philosophical tenets in ecosophy, and for theorizing ecological economics. We can then review the subsequent turns to *technê* in each chapter as marking ways that *technê* has long been crucial to a distinctive unity of ecological knowledge and action, which might help us round out our theories of ecological rhetoric at present (31). Thirdly, the study offers an emphasis on the inclusion of rhetorical strategies as integral to advancing forms of ecologically responsible praxis, or to put it more boldly, the dissertation emphasizes that integrating rhetorical strategies into a conception of ecological rhetoric is integral to thinking about the responsibilities of ecological rhetoric today.

To start, we should remember that there is currently significant emphasis on the rhetorical theories that support analytic and deliberative in work in environmental rhetoric, which in recent decades has made prominent contributions to better argumentation, improved inter-disciplinary research, more persuasive policies and successful advocacy in networks of science, politics, policy and activism. The successes of such work analyzing communication practices, successes, and failures have come in applying a number of rhetorical approaches that have demonstrated their potential impact on policy, in explaining how scientists turn to metaphors (how these lead to, or hinder, social understandings and productive policies consistent with sustainability), or in applying better argumentation to carry out tactical interventions at different levels of politics. While (as argued in more detail in the first chapter) it is clear that much of the work in environmental rhetoric has generally

followed ecological thought and critical theory in ways that lead our field to embrace our conventional commitments to rhetorical analyses and improving deliberations in innovative ways, the theories drawn largely from second wave environmental thought and critical theorists from the Frankfurt school, Laclau and Mouffe, and Actor Network Theory, has made it somewhat more difficult to forward rhetorical theories that contribute theoretical work that might advance this configuration in other ways, and this has triggered some notable critiques that this emphasis on analysis and deliberation is somewhat reactionary, too slow to respond, or "crisis driven" (Mathur 151 -152). This criticism is mainly pointed at the vein of work in environmental rhetoric that has attempted to shore up and sustain forms of deliberation -- a main emphasis in scholarship running from Killingsworth and Palmer's significant work *Ecospeak* (1992) to the strategies of a so-called "deliberative turn" more recently noted by Karin Backstrand in *Environmental Politics and Deliberative Rationality* (2010).[200] This criticism might be somewhat severe, but it suggests that part of the challenge for rhetorical studies might be to think more broadly about the relationship between rhetoric and ecological theories as a means to critically rethink broader but familiar tensions between concepts like deliberative rationality and instrumental rationality. To put it another way, the challenge may be to think about how *ecological rhetoric* is itself a 'logic' worthy of foregrounding in its own right, and that this logic involves certain theories, *technê* and strategies that might precede praxis, and which asks us to configure ways to think about how innovations in *ecological rhetoric* must sometimes precede deliberation. If too much of what we value as *environmental rhetoric* remains moored to the theories that initially spurred this subfield, the result may be that much in the recent history of environmental rhetoric could fall under the same well known critique of Habermas who, while remaining persuasive in many ways, tended to position technology and instrumental rationality as a form of nonsocial rationality, a stance that this much less plausible after decades of research into science and technology studies, as well as the recent history of 3rd wave environmentalist thinkers emphasizing (often contentiously) more aggressive and conscientious

technological and economic solutions to ecological problems. Consider a brief comparison between a benchmark example for Habermas (and an important starting point for Killingsworth and Palmer) and a more contemporary example. Habermas started *Towards a Rational Society* with news about a new university town built to train ten thousand Israeli students as "personnel who will be necessary for future industry in the desert," stating his concerns about instrumental rationality in a university that serves as an instrument for "transmitting technically exploitable knowledge" that meets industrial needs and "fulfills the system of social labor" (1). Compare this to a new mission for the University of British Columbia, an urban campus with a *Center for Interactive Research on Sustainability* with a "command center" and a "living laboratory" dedicated to "commit, integrate, demonstrate, and inspire" sustainability by reshaping Vancouver's urban spaces into a network of buildings on and off from campus that aren't just carbon neutral, or designed to mimic nature, but designed to actively remediate environmental problems by creating food, drawing carbon from the atmosphere, drawing energy from waste, as well as promoting new policies, and engaging community partnerships through forms of deliberation. While rhetoric's contributions to such promising changes are clearly tied to helping forward better deliberations about ecological decision making, to those rhetorical exigencies Aristotle canonized as a concern for the contingencies of human control of the future with an "end" of promoting the good and avoiding the harmful, we seem to risk losing valuable aspects of our rhetorical theories by making deliberation the initial or overriding framework for our critical interventions into environmental problems.

Of course, in addition to leveraging rhetorical theories that support deliberation, we have seen some emphasis on how rhetoric helps break down particular binaries between nature and culture, how certain *figurations* or "rhetorical fields" (as Whiteside put it) of persuasive forces, characters, tropes, or strategies consider that "the identities of 'nature' and 'humanity' get constituted together reciprocally" – as they are consistently "reinforced by a rhetorical field in which 'human' and 'natural' issues are kept

constantly intertwined" (46). Indeed, the relationships configured between rhetorical theory, critical theory and ecological thought have most often worked in the direction of, as Andrew Biro recently put it, working to pull the best from the critical theory's "commitment ... to developing a dialectical account of human biology and to basing projects of social transformation on a firmer understanding of what *really* motivates human behavior, without succumbing to biological determinism and essentialism" (emphasis his, 17). As argued in this dissertation, recent works in critical theory, or that area within it sometimes called 'theoretical ecology,' has helped us work out the latter concern with forms of 'biological determinism,' especially the slew of recent historical and philosophical work taking versions of Actor-Network-Theory to study large socio-technological systems that account for 'natural,' social and technological phenomena as ecological agents participating within ecological systems (Law, Latour, Callon, Serres, etc.). However, while this still growing body of work provides us with important ways of doing ecological histories that avoid the dangers of "biologism" or "essentialism" and offer numerous ways for scholars to become more conscious of their descriptions of technological, social and ecological networks in their work, these perspectives often make it difficult to give due relevance to what rhetoric is best at mapping about human intelligence as what guides our vulnerabilities to persuasion or enables our ability to be motivated, and to situate these as forms of responsible agency, or translate this to present forms of action -- often because on describing complex nodes of agency also strategically passes over "what is commonly taken as distinctive or even unique about humans" and/or insists on superseding or forcing out any or all nature/culture dualisms (Bennett, ix). As it is presently written, the project does contribute histories with several rhetorical theories that might give their allegiance to those recent critical theories bent on thinking ecologically in ways that do not see 'nature' as distinct from culture and human agency, mainly by teasing out several rhetorical theories and performances that add to interest in 'ecologics' (as Hanjo Berrenssem recently put it) that promote human agency within ecological parameters, or, as Deleuze and Guattari put it, that offer ways of thinking of the

natural and the human not as confronting opposites, but as "one and the same essential reality, the producer-product" (Herzogenrath 1-5). However, in addition to this, as much in critical theory seems increasingly to work within this kind ecological framework, the genealogical work in this study might help forward several key ideas and axioms about *ecological rhetoric* today as a particularly useful way of theorizing a distinctive kind of ecological thought that emphasizes rhetoric as a *productive* art that must create a distinctive form of ecological ethics.

To start with the more modest contribution, these rhetorical histories offer a contribution to what Guattari called "the creation of" diverse "thinking environments" that can support an increasingly "generalized ecology," ways of thinking that work on the interplay of, at least, three ecological registers -- the environment, social relations, and human subjectivity -- needed to broadly support sustainable knowledge production and *praxis* (*Three Ecologies* 35). In the late 1980s and early 1990s, Guattari argued that a generalized ecology had barely begun to exist, and he foresaw the possibility for its emergence in response to the narrow association of ecology with "the image of a small nature-loving minority or with qualified specialists" (35). Each chapter in this dissertation offers a line of thought where versions of ecological rhetoric surface as a means to theorize and give structure to what Castell's called a recurring *ecologist's challenge* that "criticizes the domination of life by science" while using "science to oppose science on behalf of life" in order to "present a superior knowledge" (181). The brands of "superior knowledge" discussed here work with rhetorical concepts and strategies to advances science beyond merely epistemic concerns, and they resurface in the canonical definitions of wisdom by Heraclitus, Bacon and Huxley, which are each distinctive definitions bridging rhetorical and ecological theories, and largely depend upon including rhetorical techniques and strategies for making this wisdom impact everyday life.

In some regards then, this project's interest in historic versions of ecological rhetoric is also comparable to other recent critical interests in histories of ecological thought that have been aptly summed up by William Connolly in *Neuropolitics* (2002) as interest in a tradition of *immanent naturalists:* "a minor tradition of the reflection upon nature, memory, thinking, the layering of culture, and an ethics of cultivation advanced at various times by theorists such as Lucretius, Spinoza, Friedrich Nietzsche, Henri Bergson, William James, Sigmund Freud, Stuart Hampshire, Gilles Deleuze, Isabelle Stengers, and Ilya Prigogine" (5). Connolly proposes that "immanent naturalists resist both a command model of morality set in a juridical rendering of the transcendental field, and a teleological image of ethics set in a divine order of things ... [to] support an ethic in which visceral attachment to life and the world provides the preliminary soil from which commitment to more generous identifications, responsibilities, and connections might be cultivated" (104). The perspectives on the figures I work with in this study share this hallmark of progressive ecological work in recent decades, which should be clear in my attempt to find a precedence in thinkers who shift from *describing* these 'generous identifications,' to offering means of *cultivating* identifications and responsibilities rhetorically. This is a shift that motivates this study's emphasis on rhetorical *theories*, its modalities of *technê,* and the construction of rhetorical *strategies* as marking key registers for ecological thought. It might be added, then, that the general ethos of the figures studied here not only support Guattari's basic idea that a more generalized ecology would require a radical dissensus of ecological thought, but that the emphasis on rhetoric, and *technê* in particular, helps align or bring together ways of thinking that Guattari though should be 'transversally' linked as forms of social action. Guattari thought a generalized ecology would need support from a multiplicity of intellectual efforts that not only re-negotiate human and non-human relationships by evading dualisms like nature vs. culture, technology vs. biology, or natural vs. artificial (dualisms which were all too clearly breaking down in the 20th century) but that offer revised logics (or rhetorics) that forward multiple ways of *relating* and creating ecological assemblages (in any

combination of rhetorical, social, technological, ecological systems) that channel past gains in a 'ecological struggle of ideas' towards future ones. This history of ecological rhetoric may reveal some 'past gains' in ecological thought that we can build on, but perhaps only if we distinguish the *productive* and *ethical* nature of its genealogy of *technê* as a distinctive "unity of knowledge and action" that might help us to move beyond the more ecologically *descriptive* work in recent decades.

This idea emphasizing a genealogy of *technê* as a key modality for a *productive* knowledge that is integral to ecological rhetoric is also one that Guattari helped to advance, particularly as he picked up the enduring appeals of Bateson's first wave cybernetics, which argued persuasively for not only describing/understanding the *mind* as immanent information moving through larger ecological systems, but stipulating that this "difference which makes a difference" both resolves certain mind/body/environment dualisms, and potentially *cultivates* a personal shift (his own) from a philosophical repose or scientific descriptions to an "ethical" mentality as his cybernetic perception of ubiquitous informatic relationships became a motivational factor to change the ways that this mind/body/environment nexus is evidently evolving in "suicidal" ways (see "Form, Substance, and Difference," 454 -460). In taking a great deal of ecological theory from Bateson and Varela, Guattari asked us plainly to move ecological science towards a more affirmative kind of ecological praxis in an "ethico-aesthetic paradigm" that included personal, social and environmental changes, where scientific knowledge is not the groundwork for normative ecological values (which he already saw as a kind of dead end) but is something that must enter a larger ecology of ideas that *produce new* personal and social values, new communication networks, new socio-political formations and new technologies as autopoetic processes (Heroux 182). This intention is, as Erick Heroux put it in a recent essay, much of what guides the ambitious "gambit" of Guattari's analytical and theoretical pursuit to find "the way around our current impasse, a world where we already have far more ecological knowledge than we do ecological practices, which are often blocked at the level of national politics and suppressed whenever

they conflict with the profitable interests of corporations... [turned into] piecemeal reforms... and ineffective technical reforms" (184). As Guattari compelled critical theory to advance a meshwork of new micro-political practices that could cultivate new subjectivities, collectives, assemblages (etc.) that are diversified but 'transversally' linked across three social, psychic, and natural realms by a mentality, he also noted that this might be beneficially grounded in kind of productive knowledge – which (as we saw in the first chapter) urged his reclaiming of *technê* as a key concept among his theory and conceptual creations. This might define a central responsibility for ecological rhetoric to build on this concept that has come to carry meaning for a number of key changes in culture, and to articulate a role for rhetoric's interventions into these 'micro-political' levels of the emergent collective, the subject, the pre-subjective, the motivational, etc.

It is worth noting, therefore, that the relationship between ecological knowledge and practices has significantly changed since Guattari's appeal to appropriate *technê,* as the scientific catalogues of new ecological tipping points are not only growing (even while many were ignored, or "hit overdrive"), but as the past decade also spurred a massive growth in social and political organizations taking on ecological problems. Indeed in the humanities and social sciences we have already had fairly reliable attention to describing the development of something more like a generalized ecology after Guattari, with numerous efforts to portray a new "typology of the movement" (Castells), a range of environmentalist identities (Killingsworth and Palmer), or the massive growth of environmental organizations that have taken shape over the past two decades (such as Hawken's or WiserEarth's mapping of an 'unorganized' network of over a hundred thousand new organizations). This expansion of ecological practices certainly solicits analytic work to detail new forms of environmentalism based on social and cultural units with differing goals, adversaries, discourses communities, political and social ideologies, and different forms of identification with nature, science, technology, politics, the economy, and culture. It also, however, seems to ask us to take up a responsibility to theorize and persuasively

articulate how this expansion and diversification of ecological practice is also to be 'transversally linked' (to again think with Guattari) in effective ways. What links such diverse practices at the moment is of course the world picture that emerges from the facts granted by ecological sciences, or the commonality of certain principles espoused by ecological ethics, or an 'international standard' for technical environmental communication, or an orientation towards creating and meeting sustainability indexes, or (and increasingly) the processes of 'environmental mainstreaming' supported by the U.N., the World Bank and numerous multi-national corporations implementing sustainable development policies and environmental economics.[201] As ecological rhetoric now rests on these and other common *technê,* our intervention as a field at present might represent or help rearticulate how such *technê* guide a (much easier to conceptualize) version of Guattari's 'generalized ecology' as ecological organizations continue to expand, diversify and 'mainstream,' aiming to make the best of their potentials under the pressure of ecological tipping points that must be dealt with in the first-half of the 21st century. Our theoretical, interdisciplinary, and pedagogical responsibilities of rhetoric must also work within this apparatus to promptly *advance* new forms of productive knowledge precisely because of the possibilities this presents. In other words, it is time for ecological rhetoric to take into account what *technê* precedes praxis, and to configure ways to think about how innovations in ecological rhetoric will often precede deliberations. This will be in the vein of many thinkers that have looked at the evolving relationships between *technê* and other classical concepts like *phronesis, arête, episteme* or *praxis* to chart "alternatives" to technological thinking or to resist the "lure of technique" (as Joseph Dunne put it in his great piece of synthesis), but the challenge now might be to reconfigure that "particular mode of rationality called technical reason" as a *technê* for ecological rhetoric that best constrains and sustains the so-called 'higher forms' of praxis that so many have sought after in 20th century thought (Newman, Collingwood, Arendt, Gadamer, Rorty, Heidegger, Habermas, Schon, Dunne, Bernstein, etc.) (Dunne 9).

The studies in each of the preceding chapters offer some insight into what this looks like in rhetorical terms.

Without too much recourse to the previous chapters, we might delineate the role of *technê* in terms of the conclusions drawn in each chapter, the first of which was the most predictable one: that environmental discourses continued fetishizing Heidegger and his discussion of *technê* long after Guattari accused him of entrusting the way we think through *technê* to a philosophical 'unmasking of the truth' and nailing "*technê* to an ontological plinth" that "compromises its character of processual opening" (34). My second conclusion comes in foregrounding a more recent circulation of *technê* in ecological discourses (environmentalist, economic, literary, and philosophic) which captures a more specific reconfiguration of ecological thought that has coalesced around *technê* in recent decades. This presents us a more distinctive modality where this concept functions as theorizing *productive* forms of ecological rhetoric, rather than operating in a so-called 'non-instrumental' mode which seems to stray too far from any viable understanding of this concept from the history of rhetoric. Accordingly, my first contribution is an argument that, if *technê* has often been an "invisible foundation" for the field, these four areas of ecological thought provide another foundation by recycling traditional understandings of *technê* (as they offer *technê* as a core concept for ecocriticism, for argumentation in environmental rhetoric, for philosophical tenets in ecosophy, and for theorizing ecological economics). These returns to *technê* take on *rhetorical and instrumental* qualities that line up to some extent with Atwill's treatment of *technê* in *Rhetoric Reclaimed,* where she staked out an ancient rhetorical tradition beginning with Sophistic and Isocratic paradigms connected by their notion of *technê* as a model of knowledge that took shape in theorizing and teaching how to "seize an advantage in social and political situations" (44). This promoted a version of rhetoric as "productive knowledge" with the power to embed man in a social, political and natural environment (which, according to Atwill, is contrary to ideas of the soul and much in a humanist tradition) as well as to open up spaces for the expression of

alternative models of subjectivity, knowledge, value and humanity (44). This first chapter argues that recent ecological discourses return to *technê* in parallel ways as they articulate *ecological* subjectivity, knowledge, and value – returns that seem like a key modality for understanding an evolution of ecological rhetoric today.

My reading of Heraclitus perhaps marks the earliest opening for thinking about how ecological themes are imbricated with a kind of productive rhetorical knowledge in his critique of how *logos* became separated from *technê* in several ways*,* and in his insistence that 'nature was confused' by treating it as something to be understood as *Logos* without seeing how also somehow 'becomes' varied *technê* as it is channeled by human artifice. I lay emphasis on how a rhetorical analysis of Heraclitus enables us to sidestep problems with reading Heraclitus as representing the metaphysical concept *Logos*, and instead to allows us to read his conception of a "*logos* from the *Logos"* as a more dynamic set of rhetorical innovations and strategies drawn from principles Heraclitus found in his singular pursuit of *Logos*, core principles such as flux, the unity of opposites, and strife as justice, which are integral to his discussion of persuasion as type of common wisdom and a social force. Thus, I don't attempt to conclusively answer the elusive historical question "what was Logos?" once and for all in this chapter, I make a case for reading this particular *logos* as a distinctive rhetorical strategy and persuasive method that gave form and content to his wisdom as a teachable rhetorical *technê*. The second concept I emphasize in this chapter, *first second nature*, preserves his vital word play while minimally defining Heraclitus' singular strategy and its goal – a unique persuasive strategy to be embodied in his figuration of the wise man, with an end goal of making *logos* a broader 'sense,' ability, or 'attunement' held in common. In other words, *first second nature* emphasizes that the value of this sage seems to be tied to a vital challenge to *make* something strategically persuasive from pre-Socratic ideas of first nature by affirming a way of thinking he thought should become so "obvious" that it be considered nothing less than second nature.

If Heraclitus sought to make something like ecological rhetoric 'common' or obvious, in some ways Bacon sees rhetorical invention play a similar role as a *technê* that crafts new knowledge by providing techniques for moving the imagination from the affectations or anticipations to a deeper form of reason and an attendant form of social persuasion– one that hinges on a re-conceived notion of 'mastery' as a *whole strategy* for scientific-rhetoric. In today's intellectual climate, Bacon's authority seems worth re-engaging as another *ecologist's challenge*, one striving to inaugurate the challenges of rhetorical *mastery* at the cusp of the 17th century that granted a new responsibility to take on instrumental, pragmatic, rhetorical and reflective thought. Bacon's refrains about rejecting a known teleological natural order to which man's arts and actions were alleged to conform, about the truth values of empirical methods and experiments, and the progress of mechanization and mathematization of nature, all come to play in the context of this authoritative idea: that this period in history required man to drive for a fuller 'mastery' not only turned 'inward' towards 'mastering the self,' but in an outward turn to controlling 'nature' through a scientific and rhetorical process. While Bacon has been blamed (usually along with Descartes) in philosophy, critical theory, and environmental discourses for spearheading a scientific revolution which promoted a patriarchal and mechanistic view of nature (Heidegger, Marcuse, Popper, Merchant, Harding, and Keller among others), his engagement with *technê* questions add an important 'defense' of Bacon as a "servant of nature" (such as those by Vico, Coleridge, Whitehead, Sobel, and Mathews). As Bacon engages with a number of *technê's* fundamental principles through his concerns with "the dangers of the innovator" (in philosophic, scientific and political terms), *technê* is a means by which Bacon theorizes the "subtle devices" of persuasion that were being learned as he and contemporaries thought about how rhetorical arts mingled with science and mechanics (Reese, Wolfe). Jessica Wolfe looks to Bacon's "subtle devices" to articulate how Bacon turns mechanistic principles (being explored by a number of Renaissance humanists) to deal with moral and epistemological challenges posed by instrumentality – an interest Bacon shared with other

Renaissance thinkers (3). I argue that, for Bacon, these subtle devices are in line with rhetorical understandings of *technê*, and that this re-establishes *technê* as something responsive to now familiar "ecological" concerns, emphasizing that for Bacon these rhetorical principles might permit us to participate in the 'whole' of nature, "to be a part of creation and movement on equal footing" where external limitations are overcome to attain progress to the extent that "rational knowledge about natural machinery takes over from the inefficient meandering of evolution" (Davidson 69). Bacon's conceptualization of rhetoric and *technê* mediates science and his ethical concerns about power and the possibly destructive forces of science, and help round out his 'whole strategy' as an ecological rhetoric. I conclude by asking: Can we imagine a recent history of ecological thought drawn to strategic aspects of Bacon's ecological rhetoric and its handling of mastery? Would this not have curbed the excessive focus on critiquing technoscience, 'mechanization' or 'instrumentality,' the many returns to some version of organicism, or the absolutist attempts at overcoming, re-writing or reuniting the antithesis between nature and man? Would not the attempts of many deep ecologists to radically restructure society with ideas of 'ecocentrism,' 'inherent worth,' 'holism,' 'preservation,' and 'limits' have taken on qualities of pragmatism, agency, and reflective instrumentalism aimed at progressive forms of rhetorical, scientific *and* technological intervention? Would Bacon not only help us think about the spirit of science in an age of production, but the spirit of science in our age of consumption?

Lastly, amplifying artificial selection as a symbolic category that compelled a kind of rhetorical inquiry between Darwin and Huxley reveals an exigence for defining artificial selection in rhetorical terms as a *technê*, and an exigence for establishing certain ethical principles and rhetorical strategies that might guide practices of artificial selection. Huxley argued these principles might be leveraged to steer artificial selection away from transcendent ideals and towards an emphasis on an ethics of 'transactions' or 'debts' and 'redundancies' calibrated between two 'artificial' realms: a social-rhetorical realm and a more rigorously scientific realm of artificial selection (agriculture, fisheries, etc.). It is the

latter realm that Huxley conceives of as a 'centre of force' in society, creating a dynamic that replicates something like the 'cosmic processes' in nature. Analyzing Huxley particularly as a rhetorician allows us to examine how he moves from analysis of the rhetoric of artificial selection and critique of its narrow or vulgar uses, to a *technê* question that speculates about a heightened role for this rhetoric in an evolutionary and ecological context (one that might moderate or enrich forms of materialism, idealism, or merely "cosmetic rhetorics"), and finally to appropriating it for pragmatic political purposes (as we saw in an example from his address to the fisheries exhibition). Indeed this 'rhetoric of artificial selection' seems to mark several important trends. One is an early rendition of a turn from analytic philosophies to the varied theses of pragmatism, wherein rhetoric is increasingly regarded as an unavoidable bridge between sciences of nature and culture. Another, and more distinctive in this study, is a move beyond mere recognition of the unavoidability of nature/culture dichotomies or the need to 'destroy' or reclassify these, to creating axioms for strategically bridging scientific truths with rhetorical supplements of art, *technê*, images, representation, convention (etc) with a particular end: supporting both (ecological) consciousness and our (unavoidable) political and technological interventions into natural and social systems. The case of artificial selection shows us this kind of rhetoric is not a matter of choice; it is by default that artificial selection becomes a rhetoric that comes into play. We can see, however, both Darwin and Huxley also play with how it *should* be made persuasive and sufficient for exigencies we increasingly define as ecological and sustainable – exigencies that include meeting a range of human needs and desires – for not only sustenance, but for emotional well-being, and moral or ethical training. Huxley, especially, asks us to think more broadly about the relationships (or 'debts') between science and the commercial industries most directly sustaining society, as well as to consider an ethics calibrated by the pleasures or tastes of the public. Taking a broader view of what Huxley does then, we see him considering what ways evolutionary science might require a corresponding ecological rhetoric to *create* forms of socio-ecological sustainability.

Among the implications we draw from this genealogy of ecological rhetoric in closing this dissertation, we might highlight that this emphasis on rhetorical theory, *technê* and attendant rhetorical strategies (as discursive practices, performances and techniques) might help to frame or extend how our field conceptualizes its responsibilities to advance ecological thought or practice through rhetorical scholarship, teaching, or public work today. The work of recovering histories of ecological rhetoric has been partly in response to the possibility that much of the work in (environmental) rhetoric, technical communication, ecocomposition and service learning might rally around its extraordinarily long history to forward more progressive rhetorical theories, *technê* and rhetorical strategies that bolster both ancient and innovative forms of ecological responsibility.[202] Most generally, this might mean a slight (but not insignificant) shift in emphasis from analytic work responsive to *facilitating* other forms of ecological thought or actions we deem as responsible, to taking some risks by emphasizing that the ideas and actions we *produce* as ecological rhetoric may indeed *best* describe forms of ecological responsibility that are some of our best hopes for sustainability. The history of ecological rhetoric drawn out in this dissertation emphasizes that we owe some debts to our own histories of rhetoric, and that present work might continue to hinge on forwarding rhetorical theory, *technê,* and rhetorical strategies that cultivates new and enduring forms of ecological responsibility as a critical contribution to what Dieter Birnbacher called "the many faces" of responsibility as a "social phenomenon" in an ecological age (9).[203] He notes that much of the classical discussion of responsibility is essentially of a form of retrospective "ex post responsibility ... a kind of responsibility that one incurs by being held 'answerable' for some act of one's own, done by commission or by omission in the past, either as someone acting in a socially defined role or simply as an accountable person," while the question of an ecological responsibility has shifted essentially to our relationship to the future and to questions about what defines sustainable actions (9). Work like Hans Jonas' *The Imperative of Responsibility: In Search of Ethics for a Technological Age* (1985) helped mark this shift in a search for a responsibility as "ex ante" –

or a form of responsibility ascribed to individuals or collectives for the *production* of affairs that can have greater (and less immediate) impact on the future (10). While Jonas' work is now often thought of as conservative, it was innovative in its consideration of aspects of this forward-looking form of responsibility, ascribing it to the collective nature of risk in a context that is technologically complex and ecologically interdependent. Ricoeur, in *Oneself As Another* (1992), responded to and critiqued Jonas' extension of the scope and power of responsibility with concern that, when the whole of nature is submitted to our care, responsibility becomes so vast as to be beyond our ability to grasp it as something that fully applies to us (Ricoeur 170). Because of the long temporal gaps between many harmful acts and their effects, Ricoeur proposes responsibility as something exteriorized as a horizon of meaning and interiorized through a socialization of risks, while positing the likelihood of a resolution between exteriority and interiority where the two notions overlap and reinforce each other (Dauenhauer 153). Discussions of the recursivity between risk and responsibility run in many directions (notably Beck, Giddens and other risk theorists, but it also expands to limits well charted by Levinas who charts responsibility as a 'principle,' or by Jonas who sees it as the entire terrain of becoming), directions which Ricoeur accredits to the "polysemy of the verb 'to respond': not just in the sense of 'to answer for...' but also as 'to respond to...'" ("The Concept of Responsibility" 12). This dissertation may not offer an 'answer for' our ecological problems today, which will require processes of mitigation, adaptation and geoengineering responsive to known planetary boundaries sustaining life, hard-hitting political-economic reform and legislation from the West to align sustainable economic growth, global interventions into the political-ecology of war, nested efforts at re-engineering the planet's cities, diversified experiments in sustainable agriculture, revolutions in energy production and use, and an extended form of conservation that makes preservation of biodiversity a logical after effect of these and other efforts at indexing sustainability. This dissertation may, however, help to mark ecological rhetoric as something enduring from our tradition which we might 'respond to' as a deeper exigence, one asking

rhetoricians to produce an ecological responsibility through the progressive rhetorical theories, *technê*, or strategies that address the motives or mentalities that make sustainable actions seem impossible, unbearably difficult, or inadequate. In other words, it offers some steps towards an 'ecology of mind' where the possibilities in ecological rhetoric would be eclipsed by common sense and observable the world over.

APPENDIX A: ENDNOTES

[1] In *Treading Softly: Paths to Ecological Order* (2010)

[2] In regards to energy, see Jay Hanson's famous article in *Energy* in 1999 giving his calculations about energy growth and physical limits. The most interesting update in this story is that peak oil, while still heavily debated, convinced the US Joint Forces Command to issue the Joint Operating Environment statement that by 2012 surplus oil would begin to disappear, and to make a push for renewable energy as a security measure. See Michael Mann's account in *The Hockey Stick and the Climate Wars: Dispatches From the Front Lines,* and the documents attained by Peter Gleick, a climate scientist and author, and posted to the DeSmog blog in February 2012 to expose the inner workings of the Heartland Institute. In addition to this comment on geoengineering publications, note also and that the IPCC would now be holding expert meetings on how to proceed with such tactics for manipulating global climate systems

[3] citing Bazerman, pg 15

[4] which he explained in his 1977 interview "The Confession of the Flesh"

[5] *Siegfried Jäger,* "Theoretical and methodological aspects of a critical discourse and dispositive analysis." Appears in a revised version in Reiner Keller / Andreas Hirseland, Werner Schneider, Willy Viehöver (eds.): Handbook of Social Sciences discourse analysis, Opladen (Leske + Budrich), 2000.

[6]See *Journal of Advanced Composition, Volume 13, Number 1, Winter 1993. UNT Digital Library. http://digital.library.unt.edu/ark:/67531/metadc28608/.*

[7] See *Rhetorical Power,* 3-4.

[8] For a recent discussion see: Noah R. Roderick, in "Analogize This! The Politics of Scale and the Problem of Substance in Complexity-Based Composition" (2012), which recently made insightful and cautionary comments about the how the interests in 'ecology' in composition and rhetoric gave galvanized around complexity, and a proposal that any engagement with ecology or complexity should be understood as a different kind of relationship or "interface" between our field and the sciences.

[9] She stipulates that this is, of course, one narrow or selective history "constructed from the perspective provided by a single concept" – and that it is almost as difficult to extract a history of *techne* in the field as it is to pin down the history of rhetoric (7). And while Pender's five definitions are rather useful, and insightful in respect of the recent history of *techne* in rhetoric and composition, they also reflect number of problems in regards to the fourth and fifth definitions (and Pender shows her reluctance in several fronts: in framing these definitions as representing "shifts on the axiological axis" (31), as two versions of *techne* shaped largely by the concept's connections with 20th century concerns that *techne* has both opened up to and helped to frame, and in pointing to Hawk as an avatar for the 5th definition). For several reasons it seems problematic that, after situating Atwill as the major spokesperson for the third definition, one of inventing new social possibilities, Pender offers two modes that can seem to some to close these possibilities down. In the 4th definition, Pender suggests the meaning (or we might prefer modality) of *techne* "as a means of producing resources" developed through a wide range of scholarship "looking at *techne* in a position of extreme [or dangerous] instrumentality," where *techne* framed understandings of 'instrumental reason' and modern production practices as capable of turning the world into mere "resources" for human exploitation, and where she says, *techne* is examined in the "extreme" manner of being "capable of sending the world into a void"(32). She argues that the fifth meaning stems from those looking at a kind of 'counter-history' of *techne* (as she cites Byron Hawk as her avatar), not only as a conceptual tool for examining all that is 'instrumental' and "capable of sending the world into the void" but as "also capable of the opposite – summoning the world from the void" – the category which she calls *techne's* "non-instrumental mode" (31, 33).

[10] as James Bauman defined *ethos* in our *Encyclopedia of Rhetoric,* 263

[11] The title of their second chapter

[12] See in particular the chapter "Varieties of Environmentalism: a Genealogy"

[13]See their appendix A for a diagram and short explanation.

[14] A fairly recent and compelling example of such work is Elizabeth Malone's 2004 project *Rhetorical Analysis of Arguments Made in the Climate Change Debate* that worked with Jeanne Fahnestock (who was a committee

member on her dissertation project) and members of the IPCC at the United Nations to explore "argument families" and "social network links" between scientists, economists and policy makers. Malone's work combined Fahnestock's insight into argumentation and rhetorical structures in science with work from sociologists and cultural theorists such as Lyotard, Habermas, Giddens and Beck who have used various 'rhetorical' methods such as risk analysis, logical analysis and discourse analysis. Using these methods, she unearths and explains similarities and differences in scientific and narrative knowledge formation to diverse stake holders in this critical debate. Brendon Larson's *Metaphors for Sustainability: Redefining Our Relationship with Nature* (2011) is equally effective, while coming at the problem from the opposite direction: as an ecologist seeking out the contributions of a number of rhetorical scholars, philosophers and social theorists. A professor of Environment and Resource Studies at the University of Waterloo, Larson approached a number or rhetorical scholars to familiarize himself with rhetorical theories and concepts (citing Fleck, Latour and Woolgar, Shapin and Schaffer, Gross, Bazerman, Killingsworth and Palmer, Fahnestock, and Worster) to explain how scientists turn to metaphors, how these lead to, or hinder, social understandings and productive policies consistent with sustainability.

[15] See Lundgren's *Risk Communication* and http://asq.org/quality-progress/2005/08/standards-outlook/environmental-communication-standard-on-the-horizon.html

[16] Early discussions of 3rd wave environmental discourses were intermittently termed '3rd way' in association with sociologist Anthony Giddens, or as political "triangulation" strategies associated with certain Clinton era programs. In the 3rd wave we see an approach stemming from prominent and heavily debated attempts to re-articulate environmentalism's core vision and strategies over the past several decades in efforts to broaden its influence through centrist compromises to both right and left approaches to governance and growth, while stressing more mainstream mechanisms for change, including technological innovation, economic controls, and continued attempts at global treaties (Giddens 5).

[17] The now historic "1st Wave" wave of American works on environmentalism will typically recount the advocacy of John Muir and Teddy Roosevelt's style of Conservationism, the early 20th century debates between Gifford Pinchot (founder of the National Forest Service) and John Muir (founder of the Sierra Club), or the impact of Aldo Leopold's landmark work *A Sand County Almanac* published much later in 1949 (Malone 34). First wave discourses are epitomized today by the "Wise Use" movement or the more radical "Earth First!" activists -- groups that have been topics of study in communications and rhetoric in works by Thiele, Payne, Shabecoff, Oravec, and Meister. However, as a form of strategic advocacy, these perspectives are increasingly critiqued as ineffective or essentialist, and have become much less prevalent as popular texts or within most political forums for public policy.

[18] Carson is an archetype of the second wave approach. She was what Deleuze and Guattari would call a nomad scientist rather than a royal scientist, a biologist turned conservationist and nature writer, a scientist who swept in to destabilize a settled order. She studied English, Biology, Zoology and Genetics, and left a legacy primarily as an ecological thinker, both in her challenging of dominant conceptions and practices of science, and in her affect on the environmental movement and ecological philosophies like deep ecology. In her chapter "Nature Fights Back" she closed *Silent Spring* by stating "the 'control of nature' is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy when it was supposed that nature exists for the convenience of man" (297). Her final words were a critique of the concepts and practices of applied entomology as coming from a "Stone Age of science" a "primitive science" armed with "modern and terrible weapons" turned not only against insects but the earth (297). Almost fifty years after *Silent Spring,* Carson's forethought about nature 'fighting back' resonates with increasing intensity in the assorted fields doing 'science studies' and in the network of organizations and practical endeavors that make up the environmental 'movement' that Carson helped to transform. By the same token, her sentiment that the 'control' of nature ushered in a primitive and arrogant science has helped to motivate many critical attempts to re-theorize and reorient technoscientific control, often in light of the growth of 'ecological thought' that has taken root in wide range of fields

[19] Aldo Leopold (1887 –1948), the famous ecologist, forester, and environmentalist, is best known for *A Sand County Almanac* (1949) and his impact on the field of environmental ethics over the past 50 years.

[20] The recent work *Sustainability Indicators: Measuring the Immeasurable* by Simon Bell and Stephen Morse (2012) seems to pinpoint the central paradox today for concept of sustainability today: defining something as sustainable works best when dealing with limited, well defined situations (i.e. small-scale ecosystems or local economies) and

when methods and interpretations are extremely rigorous and slow, but the "concept of sustainability takes us away from limited, well-defined situations" by necessitating some understanding or representation of complex global systems, and holds a requirement today for fast "emphasis on immediate implementation" that doesn't allow rigorous testing of indicators. Defining anything as sustainable today, as the authors argue, "takes place in tandem with a wish to implement sustainability Now!" (73).

[21] Renatto Barilli echoes this view in his definition of rhetoric as "*technê* in the fullest sense: the activity it performs is not only cognitive but also transformative and practical as well. It does not limit itself to conveying neutral, sterilized facts (that would be *docere*), but its aim is to carry away the audience; to produce an effect on them; to mold them; to leave them different as a result of its impact" (x).

[22] She stipulates that this is, of course, one narrow or selective history "constructed from the perspective provided by a single concept" – and that it is almost as difficult to extract a history of *techne* in the field as it is to pin down the history of rhetoric (7). And while Pender's five definitions are rather useful, and insightful in respect of the recent history of *techne* in rhetoric and composition, they also reflect number of problems in regards to the fourth and fifth definitions (and Pender shows her reluctance in several fronts: in framing these definitions as representing "shifts on the axiological axis" (31), as two versions of *techne* shaped largely by the concept's connections with 20th century concerns that *techne* has both opened up to and helped to frame, and in pointing to Hawk as an avatar for the 5th definition). For several reasons it seems problematic that, after situating Atwill as the major spokesperson for the third definition, one of inventing new social possibilities, Pender offers two modes that can seem to some to close these possibilities down. In the 4th definition, Pender suggests the meaning (or we might prefer modality) of *techne* "as a means of producing resources" developed through a wide range of scholarship "looking at *techne* in a position of extreme [or dangerous] instrumentality," where *techne* framed understandings of 'instrumental reason' and modern production practices as capable of turning the world into mere "resources" for human exploitation, and where she says, *techne* is examined in the "extreme" manner of being "capable of sending the world into a void"(32). She argues that the fifth meaning stems from those looking at a kind of 'counter-history' of *techne* (as she cites Byron Hawk as her avatar), not only as a conceptual tool for examining all that is 'instrumental' and "capable of sending the world into the void" but as "also capable of the opposite – summoning the world from the void" – the category which she calls *techne's* "non-instrumental mode" (31, 33).

[23] While Heidegger's concerns with *techne* remain of interest to a number of recent works by Rutsky, Mitcham, Feenberg, Hawk and Miller, these account of *technê* should largely be confined to a second wave of environmental thinking – most often filtering their ideas through Heidegger and Aristotle's renderings of *technê* as a concept to be thought through in stark contrast to modern technicity and its treatment of nature as 'standing reserve'. Such arguments draw on *technê* in ways that (by the late 1980s) already represented the vintage interpretation of Heidegger that Badiou saw over-determining philosophy, and that Guattari indicted specifically as nailing *technê* to an "ontological plinth" by entrusting ancient *technê* in a philosophical fashion – and in opposition to modern technology – with the mission of 'unmasking the truth' about making, art, and poeisis, something which Guattari thought compromised *technê 's* character of "processual opening" (*Chaosmosis* 34).

[24] Andrew Kirk (*Counterculture Green*, 2007) and Fred Turner (*From Counterculture to Cyberculture*, 2006) have evaluated and praised the literate practices and creative processes of invention in the catalogues and early instantiations of open source cultures like "The WELL" for the evolution of useful "platforms," "publics," and "commons," that shape processes of invention through the sharing environmental project ideas, instructions on 'tool-use,' plans to provide access to tools through freecycling goods and services that support environmental projects.

[25] "Planet Craft" is a slogan he coins in his work *Whole Earth Discipline: An Ecopragmatist Manifesto* (2009).

[26] Marglin defines *episteme* as theoretical knowledge, self-evident principles, disembodied and decontextualized, universal knowledge, and "that which easily becomes the logic of calculation and maximization" (145).

[27] which they believe requires a "comparative approach to different socio-cultural contexts, in the framework of a knowledge theory of culture, describing different ways of mixing *episteme* and *technê* ; dis-embodied universalisms and practical body-centered intuitive competencies"

[28] This book won the John G. Cawelti Award for the best book in American Cultural Studies in 2001. However, Buell's assessment of ecocriticism was severely critiqued by several ecocritics, especially Dana Phillips in *The Truth*

of Ecology (2003)*,* who argued that Buell reinforced several naive assumptions of early ecocriticism that tended to privilege nature writing and to assume it was relatively easy for writers to directly venture out into nature and bring it back in writing through individual and often idiosyncratic experiences (something Robert Finch called *the natural pattern* of nature writing, or *the excursion*). Both Dana Philips and Robert Wess, a Burke scholar and ecocritic, accused early eco-criticism for indulgences in what Burke sometimes calls a "naïve verbal realism" about nature that refuses to realize the full extent of the role played by human constructions in shaping nature, or to acknowledge "symbolicity in notions of reality" (Wess, quoting *Language as Symbolic Action,* 5).

[29] Ten years after Ecospeak, Killingsworth argued that the study of environmental rhetoric had progressed in two essential directions: one that deals with ecology and environmentalism as topics or exigencies for the forms of analysis mentioned above, and another approach that he says is more "holistic," tending toward "forms of eco-criticism" that contribute new ways of practicing rhetoric that uses ecology or ecological thought to model rhetorical theory and conventions[29] (Coppola 226).

[30] Buell notes that ecocritics have been urged for decades to recognize that "the physical environment humans inhabit is not a holistic spiritual or biotic economy but a network or networks within which, on the one hand humans are biotically imbricated (like it or not), and within which, on the other hand, first nature has been greatly modified (like it or not) by *technê*" (45).

[31] see 1973's "The Shallow and the Deep, Long-Range Ecology Movement" p. 7 of *Selected Works*.

[32] This quote continues "The details of an *ecosophy* would show many variations due to significant differences concerning not only the 'facts' of pollution, resources, population, etc. but also value priorities."

[33] Stating that: "A time will come in which immense programs will be needed to regulate the balance among ozone, carbon dioxide, and oxygen in the atmosphere. Environmental ecology could [therefore] be easily requalified as *machinic ecology* since, both for the cosmos and for human praxis, machines are everything, and I would even add war machines. Since time immemorial 'nature' has been at war with life! But the acceleration of techno-scientific 'progress,' when conjugated with the enormous demographic growth of the moment, implies that an escape forward needs to be engaged immediately if the mechanosphere is to be controlled. (*Three Ecologies,* 66)"

[34] William Ophuls' *Plato's Revenge* (2011) and Melissa Lane's *Eco-Republic* (2012) cast an argument that largely runs counter to Val Plumwood's well known *Feminism and the Mastery of Nature* (1993) which tagged Plato's famous dualisms to a logic of colonisation and hierarchy that pit spirit over matter, reason over nature, soul over body, etc.

[35] Roochnik's study of Plato is one of many works charting the most consequential separation and stabilization of *technê* from other crucial concepts (most notably *logos*, *episteme,* and *dunamis*) during the formal emergence of rhetoric and philosophy. While passages from the *Republic, Gorgias, Euthydemus, Hipias Minor* and *Protagoras* demonstrate Socrates' arguments that that each type of knowledge has its own *dunamis* or potency/potential, where the words *dunamis,* wisdom, knowledge and expertise are often used interchangeably, it is rarely seen as problematic to argue that Plato's separation of philosophy and rhetoric subverted a number older ideas about *technê* largely by distinguishing them as 'deceptive' or 'artificial,' that this endured as a means to undermine rhetoric's status as *epistemic* (or as producing 'true' knowledge), or that this separation has strengthened claims that *technê* and rhetoric need to be not only supplemented by, but subverted to other 'nontechnical' forms of knowledge. As Bernard Stiegler stated in the first lines of *Technics and Time*, Vol I (1998), philosophy's separation of *technê* from *episteme* granted an inheritance of conflict "in which the philosopher's *episteme* is pitched against the sophistic *technê,* whereby all technical knowledge is devalued" (1). While such claims may be deliberately provocative, Stiegler's announcement of this 'inheritance of conflict' resonates through rhetorical scholarship in several characteristic ways: in the field's numerous treatments of the Classical questions of whether rhetoric is an art –a primary question that has animated a wide range of discussions on both rhetorical historiography and contemporary rhetorical theory in works by Poulakos, Bizzell, Lauer, Jarratt, McComiskey, Kerford, Marback and others, and in the related work 'recovering' Sophistic and pre-Socratic accounts of *technê* to, as Ekaterina Haskins says, "move beyond the foundational and totalizing question of 'What is rhetoric?' to more inclusive and proactive question 'What can a rhetoric be?'" – a question that has led to richer and more diverse accounts of *technê* in Sophistic theories and performances grounded in different historical and cultural circumstances (i.e. Papillion, Jarratt, Atwill, McComiskey, Pender, Haskins) (Haskins, *Professing Rhetoric,* 208). Of course, this 'conflict' is also

shaped by a much wider range of 20th century thinkers that have drawn on *technê* to examine or distinguish evolving features of technical or 'instrumental' knowledge formation from other forms of knowledge, most often knowledge associated with *praxis* or *phronesis*, and to pose new 'technê questions' about wide range technical activities affecting political, social and intellectual life (Dewey, Heidegger, Gadamer, Bernstein, Zimmerman, Ihde, Papillon, Roochnick, Mitcham, Winner, Steigler, Rotman).

[36] A selection of landmark studies and articles addressing history of rhetoric include: Berlin, James A, Susan Jarratt, John Schilb, and Victor J. Vitanza. "Historiography and the Histories of Rhetorics I: Revisionary Histories." *PRE/TEXT* 8 (1987): 9-152. Berlin, James A, Susan Jarratt, John Schilb, and Victor J. Vitanza. "Historiography and the Histories of Rhetorics II: Revisionary Histories and Ethics." *PRE/TEXT* 11 (1990): 169-287. Burke, Kenneth. *Attitudes Toward History.* 3rd ed. Berkeley: U of CA P, 1984. Connors, Robert. "Writing the History of Our Discipline." *An Introduction to Composition Studies.* Ed. Erika Lindemann and Gary Tate. NY: Oxford UP, 49-71. "Rhetorical History as a Component of Composition Studies." *Rhetoric Review* 7 (1989): 230-40. Jarratt, Susan. "The First Sophists and the Uses of History." *Rhetoric Review* 6 (1987): 67-78. *Rereading the Sophists: Classical Rhetoric Refigured.* Carbondale: SIUP, 1991. LaCapra, Dominick. "Rhetoric and History." In *History and Criticism.* Ithaca: Cornell UP, 1985. 15-44. *Learning From the Histories of Rhetoric.* Ed. Theresa Enos. Carbondale: SIUP, 1993. Momigliano, Arnaldo. "The Rhetoric of History and the History of Rhetoric: On Hayden White's Tropes." In *Comparative Criticism: A Yearbook.* Ed. E. S. Shaffer. 3 (1981): 259-68. Poulakos, Takis. "Historiiographies of the Tradition of Rhetoric: A Brief History of Classical Funeral Orations." *Western Journal of Speech Communication* 54 (1990): 172-88. Schiappa, Edward. "The Historiography of Rhetoric: Conflicts and Their Implications." *The Writing Instructor* 8 (1988): 15-22. Streuver, Nancy. "The Study of Language and the Study of History." *Journal of Interdisciplinary History* 4 (1974): 401-15. *Writing Histories of Rhetoric.* Ed. Victor J. Vitanza. Carbondale: SIUP, 1994.(Includes Sharon Crowley, Hans Kellner, Kathleen Ethel Welch, William A. Covino, Takis Poulakos, John Poulakos, Janet M. Atwill, James A. Berlin, John Schilb, Lynn Worsham, Jane Sutton, Victor J. Vitanza.) The diversity of topics in the history of Rhetoric today has sustained organizations including the *American Society for the History of Rhetoric* and *The International Society for the History of Rhetoric.*

[37] In this section, North draws a great deal from Connors' "Historical Inquiry in Composition Studies." *The Writing Instructor* 4 (1984): 157-67.

[38] In Kennedy's *Classical Rhetoric and Its Christian and Secular Tradition* (1980), Kennedy offers the technical as focused on handbooks, and 'how-to' manuals, the Sophistic as the study of the training and rhetorical performances of speakers of civic virtue, and the philosophic as encompassing the relationships between rhetorical knowledge and other forms of knowledge

[39] An approach he derives from W.B. Gallie's philosophy.

[40] Granting that the pedagogical strand of the rhetorical tradition has some "genuine continuity," Gross is directly responding to "the methods of Bizzell and Herzberg" in *The Rhetorical Tradition*. See also, Richard Leo Enos in "Rhetorical Archaeology: Established Resources, Methodological Tools, and Basic Research Methods" where he argues for an archaeological analogy.

[41] In contrast to many descriptive studies of scientific knowledge formation that seek out how implicit and explicit 'narratives' and 'texts' act as "supplements" to the material technologies developed by figures in the history of science, and Doyle cites Schaffer and Shapin's study of the development of Boyle's air pump as his example, Doyle makes the case that the narratives and visuals used are not merely supplements, but "part of the network of power and thinking that made Boyle's project possible" (3). Doyle suggests that the prior view often "ignores the disjunctions and collaborations among technologies, rhetorical and otherwise, and thus ends up positing a historical agent in command of her *techne"* (3). Doyle also emphasizes that rhetorics might be seen as working more like a contagion in scientific practices rather than as communication or representation alone.

[42] Here Doyle follows Deleuze and Guattari closely in their claim that that philosophy must be thought of in relation to the creation of concepts -- a relationship which grants "a history as well as a turbulent geography" that runs back to the "origin of phil-osophy" (*What is Philosophy?,* 8).

[43] They make a number of useful and fairly conventional claims about philosophy's use of concepts, including (1) "concepts are not waiting for us readymade like heavenly bodies;" (2) a concept is never created in simple or solitary acts of "forming, inventing, or fabricating concepts, because concepts are not necessarily forms,

discoveries, or products;" (3) concepts hold their creators signatures (i.e. Descartes' *cogito*, Leibniz's *monad*, Bergson's *duration*); (4) "although concepts are dated, signed and baptized, they have their own way of not dying while remaining subject to constraints of renewal, replacement, and mutation;" and (5) that we "must no longer accept concepts as gifts, nor merely purify and polish them, but first *make* and *create* them, present them and make them convincing" (Deleuze 5-8).

[44] Noting here the key repetition of this term in the fragments.

[45] Rhetoric has been particularly attentive to the recurring trope of 'second nature' from Aristotle's association of rhetoric as part of the warring spirit that is "like second nature" to man (in *The Politics* 1.3.8, and *the Rhetoric,* 1152a 30-32), to George Campbell's belief that a rhetorician's work involves negotiating the fundamental relationship between human nature and *evidence* (*The Philosophy of Rhetoric* vol 1), to Burke's contention that man is the 'symbol using animal'.

[46] Vickers often uses the Nietzschean term *"ressentiment"* to discuss the attitudes towards Bacon's authoritative influence. In emphasizing the centrality of persuasion, Vickers goes on to say: "in effect, [Bacon's] whole life's work was dedicated to persuasion and he shows himself to be very aware of the importance of persuasive writing, interpreting a proverb of Solomon in *The Advancement of Learning* as 'signifying the profoundness of wisdom will help a man to a name of admiration, but that it is eloquence that prevaileth in an active life' (3.409)" (*Francis Bacon and Renaissance Prose,* 3).

[47] This also extends some contemporary views in Rhetoric that have tended to limit the present value of Bacon's thought by constricting our sense of how radically Bacon recovered and reversed Ramus' resistance to past ideas about persuasion and *inventio* by putting these in the service of knowing through dialectics, and his redefinition of rhetoric as the remaining canons, which he put back in the service of Aristotelian pedagogy – all of moves which distanced 'truth', virtue or character from the service of rhetoric. Here I draw on "The Logic and Rhetoric of Peter Ramus" by Pierre Albert Duhamel, and Walter Ong's exhaustive treatment in *Ramus, Method and the Decay of Dialogue.* It is also important that Bacon seems to have shared several of Ramus' concerns about rhetoric, and delimited rhetoric in similar ways.

[48] Keeping in mind that ecology and the 'ecologist' are the subjects of a kind of performative naming or rhetorical figuration by contemporary critical and social theorists and historians [also added to intro], the 'ecologist' can be considered a much older figure than a twentieth century persona. Daniel Graham's entry on Heraclitus (*Hērákleitos ho Ephésios*; c. 535 – c. 475 BCE) in the Stanford Encyclopedia offers a quick impression of the differing interests in Heraclitus in recent times, as Graham points to studies on "a material monist or a process philosopher; a scientific cosmologist, a metaphysician, or a mainly religious thinker; an empiricist, a rationalist, or a mystic; a conventional thinker or a revolutionary; a developer of logic or one who denied the law of non-contradiction; the first genuine philosopher or an anti-intellectual obscurantist."

[49] See for instance: *Pan's Travail: Environmental Problems of the Ancient Greeks and Romans* by J Donald Hughes (1994), *The Ecology of the Ancient Greek World* (1991) by Robert Sallares, or "Theophrastus as Ecologist" by J. Donald Hughes, Environmental Review: ER, Vol. 9, No. 4, Special Issue: Roots of Ecological Thought(Winter, 1985), pp. 296-306. In all three Theophrastus is given special place as the 'first ecologist'. Other examples of those looking for ecological ideas among the Greeks include Latour in *Politics of Nature,* William Ophuls in *Plato's Revenge*, Richard Doyle's recent reading of the Phaedrus in *Darwin's Pharmacy*, Rebecca Stot's work on Darwin's debts to the ancients in *Darwin's Ghosts*, Melissa Lane's 2012 work *Eco-Republic,* Donald Worster's *Nature's Economy: A History of Ecological Ideas* (1977), which tries to account for what the science of ecology looked like "prior to its recent ascent to oracular power" in a popular environmental movement (IX). Worster picked up where Clarence Glacken left off in *Traces on the Rhodian Shore: Nature and Culture In Western Thought from Ancient Times to the End of the 18th Century* (1976)*,* devoted particular attention to the history of the science of ecology, and to the environmental works of White, Linnaeus, Humboldt, Darwin, Emerson, Thoreau, Muir, Pinchot, and Leopold (Malone 29).

[50] William Ophuls' *Plato's Revenge* (2011) and Melissa Lane's *Eco-Republic* (2012) cast an argument that largely runs counter to Val Plumwood's well known *Feminism and the Mastery of Nature* (1993) which tagged Plato's famous dualisms to a logic of colonisation and hierarchy that pit spirit over matter, reason over nature, soul over body, etc. The latter reference refers of course to Bernard Alan Miller's *Rhetoric's Earthly Realms: Heidegger, Sophistry, and the Gorgian Kairos* (2011)

[51] Keyser, P. and Georgia L. Irby-Massie (eds.), 2007, *The Routledge Biographical Encyclopedia of Ancient Natural Science*, Oxford: Routledge.

[52] Castells points to 19th century figures like Malthus, Darwin, and others, as well as the American Audubon Society. He makes the following comparisons about ecological thought and environmental action: *By environmentalism I refer to all forms of collective behavior that, in their discourse and in their practice, aim at correcting destructive forms of relationship between human action and its natural environment, in opposition to the prevailing structural and institutional logic. By ecology, in my sociological approach, I understand a set of beliefs, theories, and projects that consider humankind as a component of a broader ecosystem and wish to maintain the system's balance in a dynamic, evolutionary perspective. In my view, environmentalism is ecology in practice, and ecology is environmentalism in theory (171).*

[53] There is a point of difference between Heidegger and Nietzsche on his 'uniqueness' in Greek thought that is now a mainstay of classicist scholarship on pre-Socratic thought (from Greek scholars such as Diels, Rienhardt, Frankel, Snell, Gignon, Kirk, Marcovich, Robinson, and Kahn). There are various perspectives on the distinctiveness of his related 'doctrines' (and disputes about whether these are doctrines) of the unity of opposites, of *logos,* flux, and the common, but there is some general agreement that Heraclitus is a pioneer of a *unique* brand of pre-Socratic wisdom (ix)

[54] *On Nature* is of course the noted (and suspected) names of several works important works of ancient Greek philosophy, most notably by Anaximander, Epicurus, Parmenides, Heraclitus, and Gorgias.

[55] See Detienne's arguments in *The Origins of Greek Thought,* pg 49-56

[56] By and large, there are three types of rhetorical interpretations that scaffold readings of Heraclitus in recent decades. The first is the enduring propensity among classicists to study *On Nature* as a kind of commonplace book offering fragments of his aphoristic wisdom that enabled many arguments on interrelated themes of social and natural change, politics, and ethics. The second approach stems from philosophers, deep ecologists and philologists making the case that analyzing Heraclitus' rhetorical tropes and grammatical innovations is a crucial path to understanding his method and its relationship to the production of meaning. These approaches see his method as hinging on an antagonistic response to other forms of understanding nature, an insistence on paradox and other paragrammatical forms, an inauguration of dialectical inquiry as integral to his model of truth, and a slant on *technê* as fundamental to his inquiry into nature's *Logos*. A third approach stems from scholarship in Rhetoric proper, and typically uses Heraclitus' fragments of principles and doctrines to trace a genealogy of vital Sophistic concepts like *logos* and *kairos* (Schiappa, Poster, Helm, Miller, Jarratt).

[57] Rhetoric has been particularly attentive to the recurring trope of 'second nature' from Aristotle's association of rhetoric as part of the warring spirit that is "like second nature" to man (in *The Politics* 1.3.8, and *the Rhetoric,* 1152a 30-32), to George Campbell's belief that a rhetorician's work involves negotiating the fundamental relationship between human nature and *evidence* (*The Philosophy of Rhetoric* vol 1), to Burke's contention that man is the 'symbol using animal'.

[58] F. M. Conford uses the term the 'Greek Miracle' to mark the emergence of Greek science and of "rationality" as mythos and a mythological world view gave way to *logos* as a desire to formulate "an intelligible representation or account (*logos*) of the world, rather than the laws of the sequence of causes and effects in time—a *logos* to take the place of *mythoi*" (144). See also the work of Kōnstantinos P. Rhodokan on the idea of the 'Greek Miracle."

[59] For example, Heraclitus' tenet that the same thing could both 'be and not be at the same time,' which prompted Aristotle's arguments in the *Metaphysics* for a first philosophy or ontology with primary substances and first principles (and the firmest first principle of non-contradiction). Among numerous examples, we see: It is by disease that health is pleasant; by evil that good is pleasant; by hunger, satiety; by weariness, rest." "To God all things are beautiful, good, and right; men, on the other hand, deem some things right and others wrong." "Doctors cut, burn, and torture the sick, and then demand of them an undeserved fee for such services." "The way up and the way down are one and the same." "It is one and the same thing to be living or dead, awake or asleep, young or old. The former aspect in each case becomes the latter, and the latter again the former, by sudden unexpected reversal." "The name of the bow is life, but its work is death."

[60] and our most stinging critiques of false positivism or negative dialectics that obsessed Adorno

[61] From Miller's reading of Hegel in *Encyclopedia* on "The Philosophy of Nature."

[62] beginning in earnest with Plato's preference for determining the *necessary* qualities of physical objects and transhistorical concepts,

[63] Granger, Guthrie, and Kahn make similar arguments, but here I cite: Hartnack, Justus; Lars Aagaard-Mogensen, Translator (1998). *An Introduction to Hegel's Logic*. Hackett Publishing. pp. 16–17. Hartnack quotes Hegel's *Lectures on the History of Philosophy* Volume I.

[64] This argument begins in the co-authored chapter "Ecosophy T: from intuition to system" in the 1989 work *Ecology, Community, and Lifestyle: Outline of an Ecosophy*

[65]Devall and Sessions summarized an eight tier platform that Rothenberg and Naess were working to expand (70).

1. The well-being and flourishing of human and nonhuman life on Earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.
2. Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy vital human needs.
4. The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of nonhuman life requires such a decrease.
5. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.
6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.
7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.
8. Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes.

[66] See: Krabbe, Erik C W (2010). "Arne Næss (1912-2009)." *Argumentation* 24 (4): 529. doi:10.1007/s10503-010-9188-. See Rothenberg's book *Hand's End: Technology and the Limits of Nature*

[67] For Rothenberg, *logos* and *techne* seem to serve an explanatory function in Heraclitus' fragments, presenting novel and challenging ideas about the inseparability of natural, social, and subjective change. He argues that Heraclitus thought this kind of explanation was a challenge that eluded language at the time, but became apparent only when thinking about action, processes of making, or simple technologies, arguing that Heraclitus insists "human language is itself strained and stretched when it is made to tackle such vast and vaporous concepts as the *logos*" and "to bring this abstract omnipresence within our reach, he analogizes from the realm of familiar tools which do not scare us... he needs images from the world of *techne"* (3). The famous bow and lyre fragment reads: "They do not understand: how that which separates unites with itself. It is a harmony of oppositions, as in the case of the bow and of the lyre*"*(P45, Patrick: http://www.classicpersuasion.org/pw/heraclitus/herpate.htm)

[68] Kahn's translation, fragment 77, pg 65

[69] ... as he ultimately sets Heraclitus aside as something like a prehistoric ecological thinker to pursue a study of subsequent thinkers promoting "deep technology" he hoped would support "deeper ecology" by proving that different thinkers have made it possible to "look at nature as a machine [although] the meaning of the machinery changes consistently though history [...and] that certain technologies seem to express a yearning towards nature itself through its 'latent language'"

[70] or Simplicious' commentary in the first book of Aristotle's *Physics,* which is the oldest text on pre-Socratic teachings

[71] Gadamer uses the phrases "continual" and "persistent challenge" to mark a distinct trend from those 'wasps discerning their favourite flavor' in Heraclitus, a trend that was instead for Gadamer an example of "effective history" (*Wirkungsgeschichte*), a reception history that captures how Heraclitus "exists" both in the primary voices situated in their hermeneutical contexts, and in receptions that have stirred some to catalogue or clarify his principle tenets, and others to affirm some "unparalleled clarity" in Heraclitus' voice for the intellectual and cultural concerns of their own day. Perhaps the main reason Heraclitus has been so provocative is because he has been regularly thought of as the 'obscure' figure among the Pre-Socratics (or as Diogenes Laertius asserted, 'the riddler,' *ainiktes*). By the time of Cicero, Heraclitus was routinely cast as "the Dark of Epheseus" because his view

on nature and his brand of wisdom had simply become "too obscure"(*De Finibus Bonorum et Malorum*, Chapter 2, Section 15.). . The obscurity of Heraclitus was determined as he was defined against virtually every other advancing school of thought (Sophistic, Milesian, Pythagorean, Atomist, and Pluralist), against positions in philosophy, science and religion. The Catholic Church also made an ideological separation in a sacred conception of *logos* that was distinguished from a Heraclitean *logos* deemed as pagan. Besides these commanding heights that determine much of the 'obscurity' of his thought, Heraclitus' own difficult style is notorious, and has contributed significantly to both the allure and the challenge of retrieving Heraclitus.

[72] Classicists like Charles Kahn have been drawn to Heraclitus as part of an rival historical trend revaluing Heraclitus then tends to look for types of "intellectual unity" in receptions of Heraclitus that extend beyond the "fullest accounts" of Heraclitus' doctrine that come through Plato or Aristotle (via Theophrastus) (Kahn 6-7). Kahn reads Heraclitus "dialogically" through a "chain of statements, interlocking ideas, imagery and verbal echoes" that is "greater than his archaic poem, since its final intent was more explicitly didactic, and its central theme a direct affirmation of unity: *hen panta einai,* 'all things are one'" (Kahn 6). Thinkers as diverse historically and philosophically as Bacon, Hegel, Marx, Nietzsche, Heidegger, Derrida and Deleuze, have all shared an interest in securing Heraclitus as evidence of a lucid thinker in his own right, a thinker who, as the classicist Charles Kahn simply put it, reflected "upon the order of nature and man's place within it, upon the problems of language, meaning and communication [in ways which] still seem profound" (Kahn ix).

[73] *Heraclitus and Derrida: Presocratic Deconstruction* (2005)

[74] his study of the emergence of philosophical discourse is *Presocratic Reflexivity: The Construction of Philosophical Discourse C. 600-450 Bc, Volume 3.* While granting *logos* as special place in his work (while maintaining its status as a philosophical and rhetorical aporia), he looks to understand Heraclitus' method through five main rhetorical innovations: an *adversarial code* that served as a polemical device, an *alethic code* that insists on a version of the truth and plays with verbal devices to mark truth and inquiry together, a *logos code* which (for Sandywell) insists on 'listening' to *physis*, a *paragramatic code* of "ambivalent symbols, antithesis, and paradoxes," and the *dialectical code* "concerned with the elaboration of dialectical oppositions" (256-7). Sandywell insists that it the interplay of elements of this rhetoric "should effect a change ... his listeners commensurate with the vision it recounts," remembering that for Heraclitus the "invisible *harmonie/harmonia* is better than the visible" (Fr. 54) (Sandywell 257). The main insight Sandywell offers in an analysis of five 'rhetorical codes' is perhaps more gainfully read as an overview and arrangement of Heraclitean 'tropes' rather than codes, as the emphasis this places on *change* or *direction* for future thinkers makes more sense.

[75] 'tropes' might be more appropriate given the emphasis this places on *change* or *direction* for future thinkers

[76] For one etymology see Watkins, Calvert (2000). "Appendix I: Indo-European Roots: leg-." *The American Heritage Dictionary of the English Language:* Fourth Edition.

[77] Though Brann's book is very fast and loose with claims by comparison to Kahn's more thorough and well-documented study I started with here.

[78] It should be noted that Brann's book is fast and loose with *logos* by comparison to Kahn's more thorough and well-documented study, which I draw on more frequently here.

[79] *On Nature* is of course the noted (and suspected) names of several works important works of ancient Greek philosophy, most notably by Anaximander, Epicurus, Parmenides and Heraclitus.

[80] In one sense, this is a simple assertion of general agreement among classicists and philologists that his fragments have a literal starting point, but it also challenges those who have interpreted Heraclitus' wisdom construed solely as aphorisms or as riddles to be interpreted in almost any way, by grounding a case that such interpretations don't fully appreciate how, as Kahn said, Heraclitus "has many strings to his bow; he does not always speak in riddles or aphorisms. Among the quotations are four or five long passages of several connected sentences, and perhaps most significantly, fragment 1 is a carefully wrought poem, which suggests the beginning of a well planned book" (Kahn 7).

[81] He seems to use terms like 'fighting' regularly in terms of how he establishes his own method and for something inherent to the method he preaches. For instance, 100 states that "The people should fight for their law as if defending the city's wall" while he makes the claim "It is harder to fight pleasure than to fight emotion," as quoted by Aristotle in *Nicomachean Ethics*, Book III.

[82] To say that Heraclitus 'tames' emerging modes of rationality is to maintain some reliable tensions about what we know about Heraclitus' own re-appropriation of *logos* as a concept. On one hand Heraclitus adamantly rejected "*polumathiê* or information-gathering on the grounds that it 'does not teach understanding," treating "the epic poets as fools and calling Pythagoras a fraud" (Barnes 40). On the other hand he took the mathematical theorems of Pythagoras as having "pursued 'scientific' investigation further than other men" and he seemed to draw on his mathematical articulation of the one and the dyad[82] as establishing the possibility of his own notion of *logos* as an initial (and always misunderstood) "account" of *physis,* and as "the beginning of strife" (Burnet 31-2).

[82] Nietzsche stressed that Heraclitus' *logos* could only be illuminated in by thinking of it in relation to two "connected negations" or "refusals": one mainly in response to Anaximander, which rejected any complete separation of physical and metaphysical realms and refused to completely separate ideas about what *is* from their effects on social realms, and a second mainly in response to Parmenides, which fundamentally refused to accept *being* as the crucial category for knowledge. David Roochnik in *Retrieving the Ancients* paints the broadest stroke of Heraclitus' appeals for many of these thinkers, saying: "With a single, insanely bold stroke, Heraclitus of Ephesus…resolved the crisis of Milesian philosophy: he eliminated Being" (Roochnik 32). For Roochnik, Heraclitus solves the incessant problem of the interaction of being/becoming in Milesian philosophy, that is gripped with the problem of how a fundamental property (of Being) interacts with all derivations of this (all things Becoming) by doing away with Being absolutely, leaving all reality in an unremitting state of flux. Nietzsche stressed that Heraclitus' *logos* could only be illuminated in by thinking of it in relation to two "connected negations" or "refusals": one mainly in response to Anaximander, which rejected any complete separation of physical and metaphysical realms and refused to completely separate ideas about what *is* from their effects on social realms, and a second mainly in response to Parmenides, which fundamentally refused to accept *being* as the crucial category for knowledge. David Roochnik in *Retrieving the Ancients* paints the broadest stroke of Heraclitus' appeals for many of these thinkers, saying: "With a single, insanely bold stroke, Heraclitus of Ephesus…resolved the crisis of Milesian philosophy: he eliminated Being" (Roochnik 32). For Roochnik, Heraclitus solves the incessant problem of the interaction of being/becoming in Milesian philosophy, that is gripped with the problem of how a fundamental property (of Being) interacts with all derivations of this (all things Becoming) by doing away with Being absolutely, leaving all reality in an unremitting state of flux.

[83] Best known from Plato's *Thaetetus* (152e) (although there are those who see no historical relationship between the two figures), the contrast to Parmenides' focus on a stable *being* and unchangeable substances as the 'nature of things,' is often contrasted also to Aristotle's similar ontology and categorical approach to a vast range of topics. In response to the more abstracted and deterministic philosophies of Anaximander and Parmenides, the emphasis on *flux* and fire was not a lawlessness or nihilistic for Nietzsche, but an affirmation that understanding of 'nature' could work with another set of constraints and contingencies tied to social and subjective change (Nietzsche *PTAG* 51).

[84] This is a perspective that lines up with the work of Gerard Naddaf's work on *The Greek Concept of Nature.*

[85] As Herbert Granger argued in "Heraclitus' Quarrel with *Polymathy* and *Historie*," (the "inquiry" of the *histore* marking a shift in Greek scholarship that took prosaic histories to new standards)

[86] By and large, these paradoxes opened up two possible courses for understandings initially, a basic division which Luhmann again described aptly as the "Greek invention of paradox at the beginning of serious second-order observing" which established "two different even contradictory uses, the one logical, the other rhetorical. The logical tradition tries to suppress the paradox... the rhetorical tradition ...introduced paradoxical statements to enlarge frames of received opinions ... to prepare the ground for innovation and/or the acceptance of suggested decisions ("Paradoxy" 38). Heraclitus' tenet that 'the same thing could both be and not be at the same time[86]' became one of the first sign-posts for both traditions, and charts a well-travelled path leading to *the Metaphysics* and Aristotle's arguments for a first philosophy with primary substances and first principles, including of course the firmest first principle of non-contradiction. While Heraclitus clearly influenced great debates about what it meant for the human ability to "correctly" speak about nature, his paradoxes were just as clearly meant to distinguish and encourage his own Brannd of innovative thinking from the pursuits of knowledge he sought to tame, and to establish some acceptance of contradictions that might help avert his audience from these serious crises of thinking, while setting a course to advance towards his own wisdom and notions of truth. R.M. Sainsbury would

diagnose in his study of paradoxes as simply establishing a need to address certain contradictions as true and acceptable. See *Paradoxes,* 2nd edition p 135-144

[87] From *The Fragments of the Work of Heraclitus of Ephesus on Nature*, translated from the Greek text by G.T.W. Patrick, Baltimore: N. Murray, 1889. This was originally Patrick's doctoral thesis at Johns Hopkins University, 1888. A note states that this 1889 edition was reprinted from the American Journal of Psychology, 1888.

[88] Here John Burnet points to DK fragments 18 and 45: (18) Of all whose discourses I have heard, there is not one who attains to understanding that wisdom is apart from all. R.P. 32 b. (19) Wisdom is one thing. It is to know the thought by which all things are steered through all things. R.P. 40.

[89] see: Martin Heidegger and Eugen Fink, Heraclitus Seminar 1966/67, Charles H. Seibert, trans. (University, Alabama: University of Alabama Press, 1979), pp. 74-76.

[90] See Detienne's *The Masters of Truth in Ancient Greece*

[91] "What intelligence or understanding do they [the people] have?" asks Heraclitus. "They follow popular bards and treat the crowd as their instructor, not realizing that the many are base, while the few are noble" (B104).

[92] 'An unapparent connection (*harmonia*) is stronger than an apparent one' (B54).

[93] At least "technological" in the ancient sense of Rothenberg was after in his claim about Heraclitus' *techne*

[94] which is often interpreted as form of elitism and distrust of the multitude, most often by focusing on his political comments that "one good man is worth ten thousand ordinary" in terms of political leadership (B49)

[95] For instance he reproaches his a group of citizens for banishing a distinguished leader:
"The adult citizens of Ephesus should hang themselves, every one, and leave the city to children, since they have banished Hermodorus, a man pre-eminent among them, saying, Let no one stand out among us; or let him stand out elsewhere among others" (B121)

[96] Barnes' translation. See Haxton's translation also: "Since mindfulness, of all things, is the ground of being, to speak one's true mind, and to keep things known in common, serves all being, just as laws made clear uphold the city, yet with greater strength. Of all pronouncements of the law the one source is the Word whereby we choose what helps true mindfulness prevail" (Haxton pg 59, fr 91).

[97] This is not only evident in the antagonism to science or *histore* discussed above, but in Heraclitus' insistence that a value of written knowledge as public "intelligence" must effectively combine both speaking and action. The aphorisms of *On Nature* were of course written to be remembered and repeated, but he also urges his readers to be wary of emerging forms of written knowledge as problematic for the wisdom he promotes (missing source?).

[98] Keep in mind that Heraclitus thought there could be a type of justice associated with strife and 'war' as the common condition of humanity, one that can and should be perceived across natural, social and personal processes or *forms* (keeping in mind that the Greek concept *form* comes from much earlier than the attested theory of forms or ideas that Plato abstracted largely in response to Heraclitus, and that 'form' is etymologically rooted in a number of terms having to do with vision, sight or appearance. See: Watt, Stephen (1997). "Introduction: The Theory of Forms (Books 5-7)." *Plato: Republic*. London: Wordsworth Editions. pp. xiv–xvi

[99] In *Place, Commonality, Judgment: Continental Philosophy and the Ancient Greeks,* Andrew Benjamin makes a comparable claim as he traced back continental philosophy to Heraclitus' original concern with place and commonality, which is cast in terms as designating "as much an original condition as they do a network of activity" (29). While he oddly prefers the term "relational ontology" to mark Heraclitus' emphasis thinking through networks of exchanges, place and commonality, Benjamin's interest in Heraclitus as a point of entry into a history of continental philosophy is similar to my own in the sense that he sees Heraclitus initiating the task of differentiating *the human relationally* from the task of distinguishing the human as a "non-relational singularity" (31). I also share Benjamin's conclusion that "thinking" after Heraclitus becomes a task that takes up questions in complex forms of relations, from thinking of life in relation to death: "What awaits men (*anthropous*) at death they do not know or even imagine (dokeoisi)" (DK 27), to thinking about what is present at the time only in relation to what is possible or "imagined" in the future (31).

[100] Given the fragmentary accounts of Heraclitus' central poem that remain, to claim that Heraclitus' thought is "systematic," Kahn argues that: *the intellectual unity of Heraclitus's composition was in a sense greater than that of any archaic poem, since its final intent was more explicitly didactic, and its central theme a direct affirmation of unity: hen panta einai, 'all things are one.' The content of this perfectly general formula seems to have been filled in by a chain of statements linked together not by logical argument but by interlocking ideas, imagery and verbal*

echoes. Theophrastus found the result 'incomplete and inconsistent,' but he was looking for a prosaic exposition of physical theories (6).

[101] David Metzer, in *The Lost Cause of Rhetoric*[101]*,* calls these "pardigmatic" of genealogical approaches attempting to (re)define rhetoric or rethink the history of rhetoric. While admiring a number of 'reclaimed' rhetorical traditions (like Susan Jarratt's *Rereading the Sophists*), he cautions against the vaguely "utopian" genealogies that "chase after the possibilities of what rhetoric can be, by questioning what it once was," specifically citing this as the kind of exploration that runs all the way back to the earliest "paradigm" that starts with the emergence of 'known rhetoric' vis-à-vis "Heraclitean rhetoric" that is "unknown" (xi, 87).

[102] See Schiappa pg 92, and Poster pg 2. A recent thread that runs from Schiappa's *Protagoras and Logos* (2003), to Carol Poster's "The Task of the Bow" (2006), to Jason Helms' response "The Task of the Name" (2008)[102] makes several arguments for renewed attention to Heraclitus in rhetoric. Helms and Poster initially hitch their wagon to Schiappa's interest in Heraclitus' influence on Protagoras, where he makes a case for thinking about Heraclitus an early 'rhetorical' theorist. Schiappa used Heraclitus as a key figure to "triangulate" some of the harder to pin down concepts or meanings in Protagoras's texts, making comparisons by "using the pre-Protagorean sources of Homer and Heraclitus on one side and the post-Protagorean writings of Plato and Aristotle on the other" (34). When Schiappa studies Heraclitus' bearing on Protagoras, he mostly suggests some straightforward influence and resemblances: the adoption of a writing style marked by the rhythm of "self-contained sayings 'designed for memorization'" (much like the treatment of *On Nature* as a commonplace book mentioned above), a style marked be "linguistic density" (choice of words with multiple meanings), and "resonance" (writing in fragments or aphorisms that carry significance that can only be fully appreciated when taken in terms of how it 'resonates with others), as well as significant differences, such as "generally railing against the poets (as in Heraclitus) to critically analyzing and evaluating their work (as in Protagoras)" (34, 57). Schiappa draws these connections largely by taking Heraclitus's work as a commonplace book that shaped the first Sophists' privileging of *logos* over a mythic-poetic tradition, which for Schiappa argues marks the Sophists as transitional figures which were still heavily influenced by this pre-Socratic tradition (58). Schiappa argues that the neglect of Heraclitus by most contemporary rhetoricians has been due anachronistic assumptions about disciplinarity on "predisciplinary" ancient thought , especially about definitions of "philosophy," "sophistic," and "rhetoric" which were much more fluid than rigidly demarcated in antiquity (Poster 1).

[103] p. 241, *The Philosophical Works of Francis Bacon,* Edited with an Introduction by John M. Robertson. This is from the preface to *the Magna Instauratio* or *Great Instauration*

[104] notably his 1620 work *Magna Instauratio* or "grand edifice" which was never finished

[105] Margery Purvers citing *Instauration Magna,* Distrubution Operis: *Works,* vol. IV, in *The Royal Society: concept and creation*. Cambridge: M.I.T. Press, 1967. Print.

[106] Montaigne was one of the first to comment specifically on Bacon as initiating a "ruse" of mastery as a type of master trope, principle or a general theory of science he brought to bear on all Brannches of knowledge, philosophy and natural history. While often complimentary of each other, Montaigne mentions this "ruse" as a synecdoche for several points of differing opinion on the character and value of human experiences of nature, on inductive reasoning, on naturalism, and on the role of humanist and metaphysical interpretations of Aristotle, who Montaigne thought already formulated this "ancient ruse" in such a way that was "not amisse, to bend nature as a wand, to a contrary extreame, whereby to set it right" (Essay XXVI, Montaigne III, X). See pages 32-3 of *Montaigne Et Francois Bacon*, by Pierre Villey. I draw these distinctions in the literature review below.

[107] See *The Mechanization of Natural Philosophy* edited by Sophie Roux, Daniel Garber, pages 12 -13 for a typical argument for Bacon in the tradition of mechanical philosophy

[108] The 'blackmail' of Bacon is an idea given most heft by Adorno and Horkheimer, who argued that "since Bacon" technoscience could manage without such categories as "substance and quality, activity and suffering, being and existence" as appropriate to the times, since, after Bacon "from now on matter was to be controlled without the illusion of immanent powers or hidden properties" (3). For Foucault's argument see: "What is Enlightenment?"

[109] Vickers and Soble present similar defenses, but Nieves Matthews outlined these debates in the most painstaking detail, pointing to a history of character assassination by Lord Macaulay, to James Spedding's defense, she traces a remarkable biography of his character, defending all accusations that he was a "blinkered careerist" (409). For a useful overview of how long these 'vicissitudes' seem to affect receptions of Bacon in recent decades,

see also the review "Bacon and the Menace of English Lit" in March 27, 1969, by Frances A. Yates in the New York Times review of books.

[110] See Richards, Robert J. *The Romantic Conception of Life: Science and Philosophy*. University of Chicago Press. p. 544.

[111] And Matthews does indeed note that defenses of Bacon have also valued the role and responsibility he grants to rhetoric (noting Vickers especially). See pages 418 -424 of *Francis Bacon: The History of Character Assassination.*

[112] Vickers often uses the Nietzschean term *"ressentiment"* to discuss the attitudes towards Bacon's authoritative influence. In emphasizing the centrality of persuasion, Vickers goes on to say: "in effect, [Bacon's] whole life's work was dedicated to persuasion and he shows himself to be very aware of the importance of persuasive writing, interpreting a proverb of Solomon in *The Advancement of Learning* as 'signifying the profoundness of wisdom will help a man to a name of admiration, but that it is eloquence that prevaileth in an active life' (3.409)" (*Francis Bacon and Renaissance Prose,* 3).

[113] Jardine, Vickers, Zappen, Briggs, Olmsted, Wallace, Howell, Cunningham, Miller and others have studied Bacon's famous method as a complex mix of a 'new natural philosophy' and an innovative rhetoric definitively advancing theories and events in the history of science and rhetoric from the early modern to the late Renaissance period. However, as Vickers argued, the serviceable studies of Francis Bacon's contributions to rhetoric pale in comparison to the important place occupied by rhetoric in Bacon's career , stating: "there are three book-length studies frequently cited: Karl R. Wallace's pioneering study, *Francis Bacon on Communication and Rhetoric*, Lisa Jardine's revised Cambridge dissertation, *Francis Bacon: Discovery and the Art of Discourse*, and the overall history by W. S. Howell, Jr*., Logic and Rhetoric in England, 1500-1700*. There are also some shorter essays, of varying value.' But it is not being unkind to say that none of these offers a satisfactory account of either Bacon's theory or practice of rhetoric. In some cases major emphases in Bacon's theory have simply not been registered, or were misunderstood. In others, the writers' evaluation of Bacon was adversely affected by their general conception of rhetoric, and the place it held in European intellectual life"(200, Cambridge Comp.). In recent decades however we have seen numerous connections between Bacon and philosophies of technology (i.e. the collection edited in 2008 by Zittel, Engel, Nanni and Karafyllis) which make numerous other new contributions to Bacon scholarship and to histories of rhetoric interested in his theories of invention.

[114] A figure of speech in which an absent or imaginary person is represented as speaking.

[115] This also extends some contemporary views in Rhetoric that have tended to limit the present value of Bacon's thought by constricting our sense of how radically Bacon recovered and reversed Ramus' resistance to past ideas about persuasion and *inventio* by putting these in the service of knowing through dialectics, and his redefinition of rhetoric as the remaining canons, which he put back in the service of Aristotelian pedagogy – all of moves which distanced 'truth,' virtue or character from the service of rhetoric. Here I draw on "The Logic and Rhetoric of Peter Ramus" by Pierre Albert Duhamel, and Walter Ong's exhaustive treatment in *Ramus, Method and the Decay of Dialogue.* It is also important that Bacon seems to have shared several of Ramus' concerns about rhetoric, and delimited rhetoric in similar ways...

[116] The first line of critique, probably the most well-known in recent decades, took on Bacon for "infusing vicious sexual metaphors into modern science at its very beginning" which became "instrumental in its ascent" (Soble on Harding, 453). This of course proved a worthy entry point into feminist concerns about science, but also motivated a more unfortunate turn that gained "added support from environmentalists seeking the origin of our current ecological crisis" (Vickers on Merchant, 118).

[117] (Solomon and Martin 14-15).

[118] Here is cites Bacon's *Novum*, 3, 29, 39, 118, 29 (respectively). The ellipsis here remove the following parenthetical: "(this crude and questionable figuring being the result of, and sanctioned by, Soper's rhetoric)." Desroche's defense is against Merchant, Harding, and Soper's readings of Bacon

[119] Both Vickers and Keroetge wrote early defenses and selected aphorisms from *Novum Organum* that are frequently repeated:

(I) *Man, being the servant and interpreter of Nature, can do and understand so much only as he has observed in fact or in thought of the course of nature…*

(III*)….Nature to be commanded must be obeyed*

(IV) *Towards the effecting of works, all that man can do is to put together or put asunder natural bodies. The rest is done by nature working within* (4:47).
Following Vickers, Kroetge uses Sedding and Ellis' *The Works of Francis Bacon,* 14 vols.
[120] For Desroche this tension runs throughout Bacon's philosophy: "What is given with one (rhetorical) hand is taken back by the other: if Bacon figures the interrogation of nature as a race to be won, it can only be won by being lost; as a thing to be chased, it can only be caught by waiting patiently for it" (17). As he continues: "Perhaps most important here, however, is the degree to which the second statement does not simply counter the first, but also functions entirely *otherwise* to it—to juxtapose the figure of a race, and the victory it implies, with the figure of the harvest, where the stakes have changed entirely, is to render deeply ambivalent the very rhetoric of victory, violence, etc., that scholars almost exclusively dwell upon when discussing Bacon's conception of the relation between nature and science." Desroches then asks us to consider the following example: "one of the most fraught of rhetorical moments concerning nature in Bacon's text, from Aphorism 117: 'For I do not run off like a child after golden apples, but stake all on the victory of art over nature in the race. Nor do I make haste to mow down the moss or the corn in blade, but wait for the harvest in its due season.'
[121] replacing the 'old nature' organically unfolding its potential (xiii).
[122] Briggs contributes an integral part of the equation in Bacon's rhetoric of mastery, and he takes a few steps away from "Vickers, Richter, and Harrison [who] stress mainly the power of his imaginative prose" by establishing a central role for rhetoric in defining scientific discovery as a particular form of religious revelation requiring a strenuous reading of nature, which he thinks is not unlike the rhetorical act of reading into Bacon's mountain of text.
[123] "Francis Bacon and the Mobility of Science,"
[124] (to use James Zappen's term).
[125] See Bacon's Essays: and Wisdom of the Ancients, p 410 and the essay "Icarus and Scylla and Charybdis, or The Middle Way"
[126] As Bacon said in Book One of the *The Advancement* "For no perfect discovery can be made upon a flat or a level; neither is it possible to discover the more remote and deeper parts of any science if you stand but upon the level of the same science, and ascend not to a higher science" (V.5).
[127] (again here he's following James Stephens)
[128] -- such as the promotion of a technocratic ethos (that Vico rejected) or the ways that Bacon's "art of inquiry into nature" seemed to insist that "one must resort to force to obtain the answer desired, that nature must be 'put to the rack,' which Leibniz (or Cassirer much later) tried to temper with more formal logic (Pesic, 82). Hobbes, to state just one more weighty example, drew brilliantly from his work with Bacon in many respects, but as Marx put it, Hobbes may have most effectively severed Bacon's unique combination of "rational methods" and "keen interest in impulse, vital force or … pain of matter" by turning this into something "one-sided" by parsing out Baconian politics, and systematizing this Brannd of science and materialism so "sensuousness loses its bloom and is turned into the abstract sensuousness of geometry." Peter Pesic's "Wrestling with Proteus: Francis Bacon and the 'Torture' of Nature" (1999) points to Leibnitz as the first to accuse Bacon of inaugurating metaphors of torturing nature (1696) by "putting it on the rack" with these new forms of discovery and invention that opened the door to experimental science. Pesic levels a defense against this claim first by contending that at least "one prong of Bacon's rhetorical program was a polemic against science," and then arguing that Bacon's quest for truth "envisions a struggle that tests the nobility of both the seeker and of nature," a fundamental struggle that Leibnitz neglects because he undervalued how Bacon "sought to present his vision of a new science [as part of] a complex rhetorical problem" (82-83). Marx comments are from "England and Materialist Philosophy" *Labour Monthly*, August 1923, pp. 105-113, "Further Selection from the Literary Remains of Karl Marx," translated and annotated by Max Beer; Original German: *Aus dem literarischen nachlass von Marx und Engels*, Vol. II, pp. 225-240;Transcribed: by Ted Crawford. For Marx, Hobbes' revision of Bacon is the historical point where "materialism is rationalised, and it develops also the ruthless logicality of reason." Similarly, Engels would argue later in his *Dialectics of Nature* that many of the British followers of Bacon had drawn the furthest extremes from his thought, saying that while the German philosophies of nature had tried to force the objective world into the framework of its subjective thought, these followers of Bacon had succumbed to "the opposite trend, which, relying on mere experience,

treats thought with sovereign disdain and really has gone to the furthest extreme in emptiness of thought" ("Natural Science and the Spirit World").

[129] For a rich discussion on this relationship, one shedding new light on a number of recent assessments of Hobbes in political and cultural theory, see *Hobbes and the Making of Modern Political Thought* by Gordon Hull (especially , 9-15 for this reference).

[130]Paolo Rossi's, "Ants, Spiders and Epistemolotists" in *Terminologia e Fortuna* (1984), Martin Hollis "Ant's, Spiders and Bees: A Third Way" (1994), and Muntersbjorn's "Francis Bacon's Philosophy of Science: *Machina Intellectus and Forma Indita* (2003)

[131] This is most recently translated and discussed by Madelaine Muntersborn, using Bacon, Francis ([1620] 1994), *Novum Organum,* Peter Urbach and John Gibson (trans. and eds.). Chicago: Open Court.

[132] See *The Order of Things*

[133] Bacon's *Plan of the Work* runs as follows (Bacon IV [1901], 22):

The Divisions of the Sciences.

The New Organon; or Directions concerning the Interpretation of Nature.

The Phenomena of the Universe; or a Natural and Experimental History for the foundation of Philosophy.

The Ladder of Intellect.

The Forerunners; or Anticipations of the New Philosophy.

The New Philosophy; or Active Science.

From: Klein, Jürgen, "Francis Bacon," *The Stanford Encyclopedia of Philosophy* (Winter 2012 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/win2012/entries/francis-bacon/>.

[134] *ars inveniendi adolescit cum inventis,* which is of course sometimes translated as "I regard that the mind, not only in its own faculties, but in its connection with things, must needs hold that the art of discovery may advance as discoveries advance." See in particular the multiple authored "The Most Significant Passage on Rhetoric in the Works of Francis Bacon" (1996) where Cogan, O'Rourke, Zappen, Sloane, Abbot and Dube lay similar claims.

[135] See page 30-1 of *Invention in Rhetoric and Composition,* and Gross and Walzer's *Rereading Aristotle's Rhetoric.* Lauer is using Douglas Ehninger's term for 18th century rhetorics to describe Bacon's approach as 'managerial. This is however not a tendency unique Lauer and Miller's examples, as this follows one tendency to restrict Bacon's idea of rhetoric to managing decorum and developing eloquence aptly accommodated to an audience, while contrasted this role to the function of "the arts of science, technics and poetics" which concern novelty or invention (131). Perez Zagorin's work on Bacon is exemplary in how it both amplifies and reduces invention within several paragraphs arguing that "he gave the concept of invention a much wider scope by explaining that it referred to two quite different meanings... either the invention of arts and sciences or that of speech and arguments," but that the "sum total of Bacon's general reflections on the nature and purpose of rhetoric... was quite restricted... as it were, a technical, not a philosophical discipline, whose job was to affect the imagination... as an aid to reason in keeping the passions in order" (181). Lisa Jardine, in *Francis Bacon: Discovery and the Art of Discourse*, very helpfully discusses Bacon's contributions to 16th century dialectic teaching, but also greatly reduces rhetoric's role to ornamentation or eloquence. Miller in fact contrasts Bacon to McKeon's richer view of invention "as the part of rhetoric that could be used to provide some system and guidance to the present-day fascination with creativity and innovation" – even though, when McKeon touches on Bacon, he sees Bacon's body of work as largely a response to problem of invention as "poorly developed," and along with Leibniz and Vico, as restoring and extended the five canons, making "them ways of advancing science, reforming philosophy, conceiving and studying culture, and framing universal history" (*Selected Writings,* vol 2. p 46-47). Such divergent views on Bacon's sense invention have, as Richard Young pointed out, persisted in studies of Bacon, running through many of the more serviceable studies of Francis Bacon's contributions to rhetoric. For Young's comments see pg 352 of *Encyclopedia of Rhetoric and Composition: Communication from Ancient Times*, edited by Theresa Enos. It was Vickers who claimed in the mid 1990s that studies of Bacon's rhetoric still pale in comparison to the important place occupied by rhetoric in Bacon's career and his thought. Works that have looked more carefully at inventive aspects of Bacon's rhetoric like *Francis Bacon: From Magic to Science* (1978) by Paolo Rossi, or Karl R. Wallace's landmark *Francis Bacon on Communication and Rhetoric* (1943), or much in the recent collection Claus Zittel's collection *Philosophies of Technology: Francis Bacon and His Contemporaries* (2008), have demonstrated that Bacon's revaluation of two Brannches of invention was a "central element for natural scientific research" and his view of

rhetoric was a designed to appeal not just to the audience, or to the intellect of the Renaissance man, but to persuade the "whole man," to affect the spirit of science and an age of production (Rossi, 157, Wallace, 132)

[136] when he said: "Constant practice devoted to one subject often prevails over both intelligence and skill"

[137] He goes on to address specific degradations of an art of invention by the Greeks and by Virgil, citing: "labor omnia vincit improbus, et duris urgens in rebus egestas" or, persevering labor overcomes all difficulties, and want that urges us on in the pressure of things (Virgil). It should be noted that Bacon also made racial comments regarding the Turks and Italians in his essays

[138] The essays offer some of the most accomplished and well-rounded examples of his style and his intent to address major themes like man in relation to the physical world, man in relation to himself and his morals, and man in relation to truth and knowledge. In an age of convoluted and fanciful verbiage, Bacon revised the essays for almost thirty years to shift from a *jejun* style to a style that mixed imaginative and allusive expression with painfully accurate and systematic exposition. He combines and contrasts aphoristic and plain style, Senecan and Ciceronian style in ways that generated wider appeal to a public audience and an immediate appeal for scholars who took up the essays as both poetic and philosophical contributions that transformed traditional ideas and genres. Much of this poetic language seemed to both reclaim and transform the ideas of the ancient Greeks, Romans, Machiavelli and other great thinkers. His early essays often borrowed heavily, such as his essay on death, which is largely repeating Lucretius and Erasmus, or his essay "Of Youth and Age" which is heavily borrowed from section 12 of Aristotle's *Rhetoric,* bk. II.

[139] For instance, he touches on core rhetorical questions in "On Studies" where he discusses rhetoric as what makes people "able to contend," and in "Of Youth and Age" (which he heavily borrowed from section 12, book 2 of Aristotle's Rhetoric) to demonstrate that Hermogones' rhetorical teachings and textbooks was an example of youthful wisdom gained and lost (likely to Meningitis).

[140] Jonathan Bennett's translation and interpretation

[141] "Francis Bacon and the Art–Nature Distinction." AMBIX, Vol. 54, No. 2, July 2007, 101–129

[142] Bacon, *Descriptio globi intellectualis,* The Oxford Francis Bacon, vol. 6, 103. See also De augmentis scientiarum, in The Works of Francis Bacon, ed. James Spedding, Robert Leslie Ellis and Douglas Denon Heath, 7 vols. (London, 1859–64), vol. 4, 294, cf. vol. 1, 496.

[143] Here Weeks cites: Bacon, *Cogitationes de natura rerum, The Works of Francis Bacon,* vol. 5, 423, cf. vol. 3, 18.

[144] First quote: Bacon, *De principiis atque originibus*, *The Oxford Francis Bacon,* vol. 6, 267 (italics in original). Second quote: Bacon, *The New Atlantis, The Works of Francis Bacon,* vol. 3, 156; Bacon, *Novum organum, The Oxford Francis Bacon,* vol. 11, 175.

[145] (Klein, Jürgen, "Francis Bacon," *The Stanford Encyclopedia of Philosophy* (Winter 2012 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/win2012/entries/francis-bacon/>)

[146] The use of rhetoric for Bacon here, seems to be that he hopes it can not only moderate such "zeal," but build on their "respectable reasons" and to bring rules, testing, and experimenting to the path that staked "everything on hard thinking and continuous mental effort," but "to establish degrees of certainty, to retain the evidence of the senses subject to certain constraints, […] to reject ways of thinking that tracks along after sensation," and to correct dialectical failures (by which he typically means more narrowly formalized logic) in order to address the "processes of everyday life [that] had filled the mind with hearsay and debased doctrines and infested it with utterly empty idols" (1). The ellipsis from the quotation removed the following: "whether they have spoken in simple confidence or in a spirit of professional posturing, have done great harm to philosophy and the sciences. As well as succeeding in •producing beliefs in people, they have been effective in •squashing and stopping inquiry; and the harm they have done by spoiling and putting an end to other men's efforts outweighs any good their own efforts have brought. Some people on the other hand..."

[147] "Rhetoric and Action in Francis Bacon,"…

[148] Sean Patrick O'Rourke, et al., "The Most Significant Passage on Rhetoric in the Works of Francis Bacon," *RSQ: Rhetoric Society Quarterly* 26, no. 3 (1996): 31-55.

[149] (before dissociating it somewhat from invention)

[150] Cogan himself seems to reinforce this as something Bacon emphasized when he argues that any deep and systematic pursuit of rhetoric is likely to bear out that underlying this 'art' we will always find a 'new-science' grounding it and guaranteeing both its "rigor and power" and its prerequisite as an object of study and teaching

that aims to direct the technological/scientific realms to the improvement of human life in thought and action (230).

[151] *De Augmentis* VI.3, *Works* 4:456-57.

[152] (to borrow Karl Wallace's term)

[153] Aristotle wittily, but hurtfully, doth deride the sophists near his time, saying, "They did as if one that professed the art of shoemaking should not teach how to make up a shoe, but only exhibit in a readiness a number of shoes of all fashions and sizes." But yet a man might reply, that if a shoemaker should have no shoes in his shop, but only work as he is bespoken, he should be weakly customed.

[154] ... note two sources in 'commonplace file'.... and here Bacon endorses a kind of "preparatory store" was endorsed by "our Saviour, speaking of divine knowledge, saith, 'That the kingdom of heaven is like a good householder, that bringeth forth both new and old store'" (XIII, 7).

[155] As Weeks discussed recently in "Mechanics in Bacon's *Great Instauration"* (2008), Bacon was interested the tension between methods of *interpretation* and *experientia literata* as a broad set of 'literate experiences,' not just a broad (and sometimes crude) set of scientific 'experiments' (142). While it has been tempting for some modernize this idea of *experientia literata* as what directly supports Bacon's ideas about the 'intentional experiment,' it is here in the *Advancement* that Bacon clearly initiates his most ambitions process of inquiry into a broad set of rhetorical mediations of nature, and proceeds through a process of arrangement and invention that is indeed comparable to his better-known process of "extending or transferring or putting together former inventions… found by intentional experiment" such as the long list of *experimenta fructifera* and *experimenta lucifera* (experiments of use and of light), a method which led to Bacon's (unfinished) natural history *Sylva Sylvarum,* the natural history published in 1627 a year after his death.

[156] XVIII. 3

[157] [Here he is almost surely referencing Virgil's *The Georgics,* and "Next I will discourse of Heaven's gift, the honey from the skies." The fourth book of *the Georgics*, his great farming poem, is devoted to bees, and honey that was the product of the bee's union with the sun.

[158] *David Parry also cites an interesting case: "In 2010, Prince Charles, the Prince of Wales, published a book entitled Harmony: A New Way of Looking at our World , co-written with Tony Juniper and Ian Skelly. As well as offering concrete policy solutions to ecological problems in fields such as architecture, agriculture and medicine, the book argues that, for human beings to be related to the world around us in a healthy way, we need to relinquish the*"mechanistic" understanding of the natural world characteristic of Western modernity and return to an older "organic" model of the world in which humans see themselves as participants in the deep spiritual interconnectedness of all things. Charles and his collaborators highlight the seventeenth century in particular as the start of what they dub "The Age of Disconnection ," in which humans came to see themselves as detached from nature and to see nature as something to be exploited for human ends. Francis Bacon' s1620 work *the Novum Organum Scientiarum* is highlighted as particularly culpable"

[159] Here Weeks cites: Bacon, *Cogitationes de natura rerum, The Works of Francis Bacon,* vol. 5, 423, cf. vol. 3, 18.

[160] Now in its second edition (first edition 1992).

[161] Bacon's ideas did ideas as consolidate in the Royal Society, which formed several decades after death in 1626 by a group of scientists, philosophers and philanthropists began a pan-European scientific movement.

[162] particularly as the Scientific Revolution as "a coherent, cataclysmic and climatic event,that fundamentally and irrevocably changed what people know about the natural world and how they secured proper knowledge of that world" is no longer, as Steven Shapin most convincingly argued, typically construed simply as "a conceptual revolution, a fundamental reordering of our ways of *thinking* about the natural. Schapin begins this argument claiming Alexandre Koyre gave it wider currency in 1939

[163] In *Foresight: The Art and Science of Anticipating the Future* (2008)

[164] This book was Forrester's attempt to draw the broadest possible implications from his work in industrial dynamics and electrical dynamics. Initial reception found the book to be a curiosity more than of any real value, though it did stir up immediate controversy and spur a number of related theories such as catastrophe theory and chaos theory. Even though the *Club of Rome's* popularization of the models is often taken as a failure of "big simulation," the simulations impacted practices in future modeling (as well as practices in business, finance, and the economy).

[165] These critiques were less an attack on scientific and mathematical model-building in the social sciences than an early attempt to think through the relationships between the two -- while working to add clarity and complexity to the models' relationships to different political economic theories, and underlying theories of growth, which the authors suggested had lead to uncritical methodologies and assumptions about resources that could effectively be construed as inputs in these models (Cole 1).

[166] The prevalent style of explanation is a rhetorical minefield. Problems are seriously tied to (but not limited to) the different cultures of research in humanistic sciences and in the natural (or technological) sciences (where causal explanation is the rule). The division is lamentable from the viewpoint of today's interest in the history of technology or 'media archaeology' or any researcher who normally has to deal with both inanimate objects and people using the objects.

[167] Most of these apply A.I. programming to problems in the environmental sciences in ways that weave the pattern seeking of humans and 'natural' data-driven methods from A.I. with the more traditional modeling techniques in order to shape "decision-making forums" or to help support the process of "Bridging Research and Policy" (WMO). Notable examples include:

Elicitator serves as an expert elicitation software tool created to process, retrieve and quantifying expert knowledge in a particular domain. These are typically used when empirical data is expensive, limited or unreliable. This new software tool can assists in quantifying expert knowledge in a form suitable for use-- prior to imputing further data into traditional models. The tool has been developed to be "user-friendly, extendible, and to facilitate consistent and repeatable elicitation of expert knowledge on a case-by-case basis."

Management Option Rank Equivalence (MORE) – "a relatively new but not an unusual type of sensitivity analysis for decision-making: MORE responds to the rapid increases in model size and complexity, particularly in the case of integrated models used to assist decision-making, and to the problems of effective sensitivity analysis. In particular, the sensitivity that is of interest is often that of the decision being made about the model's varying inputs and parameters. To assist decision-making model outputs will result in a ranking of management options."

The EXploratory Climate Land Assessment and Impact Management (EXCLAIM) tool: The tool brings together hydrological and socio-economic models with easy to use user interfaces. "Developed with specialised GIS tools, via thin-client technology, to assist policy makers, donor organisations and Non-Governmental Organisations (NGOs) understand how the interactions between changing land use and climate affects water resources and people's livelihoods."

[168] Lessl's work is an inspired piece of rhetorical analysis with a historicist's penchant to expose how a religious context for science gave way in the 19th century to the 'twin lives' of evolution as both a 'careful science' and as type of 'rhetorical Darwinism' that gave science a new "narrative form" while it "conflated history with science" and overcoded older narrative forms that "originally expressed religious meaning" and gave science its place in a patronage of ideas (168).

[169] At present popular works continue to analyze what Andrew Brown called *The Darwin Wars* with entrenched positions on about 'selfish gene' theories used to explain nearly all human motivations, and where newer debates venture into questions about 'punctuated equilibrium' or the 'ends of evolution' and whether gross evolutionary pressures are still of any effect on the human species now that medical and genetic science steer our survival through an urbanized, and technologically mediated environment (as evolutionary biologists Eldredge and Gould have argued, and naturalist David Attenborough often argues publicly).

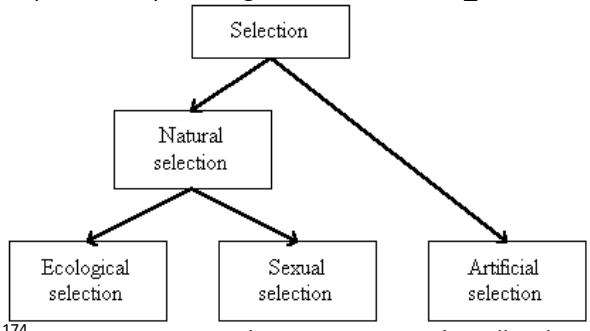
[170] See Stauffer, R. C. (1957). "Haeckel, Darwin and Ecology." *Quarterly Review of Biology* 32(2): 138–144. doi:10.1086/401754. Works by ecological historians (including both historians and ecologists writing histories) such as McIntosh, Egerton, Worster, Nicholson, Nash and others have positioned Darwin as a central figure in relation to a number of other pioneering figures of the science of ecology (like Humbolt, Wallace, Warming, Huxley and Haeckel), considering for instance how they composed their work in correspondence with Darwin as he shaped his ideas of natural selection and the transmutation of species, or (in the case of Haeckel and Warming) how they argued against Darwin's elevation of the principle of natural selection, either by maintaining some notion of a divine plan or siding with some version of Lamarck's inherited traits. For these distinctions see for example Acot, P. (1997). "The Lamarckian Cradle of Scientific Ecology." *Acta Biotheoretica* 45(3/4): 185–193. Forbes, S. A. (1887). "The Lake as Microcosm." *Bulletin of the Scientific Association*: 77–87. Paterson, H. (2005). "The Competitive Darwin." *Paleobiology* 31 (2): 56–76. Worster, D. (1994). *Nature's Economy: A History of*

Ecological Ideas. Cambridge University Press. Kormandy, E. J. (1978). "Ecology/Economy of Nature—Synonyms?." *Ecology* 59(6): 1292–1294.

[171] These debates are well mapped in works by Nicholson, Egerton, McIntosh, and Worster in particular.

[172] See in particular: "Nature's Fancy: Charles Darwin and the Breeding of Pigeons" by James A. Secord

[173] Artificial selection is sometimes, though unconventionally, a special case or a somewhat problematic pattern of evolution, like the other principle sub-categories of natural selection, *sexual selection* (and, much later, *ecological selection*) as mechanisms or as sub-sets of natural selection fitting within the struggle for existence but operating very differently, as sexual selection for instance often works against the principle of survival, such as the peacock's tail which functions to arouse and sustain interests but makes it vulnerable to prey. The following presents a typical hierarchical breakdown classifying natural and artificial selection, where natural selection is further subclassified into ecological and sexual selection (taken from wiki commons): http://en.wikipedia.org/wiki/File:Selection_classification_diagram.png



[174] See *A New Approach to Conservation* by Gill Aitken for a fuller discussion.

[175] In *The Rights of Nature: A History of Environmental Ethics* (1989) Nash cites on Darwin's notebooks and his reflections mainly, where Darwin comments on his family as nested within the human family, a mammal family, and the living world – noting how these ideas lead Darwin to his more frank discussions on how radically different his views had strayed from the Christian view of man as divinely created. Nash highlights one of Darwin's frequently cited from the following citation: "Man in his arrogance thinks himself a great work worthy of the interposition of a deity, more humble and I believe truer to consider him created from animals" Pamphlet: de Beer, Gavin ed. 1960. Darwin's notebooks on transmutation of species. Part II. Second notebook [C] (February to July 1838). Bulletin of the British Museum (Natural History). Historical Series 2 (3) (May): 75-118.

[176] In one of his more succinct essays, "The Dialectical Links Between Environmental Ethics and Sciences," Rozzi singles out Darwin for three reasons: because his "examination of the social influences and circumstances that led Darwin to formulate his theory of natural selection form one of the most studied and debated areas in the history of science;" because "Darwinian theory constitutes a foundational basis for major strains of both ecology and environmental ethics;" and because "it presents contrasting connotations in respect to Modern values and attitudes that have promoted an abuse of human society over the natural environment."

[177] Rozzi examines one seminal text in ecology (Ernst Haeckel's 1866 work *Generelle Morphologie der Organismen,* 1866) and one seminal text in environmental ethics ("The Land Ethic" established in 1949 by Aldo Leopold in *A Sand Country Almanac*).

[178] Worster's account is organized around four formative episodes of a history of science that lead to modern ideas about ecology: an 18th century marked by various naturalists negotiating science and reason (particularly Gilbert White and Carolus Linnaeus); an early 19th century "romantic Ecology" devoted to popularizing and romanticizing scientific work (such as Thoreau with the botanical work of Humbolt); the pivotal mid-19th century work of Darwin; and a maturation of ecology early in the 20th century that coincided with apparent limits in the frontiers of the new world, and the ecological devastation after World Wars (XII). See M Nicholson's work for a major critique, which is also summarized in Robert McIntosh's *The Background of Ecology.*

[179] He charts briefly how Darwin's concepts and ethos shapes a wide range of texts: from natural history essays embracing forms of vitalism (Bergson and John Burroughs) to philosophical essays exploring ways to overcome man's estrangement from nature (from Marx to Romantic or transcendentalist thinkers like Thoreau), to what Worster calls a resurgence of literary "interest in the fearful and demonic forces around them" in 'disenchantment

thinkers' or 'post-Romantic' thinkers (like Tennyson or Melville), which continue to be in vogue today (i.e. Morton and Stone) (125-6).

[180] see Miller and Halloran's "Reading Darwin, Reading Nature; or, On the Ethos of Historical Science"

[181] See *Darwin and the Barnacle* by Rebecca Stott, Faber and Faber: 2003

[182] To sum up Parrish's recent project, *Adaptive Rhetoric : Evolution, Culture, and the Art of Persuasion,* he states: "Language, culture, art (including the art of persuasion) are behaviors that help us adapt to our needs as social animals, and must be considered when studying rhetorical practice. A biocultural view emphasizes both specific historical practices shaped by culture and the constraints our physical bodies place on us as rhetors. The second idea a biocultural approach entails is that animal rhetorics should be viewed as analogues or even evolutionary precursors to certain human persuasive activities, allowing us to gather information about the origins of these activities" (iii).

[183] Here Campbell is citing Darwin's *Origin* pages 50-54. It should be noted too that this response to Philip Kitcher is an effort by Campbell to sidestep certain debates about how a concept of natural selection *springs from* Darwin's thoughts on artificial selection (which is often treated then as merely a trick for rhetorical discovery or invention). This also comes after Campbell credits Kitcher for an excellent analysis of Darwin's rhetorical logic that focuses on tactics such as: *dead rhetoric* (field-specific conventions or clichés to establish context), *emergent rhetoric* (his recognition of how his arguments changes both himself and his audience), *pathos* (brining affective commitments and desires into play), *dialogues of one* (deliberations with the self as a means to begin social change) and *uncharted territory* (or changing the certain scientific rules while anticipating and blocking certain audience-specific arguments) (See Campbell's "The Comic Frame" 26).

[184] Campbell then tends to look backwards, calling the analogy a "concept/metaphor/oxymoron" in the Baconian tradition that applies *vera causa* logic while showing how imagination can be brought to the aid of reason in two key ways: as an attempt "to use imagination to save reason from inferential work too demanding and too incredible either for the public or his fellow naturalists" (33). The 'abductive inference' is a "weak form of inference that inclines our judgment so slightly toward its conclusion that we cannot say that we believe the latter to be true; we only surmise that it may be so" (34). Campbell believes that *The Origin of Species* can be summarized simply as a set of deductive inferences (i.e. the basic logic that organisms vary, variations are largely inherited, organisms produce more than can survive, and organisms that vary most strongly in directions favored by the environment will accumulate), but that it should be understood in terms of a contrasting kind of logic working through abductive inferences connected to the artificial/natural selection analogy, which he thinks is designed to "incline" a kind of 'sufficient' reasoning (or even 'guessing') about the connections between artificial and natural selection in ways that might address "what Burke would call 'trained incapacity'" in both the "habits of thought common to breeders" and the "inability of professionals to see beyond their own specialty" (34, 30). Similarly, Campbell singles out certain imagery associated industrialism as a basic persuasive strategy, such as Darwin's request "to use the expression *the manufactury of species*" as an attempt to show that this "manufactured" process must be both "intelligible to the common sense of technological reason" for the species that is clearly "beyond the average" in their ability to influence evolution (Campbell 38, citing Origin pg 56).

[185] Like many studies in rhetoric in recent decades, Davies thinks Darwin's skills as a rhetorician do not diminish his accomplishments as a scientist, but quite the opposite, that his rhetorical insights are deeply intertwined with his scientific inquiry, and not just because of the commonplace understanding that science like all human discourse is subject to rational and sometimes irrational forms of persuasion that are either persuasive or coercive. Instead he emphasizes that Darwin's long view of human history sees human nature as fundamentally *persuasive* because "like our primate cousins... we are well equipped to anticipate and navigate our environment in ways that never reach conscious awareness or ways that rise to consciousness only after the fact" (5). Davies initially states his interest in a similar set of rhetorical strategies to Campbell's early work, the strategies of adopting a tone and cadence from Romantic imagery that can create calm, optimism and a love for nature and life that can "outlive our dying belief in God" (4). More generally, however, Davies is interested in several leading questions: "What happens if we discard the theology latent in the Romantic view but retain the rhetorical strategies? Might we succeed in convincing those with theological instincts that the right view of life is decidedly nontheological? Might

we make the evolutionary view of life palatable? Might we invite acceptance where Nietzsche's madman provokes resistance?" (5).

[186] Here he is emphasizing that Darwin's long view of human history sees human nature as fundamentally "persuasive" because "like our primate cousins... we are well equipped to anticipate and navigate our environment in ways that never reach conscious awareness or ways that rise to consciousness only after the fact" (5). Like Campbell, Davies interprets certain Darwinian insights into human nature as fundamentally rhetorical and 'tragic,' concluding that Darwin reflects "the wisdom of the rhetorician" in how he addresses his audience as having "the architecture" of other species with "affective and low-level cognitive capacities" that are "far more elaborate and persuasive than the architecture of our consciously accessible cognitive capacities" (5).

[187] For example see Jaeger's *Paideia: The Ideals of Greek Culture*[187], which outlines a version of classical humanism rooted in the culture of antiquity, offers some representative conclusions about *techne* that stood for much of the first half of the 20th century: that *technê* diverges from *theoria* (as "pure knowledge") by being related, in all accounts, with practice, teachability, and use value (130), and because of its problematic uncoupling from moral responsibility (59-72), virtue (1-12), and contemplation of truth (17-22, 192, *Vol 2*).

[188] There is very little said about Huxley's arguments in relation to this concept and analogy, although much said about other aspect of his rhetorical legacy, notably in *Thomas Henry Huxley: Communicating for Science* by John Vernon Jensen (1991), which is thorough treatment of "the greatest public spokesman for science in his century" (15).

[189] It is often said that Huxley's greatest rhetorical achievements is not only his defense of evolution, but the way he made evolution a part of his professional career, which offered a kind of "revised positivism" that became a rhetorical resource for remaking institutional and political ideologies in the image of science, usually by noting his "all-consuming drive to professionalize English science" and his apparent understanding of the "practical rhetorical conditions under which this new professional identity needed to take form" (Lessl 166).

[190] 'The origin of Species,' Westminster Review 17 (n.s.) 1860, pp. 541-70.

[191] Huxley differed from Darwin in maintaining that processes of artificial selection "had not yet produced a species" and that breeding or horticulture created morphological speciation not physiological changes creating a new species, and there are well documented differences in opinion between Darwin and Huxley in their disputes over what criteria are necessary for creating a physiological species (Blinderman, Lovejoy, Richards, Lynn).

[192] For a discussion of 'cosmetic rhetoric' see in particular his discussion in the notes to "Evolution and Ethics" 128-131.

[193] His work with Mill led to his eventual presidency of the Land Nationalization Society in the 1880s.

[194] See Evolution and Ethics" 10-11 for this discussion of art.

[195] See Jensen's discussion on pg 115 of *Thomas Henry Huxley: Communicating for Science*

[196] We might think of Huxley drawing on a this well known analogy to interrogate whether institutions carrying professional scientific ideals and educational pragmatism might forward a more rigorous scientific realm of artificial selection (which may be reminiscent of the application of this concept to consider how something functions as "*technê1*"), while thinking about how this might be a 'centre of force' for the social-political realm (which may remind readers of thinking about a less predictable corollary in "*technê2"* or questioning how this does or does not forward 'truly' virtuous actions) (Roochnik 2). sDavid Roochnik's landmark study *Of Art and Wisdom: Plato's Understanding of Technê* (1996) critiques Jaeger's depiction of *technê* in two ways: as a resting too heavily on one of two principle modalities for *technê* in the dialogues, and as purveying a 'technê analogy' in Socrates that suggests *technê* is more than a model of knowledge for Plato, but a model of ethics or virtue. Roochnik, who is a philosopher and not a classicist, develops his argument through an exceptionally thorough reading of Plato's treatments of *technê* in his early dialogues (the *Apology, Laches, Charmides, Euthyphro,* book 1 of *Republic*, *Euthydemus, Ion, Hippias Minor, Protagoras,* and *Gorgias*), where he charts *technê's* multiple meanings in Greek thought, including: "a 'craft,' 'skill,' 'expertise,' 'profession,' or even, as it is sometimes translated, a 'science' […] a thorough, masterful knowledge of a specific field that typically issues a useful result, can be taught to others, and can be recognized, certified, and rewarded"(1). Although Roochnik admits Plato never offers a systematic account of technê in the dialogues, through his own extensive listings of the kinds of *technai* Plato employs as illustrations (a list similar to Vlastos and Brumbaugh before him[196]), he makes the case that Plato's *technê* is a concept with two fundamental modalities: mathematical (which he also calls calculative, abstracting and theoretical) and productive

(which he associates with Gorgias, rhetoric and stochastic knowledge). This is a distinction he calls *technê1* and *technê2*. *Technê1* rests on calculating or theorizing a "fixed" or formulaic *technê*, which is thought of as analogous to a logic guiding most forms of fabrication, and containing a determinate reliable end which can guarantee some form of expertise and teachability (Roochnik 44-50). *Technê2* suggests a more flexible method or set of skills that one can use and improve upon without having to rely on in an entirely mechanical way, but which produces changes that can only be determined as probable or contestable, a technê that Roochnik assigns to Protagoras' and Isocrates' rhetorical education.

[197] noting especially Darwin's fascination with the 'deceptive' aspects animal behavior (such as the ability of one species to mimic another, or of ants to domesticate aphids), and bad conclusions such as a simple "struggle for existence" or as humans needing to survive by "increasing efficiency as regards [to] outside competition."

[198] See especially Paul White's *Instituting Biology* (57-63)

[199] See Sutton and Pindar's quoting of Bateson in the introduction to T*he Three Ecologies,* pg 11.

[200] *Ecospeak: Rhetoric and Environmental Politics in America* (1992) customized Habermas' ideas of reconstructive science and critical rationality, concepts which remain persuasively tied the more recent 'deliberative turn'.

[201] The International Institute for Environment and Development (an international policy research institute and NGO) defines *mainstreaming* as "the informed inclusion of relevant environmental concerns into the decisions and institutions that drive national, sectoral, and local development policy, rules, plans, investment and action" (IIED 2009). The UNDP (United Nations Development Programme) offers a similar description and lengthy set of strategies guided by a number of theories for mainstream sustainable development.

[202] There is much more to be said about recent work in the field, especially about work in technical communication, ecocomposition and service learning that has linked up with civic initiatives intent on developing a meaningful grasp of what sustainability means for cities, universities, general education, rhetoric and writing classes, and developing either new or appropriate practices that might support this. Something that was deleted from this dissertation was a discussion of a number of such scholars who have been reclaiming and stitching together new ideas about *technê* in order to advance current theories of service learning and work as a form of rhetorical invention, or intervention-- scholars including Annie Merill Ingramm, David Barton, Eleanor Long, Dennis Carlson, James Dubinsky, and Jeff Grabill. We might further consider how such work is appropriating the conventional ideas about *technê* in this dissertation and re-aligning the discourses and language of sustainability and ecology.

[203] In "Philosophical Foundations of Responsibility" from the collection *Responsibility: the Many Faces of a Social Phenomenon,* he notes that much of the classical discussion of responsibility is essentially of a form of retrospective "ex post responsibility", "a kind of responsibility that one incurs by being held 'answerable' for some act of one's own, done by commission or by omission in the past, either as someone acting in a socially defined role or simply as an accountable person" (9).

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ABSTRACT

A GENEALOGY OF ECOLOGICAL RHETORIC: HERACLITUS, BACON, DARWIN AND HUXLEY

by

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Advisor: Dr. Jeff Pruchnic

Major: English (Composition Studies)

Degree: Doctor of Philosophy

This dissertation is a genealogical study of historical intersections between rhetoric and ecology. Studying the works of Heraclitus, Francis Bacon, T.H. Huxley and Darwin as "bridge figures" in the history of rhetoric, science and ecological thought, I examine how their rhetorical theories and strategies (as discursive practices, performances and techniques) form a genealogy that bridges rhetorical and ecological theories and practices. My analysis studies their critical assessments and uses of rhetoric as it intersects with each figure's new investigations into natural philosophy, nature, and evolutionary biology, while drawing out relevant lessons for contemporary ecological and rhetorical thinkers. The main threads in my study include the evolution of rhetoric as *technê* as productive knowledge, invention or intervention, the role of rhetoric in bridging of natural and artificial, the evolving idea of 'mastery', and the development of persuasion into theories of social ecologies, among others. My study concludes by comparing these different attempts to make strategic use of rhetoric and *technê,* and draws conclusions about the value of this deeper rhetorical history of ecological thought for environmental rhetoric, science studies, and contemporary critical theories dealing with ecological themes.

AUTOBIOGRAPHICAL STATEMENT

I received my Bachelor of Arts with honors distinction from Laurentian University (or "Algoma") in 2000, majoring in English with a double minor in History and Philosophy. I proceeded to complete a Master of Arts in English at the University of Windsor in 2002, specializing in Post-Colonial Literature and Aboriginal Studies. It is here that I became interested in Composition, the History of Rhetoric, and in teaching – largely thanks to Dale Jacobs. I then worked for four years before returning to school at Wayne state, working as a teacher in various settings: as a Full-Time Sessional Professor at Centennial College in Toronto, Ontario (I was Nominated for the 2006 *George Wicken Teaching Excellence Award*, a college wide competition granted to one professor annually), as a Secondary School Teacher at *The Chauncy School* in Ware, England, and as a Teacher's Assistant and Literacy Program Co-coordinator at *Warrax House Therapeutic School* in Stanstead Abbots, England. I also worked briefly in advertising and as a cable technician (a.k.a. cable guy). I returned to take courses at Wayne State without funding in the fall of 2006, while I wrote entries for an internet start up that would be bought out by 'ask.com'. In 2007 I was given funding and the chance to really pick up my interests in Rhetoric and Composition Studies, Composition pedagogies, Rhetorics of Science and Technology, Environmental Rhetoric, Critical and Cultural Theory. While starting the dissertation process I was hired as a full-time Lecturer with a 3/3 teaching load focused on teaching 1020, Introduction to College Writing, and extended service commitments to the Composition Committees, including chairing the Curriculum committee, serving on the Assessment committee, and the Mentoring committee. I am currently a committed teacher of writing and rhetoric. My teaching is inspired by Wayne State students, Detroit, and my present research into the rhetoric of science and technology, ecology, new media and various composition pedagogies.